DINKLE

Delight Through Connections

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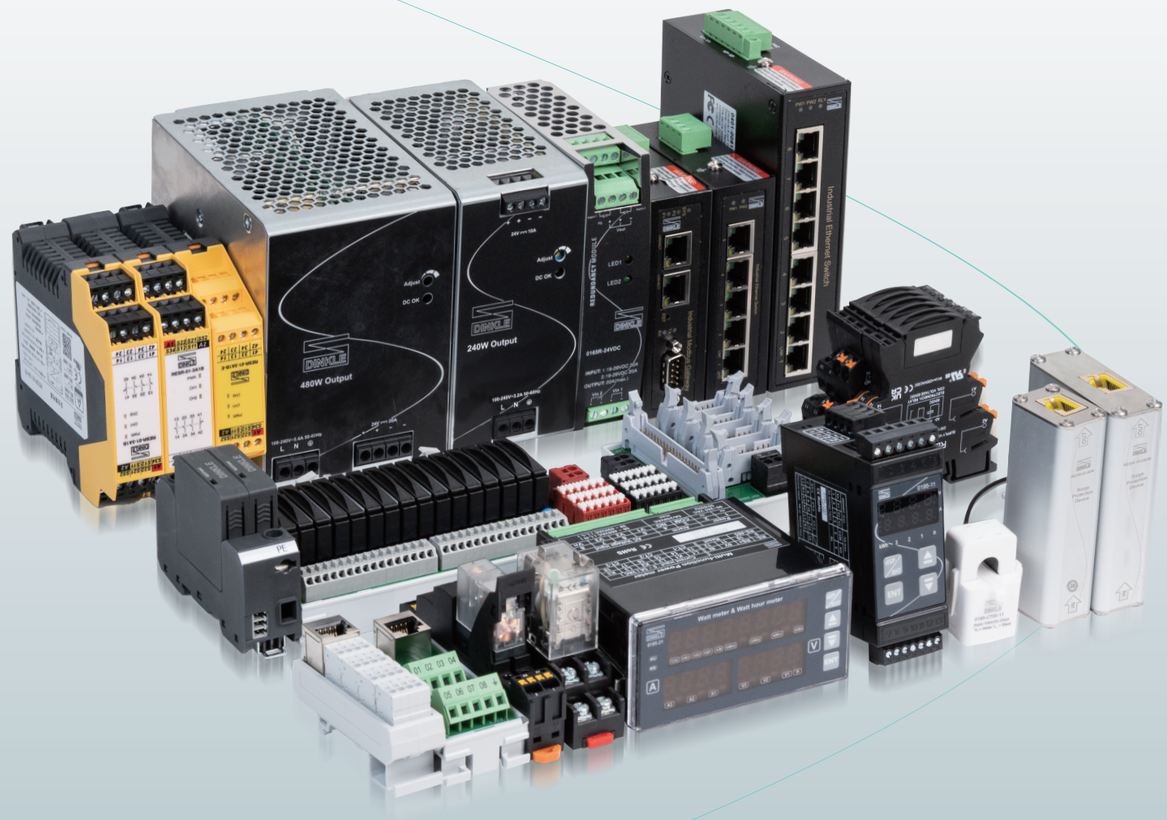
JUL./2025

Electronic Portfolio Catalog



DINKLE 町洋企業股份有限公司
DINKLE ENTERPRISE CO., LTD.

DC-38.1

Delight Through Connections

Since its establishment in 1983, Dinkle Group has upheld the power of innovation and an exceptional craftsman's spirit. Starting with terminal block manufacturing, Dinkle has built a global service framework centered around this core business. By delivering high-quality products and efficient services, we create strong and lasting connections with our customers.

With years of rich experience and technical expertise tailored to the needs of global customers, Dinkle excels by listening carefully, understanding accurately, and executing precisely. This approach is the key to our success and achieving win-win partnerships. The support and trust of our customers continuously fuel our passion and drive for ongoing innovation.

Today, Dinkle is not only a leading provider of high-end terminal blocks but also an outstanding supplier of industrial connection and Industry 4.0-related equipment. In addition to high-quality standard products, we offer customized solutions to meet specific customer needs.

Dinkle is your ideal win-win partner for diverse demands — let us **Delight Through Connections!**

Product features

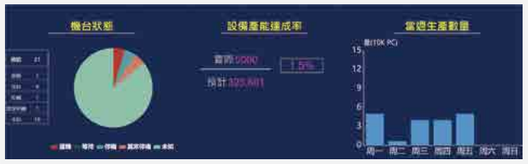
- 30% reduction in inventory space due to high-density terminal blocks with standard integrated one-piece housings
- 70% savings in wiring time with push-in design terminal blocks, where wires are inserted and withdrawn from the top
- Many options for communication modules, signal modules, power distribution modules, relay modules, standard power supply, accessories and tools to meet all kinds of industrial control requirements
- Standardized modules support most brands of PLCs and controllers
- Safety ensured by terminal blocks and materials which are UL1059 recognized and IEC60947 approved
- Welcome specified customization

Solutions for Digital Transformation

ERP

Ethernet

MoM



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IPC

Unmanaged Ethernet Switch
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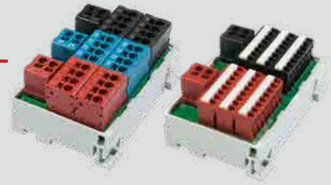
Control Level

Power



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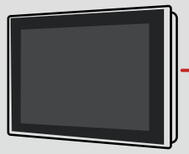
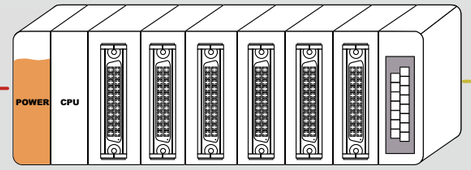
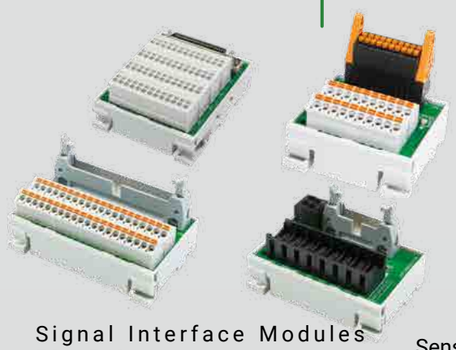




Communication by Modbus / EtherNet/IP / EtherCAT / PROFINET / CC-LINK or IO modules



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iO-GRID
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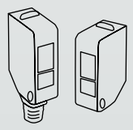
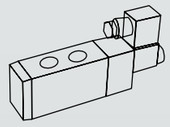
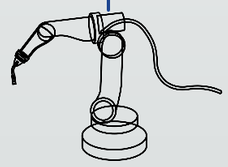
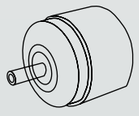
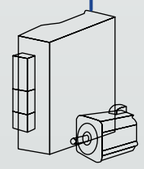
Device Level











Category List

Communication Modules Overview

Connection Method	Connector	Communication Interface	Part Number	Page
PID	RJ45	-	0170-0201	P16
PID	RJ45	-	0170-0202	P16
PID	RJ45	-	0170-0203	P16
Screw	RJ45	-	0170-0305	P16
PID	USB	RS485	GFTL-RM02	P16
-	USB	USB HDD	GFTL-G001	P16

Distribution Module Overview

Connection Method	Distribution Type	Number of Connections	Part Number	Page
PID	1 input to 8 outputs	8+8	0241-P116	P18
PID	1 input to 8 outputs	8+8	0241-P116A	P18
PID	1 input to 12 outputs	12+12	0241-P124	P18
PID	1 input to 12 outputs	12+12	0241-P124A	P18
PID	1 input to 18 outputs	18+18	0241-P136	P19
PID	1 input to 18 outputs	18+18	0241-P136A	P19
PID	1 input to 24 outputs	24+24	0241-P148	P19
PID	1 input to 24 outputs	24+24	0241-P148A	P19
PID	1 input to 24 outputs	24+24	0241-P248	P20
PID	1 input to 24 outputs	24+24	0241-P248A	P20
PID	1 input to 8 outputs	8+8	0241-P316	P20
PID	1 input to 8 outputs	8+8+8	0241-P424	P21

Unmanaged Ethernet Switch Overview

Network Speed	POE(Power over Ethernet)	Network Connector	Part Number	Page
10/100Base	NO	RJ45x5 PORT	0401-0051	P23
10/100/1000Base	NO	RJ45x5 PORT	0401-0052	P23

Unmanaged Ethernet Switch Overview

Network Speed	POE(Power over Ethernet)	Network Connector	Part Number	Page
10/100Base	NO	RJ45x8 PORT	0401-0080	P24
10/100/1000Base	NO	RJ45x8 PORT	0401-0081	P23
10/100/1000Base	NO	RJ45x16 PORT	0401-00S4	P24
10/100Base	YES	RJ45x5 PORT	0401-0151	P25
10/100/1000Base	YES	RJ45x5 PORT	0401-0152	P25
10/100Base	YES	RJ45x8 PORT	0401-0180	P25
10/100/1000Base	YES	RJ45x8 PORT	0401-0181	P26
10/100/1000Base	YES	RJ45x16 PORT	0401-01S4	P26
10/100/1000Base	YES	RJ45x5 PORT+Voltage Booster	0401-0254	P26
10/100/1000Base	YES	RJ45x8 PORT+Voltage Booster	0401-0284	P27
10/100/1000Base	YES	RJ45x5+SFPx2PORT	0401-0374	P27
10/100Base	NO	RJ45x5 PORT(BSP+QoS)	0401-0553	P28
10/100/1000Base	NO	RJ45x5 PORT(BSP+QoS)	0401-0554	P28
10/100Base	NO	RJ45x8 PORT(BSP+QoS)	0401-0583	P28
10/100/1000Base	NO	RJ45x8 PORT(BSP+QoS)	0401-0584	P29
10/100Base	YES	RJ45x5 PORT(BSP+QoS)	0401-3053	P30
10/100/1000Base	YES	RJ45x5 PORT(BSP+QoS)	0401-3054	P30
10/100Base	YES	RJ45x8 PORT(BSP+QoS)	0401-3083	P30
10/100/1000Base	YES	RJ45x8 PORT(BSP+QoS)	0401-3084	P31
Industrial Communication Gateway				
10/100Base	NO	1 x DB9 male + 2 x10/100M RJ45	0401-0733	P32
PoEEthernet Waterproof Enclosure				
10/100/1000Base	YES	RJ45x5+SFPx2 PORT	0219-0101	P34
10/100/1000Base	YES	RJ45x8 PORT	0219-0102	P34

Signal Interface Modules Overview

Connection Method	Connector	Indicator	Part Number	Page
PID	Input : IDC 40-Pin, Output: IDC 14-Pin* 4 Sets	NO	0241-C140K1	P37
PID	Input : IDC 40-Pin, Output: IDC 20-Pin* 2 Sets	NO	0241-C140K2	P37
PID	IDC 14-Pin, Mini Clamp Connector Socket	NO	0241-C114K	P37
PID	IDC 20-Pin, Mini Clamp Connector Socket	NO	0241-C120K	P37
PID	IDC 14-Pin	NO	0241-C114	P38
PID	IDC 20-Pin	NO	0241-C120	P38
PID	IDC 26-Pin	NO	0241-C126	P38
PID	IDC 30-Pin	NO	0241-C130	P38
PID	IDC 34-Pin	NO	0241-C134	P38
PID	IDC 40-Pin	NO	0241-C140	P38
Screw	IDC 20-Pin	NO	0241-C120S	P38
Screw	IDC 34-Pin	NO	0241-C134S	P38
Screw	IDC 40-Pin	NO	0241-C140S	P38
PID	D-Sub(Female) 37-Pin	NO	0241-C237	P38
PID	D-Sub(Female) 44-Pin	NO	0241-C244	P38
PID	MDR 20-Pin	NO	0241-C320	P38

Signal Interface Modules Overview

Connection Method	Connector	Indicator	Part Number	Page
PID	MDR 26-Pin	NO	0241-C326	P38
PID	MDR 50-Pin	NO	0241-C350	P38
PID	MDR 68-Pin	NO	0241-C368	P38
PID	MDR 100-Pin	NO	0241-C300	P38
PID	IDC 20-Pin	YES	0241-C120LED	P39
PID	IDC 34-Pin	YES	0241-C134LED	P39
PID	IDC 40-Pin	YES	0241-C140LED	P39
PID	Terminal Block/ Plug 20-Pin	YES	0241-C420LEDA	P39
PID	Terminal Block/ Plug 34-Pin	YES	0241-C434LEDA	P40
PID	Terminal Block/ Plug 40-Pin	YES	0241-C440LEDA	P40

Sensor Terminal Blocks Overview

Connection Method	Number of Sensors	Signal		Power		Part Number	Page
		Rated Voltage	Rated Current	Rated Voltage	Rated Current		
PID	4 sets	600V	20A	300V	10A	DP2.5SGQK01	P41
PID	8 sets	600V	20A	300V	10A	DP2.5SGQK02	P41
PID	12 sets	600V	20A	300V	10A	DP2.5SGQK03	P42
PID	16 sets	600V	20A	300V	10A	DP2.5SGQK04	P42
PID	20 sets	600V	20A	300V	10A	DP2.5SGQK05	P42

Relay Module Overview

Connection Method	Input (24VDC)		Output			Part Number	Page
	Input Type	Connector	Number of Relays	Current	Contact Form		
PID	NPN / PNP	IDC 14-Pin	8	5A	1A	0240-A108	P43
PID	NPN / PNP	IDC 20-Pin	16	5A	1A	0240-A116	P43
PID	NPN / PNP	IDC 40-Pin	32	5A	1A	0240-A132	P43
PID	NPN / PNP		2	10A	1A	0240-A202	P44
PID	NPN / PNP		4	10A	1A	0240-A204	P44
PID	NPN / PNP		6	10A	1A	0240-A206	P44
PID	NPN / PNP	IDC 14-Pin	8	10A	1A	0240-A208	P44
PID	NPN / PNP	IDC 14-Pin	12	10A	1A	0240-A212	P44
PID	NPN / PNP	IDC 20-Pin	16	10A	1A	0240-A216	P44
PID	NPN / PNP		2	10A	1C	0240-C202	P44
PID	NPN / PNP		4	10A	1C	0240-C204	P44
PID	NPN / PNP		6	10A	1C	0240-C206	P44
PID	NPN / PNP	IDC 14-Pin	8	10A	1C	0240-C208	P44
PID	NPN / PNP	IDC 14-Pin	12	10A	1C	0240-C212	P44
PID	NPN / PNP	IDC 20-Pin	16	10A	1C	0240-C216	P44
Screw	NPN / PNP		2	10A	1C	0240-C202S	P44
Screw	NPN / PNP		4	10A	1C	0240-C204S	P44

Relay Module Overview

Connection Method	Input (24VDC)		Output			Part Number	Page
	Input Type	Connector	Number of Relays	Current	Contact Form		
Screw	NPN / PNP		6	10A	1C	0240-C206S	P44
Screw	NPN / PNP	IDC 14-Pin	8	10A	1C	0240-C208S	P44
Screw	NPN / PNP	IDC 14-Pin	12	10A	1C	0240-C212S	P44
Screw	NPN / PNP	IDC 20-Pin	16	10A	1C	0240-C216S	P44
PID	NPN / PNP		8	1A	2C	0240-C308	P44
PID	NPN / PNP		8	1A	2C	0240-C308A	P44

Micro Relay Module Overview

Connection Method	Input			Output			Part Number	Page
	Input Type	Voltage	Current	Voltage	Current	Contact Form		
PID	-	24 VDC	7.5mA	250VAC/30VDC	5A	1A	0240-A104B-U-HF	P47
PID	-	24 VDC	7.08mA	250VAC/30VDC	5A	1A	0240-A102BB-U-HF	P48
PID	-	24 VDC	7.08mA	250VAC/30VDC	5A	1A	0240-A104BB-U-HF	P48
PID	-	24 VDC	7.08mA	250VAC/30VDC	5A	1A	0240-A108BB-U-HF	P48
PID	-	24 VDC	7.08mA	250VAC/30VDC	5A	1A	0240-A116BB-U-HF	P48
PID	NPN/PNP	24 VDC	7.08mA	250VAC/30VDC	5A	1A	0240-A116CB-U-HF	P47
PID	-	24 VDC	7.08mA	250VAC/30VDC	5A	1 C	0240-C102DB-U-HF	P48
PID	-	24 VDC	7.08mA	250VAC/30VDC	5A	1 C	0240-C104DB-U-HF	P48

Slim Relay Module Overview

Opto Relay

Connection Method	Input			Output			Part Number	Page
	Input Type	Voltage	Current	Voltage	Current	Contact Form		
P-LUP	NPN / PNP	5 VDC	15~20 mA	3~48 VDC	6A	1A	RE-H2604	P50
P-LUP	NPN / PNP	24 VDC	15~20 mA	3~48 VDC	6A	1A	RE-H2614	P50
P-LUP	NPN / PNP	90~240 VAC	40mA	3~48 VDC	6A	1A	RE-H2674	P50
P-LUP	NPN / PNP	200~240 VAC	40mA	3~48 VDC	6A	1A	RE-H2664	P51
PID	PNP	5 VDC	10mA	4~30 VDC	0.1A	1A	RE-3704	P52
PID	PNP	24 VDC	10mA	4~30 VDC	0.1A	1A	RE-3714	P52
PID	NPN	24 VDC	8mA	24~253 VAC	2.4A	1A	RE-3814	P52
Screw	NPN	5~30 VDC	6mA	3~30 VDC	0.1A	1A	RE-S0014	P53
Screw	NPN / PNP	5 VDC	15~18 mA	3~48 VDC	0.5A	1A	RE-S0504	P53
Screw	NPN / PNP	24 VDC	12~14 mA	3~48 VDC	0.5A	1A	RE-S0514	P53
Screw	NPN / PNP	95~125 VAC	0.6~1.3 mA	3~48 VDC	0.5A	1A	RE-S0554	P54
Screw	NPN / PNP	200~240 VAC	0.6~1.1 mA	3~48VDC	0.5A	1A	RE-S0564	P54

Slim Relay Module Overview

Slim Relay								
Connection Method	Input			Output			Part Number	Page
	Input Type	Voltage	Current	Voltage	Current	Contact Form		
P-LUP	NPN / PNP	24 VAC / VDC	11.1mA	400 VAC 125 VDC	6A	1 C	RER-H1C-24	P55
P-LUP	NPN / PNP	110 VAC / VDC	3.4mA	400 VAC 125 VDC	6A	1 C	RER-H1C-110	P55
P-LUP	NPN / PNP	230 VAC / VDC	3.7mA	400 VAC 125 VDC	6A	1 C	RER-H1C-230	P55
Screw	NPN / PNP	24 VAC / VDC	11.1mA	400 VAC 125 VDC	6A	1 C	RER-S1C-24	P56
Screw	NPN / PNP	110 VAC / VDC	3.4mA	400 VAC 125 VDC	6A	1 C	RER-S1C-110	P56
Screw	NPN / PNP	230 VAC / VDC	3.7mA	400 VAC 125 VDC	6A	1 C	RER-S1C-230	P56
PID	NPN / PNP	24 VAC / VDC	11.1mA	400 VAC 125 VDC	6A	1 C	RER-P1C-24	P57
PID	NPN / PNP	110 VAC / VDC	3.4mA	400 VAC 125 VDC	6A	1 C	RER-P1C-110	P57
PID	NPN / PNP	230 VAC / VDC	3.7mA	400 VAC 125 VDC	6A	1 C	RER-P1C-230	P57

Compact Relay J Series Overview

Type	Rated Voltage	Rated Current	Contacts	Part Number	Page
Relay	24VDC	21.8mA	1C	RER-J1C-D24	P61
	120VAC	7.6mA	1C	RER-J1C-A120	P61
	230VAC	3.9mA	1C	RER-J1C-A230	P61
	24VDC	21.8mA	2C	RER-J2C-D24	P63
	120VAC	7.6mA	2C	RER-J2C-A120	P63
	230VAC	3.9mA	2C	RER-J2C-A230	P63

Type	Connection Method	Applicable Relay Series	Part Number	Page
Relay Socket	PID	RER-J1C-XXXX	0149-3T-05ST	P65
	Screw		0149-30-05A	P65
	Cage clamp socket		0149-33-05E	P65
	PID	RER-J2C-XXXX	0149-3T-08ST	P65
	Screw		0149-30-08A	P65
	Cage clamp socket		0149-33-08E	P65

General-purpose Relay S / M Series Overview

Type	Rated Voltage	Rated Current	Contacts	Part Number	Page
Relay	24VDC	36.9mA	2C	RER-S2C-D24	P69
	120VAC	9.2mA	2C	RER-S2C-A120	P69
	230VAC	5.5mA	2C	RER-S2C-A230	P69
	24VDC	36.9mA	4C	RER-S4C-D24	P71
	120VAC	9.2mA	4C	RER-S4C-A120	P71
	230VAC	5.5mA	4C	RER-S4C-A230	P71
	24VDC	36.9mA	2C	RER-M2C-D24	P73
	120VAC	9.2mA	2C	RER-M2C-A120	P73
	230VAC	5.5mA	2C	RER-M2C-A230	P73
	24VDC	36.9mA	4C	RER-M4C-D24	P75
	120VAC	9.2mA	4C	RER-M4C-A120	P75
	230VAC	5.5mA	4C	RER-M4C-A230	P75

Type	Connection Method	Applicable Relay Series	Part Number	Page
Relay Socket	PID	RER-S2C-XXXX RER-M2C-XXXX	0149-1T-08ST	P77
	Screw		0149-10-08A	P77
	Cage clamp socket		0149-13-08E	P77
	PID	RER-S4C-XXXX RER-M4C-XXXX	0149-1T-14ST	P77
	Screw		0149-10-14A	P77
	Cage clamp socket		0149-13-14E	P77

General-purpose Relay L Series Overview

Type	Rated Voltage	Rated Current	Contacts	Part Number	Page
Relay	24VDC	36.9mA	2C	RER-L2C-D24	P78
	120VAC	9.2mA	2C	RER-L2C-A120	P78
	230VAC	5.5mA	2C	RER-L2C-A230	P78
	24VDC	69mA	4C	RER-L4C-D24	P80
	120VAC	21.8mA	4C	RER-L4C-A120	P80
	230VAC	10.8mA	4C	RER-L4C-A230	P80

Type	Connection Method	Applicable Relay Series	Part Number	Page
Relay Socket	Screw	RER-L2C-XXXX	0149-20-08A	P82
	Screw	RER-L4C-XXXX	0149-20-14A	P82

Smart Meter Overview

Input Current	Installation	Part Number	Page
0~100 mA	Rail Mounting	0195-1111	P88
5A	Rail Mounting	0195-1151	P89
0~100 mA	Panel Mounting	0195-2111	P90
5A	Panel Mounting	0195-2151	P91
Current Conveyor			
Installation		**Part Number**	**Page**
Rail Mounting		0195-3143	P92
Temperature/Humidity/Dew Point Transducer			
Connection Method	**Communication**	**Part Number**	**Page**
Lead wire (4C/4.0Φ)	RS-485 Modbus RTU	0402-1201-XX.X	P93
RJ45 Lead wire connector	RS-485 Modbus RTU	0402-1301-XX.X	P93
Smart Meter Setting Manual			
Part Number			**Page**
0195-11/0195-21 Series			P163

Power Supply Overview

Input Voltage Range	Rated Output Voltage	Rated Output Power	Part Number	Page
Single phase 85-264 VAC	24VDC	30W	0165N-24V30W1AC	P98
Single phase 85-264 VAC	24VDC	75W	0165N-24V75W1AC	P98
Single phase 85-264 VAC(120-375VDC)	24VDC	120W	0165N-24V120W1AC	P98
Single phase 85-264 VAC(120-375VDC)	24VDC	240W	0165N-24V240W1AC	P98
Single phase 85-264 VAC(120-375VDC)	24VDC	480W	0165N-24V480W1AC	P98
90-264 VAC	24VDC	120W	01651-24V120W1AC	P99
90-264 VAC	24VDC	240W	01651-24V240W1AC	P99
90-264 VAC	24VDC	480W	01651-24V480W1AC	P99
180-264 VAC	24VDC	960W	01652-24V960W1AC	P99
90-264 VAC	48VDC	120W	01651-48V120W1AC	P100
90-264 VAC	48VDC	240W	01651-48V240W1AC	P100
90-264 VAC	48VDC	480W	01651-48V480W1AC	P100
180-264 VAC	48VDC	960W	01652-48V960W1AC	P100
Redundancy Module				
19-29 VDC	24VDC	-	0165R-24VDC	P101
36-60 VDC	48VDC	-	0165R-48VDC	P101

Wire Harness Overview

MDR Cable					
Wire Harness	**Cable**	**Connecting Poles**	**Length**	**Part Number**	**Page**
MDR-MDR	Unshielded/ Shielded	50P/68P/100P	0.5m/1m/2m/3m/5m	WHX55-XXXX	P103
MDR-MDR-MDR	Unshielded	100P-50Px2		WHX55-T0XX	P103
D-Sub Male - D-Sub Female Cable					
Wire Harness	**Cable**	**Connecting Poles**	**Length**	**Part Number**	**Page**
D-sub Female-D-sub Male	Unshielded/ Shielded	37P/44P	0.5m/1m/2m/3m/5m	WHX10-XXXX	P103
Both-End D-sub Male Cable					
Wire Harness	**Cable**	**Connecting Poles**	**Length**	**Part Number**	**Page**
D-sub Male-D-sub Male	Unshielded/ Shielded	37P/44P	0.5m/1m/2m/3m/5m	WHX11-XXXX	P103
FUJI-IDC Cable					
Wire Harness	**Cable**	**Connecting Poles**	**Length**	**Part Number**	**Page**
IDC-FUJI	Unshielded/ Shielded	40P	0.5m/1m/2m/3m/5m	WHX37-XXXX	P104
IDC-IDC Cable					
Wire Harness	**Cable**	**Connecting Poles**	**Length**	**Part Number**	**Page**
IDC-IDC	Unshielded/ Shielded	14P/20P/26P/30P/ 34P/40P	0.5m/1m/2m/3m/5m	WHX33-XXXX	P104
FUJI, Free cable end					
Wire Harness	**Cable**	**Connecting Poles**	**Length**	**Part Number**	**Page**
Loose Wire/FUJI	Unshielded/ Shielded	40P	0.5m/1m/2m/3m/5m	WHXX7-XXXX	P104
IDC, Free cable end					
Wire Harness	**Cable**	**Connecting Poles**	**Length**	**Part Number**	**Page**
Loose Wire/IDC	Unshielded/ Shielded	20P/34P/40P	0.5m/1m/2m/3m/5m	WHXX3-XXXX	P104

Safety Relay Overview

Safe Output		Terminals	**Power**	Reset	Applications	**Part Number**	**Page**
3NO	1NC	Screw connection	24V DC/AC	AUTO / MANUAL	Emergency button, Safety door, Light curtain	RESR-01-3A1B-E	P108
3NO	1NC	Screw connection		AUTO / MANUAL	Emergency button, Safety door	RESR-01-3A1B	P110
		Spring connection				RESR-01-3A1B-S	P110
3NO	1NC	Screw connection		MANUAL (Reset monitoring)		RESR-01-3A1BM	P115
		Spring connection				RESR-01-3A1BM-S	P115
3NO	1NC	Screw connection		AUTO / MANUAL	Emergency button, Safety door, Light curtain	RESR-11-3A1B-P	P118
		Spring connection				RESR-11-3A1B-PS	P118
3NO	1NC	Screw connection		AUTO / MANUAL	Two-hand button	RESR-21-3A1B	P120
		Spring connection				RESR-21-3A1B-S	P120

T2 Surge Protection Device RES2 Series (40kA) Overview

Max. Operating Voltage	Rated Discharge Current	Max. Discharge Current	Voltage Protection Level	Type of Protection	Remote Signal	Part Number	Page
385VAC	20kA	40kA	1.7kV	Single phase (TN)	-	RES2-40-2P	P129
					YES	RES2-40-2PF	P129
				3-phase 3-wire(IT)、3-phase 4-wire(TN-C)	-	RES2-40-3P	P129
					YES	RES2-40-3PF	P129
				3-phase 5-wire (TN-S)	-	RES2-40-4P	P129
					YES	RES2-40-4PF	P129
385VAC (255VAC)	"0kA (40kA)	40kA (80kA)	1.7kV (1.2kV)	Single phase (TT)	-	RES2-40-1PN1	P130
					YES	RES2-40-1PN1F	P130
				3-phase 4-wire (TT)	-	RES2-40-3PN1	P130
					YES	RES2-40-3PN1F	P130
					YES	RES2-40-3PN1F-3	P130

T2 Surge Protection Device RES2 Series (80kA) Overview

Max. Operating Voltage	Nominal Discharge Current	Max. Discharge Current	Voltage Protection Level	Type of Protection	Remote Signal	Part Number	Page
385VAC	40kA	80kA	2kV	Single phase (TN)	-	RES2-80-2P	P131
					YES	RES2-80-2PF	P131
				3-phase 3-wire(IT)、3-phase 4-wire(TN-C)	-	RES2-80-3P	P131
					YES	RES2-80-3PF	P131
				3-phase 5-wire (TN-S)	-	RES2-80-4P	P131
					YES	RES2-80-4PF	P131
385VAC (255VAC)	40kA (40kA)	80kA (80kA)	2kV (1.2kV)	3-phase 4-wire (TT)	-	RES2-80-3PN1	P132
					YES	RES2-80-3PN1F	P132
					YES	RES2-80-3PN1F-3	P132

T2 Surge Protection Device RES2 Series (DC) Overview

Max. Operating Voltage	Nominal Discharge Current	Max. Discharge Current	Voltage Protection Level	Type of Protection	Remote Signal	Part Number	Page
90VDC	20kA	40kA	600V	24VDC power	-	RES2-40-24	P133
					YES	RES2-40-24F	P133
180VDC			800V	110VDC power	-	RES2-40-110	P133
					YES	RES2-40-110F	P133
320VDC			1200V	220VDC power	-	RES2-40-220	P133
					YES	RES2-40-220F	P133
1000VDC	20kA	40kA	4kV	1000VDC Photovoltaic	-	RES2-40-1000	P134
					YES	RES2-40-1000F	P134
1500VDC			6kV	1500VDC Photovoltaic	-	RES2-40-1500	P134
					YES	RES2-40-1500F	P134

T2 Surge Protection Device RES2 Series (T2 Surge Protection Device RESC2 Series (40kA)) Overview

Max. Operating Voltage	Nominal Discharge Current	Max. Discharge Current	Voltage Protection Level	Type of Protection	Remote Signal	Part Number	Page
385VAC	20kA	40kA	1.7kV	Single phase (TN)	-	RESC2-40-1P	P137
					YES	RESC2-40-1PF	P137
				Single phase (TN)	-	RESC2-40-2P	P137
					YES	RESC2-40-2PF	P137
				3-phase 3-wire(IT)、3-phase 4-wire(TN-C)	-	RESC2-40-3P	P137
					YES	RESC2-40-3PF	P137
385VAC (255VAC)	20kA (20kA)	40kA (40kA)	1.7kV (1.5kV)	3-phase 5-wire (TN-S)	-	RESC2-40-4P	P138
					YES	RESC2-40-4PF	P138
				Single phase (TT)	-	RESC2-40-1PN1	P138
					YES	RESC2-40-1PN1F	P138
				3-phase 4-wire (TT)	-	RESC2-40-3PN1	P138
					YES	RESC2-40-3PN1F	P138
					YES	RESC2-40-3PN1F-3	P138

T2 Surge Protection Device RES2 Series (80kA) Overview

Max. Operating Voltage	Nominal Discharge Current	Max. Discharge Current	Voltage Protection Level	Type of Protection	Remote Signal	Part Number	Page
385VAC	40kA	80kA	2kV	Single phase (TN)	-	RESC2-80-1P	P139
					YES	RESC2-80-1PF	P139
				Single phase (TN)	-	RESC2-80-2P	P139
					YES	RESC2-80-2PF	P139
				3-phase 3-wire(IT)、3-phase 4-wire(TN-C)	-	RESC2-80-3P	P139
					YES	RESC2-80-3PF	P139
				3-phase 5-wire (TN-S)	-	RESC2-80-4P	P140
					YES	RESC2-80-4PF	P140
385VAC (255VAC)	385VAC (255VAC)	385VAC (255VAC)	385VAC (255VAC)	Single phase (TT)	-	RESC2-80-1PN1	P140
					YES	RESC2-80-1PN1F	P140
				3-phase 4-wire (TT)	-	RESC2-80-3PN1	P140
					YES	RESC2-80-3PN1F	P140
					YES	RESC2-80-3PN1F-3	P140

T2 Surge Protection Device RESC2 Series (DC) Overview

Max. Operating Voltage	Nominal Discharge Current	Max. Discharge Current	Voltage Protection Level	Type of Protection	Remote Signal	Part Number	Page
90VDC	20kA	40kA	600V	24VDC power	-	RESC2-40-24	P141
					YES	RESC2-40-24F	P141
180VDC			800V	110VDC power	-	RESC2-40-110	P141
					YES	RESC2-40-110F	P141
320VDC			1200V	220VDC power	-	RESC2-40-220	P141
					YES	RESC2-40-220F	P141
1200VDC	20kA	40kA	4kV	1200VDC Photovoltaic	-	RESC2-40-1000	P142
					YES	RESC2-40-1000F	P142
1800VDC			6kV	1800VDC Photovoltaic	-	RESC2-40-1500	P142
					YES	RESC2-40-1500F	P142

T3 Network Surge Protector RESW Series Overview

Max. Operating Voltage	Nominal Discharge Current	Voltage Protection Level (Up)	Applicable Network	Bandwidth	Part Number	Page
2kA	2kA	100V/300V	100M Ethernet	100MHz	RESW-02-8DM	P144
10kA	10kA	850V/1kV	1000M Ethernet	/	RESW-10-24DM	P144
3kA	3kA	1kV/1.2kV	100M Ethernet + 220VAC power	/	RESW-03-220AM	P144
2kA	2kA	600V/1kV	1000M Ethernet	500MHz	RESW-02-60DK	P145
2kA	2kA	1.2kV/600V	PoE Network	150MHz	RESW-02-60DP	P145

T3 Surge Protection Device RESC2 Series (DC) Overview

Max. Operating Voltage	Nominal Discharge Current	Max. Discharge Current	Voltage Protection Level	Type of Protection	Part Number	Page
6VDC	800mA	10kA	40V/600V	Thermocouple, RS-485, CAN	RES-05L	P148
				RTD	RES-05L3	P148
32VDC				Single channel, AI, AO, DI, DO	RES-24L	P149
				AI, AO, DI, DO, RS-232	RES-24L3	P149
6VDC	800mA	10kA	L-L:40V/L-G:600V	2-Wire system, Thermocouple, RS-485, CAN	RESC-05L	P150
32VDC				2-Wire system, AI, AO, DI, DO	RESC-24L	P150
6VDC				3-Wire system, RTD	RESC-05L3	P151
32VDC				3-Wire system, AI, AO, DI, DO, RS-232	RESC-24L3	P151

Interface Module Compatibility Table

Interface Module Compatibility Table

PLC / Module	FATEK					Siemens													Allen-Bradley			
	FBs-24YT/J	FBs-24EYT	FBs-32DGI	FBs-24X	FBs-24EX	6ES7322-1BL00-0AA0	6ES7322-1BH01-0AA0	6ES7322-1BH10-0AA0	6ES7322-1FH00-0AA0	6ES7322-1FL00-0AA0	6ES7321-1BH02-0AA0	6ES7321-1BH10-0AA0	6ES7321-1BH50-0AA0	6ES7321-1CH20-0AA0	6ES7321-1FH00-0AA0	6ES7321-7BH01-0AB0	6ES7321-1BL00-0AA0	6ES7321-1EL00-0AA0	6ES7323-1BL00-0AA0	1746-OB32	1746-OV32	1746-IB32	1746-IV32
0241-C120 (P38)							•	•	•	•	•	•	•	•	•	•	•	•				
0241-C130 (P38)	•	•	•	•	•																	
0241-C134 (P38)																						
0241-C140 (P38)						•													•	•	•	•
0241-C120S (P38)							•	•	•	•	•	•	•	•	•	•	•	•				
0241-C134S (P38)																						
0241-C140S (P38)						•													•	•	•	•
0241-C120LED (P39)							•	•	•	•	•	•	•	•	•	•	•	•				
0241-C134LED (P39)																						
0241-C140LED (P39)						•														•	•	•
0241-C237 (P38)																						
0240-A132 (P43)						•													•	•	•	
0240-A116 (P43)							•	•	•													
0240-A216 (P44)							•	•	•													
0240-C216 (P44)							•	•	•													
0240-C216S (P44)							•	•	•													

Interface Module Compatibility Table

	KEYENCE																								
PLC / Module	KV-NC16EX	KV-C64XC	KV-NC32EX	KV-C32XC	KV-NC32EXT	KV-NC16EXT	KV-C32XTD	KV-C16XTD	KV-SIR32XT	KV-NC16ET	KV-NC16ETP	KV-C32TC	KV-C32TD	KV-C64TC	KV-C64TD	KV-NC32ET	KV-C32TCP	KV-C64TCP	KV-NC32ETP	KV-700	KV-NC32T	KV-3000	KV-5000		
0241-C120 (P38)	•										•	•									•				
0241-C134 (P38)		•	•	•	•	•	•	•					•	•	•	•	•	•	•	•		•			
0241-C140 (P38)										•													•	•	
0241-C120S (P38)	•										•	•									•				
0241-C134S (P38)		•	•	•	•	•	•	•					•	•	•	•	•	•	•	•		•			
0241-C140S (P38)										•													•	•	
0241-C120LED (P39)	•										•	•									•				
0241-C134LED (P39)		•	•	•	•	•	•	•					•	•	•	•	•	•	•	•		•			
0241-C140LED (P39)										•													•	•	
0241-C237 (P38)																									
0240-A132 (P43)																									
0240-A116 (P43)											•	•													
0240-A216 (P44)											•	•													
0240-C216 (P44)											•	•													
0240-C216S (P44)											•	•													

Interface Module Compatibility Table

	Panasonic																					
PLC / Module	AFP7X32D2	AFP7X64D2	FP2-X32D2	FP2-X64D2	FP2-XY64D2T	FP2-XY64D2P	FPG-XY64D2P	FPG-XY64D2T	AFP7XY64D2P-A	AFP7XY64D2T	FP2-Y serice	FP2-PP serice	AFP7Y serice	AFP7EXPM	AFP7EXPS	AFP7PP serice	FP2-HS serice	FP2-PXY serice	AFP7PG serice	FPG-PP serice		
0241-C120 (P38)																						
0241-C134 (P38)																						
0241-C140 (P38)	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•		
0241-C120S (P38)																						
0241-C134S (P38)																						
0241-C140S (P38)	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•		
0241-C120LED (P39)																						
0241-C134LED (P39)																						
0241-C140LED (P39)	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•		
0241-C237 (P38)																						
0240-A132 (P43)						•	•	•	•	•	•											
0240-A116 (P43)																						
0240-A216 (P44)																						
0240-C216 (P44)																						
0240-C216S (P44)																						

Interface Module Compatibility Table

	KEYENCE									OMRON															
PLC / Module	KV-5500	KV-H20S	KV-H40S	KV-H20G	KV-MC20V	KV-SSC02	KV-MC40V	KV-SH04PL	KV-ML16V	KV-SC20V	CJ1W-ID231	CJ1W-ID232	CJ1W-ID261	CJ1W-ID262	CJ1W-OD231	CJ1W-OD233	CJ1W-OD261	CJ1W-OD263	CJ1W-OD232	CJ1W-OD262	CJ1W-ID233	CJ1W-OD234			
0241-C120 (P38)										•															
0241-C134 (P38)											•														
0241-C140 (P38)	•	•	•	•	•	•	•	•				•	•	•	•	•	•	•	•	•	•	•			
0241-C120S (P38)										•															
0241-C134S (P38)											•														
0241-C140S (P38)	•	•	•	•	•	•	•	•				•	•	•	•	•	•	•	•	•	•	•			
0241-C120LED (P39)										•															
0241-C134LED (P39)											•														
0241-C140LED (P39)	•	•	•	•	•	•	•	•				•	•	•	•	•	•	•	•	•	•	•			
0241-C237 (P38)																									
0240-A132 (P43)																•	•	•	•	•	•				
0240-A116 (P43)																									
0240-A216 (P44)																									
0240-C216 (P44)																									
0240-C216S (P44)																									

Interface Module Compatibility Table

	Mitsubishi												DELTA														
PLC / Module	QX41	QX42	QX71	QX72	QX82	QX81	QY41P	QY71	QY82P	QH42P	QH81P	FX5UC serice	AH32AM10N-5C	AS32AM10N-5C	AH64AM10N-A	AS64AM10N-5C	DVP32SM11N	AH32AN02P-5C	AH64AN02P-5C	AH32AN02T-5C	AH64AN02T-5C	AS32AN02T-5C	AS64AN02T-A	AS64AN02T-A	AS332T-A	AS332P-A	AS324MT-A
0241-C120 (P38)													•														
0241-C134 (P38)																											
0241-C140 (P38)	•	•	•	•	•		•	•	•	•					•	•	•	•	•	•	•	•	•	•	•	•	•
0241-C120S (P38)													•														
0241-C134S (P38)																											
0241-C140S (P38)	•	•	•	•	•		•	•	•	•					•	•	•	•	•	•	•	•	•	•	•	•	•
0241-C120LED (P39)													•														
0241-C134LED (P39)																											
0241-C140LED (P39)	•	•	•	•	•		•	•	•	•					•	•	•	•	•	•	•	•	•	•	•	•	•
0241-C237 (P38)						•						•															
0240-A132 (P43)							•	•	•	•								•	•	•	•	•	•	•	•	•	•
0240-A116 (P43)																											
0240-A216 (P44)																											
0240-C216 (P44)																											
0240-C216S (P44)																											

Communication Modules

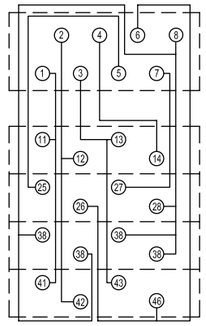
The essential connection product for industrial digitalization: Communication Modules

- The communication module product line includes USB to RS232, USB to RS485 and USB extender and signal demultiplexer devices. These can quickly connect and collect digital information from computer systems, sensors and field devices, thus enabling communication of data and related settings for temperature controllers, pressure gauges, inverters, barcode readers, RFID device and more.In addition, communication modules can facilitate the expansion of communication node connections, saving wiring time and space in the process.

- Dinkle communication modules are equipped with the latest push-in design (PID) terminal blocks, to save wiring time and improve wiring reliability.

Communication Modules

0170-0201



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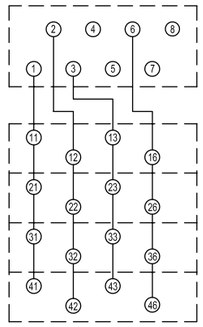

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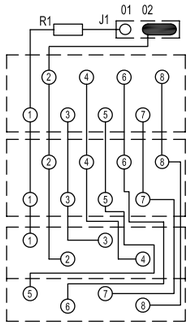
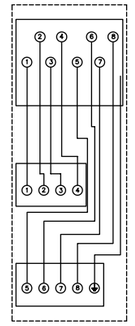


Specification

Number of Connections	16 Pole
Connection Method	PID
Rated Voltage	24 VDC
Rated Current	1A
Wire Range	26~16 AWG
Input Type	-
Connector	RJ45
Indicator	NO
L x W x H (mm)	22.5 x 77.5 x 41.6

0170-0305



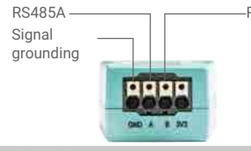
Specification

Number of Connections	16 Pole
Connection Method	Screw
Rated Voltage	24 VDC
Rated Current	1A
Wire Range	26~16 AWG
Input Type	-
Connector	RJ45
Indicator	NO
L x W x H (mm)	35.2 x 77.9 x 32

GFTL-RM02

RS485 Communication Interface

Wire Range (IEC/ UL)	0.14 ~ 1.5 mm^2 / AWG 28 ~ 16
Applicable Ferrules	DN00510D DN00710D



GFTL-G001

Transfer	USB2.0
Connector	Type A
Compatibility	Type A hub
Storage Temp.	0~70 ℃
L x W x H (mm)	66.5 x 27.5 x 16.5
Capacity	32 GB

Distribution Modules

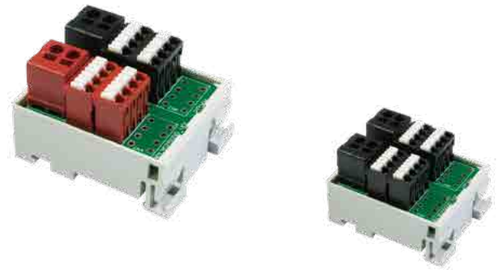
Effective power circuit management and arrangement: Distribution Modules

- Dinkle power distribution modules can organize and arrange power circuits using terminal block colors. The intuitive product design reduces human wiring errors and effectively improves the safety and the elegant appearance of the power system.

- Dinkle power distribution modules equipped with the latest push-in design (PID) terminal blocks, can efficiently save space, installation time and cost. A high tensile strength stainless steel clip within the terminal blocks holds the wire securely and resists equipment vibration, ensuring longterm stable connections and reducing maintenance costs.

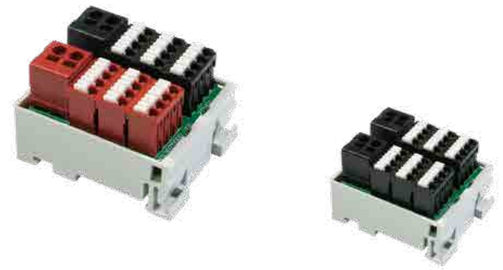
Distribution Modules

0241-P116



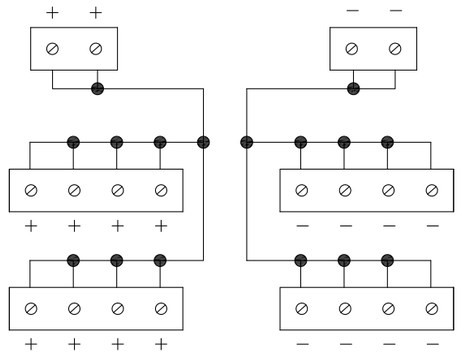
0241-P116A

0241-P124



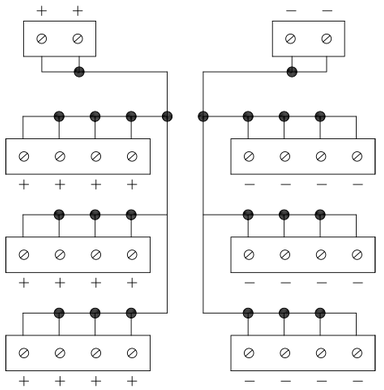
0241-P124A

Wiring Diagram



Specification	
Distribution Type	1 input to 8 outputs
Number of Connections	8+8
L x W x H (mm)	38.2 x 47.9 x 30.3
Connection Method	PID
Input	
Input voltage	50 VDC
Max. current of single pole	20A
Total input Current	40A
Wire Range	26~12 AWG
Stripping Length	9~10 mm
Applicable Ferrules	DN00510D DN00710D DN01510D
Output	
Output Voltage	50 VDC
Max. current of single pole	12A(Total output below 40A)
Wire Range	26~16 AWG
Stripping Length	8~9 mm
Applicable Ferrules	DN00508D DN00708D

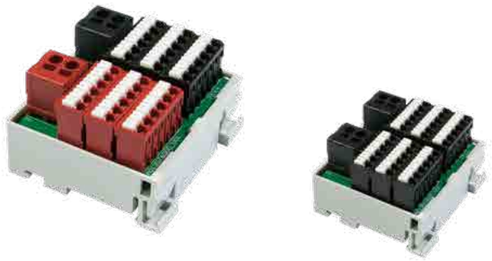
Wiring Diagram



Specification	
Distribution Type	1 input to 12 outputs
Number of Connections	12+12
L x W x H (mm)	38.2 x 47.9 x 30.3
Connection Method	PID
Input	
Input voltage	50 VDC
Max. current of single pole	20A
Total input Current	40A
Wire Range	26~12 AWG
Stripping Length	9~10 mm
Applicable Ferrules	DN00510D DN00710D DN01510D
Output	
Output Voltage	50 VDC
Max. current of single pole	12A(Total output below 40A)
Wire Range	26~16 AWG
Stripping Length	8~9 mm
Applicable Ferrules	DN00508D DN00708D

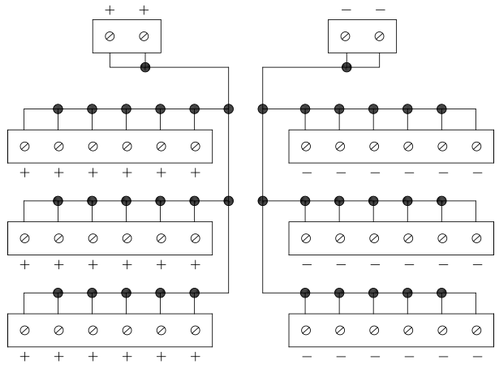
Distribution Modules

0241-P136



0241-P136A

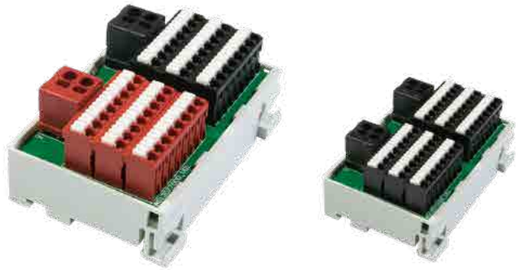
Wiring Diagram



Specification

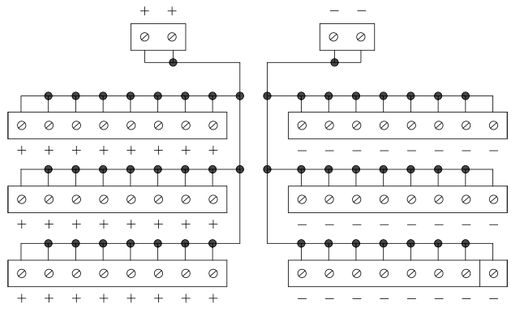
Distribution Type	1 input to 18 outputs
Number of Connections	18+18
L x W x H (mm)	49.8 x 47.9 x 30.3
Connection Method	PID
Input	
Input voltage	50 VDC
Max. current of single pole	20A
Total input Current	40A
Wire Range	26~12 AWG
Stripping Length	9~10 mm
Applicable Ferrules	DN00510D DN00710D DN01510D
Output	
Output Voltage	50 VDC
Max. current of single pole	12A(Total output below 40A)
Wire Range	26~16 AWG
Stripping Length	8~9 mm
Applicable Ferrules	DN00508D DN00708D

0241-P148



0241-P148A

Wiring Diagram

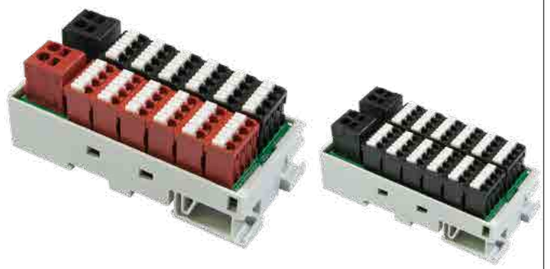


Specification

Distribution Type	1 input to 24 outputs
Number of Connections	24+24
L x W x H (mm)	68 x 47.9 x 30.3
Connection Method	PID
Input	
Input voltage	50 VDC
Max. current of single pole	20A
Total input Current	40A
Wire Range	26~12 AWG
Stripping Length	9~10 mm
Applicable Ferrules	DN00510D DN00710D DN01510D
Output	
Output Voltage	50 VDC
Max. current of single pole	12A(Total output below 40A)
Wire Range	26~16 AWG
Stripping Length	8~9 mm
Applicable Ferrules	DN00508D DN00708D

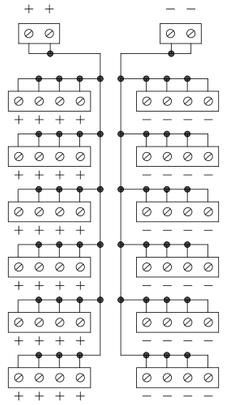
Distribution Modules

0241-P248



0241-P248A

Wiring Diagram

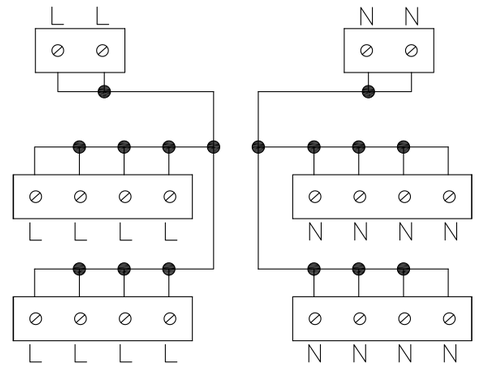


Specification

Distribution Type	1 input to 24 outputs
Number of Connections	24+24
L x W x H (mm)	35.2 x 77.9 x 30.3
Connection Method	PID
Input	
Input voltage	50 VDC
Max. current of single pole	20A
Total input Current	40A
Wire Range	26~12 AWG
Stripping Length	9~10 mm
Applicable Ferrules	DN00510D DN00710D DN01510D
Output	
Output Voltage	50 VDC
Max. current of single pole	12A(Total output below 40A)
Wire Range	26~16 AWG
Stripping Length	8~9 mm
Applicable Ferrules	DN00508D DN00708D

0241-P316

Wiring Diagram

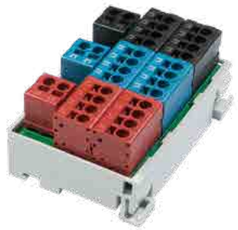


Specification

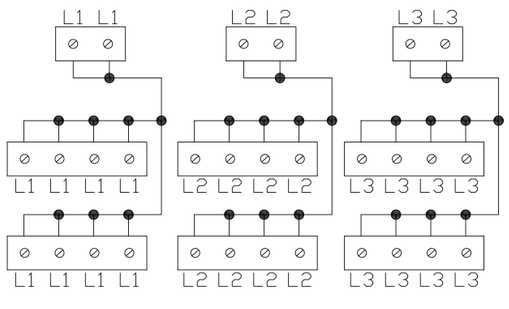
Distribution Type	1 input to 8 outputs
Number of Connections	8+8
L x W x H (mm)	49.8 x 47.9 x 30.3
Connection Method	PID
Input	
Input voltage	300 VAC
Max. current of single pole	20A
Total input Current	20A
Wire Range	26~12 AWG
Stripping Length	9~10 mm
Applicable Ferrules	DN00510D DN00710D DN01510D
Output	
Output Voltage	300 VAC
Max. current of single pole	20A(Total output below 20A)
Wire Range	26~12 AWG
Stripping Length	9~10 mm
Applicable Ferrules	DN00510D DN00710D DN01510D

Distribution Modules

0241-P424



Wiring Diagram



Specification	
Distribution Type	1 input to 8 outputs
Number of Connections	8+8+8
L x W x H (mm)	68 x 47.9 x 30.3
Connection Method	PID
Input	
Input voltage	300 VAC
Max. current of single pole	20A
Total input Current	20A
Wire Range	26~12 AWG
Stripping Length	9~10 mm
Applicable Ferrules	DN00510D DN00710D DN01510D
Output	
Output Voltage	300 VAC
Max. current of single pole	20A(Total output below 20A)
Wire Range	26~12 AWG
Stripping Length	9~10 mm
Applicable Ferrules	DN00510D DN00710D DN01510D

Wiring Diagram

Specification	
Input	
Output	

Unmanaged Ethernet Switch

Industrial Unmanaged 5port/8port Ethernet Switch

Features:

- Rugged industrial 5 port 10/100/1000M Ethernet Switch/8 port 10/100/1000M Ethernet Switch /16 port 10/100/1000M Ethernet Switch
- Broadcast storm series are equipped with DIP switches to easily enable the Quality of Service (QoS) and broadcast storm protection (BSP) features
- Gate Wayte series supports the serial interfaces: RS-485, RS-232, RS-422
- Wide voltage input: 12-56VDC
- Operating Temperature: Suitable for -40°C to +75°C
- Suitable for high and harsh environments, such as hazardous environments, central control places, industrial automation factories, IP monitoring and traffic monitoring
- Rigorously tested for use in safety, transportation and telecommunication equipment
- For IP monitoring, additional PoE specification is available for users as an option

Unmanaged Ethernet Switch

0401-0051

0401-0052

0401-0081

Specification			
Network Connector	5xRJ-45 10/100BaseT(X) auto negotiation, Auto MDI/MDI-X function, Full/Half duplex	5xRJ-45 10/100/1000BaseT(X) auto negotiation, Auto MDI/MDI-X function, Full/Half duplex	8xRJ-45 10/100/1000BaseT(X) auto negotiation, Auto MDI/MDI-X function, Full/Half duplex
External Power Supply	Redundant Dual DC 12V-56V Power Input	Redundant Dual Power Input 12VDC-56VDC or 18VAC-36VAC	Redundant Dual DC 12V-56V
Power Consumption	2.24W@48 VDC full load	2.76W@48 VDC full load	5W@48 VDC full load
Removable Terminal Block	Provide 2 Redundant power, 4 Pin Wire range: 0.34mm^2 to 2.5mm^2 Solid wire (AWG):12-28 Stranded wire (AWG): 12-30 Torque:5lb-In/0.5Nm Wire Strip length: 7-8mm	Provide 2 Redundant power, 4 Pin Wire range: 0.34mm^2 to 2.5mm^2 Solid wire (AWG):12-28 Stranded wire (AWG): 12-30 Torque:5lb-In/0.5Nm Wire Strip length: 7-8mm	Provide 2 Redundant power , Alarm relay contact ,6 Pin Wire range: 0.34mm^2 to 2.5mm^2 Solid wire (AWG):12-30 Stranded wire(AWG): 12-30 Torque:5lb-In/0.5Nm Wire Strip length: 7-8mm
Operating Temperature	-40°C to +75°C	-40°C to +75°C	-40°C to +75°C
Operating Humidity:	5% to 95% (Non-condensing)	5% to 95% (Non-condensing)	5% to 95% (Non-condensing)
Housing	Rugged Metal, IP30 protection	Rugged Metal, IP30 protection	Rugged Metal, IP30 protection
L x W x H (mm)	103.5 x 32 x 81.5	103.5 x 32 x 81.5	142 x 36.2 x 105
Installation	DIN Rail Mount or Wall Mount	DIN Rail and Wall Mount options included	DIN Rail Mount or Wall Mount
Certified			
Safety	UL 60950-1(MET) LVD62368-1	UL 60950-1(MET) LVD62368-1	UL 60950-1(MET) LVD62368-1
EMC	CE, FCC, EN 55032/35	CE, FCC, EN 55032/35, VCCI	CE, FCC, EN 55032/35
EMI	CISPR 32, FCC Part 15B Class A	FCC Part 15 Subpart B Class A	CISPR 32, FCC Part 15B Class A
EMS	IEC 61000-4-2 ESD: Contact: 6KV; Air: 8KV IEC 61000-4-4 EFT: Power: 2KV; Signal: 2KV IEC 61000-4-5 Surge: Power: 2KV; Signal: 2KV	IEC 61000-4-2 ESD: Contact: 6KV; Air: 8KV IEC 61000-4-4 EFT: Power: 2KV; Signal: 2KV IEC 61000-4-5 Surge: Power: 2KV; Signal: 2KV	IEC 61000-4-2 ESD: Contact: 6KV; Air: 8KV IEC 61000-4-4 EFT: Power: 2KV; Signal: 2KV IEC 61000-4-5 Surge: Power: 2KV; Signal: 2KV

Unmanaged Ethernet Switch

0401-0080

0401-00S4

Specification			
Network Connector	8xRJ-45 10/100BaseT(X) auto negotiation, Auto MDI/MDI-X function, Full/Half duplex	16 xRJ-45 10/100/1000BaseT(X) auto negotiation, Auto MDI/MDI-X function, Full/Half duplex	
External Power Supply	Redundant Dual DC 12V-56V DC Power Input	Redundant Dual DC 12V-56V Power Input	
Power Consumption	3W@48 VDC full load	12.9W@48 VDC full load	
Removable Terminal Block	Provide 2 Redundant power , Alarm relay contact ,6 Pin Wire range: 0.34mm^2 to 2.5mm^2 Solid wire (AWG):12-30 Stranded wire(AWG): 12-30 Torque:5lb-In/0.5Nm Wire Strip length: 7-8mm	Provides 2 Redundant power, Alarm relay contact, 6 Pin Wire range: 0.34mm^2 to 2.5mm^2 Solid wire (AWG):12-30 Stranded wire (AWG): 12-30 Torque:5lb-In/0.5Nm Wire Strip length: 7-8mm	
Operating Temperature	-40°C to +75°C	-40°C to +75°C	
Operating Humidity:	5% to 95% (Non-condensing)	5% to 95% (Non-condensing)	
Housing	Rugged Metal, IP30 Protection	Rugged Metal, IP30 Protection	
L x W x H (mm)	142 x 36.2 x 105	155 x 48 x 120 mm	
Installation	DIN-Rail and wall mount brackets included	DIN Rail and Wall Mount options included	
Certified			
Safety	UL 60950-1(MET) LVD62368-1	UL60950-1(MET) LVD62368-1	
EMC	CE, FCC, EN 55032/35	CE, FCC, EN 55032/35	
EMI	CISPR 32, FCC Part 15B Class A	CISPR 32, FCC Part 15B Class A	
EMS	IEC 61000-4-2 ESD: Contact: 6KV; Air: 8KV IEC 61000-4-4 EFT: Power: 2KV; Signal: 2KV IEC 61000-4-5 Surge: Power: 2KV; Signal: 2KV	IEC 61000-4-2 ESD: Contact: 6KV; Air: 8KV IEC 61000-4-4 EFT: Power: 2KV; Signal: 2KV IEC 61000-4-5 Surge: Power: 2KV; Signal:2KV	

Unmanaged PoE Ethernet Switch

0401-0151

0401-0152

0401-0180

Specification			
Network Connector	5xRJ-45 10/100BaseT(X) auto negotiation, Auto MDI/MDI-X function, Full/Half duplex	5xRJ-45 10/100/1000BaseT(X) auto negotiation, Auto MDI/MDI-X function, Full/Half duplex	8xRJ-45 10/100BaseT(X) auto negotiation, Auto MDI/MDI-X function, Full/Half duplex
External Power Supply	Redundant Dual DC 48V-56V Power Input	Redundant Dual DC 48V-56V Power Input	Redundant Dual DC 48V-56V Power Input PoE input 48-56VDC
PoE power	PoE power per port 30watts. Maximum total power 90Watts with 56VDC input, Supports IEEE 802.3af/at	PoE power per port 30watts. Maximum total power 120Watts with 56VDC input, Supports IEEE 802.3af/at	PoE power per port 30watts. Maximum 36Watts Maximum total power 200Watts, Supports IEEE802.3af/at
Power Consumption	2.24W@48 VDC full load without PoE	2.24W@48 VDC full load without PoE	5.76W@48 VDC full load, Without PoE
Removable Terminal Block	Provide 2 Redundant power, 4 Pin Wire range: 0.34mm^2 to 2.5mm^2 Solid wire (AWG):12-28 Stranded wire (AWG): 12-30 Torque:5lb-In/0.5Nm Wire Strip length: 7-8mm	Provide 2 Redundant power, 4 Pin Wire range: 0.34mm^2 to 2.5mm^2 Solid wire (AWG):12-28 Stranded wire (AWG): 12-30 Torque:5lb-In/0.5Nm Wire Strip length: 7-8mm	Provide 2 Redundant power , Alarm relay contact ,6 Pin Wire range: 0.34mm^2 to 2.5mm^2 Solid wire (AWG):12-30 Stranded wire(AWG): 12-30 Torque:5lb-In/0.5Nm Wire Strip length: 7-8mm
Operating Temperature	-40°C to +75°C	-40°C to +75°C	-40°C to +75°C
Operating Humidity:	5% to 95% (Non-condensing)	5% to 95% (Non-condensing)	5% to 95% (Non-condensing)
Housing	Rugged Metal, IP30 Protection	Rugged Metal, IP30 Protection	Rugged Metal, IP30 Protection
L x W x H (mm)	103.5 x 32 x 81.5 mm	103.5 x 32 x 81.5 mm	142 x 36.2 x 105 mm
Installation	DIN Rail and Wall Mount options included	DIN Rail and Wall Mount options included	DIN Rail and Wall Mount options included
Certified			
Safety	UL60950-1(MET) LVD62368-1	UL60950-1(MET) LVD62368-1	UL60950-1(MET) LVD62368-1
EMC	CE, FCC, EN 55032/35	CE, FCC, EN 55032/35	CE, FCC, EN 55032/35
EMI	CISPR 32, FCC Part 15B Class A	CISPR 32, FCC Part 15B Class A	FCC Part 15 Subpart B Class A
EMS	IEC 61000-4-2 ESD: Contact: 6KV; Air: 8KV IEC 61000-4-4 EFT: Power: 2KV; Signal: 2KV IEC 61000-4-5 Surge: Power: 2KV; Signal: 2KV	IEC 61000-4-2 ESD: Contact: 6KV; Air: 8KV IEC 61000-4-4 EFT: Power: 2KV; Signal: 2KV IEC 61000-4-5 Surge: Power: 2KV; Signal:2KV	IEC 61000-4-2 ESD: Contact: 6KV; Air: 8KV IEC 61000-4-4 EFT: Power: 2KV; Signal: 2KV IEC 61000-4-5 Surge: Power: 2KV; Signal: 2KV

Unmanaged PoE Ethernet Switch

0401-0181

0401-01S4

0401-0254

Specification			
Network Connector	8xRJ-45 10/100/1000BaseT(X) auto negotiation, Auto MDI/MDI-X function, Full/Half duplex	16 x RJ-45 10/100/1000BaseT(X) auto negotiation Auto MDI/MDI-X function, Full/Half duplex	5 x RJ-45 10/100/1000BaseT(X) auto negotiation, 4 x 10/100/1000M PSE port, 1 x 10/100/1000M TX port Auto MDI/MDI-X function, Full/Half duplex
External Power Supply	Redundant Dual DC 48V-56V Power Input PoE input 48-56VDC	Redundant Dual DC 48V-56V Power Input	DC 24V-56V Power Input
PoE Power	PoE power per port 30watts. Maximum total power 200Watts with 56VDC input, Supports IEEE802.3af/at	PoE power per port 30watts. Maximum total power 300Watts with 56VDC input, Supports IEEE802.3af/at	PoE power per port 30Watts Maximum total power 90Watts at 24VDC power input
Power Consumption	5.76 W@48 VDC full load without PoE	12.9W@48 VDC full load, Without PoE	3.9 W@48 VDC full load without PoE
Removable Terminal Block	Provide 2 Redundant power , Alarm relay contact ,6 Pin Wire range: 0.34mm^2 to 2.5mm^2 Solid wire (AWG):12-30 Stranded wire(AWG): 12-30 Torque:5lb-In/0.5Nm Wire Strip length: 7-8mm	Provides 2 Redundant power, Alarm relay contact, 6 Pin Wire range: 0.34mm^2 to 2.5mm^2 Solid wire (AWG):12-30 Stranded wire (AWG): 12-30 Torque:5lb-In/0.5Nm Wire Strip length: 7-8mm	3 Pin Terminal block Wire range: 1.5mm^2 Solid wire (AWG):14-28 Stranded wire(AWG): 14-28 Torque:0.2~2.5N-m Wire Strip length: 6-7mm
Operating Temperature	-40°C to +75°C	-40°C to +75°C	-40°C to +75°C
Operating Humidity:	5% to 95% (Non-condensing)	5% to 95% (Non-condensing)	5% to 95% (Non-condensing)
Housing	Rugged Metal, IP30 Protection	Rugged Metal, IP30 Protection	Rugged Metal, IP30 Protection
L x W x H (mm)	142 x 39.6 x 105 mm	155 x 48 x 120 mm	103.5 x 32 x 81.5 mm
Installation	DIN Rail and Wall Mount options included	DIN Rail and Wall Mount options included	DIN Rail and Wall Mount options included
Certified			
Safety	UL60950-1(MET) LVD62368-1	UL60950-1(MET) LVD62368-1	UL60950-1(MET) LVD62368-1
EMC	CE, FCC, EN 55032/35	CE, FCC, EN 55032/35	CE, FCC, EN 55032/35
EMI	FCC Part 15 Subpart B Class A	CISPR 32, FCC Part 15B Class A	CISPR 32, FCC Part 15B Class A
EMS	IEC 61000-4-2 ESD: Contact: 6KV; Air: 8KV IEC 61000-4-4 EFT: Power: 2KV; Signal: 2KV IEC 61000-4-5 Surge: Power: 2KV; Signal: 2KV	IEC 61000-4-2 ESD: Contact: 6KV; Air: 8KV IEC 61000-4-4 EFT: Power: 2KV; Signal: 2KV IEC 61000-4-5 Surge: Power: 2KV; Signal:2KV	IEC 61000-4-2 ESD: Contact: 6KV; Air: 8KV IEC 61000-4-4 EFT: Power: 2KV; Signal: 2KV IEC 61000-4-5 Surge: Power: 2KV; Signal:2KV

Unmanaged PoE Ethernet Switch

0401-0284

0401-0374

Specification			
Network Connector	8 x RJ-45 10/100/1000BaseT(X) auto negotiation Auto MDI/MDI-X function, Full/Half duplex	5 x RJ-45 10/100/1000BaseT(X) auto negotiation, 4 x Gigabit 30W PSE port2 x SFP 100/1000M BaseX Auto MDI/MDI-X function, Full/Half duplex	
External Power Supply	Redundant Dual DC 24V-56V Power Input	Redundant Dual DC 12V-56V Power Input	
PoE Power	PoE power per port 30watts. Maximum total power 200Watts with 56VDC input, Maximum total power 120Watts with 24VDC input, Supports IEEE802.3af/at	PoE power per port 30watts. Maximum total power 60W at 12VDC power input, Maximum total power 120Watts at 24VDC and 48VDC power input.	
Power Consumption	5.76W@ 24 VDC full load, Without PoE	5.76W@12/24/48 VDC full load, Without PoE	
Removable Terminal Block	Provide 2 Redundant power , Alarm relay contact ,6 Pin Wire range: 0.34mm^2 to 2.5mm^2 Solid wire (AWG):12-30 Stranded wire(AWG): 12-30 Torque:5lb-In/0.5Nm Wire Strip length: 7-8mm	Provide 2 Redundant power , Alarm relay contact ,6 Pin Wire range: 0.34mm^2 to 2.5mm^2 Solid wire (AWG):12-30 Stranded wire(AWG): 12-30 Torque:5lb-In/0.5Nm Wire Strip length: 7-8mm	
Operating Temperature	-40°C to +75°C	-40°C to +75°C	
Operating Humidity:	5% to 95% (Non-condensing)	5% to 95% (Non-condensing)	
Housing	Rugged Metal, IP30 Protection	Rugged Metal, IP30 Protection	
L x W x H (mm)	142 x 42.8 x 105	142 x 42.8 x 105	
Installation	DIN-Rail and wall mount brackets included	DIN-Rail and wall mount brackets included	
Certified			
Safety	UL 60950-1(MET) LVD62368-1	UL 60950-1(MET) LVD62368-1	
EMC	CE, FCC, EN 55032/35	CE, FCC, EN55032/EN55035, VCCI	
EMI	CISPR 32, FCC Part 15B Class A	FCC Part 15 Subpart B Class A	
EMS	IEC 61000-4-2 ESD: Contact: 6KV; Air: 8KV IEC 61000-4-4 EFT: Power: 2KV; Signal: 2KV IEC 61000-4-5 Surge: Power: 2KV; Signal: 2KV	IEC 61000-4-2 ESD: Contact: 6KV; Air: 8KV IEC 61000-4-4 EFT: Power: 2KV; Signal: 2KV IEC 61000-4-5 Surge: Power: 2KV; Signal: 2KV	

BSP Ethernet Switch

0401-0553

0401-0554

0401-0583

Specification			
Network Connector	5xRJ-45 10/100BaseT(X) auto negotiation, Auto MDI/MDI-X function, Full/Half duplex	5xRJ-45 10/100/1000BaseT(X) auto negotiation, Auto MDI/MDI-X function, Full/Half duplex	8xRJ-45 10/100BaseT(X) auto negotiation, Auto MDI/MDI-X function, Full/Half duplex
External Power Supply	DC 9.6-60V Power Input	DC 9.6-60V Power Input	DC 9.6-60V Power Input
Power Consumption	1.232 W@48 VDC full load	2.688 W@48 VDC full load	1.33 W @ 48VDC full load
Removable Terminal Block	3 Pin Terminal block Wire range: 1.5mm^2 Solid wire (AWG):14-28 Stranded wire(AWG): 14-28 Torque:0.2~2.5N-m Wire Strip length: 6-7mm	3 Pin Terminal block Wire range: 1.5mm^2 Solid wire (AWG):14-28 Stranded wire(AWG): 14-28 Torque:0.2~2.5N-m Wire Strip length: 6-7mm	3 Pin terminal block Wire range: 1.5mm^2 Solid wire (AWG):14-28 Stranded wire(AWG): 14-28 Torque:0.2~2.5N-m Wire Strip length: 6-7mm
DIP Switch (OPTIONAL)	Dip1: Broadcast Storm Protection (BSP) Dip2: Quality of Service (QoS) *Refer to manual dip switch indicator for details*	Dip1: Broadcast Storm Protection (BSP) Dip2: Quality of Service (QoS) *Refer to manual dip switch indicator for details*	Dip1: Broadcast Storm Protection (BSP) Dip2: Quality of Service (QoS) *Refer to manual dip switch indicator for details*
Operating Temperature	-40°C to +75°C	-40°C to +75°C	-40°C to +75°C
Operating Humidity:	5% to 95% (Non-condensing)	5% to 95% (Non-condensing)	5% to 95% (Non-condensing)
Housing	Rugged Metal, IP30 protection	Rugged Metal, IP30 protection	Rugged Metal, IP30 protection
L x W x H (mm)	100.5 x 60 x 25.5 mm	100.5 x 60 x 25.5 mm	100.5 x 81.5 x 40 mm
Installation	DIN Rail Mount	DIN Rail Mount	DIN Rail Mount or Wall Mount
Certified			
Safety	LVD (EN62368-1), UL62368-1(MET)	LVD (EN62368-1), UL62368-1(MET)	LVD (EN62368-1), UL62368-1(MET)
EMC	CE, FCC, EN 55032/35	CE, FCC, EN 55032/35	CE, FCC, EN 55032/35
EMI	FCC Part 15 Subpart B Class A	FCC Part 15 Subpart B Class A	FCC Part 15B Class A
EMS	IEC 61000-4-2 ESD: Contact: 6KV; Air: 8KV IEC 61000-4-4 EFT: Power: 2KV; Signal: 2KV IEC 61000-4-5 Surge: Power: 2KV; Signal: 2KV	IEC 61000-4-2 ESD: Contact: 6KV; Air: 8KV IEC 61000-4-4 EFT: Power: 2KV; Signal: 2KV IEC 61000-4-5 Surge: Power: 2KV; Signal: 2K	IEC 61000-4-2 ESD: Contact: 6KV; Air: 8KV IEC 61000-4-4 EFT: Power: 2KV; Signal: 2KV IEC 61000-4-5 Surge: Power: 2KV; Signal: 2KV

BSP Ethernet Switch

0401-0584

Specification			
Network Connector	8xRJ-45 10/100/1000BaseT(X) auto negotiation, Auto MDI/MDI-X function, Full/Half duplex		
External Power Supply	DC 9.6-60V Power Input		
Power Consumption	2.7 W@48VDC full load		
Removable Terminal Block	3 Pin terminal block Wire range: 1.5mm^2 Solid wire (AWG):14-28 Stranded wire(AWG): 14-28 Torque:0.2~2.5N-m Wire Strip length: 6-7mm		
DIP Switch (OPTIONAL)	Dip1: Broadcast Storm Protection (BSP) Dip2: Quality of Service (QoS) *Refer to manual dip switch indicator for details*		
Operating Temperature	-40°C to +75°C		
Operating Humidity:	5% to 95% (Non-condensing)		
Housing	Rugged Metal, IP30 Protection		
L x W x H (mm)	100.5 x 81.5 x 40 mm		
Installation	DIN Rail Mount or Wall Mount		
Certified			
Safety	LVD (EN62368-1), UL62368-1(MET)		
EMC	CE, FCC, EN 55032/35		
EMI	FCC Part 15 Subpart B Class A		
EMS	IEC 61000-4-2 ESD: Contact: 6KV; Air: 8KV IEC 61000-4-4 EFT: Power: 2KV; Signal: 2KV IEC 61000-4-5 Surge: Power: 2KV; Signal: 2KV		

BSP PoE Ethernet Switch

0401-3053

0401-3054

0401-3083

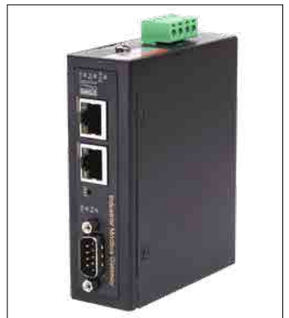
Specification			
Network Connector	5xRJ-45 10/100BaseT(X) auto negotiation, Auto MDI/MDI-X function, Full/Half duplex 4 x 10/100M 802.3af/at PSE port	5xRJ-45 10/100/1000BaseT(X) auto negotiation, Auto MDI/MDI-X function, Full/Half duplex 4 x 10/100/1000M 802.3af/at PSE port	8xRJ-45 10/100BaseT(X) auto negotiation, Auto MDI/MDI-X function, Full/Half duplex 8 x 10/100M 802.3af/at PSE port
External Power Supply	DC 48-56V Power Input	DC 48-56V Power Input	DC 48-56V Power Input
PoE Power	PoE power per port 30watts Maximum total power 90Watts	PoE power per port 30watts Maximum total power 90Watts	PoE power per port 30watts Maximum total power 200Watts
Power Consumption	1.68 W@48 VDC full load without PoE	3.36 W@48 VDC full load without PoE	2.24 W@48 VDC full load without PoE
Removable Terminal Block	3 Pin terminal block Wire range: 1.5mm^2 Solid wire (AWG):14-28 Stranded wire(AWG): 14-28 Torque:0.2~2.5N-m Wire Strip length: 6-7mm	3 Pin terminal block Wire range: 1.5mm^2 Solid wire (AWG):14-28 Stranded wire(AWG): 14-28 Torque:0.2~2.5N-m Wire Strip length: 6-7mm	3 Pin terminal block Wire range: 1.5mm^2 Solid wire (AWG):14-28 Stranded wire(AWG): 14-28 Torque:0.2~2.5N-m Wire Strip length: 6-7mm
DIP Switch (OPTIONAL)	Dip1: Broadcast Storm Protection (BSP) Dip2: Quality of Service (QoS) *Refer to manual dip switch indicator for details*	Dip1: Broadcast Storm Protection (BSP) Dip2: Quality of Service (QoS) *Refer to manual dip switch indicator for details*	Dip1: Broadcast Storm Protection (BSP) Dip2: Quality of Service (QoS) *Refer to manual dip switch indicator for details*
Operating Temperature	-40°C to +75°C	-40°C to +75°C	-40°C to +75°C
Operating Humidity:	5% to 95% (Non-condensing)	5% to 95% (Non-condensing)	5% to 95% (Non-condensing)
Housing	Rugged Metal, IP30 Protection	Rugged Metal, IP30 Protection	Rugged Metal, IP30 Protection
L x W x H (mm)	100.5 x 25.5 x 60 mm	100.5 x 25.5 x 60 mm	100.5 x 40 x 81.5 mm
Installation	DIN Rail and Wall Mount options included	DIN Rail and Wall Mount options included	DIN Rail and Wall Mount options included
Certified			
Safety	UL62368-1(MET), LVD62368-1	UL62368-1(MET), LVD62368-1	UL62368-1(MET), LVD62368-1
EMC	CE, FCC, EN 55032/35	CE, FCC, EN 55032/35	CE, FCC, EN 55032/35
EMI	FCC Part 15 Subpart B Class A	FCC Part 15 Subpart B Class A	FCC Part 15 Subpart B Class A
EMS	IEC 61000-4-2 ESD: Contact: 6KV; Air: 8KV IEC 61000-4-4 EFT: Power: 2KV; Signal: 2KV IEC 61000-4-5 Surge: Power: 2KV; Signal: 2KV	IEC 61000-4-2 ESD: Contact: 6KV; Air: 8KV IEC 61000-4-4 EFT: Power: 2KV; Signal: 2KV IEC 61000-4-5 Surge: Power: 2KV; Signal: 2KV	IEC 61000-4-2 ESD: Contact: 6KV; Air: 8KV IEC 61000-4-4 EFT: Power: 2KV; Signal: 2KV IEC 61000-4-5 Surge: Power: 2KV; Signal: 2KV

BSP PoE Ethernet Switch

0401-3084

Specification			
Network Connector	8xRJ-45 10/100/1000BaseT(X) auto negotiation, Auto MDI/MDI-X function, Full/Half duplex 8 x 10/100/1000M 802.3af/at PSE port		
External Power Supply	DC 48-56V Power Input		
PoE Power	PoE power per port 30watts Maximum total power 200Watts		
Power Consumption	4.48 W@48 VDC full load without PoE		
Removable Terminal Block	3 Pin terminal block Wire range: 1.5mm^2 Solid wire (AWG):14-28 Stranded wire(AWG): 14-28 Torque:0.2~2.5N-m Wire Strip length: 6-7mm		
DIP Switch (OPTIONAL)	Dip1: Broadcast Storm Protection (BSP) Dip2: Quality of Service (QoS) *Refer to manual dip switch indicatorfor details*		
Operating Temperature	-40°C to +75°C		
Operating Humidity:	5% to 95% (Non-condensing)		
Housing	Rugged Metal, IP30 Protection		
L x W x H (mm)	100.5 x 40 x 81.5 mm		
Installation	DIN Rail and Wall Mount options included		
Certified			
Safety	UL62368-1(MET), LVD62368-1		
EMC	CE, FCC, EN 55032/35		
EMI	FCC Part 15B Class A		
EMS	IEC 61000-4-2 ESD: Contact: 6KV; Air: 8KV IEC 61000-4-4 EFT: Power: 2KV; Signal: 2KV IEC 61000-4-5 Surge: Power: 2KV; Signal: 2KV		

Industrial Communication Gateway

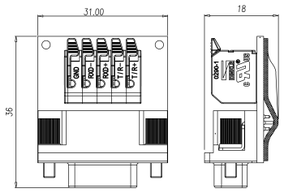


0401- 0733

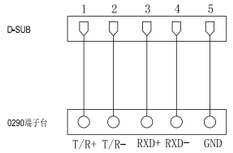
Specification	
Network Connector	1 port RS-232/422/485 and 2 ports 10/100M TX
External Power Supply	Redundant Dual DC 12V-56V Power Input
Power Consumption	3.84W@48 VDC full load
Removable Terminal Block	Provide 2 Redundant power, 4 Pin Wire range: 0.34mm^2 to 2.5mm^2 Solid wire (AWG): 12-28 Stranded wire (AWG): 12-30 Torque:5lb-In/0.5Nm Wire Strip length: 7-8mm
Operating Temperature	-40°C to +75°C
Operating Humidity:	5% to 95% (Non-condensing)
Housing	Rugged Metal, IP30 Protection
L x W x H (mm)	103.5 x 32 x 81.5 mm
Installation	DIN Rail and Wall Mount options included
Certified	
Safety	LVD (EN62368-2)
EMC	CE, FCC, EN 55032/35
EMI	CISPR 32, FCC Part 15B Class A
EMS	IEC 61000-4-2 ESD: Contact: 4KV; Air: 8KV IEC 61000-4-4 EFT: Power: 2KV; Signal: 2KV IEC 61000-4-5 Surge: Power: 2KV

Accessories

RS485 Adapter



0401-C001	
Voltage	**100VAC/DC**
Rated Current	**3A**
Differential Impedance	**50Ω**
Wire Range	**28~16AWG**
Stripping Length	**9~10 mm**
L x W x H (mm)	**36*31*18**
Certified	**ROHS**



Network cable

WHSCC-08XX

Cable	
0.5m	WHSCC-0805
1m	WHSCC-0810
10m	WHSCC-0800
15m	WHSCC-08150

WHSCC-08XX	
Ethernet CAT6 SFTP	
Specification	**26AWG(7/0.16BC)*4P+AB,WHITE PVC JACKET,OD:5.8MM**

Network cable

0206-04XX

Cable	
0.5m	0206-04X5
1m	0206-0401
10m	0206-0410
15m	0206-0415

0206-04XX	
Ethernet CAT6 SFTP	
Specification	**180°RJ45 connector +180°RJ45 connector**
Certified	**RoHS**

PoE Ethernet Waterproof Enclosure

Efficient, stable, intelligent monitoring: PoE Waterproof Enclosure

Provided the strongest protection for your outdoor monitoring equipment! The PoE Waterproof Enclosure is designed for use in harsh environments. By combining the efficient PoE power supply, it achieves the integration of data transmission and power supply. Thus, no more power supply installation issues to be worried about.
With IP65 protection level, it ensures that your equipment can operate stably in any weather condition, providing all-weather protection and safety.

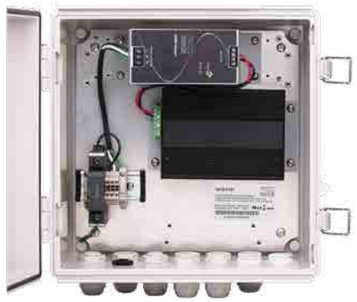
Features:

- Designed with fully hermetic protection:
  IP65 waterproof and dustproof structure, adapts to various kinds of outdoor weather, no fear of rain, snow, and dust ingression. Keep the equipment in optimal condition at all times.
- Plug-and-play technology: integrated PoE power supply and data transmission functions, only one network cable is needed, and no external power supply is required. Enabling faster and easier installation and more efficient management.
- Rugged and durable: Made of weather-resistant materials, it can withstand extreme temperature changes and is suitable for long-term exposure to outdoor environments, extending the lifetime of the equipment.
- Flexible installation options: Suitable for a variety of installation approaches such as walls and lamp poles to meet different monitoring needs.

Applications:

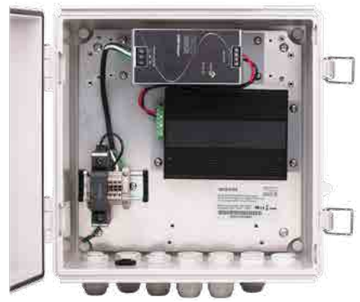
Industrial facilities and storage areas
Smart city construction
Public facility monitoring (eg. parks, squares, roads)
Safety protection for commercial buildings and communities

PoE Ethernet Waterproof Enclosure



0219-0101

Specification	
Network Connector	5 x RJ-45 10/100/1000BaseT(X) auto negotiation, 4 x Gigabit 30W PSE port 2 x SFP 100/1000M BaseX Auto MDI/MDI-X function, Full/Half duplex
External Power Supply	DC24V 240W Power input
PoE Power	PoE power per port 30watts. Maximum total power 60W at 12VDC power input, Maximum total power 120Watts at 24VDC and 48VDC power input.
Power Consumption	5.76W@12/24/48 VDC full load, Without PoE
Removable Terminal Block	Provide 2 Redundant power, Alarm relay contact ,6 Pin Wire range: 0.34mm^2 to 2.5mm^2 Solid wire (AWG):12-30 Stranded wire (AWG): 12-30 Torque:5lb-In/0.5Nm Wire Strip length: 7-8mm
Operating Temperature	-40°C to +75°C
Operating Humidity:	5% to 95% (Non-condensing)
Housing	Polycarbonate, IP68 Protection
L x W x H (mm)	300 x 300 x 150 mm
Installation	Wall Mounting (default) or Pole Mounting (optional)
Certified	
Safety	UL 62368-1 (pending)
EMC	CE, FCC, EN 55032/35
EMI	FCC Part 15B Class A
EMS	IEC 61000-4-2 ESD: Contact: 6KV; Air: 8KV IEC 61000-4-4 EFT: Power: 2KV; Signal: 2KV IEC 61000-4-5 Surge: Power: 2KV; Signal: 2KV



0219-0102

Specification	
Network Connector	8 x RJ-45 10/100/1000BaseT(X) auto negotiation Auto MDI/MDI-X function, Full/Half duplex 8 x Gigabit PoE+ 802.3at/af PSE port, 30W per port
External Power Supply	DC24V 240W Power input
PoE Power	PoE power per port 30watts. Maximum total power 200Watts with 56VDC input, Maximum total power 120Watts with 24VDC input, Supports IEEE802.3af/at
Power Consumption	5.76W@ 24 VDC full load, Without PoE
Removable Terminal Block	Provide 2 Redundant power, Alarm relay contact ,6 Pin Wire range: 0.34mm^2 to 2.5mm^2 Solid wire (AWG):12-30 Stranded wire (AWG): 12-30 Torque:5lb-In/0.5Nm Wire Strip length: 7-8mm
Operating Temperature	-40°C to +75°C
Operating Humidity:	5% to 95% (Non-condensing)
Housing	Polycarbonate, IP68 Protection
L x W x H (mm)	300 x 300 x 150 mm
Installation	Wall Mounting (default) or Pole Mounting (optional)
Certified	
Safety	UL 62368-1 (pending)
EMC	CE, FCC, EN 55032/35
EMI	FCC Part 15B Class A
EMS	IEC 61000-4-2 ESD: Contact: 6KV; Air: 8KV IEC 61000-4-4 EFT: Power: 2KV; Signal: 2KV IEC 61000-4-5 Surge: Power: 2KV; Signal: 2KV

DINKLE 因联结而喜悦!!
Delight Through Connections

Signal Interface Modules

Easy wiring, convenient expansion, quick connection for I/O signals within the panel and between devices and controllers:
Signal Interface Modules

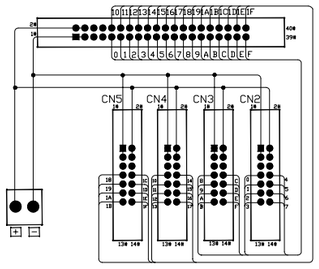
- Challenging the smallest dimension available in the industry, Dinkle signal interface modules provide the highest I/O density、the most efficient arrangement, and the most complete specifications for signal transmission modules. Dinkle's professional module design incorporates significant improvements over other brands.

- Dinkle’s signal transfer modules equipped with the latest push-in design (PID) terminal blocks can effectively save space, time and cost.A high tensile strength stainless steel clip within the terminal blocks holds the wire securely and resists equipment vibration, even low frequency micro-vibrations, ensuring long-term connection stability and reducing maintenance costs. The terminal blocks and housings in the same color scheme enhance the product’s aesthetics and customer value.

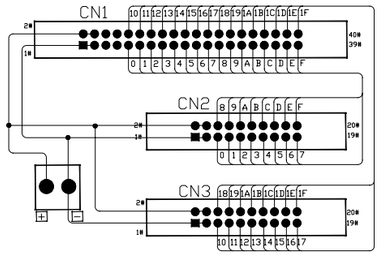
Signal Interface Modules Overview

	0241-C140K1	0241-C140K2	0241-C114K	0241-C120K
				
Specification				
Number of Connections	4 sets	2 sets	8 sets	16 sets
Connection Method	PID	PID	PID	PID
Rated Voltage	24 VDC	24 VDC	24 VDC	24 VDC
Rated Current	1A	1A	1A	1A
Wire Range	26~12 AWG	26~12 AWG	26~12 AWG	26~12 AWG
Stripping Length	9~10 mm	9~10 mm	9~10 mm	9~10 mm
Applicable Ferrules	DN00510D DN00710D DN01510D	DN00510D DN00710D DN01510D	DN00510D DN00710D DN01510D	DN00510D DN00710D DN01510D
Input Type	-	-	-	-
Connector	IDC 40-Pin, IDC 14-Pin	IDC 40-Pin, IDC 20-Pin	IDC 14-Pin, Mini-Clamp	IDC 20-Pin, Mini-Clamp
Indicator	NO	NO	NO	NO
L x W x H (mm)	65.2 x 77.9 x 43	76 x 47.9 x 43	68 x 47.9 x 43	65.2 x 77.9 x 43
Wire Harness **Shielded**	WHS33	WHS33	WHS33	WHS33
Wire Harness **Unshielded**	WHN33	WHN33	WHN33	WHN33

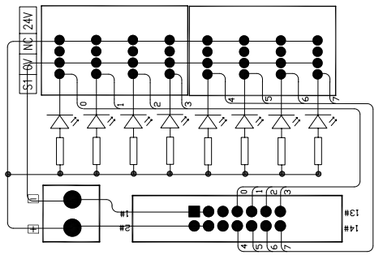
0241-C140K1Wiring Diagram



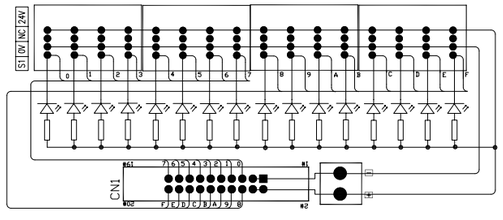
0241-C140K2 Wiring Diagram



0241-C114K Wiring Diagram



0241-C120K Wiring Diagram



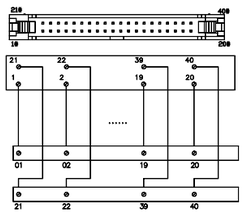
Signal Interface Modules Overview

	0241-C1XX	0241-C1XXS	0241-C2XX	0241-C3XX
				

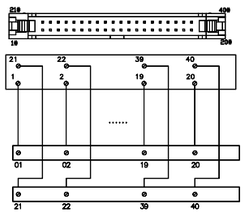
Specification			Specification			Specification			Specification		
Part Number	**Number of connections**	**L x W x H (mm)**	**Part Number**	**Number of connections**	**L x W x H (mm)**	**Part Number**	**Number of connections**	**L x W x H (mm)**	**Part Number**	**Number of connections**	**L x W x H (mm)**
0241-C114	14 poles	38.2 x 47.9 x 43	**0241-C120S**	20 poles	60.5 x 47.9 x 43	**0241-C237**	37 poles	60.2 x 77.9 x 30.3	**0241-C320**	20 poles	60.5 x 47.9 x 30.3
0241-C120	20 poles	49.8 x 47.9 x 43	**0241-C134S**	34 poles	111.1 x 47.9 x 43	**0241-C244**	44 poles	60.2 x 77.9 x 30.3	**0241-C326**	26 poles	60.5 x 47.9 x 30.3
0241-C126	26 poles	60.5 x 47.9 x 43	**0241-C140S**	40 poles	111.1 x 47.9 x 43				**0241-C350**	50 poles	60.2 x 77.9 x 30.3
0241-C130	30 poles	68 x 47.9 x 43							**0241-C368**	68 poles	94.2 x 77.9 x 30.3
0241-C134	34 poles	68 x 47.9 x 43							**0241-C300**	100 poles	112.2 x 77.9 x 30.3
0241-C140	40 poles	76 x 47.9 x 43									

Specification				
Connection Method	PID	Screw	PID	PID
Rated Voltage	24 VDC	24 VDC	24 VDC	24 VDC
Rated Current	1A	1A	1A	1A
Wire Range	26~16 AWG	26~18 AWG	26~16 AWG	26~16 AWG
Stripping Length	9~10 mm	6~7 mm	9~10 mm	9~10 mm
Screw	-	M2.5	-	-
Rated torque	-	0.5~0.6	-	-
Applicable Ferrules	DN00510D DN00710D	-	DN00510D DN00710D	DN00510D DN00710D
Input Type	NPN / PNP	NPN / PNP	NPN / PNP	NPN / PNP
Connector	IDC	IDC	D-Sub	MDR
Indicator	NO	NO	NO	NO
Wire Harness **Shielded**	WHS33	WHS33	WHS10 / WHS11	WHS55
Wire Harness **Unshielded**	WHN33	WHN33	WHN10 / WHN11	WHN55

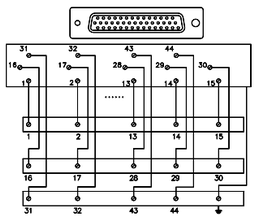
0241-C1XX Wiring Diagram



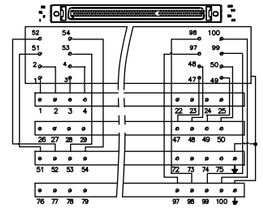
0241-C1XXSWiring Diagram



0241-C2XX Wiring Diagram

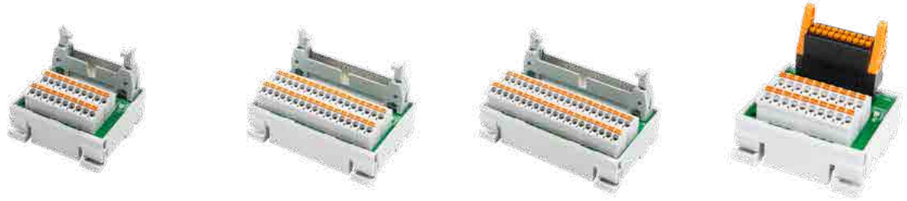


0241-C3XX Wiring Diagram



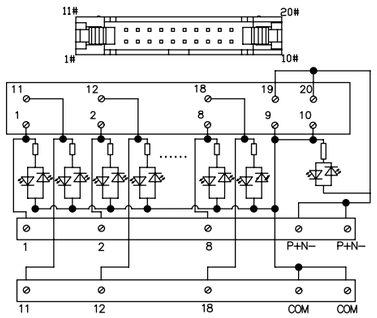
Signal Interface Modules(with LED)

0241-C120LED	0241-C134LED	0241-C140LED	0241-C420LEDA

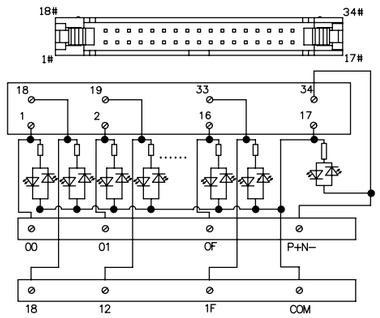


Specification					
Number of Connections		20 Poles	34 Poles	40 Poles	20 Poles
Connection Method		PID	PID	PID	PID
Rated Voltage		24 VDC	24 VDC	24 VDC	24 VDC
Rated Current		1A	1A	1A	1A
Wire Range		26~16 AWG	26~16 AWG	26~16 AWG	26~16 AWG
Stripping Length		8~9 mm	8~9 mm	8~9 mm	8~9 mm
Applicable Ferrules		DN00510D DN00710D	DN00510D DN00710D	DN00510D DN00710D	DN00510D DN00710D
Input Type		NPN / PNP	NPN / PNP	NPN / PNP	NPN / PNP
Connector		IDC	IDC	IDC	Terminal blocks
Indicator		YES	YES	YES	YES
L x W x H (mm)		49.8 x 47.9 x 43	68 x 47.9 x 43	76 x 47.9 x 43	49.8 x 47.9 x 49.4
Wire Harness	**Shielded**	WHS33	WHS33	WHS33	WHSX3 / WHSX7
	Unshielded	WHN33	WHN33	WHN33	WHNX3 / WHNX7

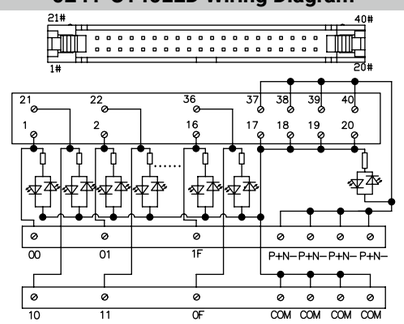
0241-C120LED Wiring Diagram



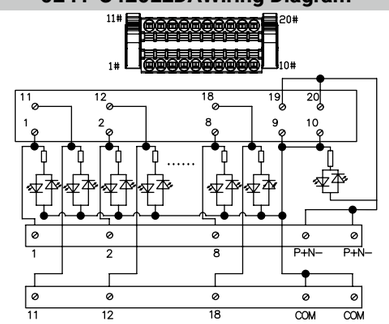
0241-C134LED Wiring Diagram



0241-C140LED Wiring Diagram

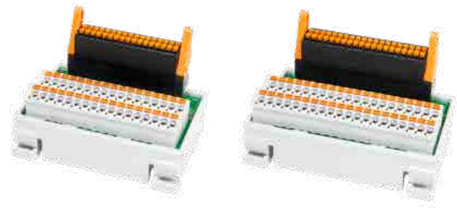


0241-C420LEDAWiring Diagram



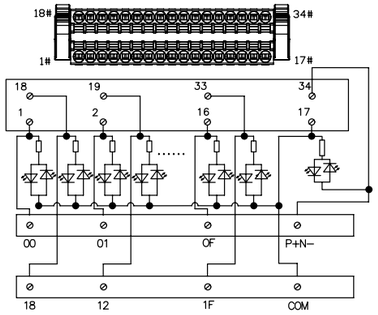
Signal Interface Modules(with LED)

0241-C434LEDA	0241-C440LEDA

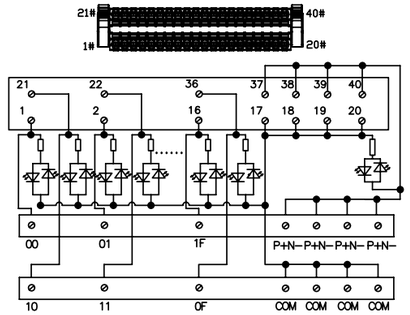


Specification					
Number of Connections		34 Poles	40 Poles		
Connection Method		PID	PID		
Rated Voltage		24 VDC	24 VDC		
Rated Current		1A	1A		
Wire Range		26~16 AWG	26~16 AWG		
Stripping Length		8~9 mm	8~9 mm		
Applicable Ferrules		DN00510D DN00710D	DN00510D DN00710D		
Input Type		NPN / PNP	NPN / PNP		
Connector		Terminal blocks	Terminal blocks		
Indicator		YES	YES		
L x W x H (mm)		68 x 47.9 x 49.4	76 x 47.9 x 49.4		
Wire Harness	**Shielded**	WHSX7 / WHSX3	WHSX7 / WHSX3		
	Unshielded	WHNX7 / WHNX3	WHNX7 / WHNX3		

0241-C434LEDAWiring Diagram



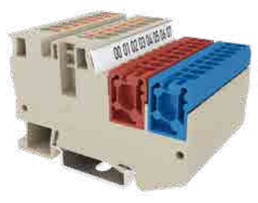
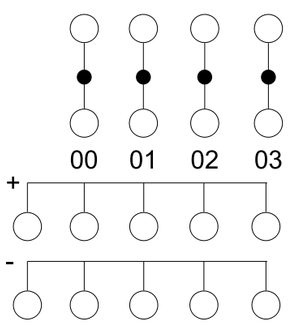
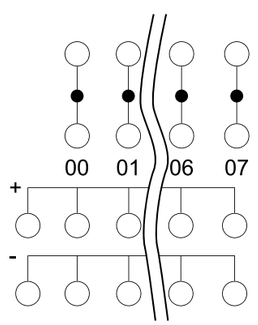
0241-C440LEDAWiring Diagram



Sensor Terminal Blocks

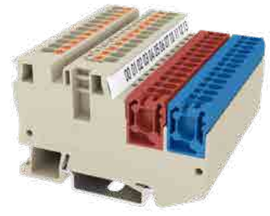
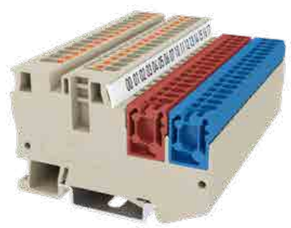
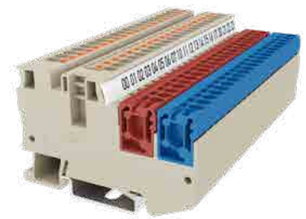
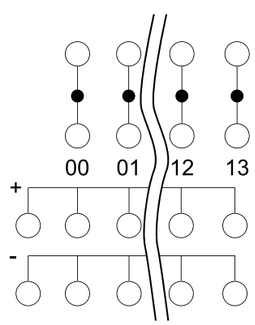
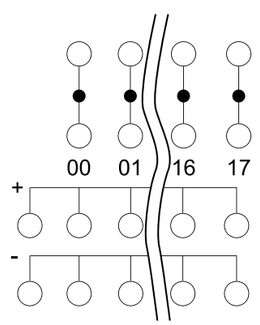
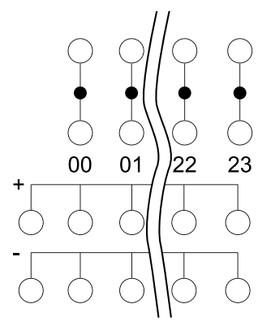
Sensor/Actuator terminal blocks are the ideal option for connecting three or four-conductor sensors and actuators.
In addition to standard terminal blocks, versions with LED display are also available. The LED display provides information about the correct connection of the terminal block.

- The sensor terminal block module supports a variety of sensors
- Featuring a plug-in design, it reduces wiring time and improves wiring efficiency.
- Blue and red terminals make it easier for users to identify positive and negative wiring.
- Modular design supports various quantities of sensors, allowing customers to flexibly configure their usage.
- Product design meets industrial standards such as IEC and UL, suitable for use in various fields.
- All products can be installed on DIN rails.

DP2.5SGQK01	DP2.5SGQK02
	
Wiring Diagram	**Wiring Diagram**
	

Specification		
Number of Sensors	4 sets	8 sets
Connection Method	PID	PID
L x W x H (mm)	30.5 x 68.5 x 43.5	50.8 x 68.5 x 43.5
Signal		
Rated Voltage	600V	600V
Rated Current	20A	20A
Wire Range	26~12 AWG	26~12 AWG
Stripping Length	10	10
Applicable Ferrules	DN00510D DN00710D DN01510D	DN00510D DN00710D DN01510D
Power		
Rated Voltage	300V	300V
Rated Current	10A	10A
Wire Range	26~14 AWG	26~14 AWG
Stripping Length	10	10
Applicable Ferrules	DN00510D DN00710D DN01510D	DN00510D DN00710D DN01510D

Sensor Terminal Blocks

DP2.5SGQK03	DP2.5SGQK04	DP2.5SGQK05
		
Wiring Diagram	**Wiring Diagram**	**Wiring Diagram**
		

Specification			
Number of Sensors	12 sets	16 sets	20 sets
Connection Method	PID	PID	PID
L x W x H (mm)	71.1 x 68.5 x 43.5	91.4 x 68.5 x 43.5	111.8 x 68.5 x 43.5
Signal			
Rated Voltage	600V	600V	600V
Rated Current	20A	20A	20A
Wire Range	26~12 AWG	26~12 AWG	26~12 AWG
Stripping Length	10	10	10
Applicable Ferrules	DN00510D DN00710D DN01510D	DN00510D DN00710D DN01510D	DN00510D DN00710D DN01510D
Power			
Rated Voltage	300V	300V	300V
Rated Current	10A	10A	10A
Wire Range	26~14 AWG	26~14 AWG	26~14 AWG
Stripping Length	10	10	10
Applicable Ferrules	DN00510D DN00710D DN01510D	DN00510D DN00710D DN01510D	DN00510D DN00710D DN01510D

Fundamental to industrial automation: Relay Modules

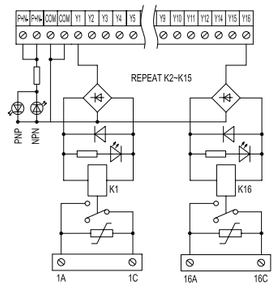
- Using high-quality industrial relays, Dinkle relay modules support a complete range of output current specification from 1A to 10A, in a variety of commonly used output contacts and configurations such as 1A, 1C, and 2C. These modules effectively isolate signals, supporting both NPN and PNP input types, and the matching one piece PCB carrier improves product value with its neat and aesthetic exterior.

- Dinkle relay modules equipped with the latest push-in design (PID) terminal blocks, can efficiently save space, installation time and cost. A high tensile strength stainless steel clip within the terminal blocks holds the wire securely and resists equipment vibration, even low frequency micro-vibrations, ensuring long-term connection stability and reducing maintenance costs.

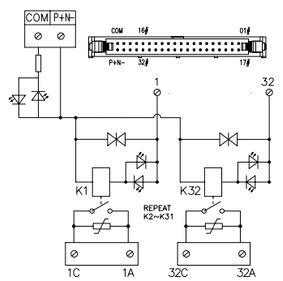
0240-A108 / 0240-A116

0240-A132

Wiring Diagram



Wiring Diagram



Specification			
Part Number	Number of Relays	Connector	L x W x H (mm)
0240-A108	8	IDC 14-Pin	65.2 x 77.9 x 43
0240-A116	16	IDC 20-Pin	127.2 x 77.9 x 43

Specification		
Relay models	OMRON/G6D-1A-ASI	OMRON/G6D-1A-ASI
Number of Relays	-	32
Connection Method	PID	PID
Wire Range	26~16 AWG	26~16 AWG
Stripping Length	9~10 mm	9~10 mm
Applicable Ferrules	DN00510D DN00710D	DN00510D DN00710D
L x W x H (mm)	-	144 x 121.8 x 53.3
Input		
Input voltage	24 VDC	24 VDC
Input Current	8.3mA	8.3mA
Connector	-	IDC 40-pin
Output		
Contact Form	1A	1A
Output Voltage	250 VAC / 30 VDC	250 VAC / 30 VDC
Output current	5A	5A

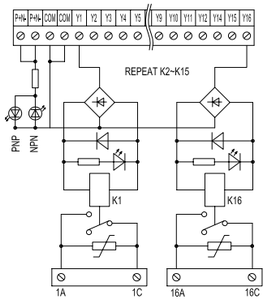
0240-A2XX

0240-C2XX

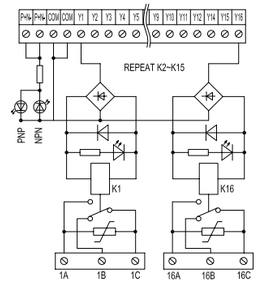
0240-C2XXS

0240-C308 / 0240-C308A

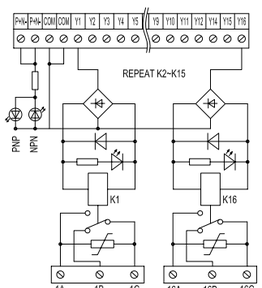
Wiring Diagram



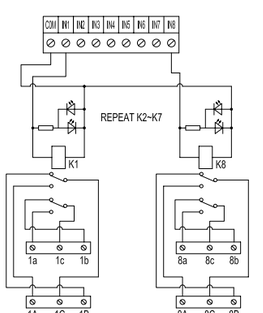
Wiring Diagram



Wiring Diagram



Wiring Diagram



Specification			
Part Number	Number of Relays	Connector	L x W x H (mm)
0240-A202	2	-	35.2 x 77.9 x 50.9
0240-A204	4	-	65.2 x 77.9 x 50.9
0240-A206	6	-	94.2 x 77.9 x 50.9
0240-A208	8	IDC 14-Pin	127.2 x 77.9 x 50.9
0240-A212	12	IDC 14-Pin	187.2 x 77.9 x 50.9
0240-A216	16	IDC 20-Pin	247.2 x 77.9 x 50.9

Specification			
Part Number	Number of Relays	Connector	L x W x H (mm)
0240-C202	2	-	35.2 x 77.9 x 50.9
0240-C204	4	-	65.2 x 77.9 x 50.9
0240-C206	6	-	94.2 x 77.9 x 50.9
0240-C208	8	IDC 14-Pin	127.2 x 77.9 x 50.9
0240-C212	12	IDC 14-Pin	187.2 x 77.9 x 50.9
0240-C216	16	IDC 20-Pin	247.2 x 77.9 x 50.9

Specification			
Part Number	Number of Relays	Connector	L x W x H (mm)
0240-C202S	2	-	35.2 x 77.9 x 50.9
0240-C204S	4	-	65.2 x 77.9 x 50.9
0240-C206S	6	-	94.2 x 77.9 x 50.9
0240-C208S	8	IDC 14-Pin	127.2 x 77.9 x 50.9
0240-C212S	12	IDC 14-Pin	187.2 x 77.9 x 50.9
0240-C216S	16	IDC 20-Pin	247.2 x 77.9 x 50.9

Specification			
Part Number	Number of Relays	Connector	L x W x H (mm)
0240-C308	8	26 ~ 16 AWG	112.2 x 77.9 x 30.3
0240-C308A	8	26 ~ 12 AWG	158.2 x 77.9 x 30.3

Specification				
Relay models	OMRON/G2R-1-E	OMRON/G2R-1-E	OMRON/G2R-1-E	OMRON/G5V-2-H1
Connection Method	PID	PID	Screw	PID
Wire Range	26~12 AWG	26~12 AWG	26~12 AWG	-
Stripping Length	9~10 mm	9~10 mm	6~7 mm	9~10 mm
Screw	-	-	M2.5	-
Rated torque	-	-	0.5	-
Applicable Ferrules	DN00510D DN00710D	DN00510D DN00710D	-	DN00510D DN00710D
Input				
Input voltage	24 VDC	24 VDC	24 VDC	24 VDC
Input Current	21.8mA	21.8mA	21.8mA	8.33mA
Output				
Contact Form	1A	1C	1 C	2 C
Output Voltage	250 VAC / 30 VDC	250 VAC / 30 VDC	250 VAC / 30 VDC	125 VAC / 24 VDC
Output current	10A	10A	10A	0.5 A / 1 A

Micro Relay Modules

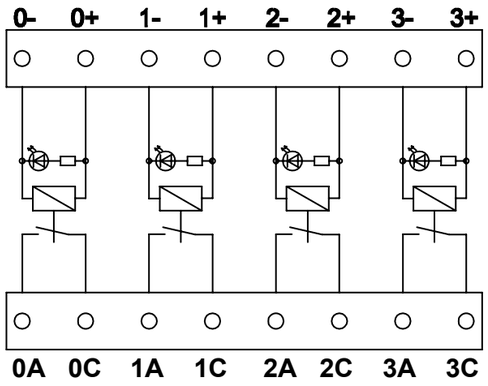
- Highly integrated configuration design minimizes the structure and save installation space
- Connected by push-in design terminal block to save wiring time
- Clear marking system easier to identify when wiring
- The max. rated voltage: 250Vac
- The max. rated current: 6A
- Provide IDC interface to reduce working time
- Easy to complete the replacement and installation of the relay

DINKLE 因联结而喜悦!!
Delight Through Connections

Micro Relay Modules

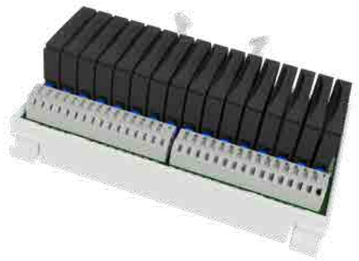
0240-A104B-U-HF

Wiring Diagram

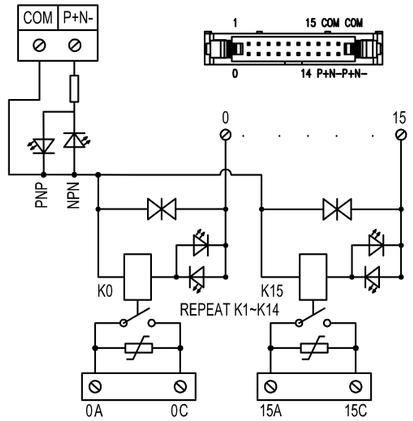


Specification	
Connection Method	PID
Wire Range	26~16 AWG
Stripping Length	9~10 mm
Applicable Ferrules	DN00510D DN00710D
L x W x H (mm)	35.2x77.9x28
Relay specification	
Input	
Input voltage	24VDC
Input Current	7.5mA
Output	
Contact Form	1A
Output Voltage	250 VAC / 30 VDC
Output current	5A

0240-A116CB-U-HF



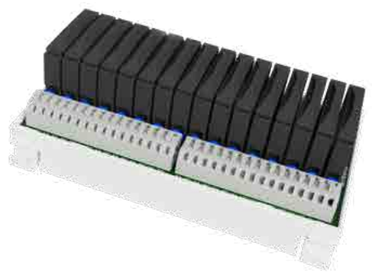
Wiring Diagram



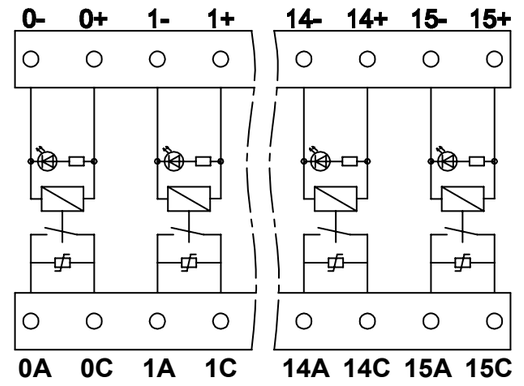
Specification	
Connection Method	PID
Wire Range	26~16 AWG
Stripping Length	9~10 mm
Applicable Ferrules	DN00510D DN00710D
L x W x H (mm)	125.2x77.9x42.8
Relay specification	
Input	
Input Type	NPN/PNP
Input voltage	24VDC
Input Current	7.08mA
Connector	IDC 20-pin
Output	
Contact Form	1A
Output Voltage	250VAC/30VDC
Output current	5A

Micro Relay Modules

0240-A1XXBB-U-HF



Wiring Diagram

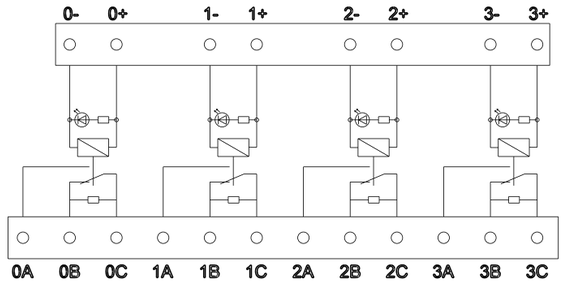


Specification		
Part Number	**Number of Relays**	**L x W x H (mm)**
0240-A102BB-U-HF	2	25.2x77.9x42.8
0240-A104BB-U-HF	4	35.2x77.9x42.8
0240-A108BB-U-HF	8	65.2x77.9x42.8
0240-A116BB-U-HF	16	125.2x77.9x42.8

Specification	
Connection Method	PID
Wire Range	26~16 AWG
Stripping Length	9~10 mm
Applicable Ferrules	DN00510D DN00710D
Relay specification	
Input	
Input voltage	24VDC
Input Current	7.08mA
Output	
Contact Form	1A
Output Voltage	250VAC/30VDC
Output current	5A

0240-CXXXDB-U-HF

Wiring Diagram



Specification		
Part Number	**Number of Relays**	**L x W x H (mm)**
0240-C102DB-U-HF	2	25.2x77.9x42.8
0240-C104DB-U-HF	4	35.2x77.9x42.8

Specification	
Connection Method	PID
Wire Range	26~16 AWG
Stripping Length	8~10 mm
Applicable Ferrules	DN00510D DN00710D
Relay specification	
Input	
Input voltage	24VDC
Input Current	7.08mA
Output	
Contact Form	1C
Output Voltage	250VAC/30VDC
Output current	5A

Slim Relay Modules

Compact components efficiently use space for high-speed switching: Slim Relay Modules

- Extra-thin design, with extra-high mechanical and electrical durability. With a maximum load current of 6A and a switching frequency up to 10kHz, these modules are widely used in signal isolation, switching under very small load, high-speed switching and limited installation space. Further advantages include safe and reliable function, long life, touch-safe, no spark, no pollution, high insulation, a high withstand voltage of 2.5kV and a low trigger current.
- During the P-LUP wiring operation, there is no need to crimp the terminals to the wires and no tool is needed to complete the wirings. Using the high-quality conductive materials makes the opto relay/slim relay has excellent performance of low contact resistance and high conductivity.

The opto relay adopts a compact structure design with only 6.2mmin thickness. And use P-LUP structure to clamp the wire to save wiring time, especially, the double-layer structure can save assembly space. By operating the lever, the wires can be connected and disconnected without tools. The product exterior provides users with clear wiring instructions, making the wiring accurate and reliable, and can support signal transmission, isolation or amplification.

P-LUP connection

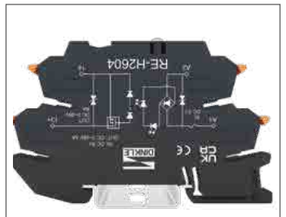
Insertion bridge (Plug-in)

Marking label

Continuous flat marking label

DIN rail

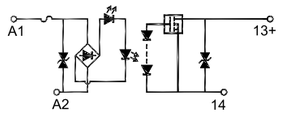
Opto Relay

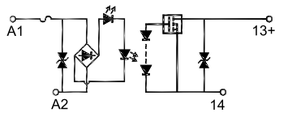


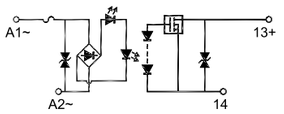
RE-H2604

RE-H2614

RE-H2674







Specification		Specification		Specification	
Input Data		**Input Data**		**Input Data**	
Rated Voltage	5 VDC	Rated Voltage	24 VDC	Rated Voltage	90~240 VAC
Rated Current	15-20 mA	Rated Current	15-20 mA	Rated Current	40mA
Indicator	(Red) LED	Indicator	(Red) LED	Indicator	(Red) LED
Max. switching frequency	10Hz	Max. switching frequency	10Hz	Max. switching frequency	10Hz
Input polarity	Bipolar	Input polarity	Bipolar	Input polarity	Bipolar
Gate voltage ON / OFF	4.7 VDC / 3.3 VDC	Gate voltage ON / OFF	22 VDC / 18 VDC	Gate voltage ON / OFF	50 VAC / 50 VAC
Output (Load Side) Data		**Output (Load Side) Data**		**Output (Load Side) Data**	
Rated Voltage	3~48 VDC	Rated Voltage	3~48 VDC	Rated Voltage	3~48 VDC
Continuous current	6A	Continuous current	6A	Continuous current	6A
General Data		**General Data**		**General Data**	
Input Type	NPN/PNP	Input Type	NPN/PNP	Input Type	NPN/PNP
Connection Method	P-LUP	Connection Method	P-LUP	Connection Method	P-LUP
Wire Range (AWG / mm^2)	24~12 / 0.2~4	Wire Range (AWG / mm^2)	24~12 / 0.2~4	Wire Range (AWG / mm^2)	24~12 / 0.2~4
Impulse withstand voltage	2.5KV	Impulse withstand voltage	2.5KV	Impulse withstand voltage	2.5KV
Stripping Length (mm)	11~12	Stripping Length (mm)	11~12	Stripping Length (mm)	11~12
Tx W x H (mm)	6.2 x 85.9 x 53.5	Tx W x H (mm)	6.2 x 85.9 x 53.5	Tx W x H (mm)	6.2 x 85.9 x 53.5
Package	10 pcs	Package	10 pcs	Package	10 pcs
Accessories Part No.		**Accessories Part No.**		**Accessories Part No.**	
DSD03-M1500		DSD03-M1500		DSD03-M1500	
TM43W		TM43W		TM43W	
TM-R100		TM-R100		TM-R100	
TS-35		TS-35		TS-35	

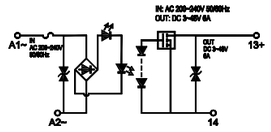
Opto Relay

P-LUP

The opto relay adopts a compact structure design with only 6.2mmin thickness. And use P-LUP structure to clamp the wire to save wiring time, especially, the double-layer structure can save assembly space. To operate the lever connects and disconnects the wires without tools. The product exterior provides users with clear wiring instructions, making the wiring accurate and reliable, and can support signal transmission, isolation or amplification.

P-LUP

RE-H2664



Specification	
Input Data	
Rated Voltage	200~240 VAC
Rated Current	40mA
Indicator	(Red) LED
Max. switching frequency	10Hz
Input polarity	Bipolar
Gate voltage ON / OFF	140VAC/140VAC
Output (Load Side) Data	
Rated Voltage	3~48 VDC
Continuous current	6A
General Data	
Input Type	NPN/PNP
Connection Method	P-LUP
Wire Range (AWG / mm^2)	24~12 / 0.2~4
Impulse withstand voltage	2.5KV
Stripping Length (mm)	11~12
Tx W x H (mm)	6.2 x 85.9 x 53.5
Package	10 pcs
Accessories Part No.	
	DSD03-M1500
	TM43W
	TM-R100
	TS-35

Insertion bridge (Plug-in)

Marking label

Continuous flat marking label

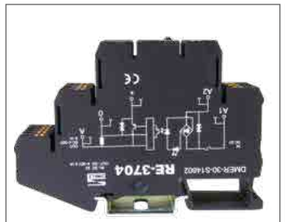
DIN rail

Opto Relay

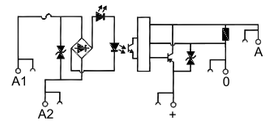
PID

Dinkle opto relay is a compact design with the thickness of 6.2mm only.It adopts push-in design (PID) spring clamping to connect wires, which saves the wiring time. The double-layer design saves assembly space. In a limited space, the use of prepared wire or solid wire can be inserted in the spring clamp tool-free. Push down the orange button to easily withdraw the wire. Perfect marking label and printable housing provide users with clear wiring instructions. This helps to assemble wires accurately and reliably. This project can support signal transmission, isolation, adjustment or amplification.

PID



RE-3704



Specification	
Input Data	
Rated Voltage	5 VDC
Rated Current	10mA
Indicator	(Red) LED
Max. switching frequency	200kHz
Input polarity	Bipolar
Gate voltage ON / OFF	4.5 VDC / 4 VDC
Output (Load Side) Data	
Rated Voltage	4~30 VDC
Continuous current	0.1A
General Data	
Input Type	Output: PNP (3-Conductor)
Connection Method	PID
Wire Range (AWG / mm^2)	24~14 / 0.25~2.5
Impulse withstand voltage	2.5KV
Stripping Length (mm)	10
T x W x H (mm)	6.2 x 92 x 64.3
Package	10 pcs
Accessories Part No.	
	DSD05-6.202-A DSD05-6.203-A DSD05-6.204-A DSD05-6.205-A DSD05-6.210-A
	TM43W
	TS-35
	0.6 x 3.5 mm

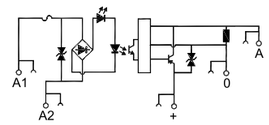
Insertion bridge (Plug-in) 2 3 4 5 10

Marking label

DIN rail

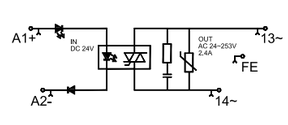
Screwdriver

RE-3714



Specification	
Input Data	
Rated Voltage	24 VDC
Rated Current	10mA
Indicator	(Red) LED
Max. switching frequency	200kHz
Input polarity	Bipolar
Gate voltage ON / OFF	19.2 VDC / 16.8 VDC
Output (Load Side) Data	
Rated Voltage	4~30 VDC
Continuous current	0.1A
General Data	
Input Type	Output: PNP (3-Conductor)
Connection Method	PID
Wire Range (AWG / mm^2)	24~14 / 0.25~2.5
Impulse withstand voltage	2.5KV
Stripping Length (mm)	10
T x W x H (mm)	6.2 x 92 x 64.3
Package	10 pcs
Accessories Part No.	
	DSD05-6.202-A DSD05-6.203-A DSD05-6.204-A DSD05-6.205-A DSD05-6.210-A
	TM43W
	TS-35
	0.6 x 3.5 mm

RE-3814



Specification	
Input Data	
Rated Voltage	24 VDC
Rated Current	8mA
Indicator	(Red) LED
Max. switching frequency	10kHz
Input polarity	Monopolar
Gate voltage ON / OFF	19.2 VDC / 16.8 VDC
Output (Load Side) Data	
Rated Voltage	24~253VAC
Continuous current	2.4A
General Data	
Input Type	-
Connection Method	PID
Wire Range (AWG / mm^2)	24~14 / 0.25~2.5
Impulse withstand voltage	2.5KV
Stripping Length (mm)	10
T x W x H (mm)	6.2 x 92 x 64.3
Package	10 pcs
Accessories Part No.	
	DSD05-6.202-A DSD05-6.203-A DSD05-6.204-A DSD05-6.205-A DSD05-6.210-A
	TM43W
	TS-35
	0.6 x 3.5 mm

Opto Relay

The slim opto relay is only 6.2mm in thickness, suitable for the control panels with limited space. The traditional screw-clamping structure provides a more secure and tight wire connection and provides a high reliable wiring method. Dinkle opto relay includes a maximum switching frequency of 10kHz, suitable for applications in different fields.

Screw

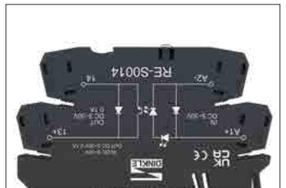
Insertion bridge (Plug-in)

Marking label

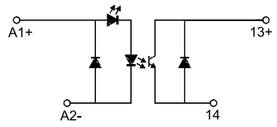
Continuous flat marking label

DIN rail

Screwdriver

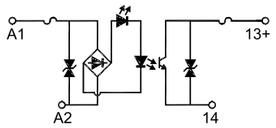


RE-S0014

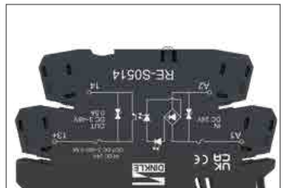


Specification	
Input Data	
Rated Voltage	5~30 VDC
Rated Current	6mA
Indicator	(Red) LED
Max. switching frequency	10kHz
Input polarity	Monopolar
Gate voltage ON / OFF	3.2VDC / 3.2VAC (LED off at 2.5VDC)
Output (Load Side) Data	
Rated Voltage	3~30 VDC
Continuous current	0.1A
General Data	
Input Type	NPN
Connection Method	Screw
Wire Range (AWG / mm^2)	24~12 / 0.2~4
Impulse withstand voltage	2.5KV
Stripping Length (mm)	6~7
Min. torque (N-m)	0.4
Max. torque (N-m)	0.5
Tx W x H (mm)	6.2 x 81.8 x 53.5
Package	10 pcs
Accessories Part No.	
DSD03-M1500	
TM43W	
TM-R100	
TS-35	
0.6 x 3.5 mm	

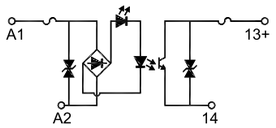
RE-S0504



Specification	
Input Data	
Rated Voltage	5 VDC
Rated Current	15~18 mA
Indicator	(Red) LED
Max. switching frequency	1kHz
Input polarity	Bipolar
Gate voltage ON / OFF	4.7 VDC / 4.2 VDC
Output (Load Side) Data	
Rated Voltage	3~48 VDC
Continuous current	0.5A
General Data	
Input Type	NPN / PNP
Connection Method	Screw
Wire Range (AWG / mm^2)	24~12 / 0.2~4
Impulse withstand voltage	2.5KV
Stripping Length (mm)	6~7
Min. torque (N-m)	0.4
Max. torque (N-m)	0.5
Tx W x H (mm)	6.2 x 81.8 x 53.5
Package	10 pcs
Accessories Part No.	
DSD03-M1500	
TM43W	
TM-R100	
TS-35	
0.6 x 3.5 mm	



RE-S0514



Specification	
Input Data	
Rated Voltage	24 VDC
Rated Current	12~14 mA
Indicator	(Red) LED
Max. switching frequency	1kHz
Input polarity	Bipolar
Gate voltage ON / OFF	21.5 VDC / 19.5 VDC
Output (Load Side) Data	
Rated Voltage	3~48 VDC
Continuous current	0.5A
General Data	
Input Type	NPN / PNP
Connection Method	Screw
Wire Range (AWG / mm^2)	24~12 / 0.2~4
Impulse withstand voltage	2.5KV
Stripping Length (mm)	6~7
Min. torque (N-m)	0.4
Max. torque (N-m)	0.5
Tx W x H (mm)	6.2 x 81.8 x 53.5
Package	10 pcs
Accessories Part No.	
DSD03-M1500	
TM43W	
TM-R100	
TS-35	
0.6 x 3.5 mm	

Opto Relay

The slim opto relay is only 6.2mm in thickness, suitable for the control panels with limited space. The traditional screw-clamping structure provides a more secure and tight wire connection and provides a high reliable wiring method. Dinkle opto relay includes a maximum switching frequency of 10kHz, suitable for applications in different fields.

Screw

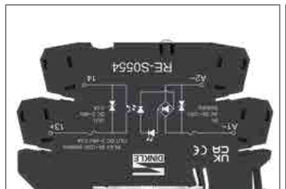
Insertion bridge (Plug-in)

Marking label

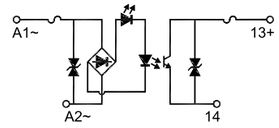
Continuous flat marking label

DIN rail

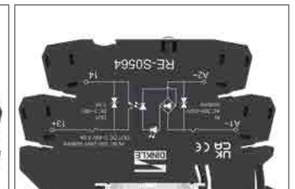
Screwdriver



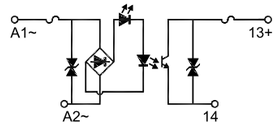
RE-S0554



Specification	
Input Data	
Rated Voltage	95~125 VAC
Rated Current	0.6~1.3 mA
Indicator	(Red) LED
Max. switching frequency	10Hz
Input polarity	Bipolar
Gate voltage ON / OFF	50 VAC / 50VAC
Output (Load Side) Data	
Rated Voltage	3~48 VDC
Continuous current	0.5A
General Data	
Input Type	NPN / PNP
Connection Method	Screw
Wire Range (AWG / mm^2)	24~12 / 0.2~4
Impulse withstand voltage	2.5KV
Stripping Length (mm)	6~7
Min. torque (N-m)	0.4
Max. torque (N-m)	0.5
Tx W x H (mm)	6.2 x 81.8 x 53.5
Package	10 pcs
Accessories Part No.	
DSD03-M1500	
TM43W	
TM-R100	
TS-35	
0.6 x 3.5 mm	



RE-S0564



Specification	
Input Data	
Rated Voltage	200~240 VAC
Rated Current	0.6~1.1 mA
Indicator	(Red) LED
Max. switching frequency	10Hz
Input polarity	Bipolar
Gate voltage ON / OFF	130 VAC / 130VAC
Output (Load Side) Data	
Rated Voltage	3~48 VDC
Continuous current	0.5A
General Data	
Input Type	NPN / PNP
Connection Method	Screw
Wire Range (AWG / mm^2)	24~12 / 0.2~4
Impulse withstand voltage	2.5KV
Stripping Length (mm)	6~7
Min. torque (N-m)	0.4
Max. torque (N-m)	0.5
Tx W x H (mm)	6.2 x 81.8 x 53.5
Package	10 pcs
Accessories Part No.	
DSD03-M1500	
TM43W	
TM-R100	
TS-35	
0.6 x 3.5 mm	

Specification	
Input Data	
Output (Load Side) Data	
General Data	
Accessories Part No.	

Slim Relay

The slim relay adopts the P-LUP structure for wiring, enabling convenient and fast operation without tools. The wire is firmly clamped without loosening. The product supports input voltage at 24V, 110V, and 230V, suitable for various industrial control fields such as PLC control, robotic arm, CNC equipment control and platform control.

- Supports a variety of common industrial control input voltages
- Easy to complete the replacement and installation of the relay
- P-LUP structure for wiring enabling quick installation without tools
- Product thickness is 6.2mm only
- Clear LED indicator
- Designed with protective circuit

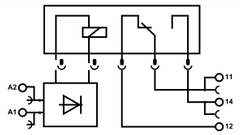
P-LUP

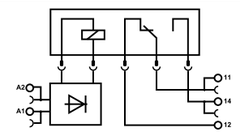
Insertion bridge (Plug-in)
Marking label
Continuous flat marking label
DIN rail

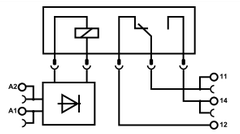
RER-H1C-24 c UL us

RER-H1C-110 c UL us

RER-H1C-230 c UL us







Specification			Specification			Specification		
Input Data			**Input Data**			**Input Data**		
Rated Voltage		24 VAC / VDC	Rated Voltage		110 VAC / VDC	Rated Voltage		230 VAC / VDC
Rated Current		11.1mA	Rated Current		3.4mA	Rated Current		3.7mA
Response time (@ rated voltage)		≦ 8 ms	Response time (@ rated voltage)		≦ 8 ms	Response time (@ rated voltage)		≦ 8 ms
Release time (@ rated voltage)		≦ 4 ms	Release time (@ rated voltage)		≦ 4 ms	Release time (@ rated voltage)		≦ 4 ms
Protective circuit		Bridge rectifier Surge protection	Protective circuit		Bridge rectifier	Protective circuit		Bridge rectifier
Indicator		(Green) LED	Indicator		(Green) LED	Indicator		(Green) LED
Contact			**Contact**			**Contact**		
Contact Form		1C	Contact Form		1C	Contact Form		1C
Contact rating (Res. load)		6 A, 250 VAC / 30 VDC	Contact rating (Res. load)		6 A, 250 VAC / 30 VDC	Contact rating (Res. load)		6 A, 250 VAC / 30 VDC
Max. switching voltage		400 VAC / 125 VDC	Max. switching voltage		400 VAC / 125 VDC	Max. switching voltage		400 VAC / 125 VDC
Max. switching current		6A	Max. switching current		6A	Max. switching current		6A
Contact resistance		≦ 100 mΩ (1 A, 6 VDC)	Contact resistance		≦ 100 mΩ (1 A, 6 VDC)	Contact resistance		≦ 100 mΩ (1 A, 6 VDC)
Mechanical endurance		1 x 10^7cycles	Mechanical endurance		1 x 10^7cycles	Mechanical endurance		1 x 10^7cycles
Electrical endurance		3 x 10^4cycles, NO 1 x 10^4cycles, NC	Electrical endurance		3 x 10^4cycles, NO 1 x 10^4cycles, NC	Electrical endurance		3 x 10^4cycles, NO 1 x 10^4cycles, NC
General			**General**			**General**		
Dielectric strength	Coil & contacts	4000 VAC / 1 min	Dielectric strength	Coil & contacts	4000 VAC / 1 min	Dielectric strength	Coil & contacts	4000 VAC / 1 min
	Open contacts	1000 VAC / 1 min		Open contacts	1000 VAC / 1 min		Open contacts	1000 VAC / 1 min
Shock resistance	Functional	49 m/s^2	Shock resistance	Functional	49 m/s^2	Shock resistance	Functional	49 m/s^2
	Destructive	980 m/s^2		Destructive	980 m/s^2		Destructive	980 m/s^2
Tx W x H (mm)		6.2 x 89.95 x 80.9	Tx W x H (mm)		6.2 x 89.95 x 80.9	Tx W x H (mm)		6.2 x 89.95 x 80.9
Wire Range (AWG / mm^2)		24~12 / 0.2~4	Wire Range (AWG / mm^2)		24~12 / 0.2~4	Wire Range (AWG / mm^2)		24~12 / 0.2~4
Connection Method		P-LUP	Connection Method		P-LUP	Connection Method		P-LUP
Stripping Length (mm)		11~12	Stripping Length (mm)		11~12	Stripping Length (mm)		11~12
Package		10 pcs	Package		10 pcs	Package		10 pcs
Accessories Part No.			**Accessories Part No.**			**Accessories Part No.**		
DSD03-M1500			DSD03-M1500			DSD03-M1500		
TM43W			TM43W			TM43W		
TM-R100			TM-R100			TM-R100		
TS-35			TS-35			TS-35		

Slim Relay

The slim relay adopts the screw-clamp wiring structure, which has excellent clamping force and makes the wire firmly clamped without loosening. The product supports input voltage at 24V, 110V, and 230V, suitable for various industrial control fields such as PLC control, robotic arm, CNC equipment control and platform control.

- Supports a variety of common industrial control input voltages
- Easy to complete the replacement and installation of the relay
- Screw-clamp wiring structure brings stable and firm connections
- Product thickness is 6.2mm only
- Clear LED indicator
- Designed with protective circuit

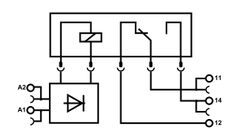
Screw

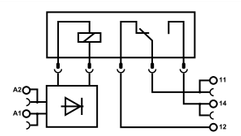
Insertion bridge (Plug-in)
Marking label
Continuous flat marking label
DIN rail
Screwdriver

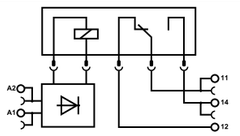
RER-S1C-24 c UL us

RER-S1C-110 c UL us

RER-S1C-230 c UL us







Specification			Specification			Specification		
Input Data			**Input Data**			**Input Data**		
Rated Voltage		24 VAC / VDC	Rated Voltage		110 VAC / VDC	Rated Voltage		230 VAC / VDC
Rated Current		11.1mA	Rated Current		3.4mA	Rated Current		3.7mA
Response time (@ rated voltage)		≦ 8 ms	Response time (@ rated voltage)		≦ 8 ms	Response time (@ rated voltage)		≦ 8 ms
Release time (@ rated voltage)		≦ 4 ms	Release time (@ rated voltage)		≦ 4 ms	Release time (@ rated voltage)		≦ 4 ms
Protective circuit		Bridge rectifier Surge protection	Protective circuit		Bridge rectifier	Protective circuit		Bridge rectifier
Indicator		(Green) LED	Indicator		(Green) LED	Indicator		(Green) LED
Contact			**Contact**			**Contact**		
Contact Form		1C	Contact Form		1C	Contact Form		1C
Contact rating (Res. load)		6 A, 250 VAC / 30 VDC	Contact rating (Res. load)		6 A, 250 VAC / 30 VDC	Contact rating (Res. load)		6 A, 250 VAC / 30 VDC
Max. switching voltage		400 VAC / 125 VDC	Max. switching voltage		400 VAC / 125 VDC	Max. switching voltage		400 VAC / 125 VDC
Max. switching current		6A	Max. switching current		6A	Max. switching current		6A
Contact resistance		≦ 100 mΩ (1 A, 6 VDC)	Contact resistance		≦ 100 mΩ (1 A, 6 VDC)	Contact resistance		≦ 100 mΩ (1 A, 6 VDC)
Mechanical endurance		1 x 10^7cycles	Mechanical endurance		1 x 10^7cycles	Mechanical endurance		1 x 10^7cycles
Electrical endurance		3 x 10^4cycles, NO 1 x 10^4cycles, NC	Electrical endurance		3 x 10^4cycles, NO 1 x 10^4cycles, NC	Electrical endurance		3 x 10^4cycles, NO 1 x 10^4cycles, NC
General			**General**			**General**		
Dielectric strength	Coil & contacts	4000 VAC / 1 min	Dielectric strength	Coil & contacts	4000 VAC / 1 min	Dielectric strength	Coil & contacts	4000 VAC / 1 min
	Open contacts	1000 VAC / 1 min		Open contacts	1000 VAC / 1 min		Open contacts	1000 VAC / 1 min
Shock resistance	Functional	49 m/s^2	Shock resistance	Functional	49 m/s^2	Shock resistance	Functional	49 m/s^2
	Destructive	980 m/s^2		Destructive	980 m/s^2		Destructive	980 m/s^2
Tx W x H (mm)		6.2 x 89.95 x 80.9	Tx W x H (mm)		6.2 x 89.95 x 80.9	Tx W x H (mm)		6.2 x 89.95 x 80.9
Wire Range (AWG / mm^2)		24~12 / 0.2~4	Wire Range (AWG / mm^2)		24~12 / 0.2~4	Wire Range (AWG / mm^2)		24~12 / 0.2~4
Connection Method		Screw	Connection Method		Screw	Connection Method		Screw
Stripping Length (mm)		11~12	Stripping Length (mm)		11~12	Stripping Length (mm)		11~12
Package		10 pcs	Package		10 pcs	Package		10 pcs
Accessories Part No.			**Accessories Part No.**			**Accessories Part No.**		
DSD03-M1500			DSD03-M1500			DSD03-M1500		
TM43W			TM43W			TM43W		
TM-R100			TM-R100			TM-R100		
TS-35			TS-35			TS-35		
0.6 x 3.5 mm			0.6 x 3.5 mm			0.6 x 3.5 mm		

The slim relay adopts the PID structure for wiring, enabling fast connection and improving the wiring efficiency. The product supports input voltage at 24V, 110V, and 230V, suitable for various industrial control fields such as PLC control, robotic arm, CNC equipment control and platform control.

- Supports a variety of common industrial control input voltages
- Easy to complete the replacement and installation of the relay
- PID wiring structure brings stable and firm connections
- Product thickness is 6.2mm only
- Clear LED indicator
- Designed with protective circuit

PID

Insertion bridge (Plug-in)

Marking label 1 2 3 4 5 6 7

Continuous flat marking label 1 2 3 4 5 6 7

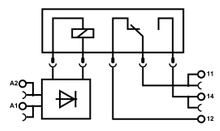
DIN rail

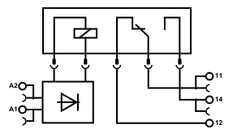
Slim Relay

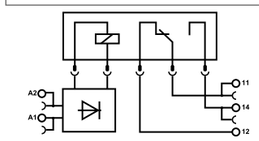
RER-P1C-24 c UL us

RER-P1C-110 c UL us

RER-P1C-230 c UL us







Specification		Specification		Specification	
Input Data		**Input Data**		**Input Data**	
Rated Voltage	24 VAC / VDC	Rated Voltage	110 VAC / VDC	Rated Voltage	230 VAC / VDC
Rated Current	11.1mA	Rated Current	3.4mA	Rated Current	3.7mA
Response time (@ rated voltage)	≦ 8 ms	Response time (@ rated voltage)	≦ 8 ms	Response time (@ rated voltage)	≦ 8 ms
Release time (@ rated voltage)	≦ 4 ms	Release time (@ rated voltage)	≦ 4 ms	Release time (@ rated voltage)	≦ 4 ms
Protective circuit	Bridge rectifier Surge protection	Protective circuit	Bridge rectifier	Protective circuit	Bridge rectifier
Indicator	(Green) LED	Indicator	(Green) LED	Indicator	(Green) LED
Contact		**Contact**		**Contact**	
Contact Form	1C	Contact Form	1C	Contact Form	1C
Contact rating (Res. load)	6 A, 250 VAC / 30 VDC	Contact rating (Res. load)	6 A, 250 VAC / 30 VDC	Contact rating (Res. load)	6 A, 250 VAC / 30 VDC
Max. switching voltage	400 VAC / 125 VDC	Max. switching voltage	400 VAC / 125 VDC	Max. switching voltage	400 VAC / 125 VDC
Max. switching current	6A	Max. switching current	6A	Max. switching current	6A
Contact resistance	≦ 100 mΩ (1 A, 6 VDC)	Contact resistance	≦ 100 mΩ (1 A, 6 VDC)	Contact resistance	≦ 100 mΩ (1 A, 6 VDC)
Mechanical endurance	1 x 10^7cycles	Mechanical endurance	1 x 10^7cycles	Mechanical endurance	1 x 10^7cycles
Electrical endurance	3 x 10^4cycles, NO 1 x 10^4cycles, NC	Electrical endurance	3 x 10^4cycles, NO 1 x 10^4cycles, NC	Electrical endurance	3 x 10^4cycles, NO 1 x 10^4cycles, NC
General		**General**		**General**	
Dielectric strength: Coil & contacts	4000 VAC / 1 min	Dielectric strength: Coil & contacts	4000 VAC / 1 min	Dielectric strength: Coil & contacts	4000 VAC / 1 min
Dielectric strength: Open contacts	1000 VAC / 1 min	Dielectric strength: Open contacts	1000 VAC / 1 min	Dielectric strength: Open contacts	1000 VAC / 1 min
Shock resistance: Functional	49 m/s^2	Shock resistance: Functional	49 m/s^2	Shock resistance: Functional	49 m/s^2
Shock resistance: Destructive	980 m/s^2	Shock resistance: Destructive	980 m/s^2	Shock resistance: Destructive	980 m/s^2
Tx W x H (mm)	6.2 x 84 x 80.9	Tx W x H (mm)	6.2 x 84 x 80.9	Tx W x H (mm)	6.2 x 84 x 80.9
Wire Range (AWG / mm^2)	24~12 / 0.2~4	Wire Range (AWG / mm^2)	24~12 / 0.2~4	Wire Range (AWG / mm^2)	24~12 / 0.2~4
Connection Method	PID	Connection Method	PID	Connection Method	PID
Stripping Length (mm)	11~12	Stripping Length (mm)	11~12	Stripping Length (mm)	11~12
Package	10 pcs	Package	10 pcs	Package	10 pcs
Accessories Part No.		**Accessories Part No.**		**Accessories Part No.**	
DSD03-M1500		DSD03-M1500		DSD03-M1500	
TM43W		TM43W		TM43W	
TM-R100		TM-R100		TM-R100	
TS-35		TS-35		TS-35	

DINKLE 因联结而喜悦!! Delight Through Connections

Compact Relay

With only 16mm base width, it is suitable for various electrical control fields.
Maximize the interior space of the cabinet in the mechanical equipment and system integration projects.

Overview

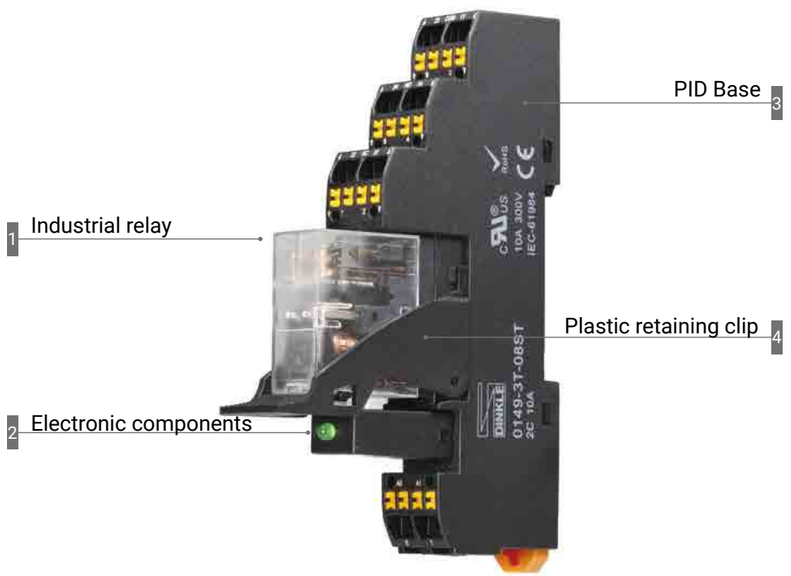
Dinkle RER series industrial relays are ideal for the actual requirements of industrial control applications. It is easy to install and commissioning, stable and reliable in operation, with a longer service life.

Features

- Small size, high rated capacity
- Well-designed structure, suitable for wide applications
- Various specifications, equipped with two-way indicators
- Contacts are made of industrial silver alloy

Certified

Structure



Industrial applications

Like Dinkle's high quality terminal series, RER series relays can be widely used in many fields of various industries such as automobiles, security surveillance, machine tool manufacturing, home appliance production, food and beverage, printing and packaging, plastics and rubber, metal processing, electronics and semiconductors, water treatment, new energy, logistics, smart buildings, automation, etc.

RER-J1C-XXX Description

RER-J1C-XXXX
① ② ③

① **J =** Product specification

② **1C =** Number of contacts

③ **XXXX =** Voltage specification
D24 = DC24V
A120 = AC120V
A230 = AC230V

Ordering Information	Specification		
	RER-J1C-D24	**RER-J1C-A120**	**RER-J1C-A230**
Coil Description			
Rated Voltage	24VDC	120VAC	230VAC
Rated Current	21.8mA	7.6mA	3.9mA
Coil resistance	1100Ω±10%	6300Ω±15%	23500Ω±15%
Pick-up voltage	18V(≤Rated voltage 75%)	96V(≤Rated voltage 80%)	184V(≤Rated voltage 80%)
Release voltage	2.4V(≥Rated voltage 10%)	36V(≥Rated voltage 30%)	69V(≥Rated voltage 30%)
Max. voltage	26.4V(Rated voltage 110%)	132V(Rated voltage 110%)	253V(Rated voltage 110%)
Coil power	0.53W	1.0VA	1.0VA
LED indicator	Green	Red	Red
Contacts Features			
Number of contacts	1C		
Resistive load (AC-1)	12A/250VAC, 30VDC		
Motor load (AC-15)	1/3HP, 240VAC		
Switching power (breaking)	3000VA, 360W		
Min. allowable load	10mA/17V		
Contacts material	$AgSnO_2$		
Contact resistance	≤50mΩ		
Dielectric Strength			
Between contacts with the same pole	1000VAC/1min		
Between contacts and coils	5000VAC/1min		
Insulation resistance	≥1000MΩ (500VDC)		
General			
Pick-up time (@ rated voltage)	≤20ms		
Release time (@ rated voltage)	≤10ms		
Operating frequency	18000 Ops/h		
Ambient temperature	-40~+55°C (Non-freezing condition)		
Ambient humidity	5%~85%RH		
Atmosphere pressure	86~106KPa		
Shock resistance	10G		
Vibration resistance	10~55Hz		
Electrical lifetime (frequency: 1s ON, 1s OFF)	$\geq 10^5$ times (1800 Ops/h)		
Mechanical lifetime (frequency: 300 times/1 minute)	$\geq 10^7$ times (18000 Ops/h)		
Weight	About 19g		

Ordering Information

PID Assembly (A13) = Relay + PID Socket + Retaining clip

Assembly specification	Technical Data	Package	Relay specification	Socket specification	Retaining clip specification
RER-J1C-D24 (A13)	1C/12A	10	RER-J1C-D24	0149-3T-05ST PID base	0149-32
RER-J1C-A120 (A13)	1C/12A		RER-J1C-A120		
RER-J1C-A230 (A13)	1C/12A		RER-J1C-A230		

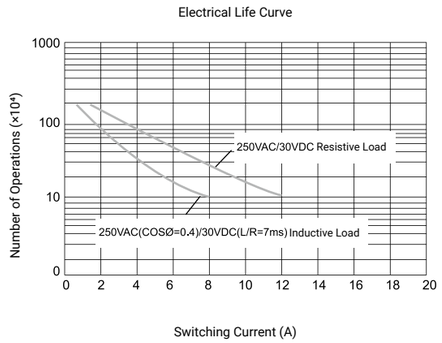
Clamping Cage Assembly (A09) = Relay + Cage clamp socket + Retaining clip

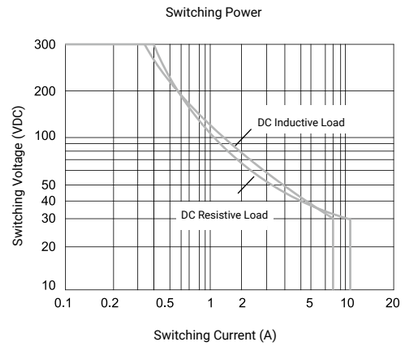
Assembly specification	Technical Data	Package	Relay specification	Socket specification	Retaining clip specification
RER-J1C-D24 (A09)	1C/12A	10	RER-J1C-D24	0149-33-05E Clamping cage base	0149-32
RER-J1C-A120 (A09)	1C/12A		RER-J1C-A120		
RER-J1C-A230 (A09)	1C/12A		RER-J1C-A230		

Screw Fastening Assembly (A07) = Relay + Screw Fastening Socket

Assembly specification	Technical Data	Package	Relay specification	Socket specification
RER-J1C-D24 (A07)	1C/12A	10	RER-J1C-D24	0149-30-05A Screw Fastening Socket (A07)
RER-J1C-A120 (A07)	1C/12A		RER-J1C-A120	
RER-J1C-A230 (A07)	1C/12A		RER-J1C-A230	

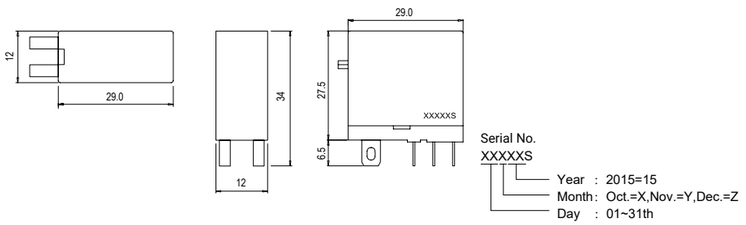
Performance Curves

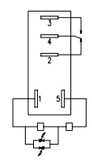




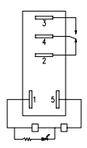
Dimensions and Electrical Connections

Unit: mm





DC Wiring Diagram



AC Wiring Diagram

RER-J2C-XXX Description

RER-J2C-XXXX
① ② ③

① **J =** Product specification

② **2C =** Number of contacts

③ **XXXX =** Voltage specification
D24 = DC24V
A120 = AC120V
A230 = AC230V

Specification			
Ordering Information	**RER-J2C-D24**	**RER-J2C-A120**	**RER-J2C-A230**
Coil features			
Rated Voltage	24VDC	120VAC	230VAC
Rated Current	21.8mA	7.6mA	3.9mA
Coil resistance	1100Ω±10%	6300Ω±15%	23500Ω±15%
Pick-up voltage	18V(≤Rated voltage 75%)	96V(≤Rated voltage 80%)	184V(≤Rated voltage 80%)
Release voltage	2.4V(≥Rated voltage 10%)	36V(≥Rated voltage 30%)	69V(≥Rated voltage 30%)
Max. voltage	26.4V(Rated voltage 110%)	132V(Rated voltage 110%)	253V(Rated voltage 110%)
Coil power	0.53W	1.0VA	1.0VA
LED indicator	Green	Red	Red
Contacts Features			
Number of contacts	2C		
Resistive load (AC-1)	8A/250VAC, 30VDC		
Motor load (AC-15)	1/6HP, 240VAC		
Switching power (breaking)	1250VA, 150W		
Min. allowable load	10mA/17V		
Contacts material	$AgSnO_2$		
Contact resistance	≤50mΩ		
Dielectric Strength			
Between contacts with the same pole	1000VAC/1min		
Between contacts and coils	5000VAC/1min		
Insulation resistance	≥1000MΩ (500VDC)		
General			
Pick-up time (@ rated voltage)	≤20ms		
Release time (@ rated voltage)	≤10ms		
Operating frequency	18000 Ops/h		
Ambient Temperature	-40~+55°C (Non-freezing condition)		
Ambient humidity	5%~85%RH		
Atmosphere pressure	86~106KPa		
Shock resistance	10G		
Vibrant resistance	10~55Hz		
Electrical lifetime (frequency: 1s ON, 1s OFF)	≥10^5 times (1800 Ops/h)		
Mechanical lifetime (frequency: 300 times/1 min)	≥10^7 times (18000 Ops/h)		
Weight	About 19g		

Ordering Information

PID Assembly (A14) Relay PID Socket Retaining clip

Assembly specification	Technical Data	Package	Relay specification	Socket specification	Retaining clip specification
RER-J2C-D24 (A14)	2C/8A	10	RER-J2C-D24	0149-3T-08ST PID base	0149-32
RER-J2C-A120 (A14)	2C/8A		RER-J2C-A120		
RER-J2C-A230 (A14)	2C/8A		RER-J2C-A230		

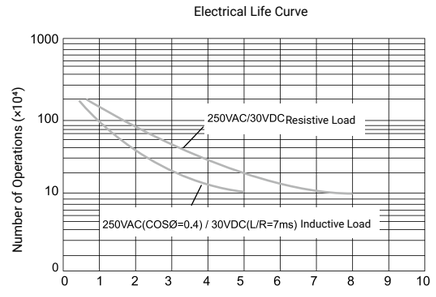
Clamping Cage Assembly (A10) Relay Cage clamp socket Retaining clip

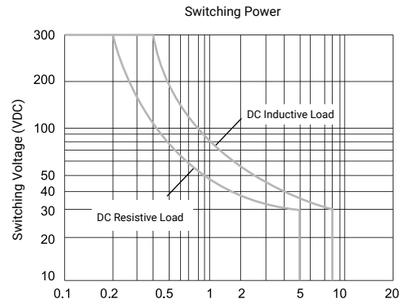
Assembly specification	Technical Data	Package	Relay specification	Socket specification	Retaining clip specification
RER-J2C-D24 (A10)	2C/8A	10	RER-J2C-D24	0149-33-08E Clamping cage base	0149-32
RER-J2C-A120 (A10)	2C/8A		RER-J2C-A120		
RER-J2C-A230 (A10)	2C/8A		RER-J2C-A230		

Screw Fastening Assembly (A08) Relay Screw Fastening Socket

Assembly specification	Technical Data	Package	Relay specification	Socket specification
RER-J2C-D24 (A08)	2C/8A	10	RER-J2C-D24	0149-30-08A Screw Fastening Socket (A07)
RER-J2C-A120 (A08)	2C/8A		RER-J2C-A120	
RER-J2C-A230 (A08)	2C/8A		RER-J2C-A230	

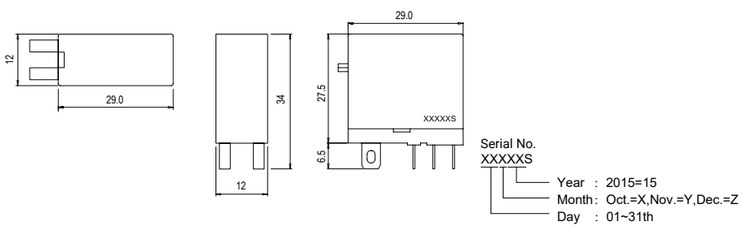
Performance Curves



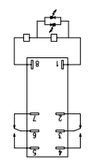


Dimensions and Electrical Connections

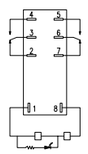
Unit: mm



Serial No.
XXXXXS
Year : 2015=15
Month: Oct.=X,Nov.=Y,Dec.=Z
Day : 01~31th



DC Wiring Diagram



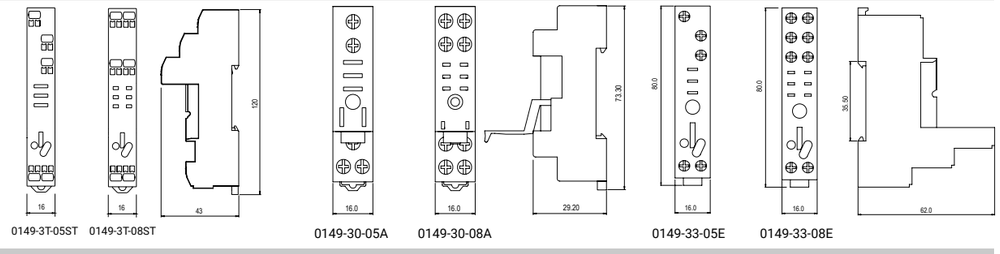
AC Wiring Diagram

Base Description

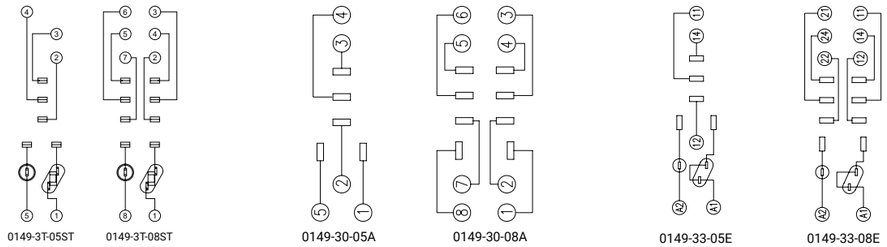
Ordering Information	0149-3T-05ST	0149-3T-08ST	0149-30-05A	0149-30-08A	0149-33-05E	0149-33-08E
Rated load current	12A	8A	16A	10A	16A	10A
Number of contacts	1C	2C	300V	300V	300V	300V
Rated load voltage	300V	300V	2500V/s	2500V/s	2500V/s	2500V/s
Withstand voltage	2500V/s	2500V/s	0.8Nm	0.8Nm	1.0Nm	1.0Nm
Screw torque	-	-	20-14 / 0.5-2.5(AWG/mm²)	20-14 / 0.5-2.5 (AWG/mm²)	20-14 / 0.5-2.5 (AWG/mm²)	20-14 / 0.5-2.5 (AWG/mm²)
External connection wire	20-14 / 0.5-2.5 (AWG/mm²)	20-14 / 0.5-2.5 (AWG/mm²)	-40~+85°C	-40~+85°C	-40~+85°C	-40~+85°C
Ambient temperature	-40~+85°C	-40~+85°C	About 22g	About 25g	About 33g	About 33g
Weight	About 35g	About 43g	10pcs	10pcs	10pcs	10pcs
Min. Package	20pcs	20pcs	RER-J1C	RER-J2C	RER-J1C	RER-J2C
General-purpose models						
Accessories	RER-J1C	RER-J2C	-	-	-	-
Short-circuit Bars	0149-3U-02	0149-3U-02	-	-	-	-
Plastic retaining clip	0149-32	0149-32	-	-	0149-32(@1pcs)	0149-32(@1pcs)
Metal retaining clip	-	-	-	-	-	-
Electronic components	0149-36 / 0149-36-240 0149-35-24 / 0149-35-240	0149-36 / 0149-36-240 0149-35-24 / 0149-35-240	-	-	0149-36 / 0149-36-240 0149-35-24 / 0149-35-240	0149-36 / 0149-36-240 0149-35-24 / 0149-35-240
DIN rail	TS-35	TS-35	TS-35	TS-35	TS-35	TS-35

Dimensions

Unit: mm



Terminal arrangement and internal wiring diagram



General-purpose Relay

In the field of electrical control, pluggable industrial relays are commonly used for electrical isolation, electrical driving, or coordination between amplification and signals, such as DCS, PLC, or field bus systems as well as the field sensors and actuators.

General-purpose Industrial Relay

Overview

Dinkle RER series industrial relays are ideal for the actual requirements of industrial control applications. It is easy to install and commissioning, stable and reliable in operation, with a longer service life.

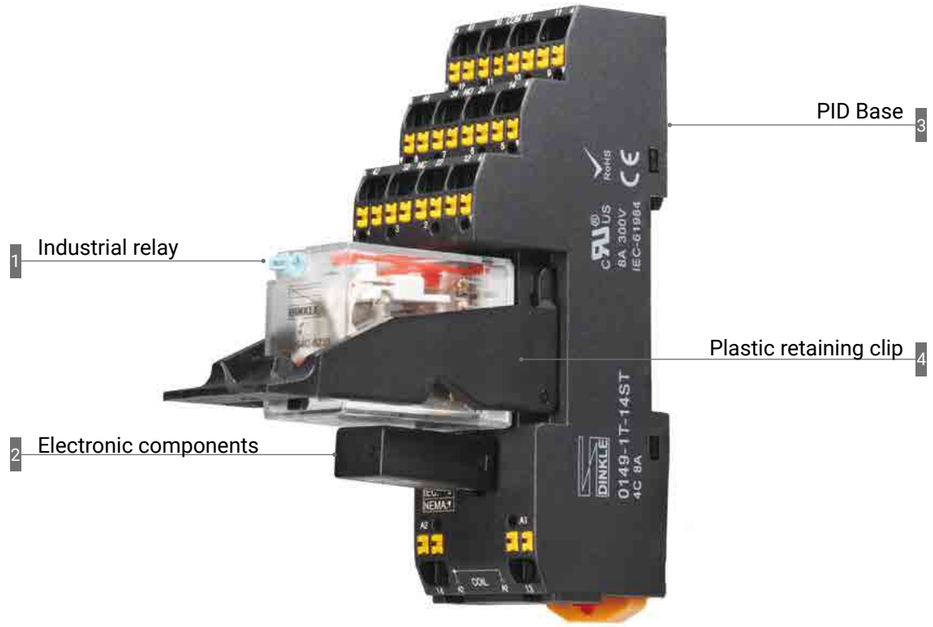
Features

- Small size, high rated capacity
- Providing inching or rotating self-locking button function, all equipped with standard indicators for activation
- Well-designed structure suitable for various applications
- Various specifications equipped with two-way indicators
- Contacts are made of industrial silver alloy

Certified

General-purpose Industrial Relay

Structure



Industial applications

Like Dinkle's high quality terminal series, RER series relays can be widely used in many fields of various industries such as automobiles, security surveillance, machine tool manufacturing, home appliance production, food and beverage, printing and packaging, plastics and rubber, metal processing, electronics and semiconductors, water treatment, new energy, logistics, smart buildings, automation, etc.

RER-S2C-XXX Description

RER-S2C-XXXX
① ② ③

① **S =** Product specification

② **2C =** Number of contacts

③ **XXXX =** Voltage specification
D24 = DC24V
A120 = AC120V
A230 = AC230V

Specification			
Ordering Information	**RER-S2C-D24**	**RER-S2C-A120**	**RER-S2C-A230**
Coil features			
Rated Voltage	24VDC	120VAC	230VAC
Rated Current	36.9mA	9.2mA	5.5mA
Coil resistance	640Ω±10%	4430Ω±15%	16500Ω±15%
Pick-up voltage	18V(≤Rated voltage 75%)	96V(≤Rated voltage 80%)	184V(≤Rated voltage 80%)
Release voltage	2.4V(≥Rated voltage 10%)	36V(≥Rated voltage 30%)	69V(≥Rated voltage 30%)
Max. voltage	26.4V(Rated voltage 110%)	132V(Rated voltage 110%)	253V(Rated voltage 110%)
Coil power	0.9W	1.2VA	1.2VA
LED indicator	Green	Red	Red
Contacts Features			
Number of contacts	2C		
Resistive load (AC-1)	10A/250VAC, 30VDC		
Motor load (AC-15)	1/3HP 240VAC		
Switching power (breaking)	2500VA, 300W		
Min. allowable load	10mA/17V		
Contacts material	AgNi		
Contact resistance	≤50mΩ		
Dielectric Strength			
Between contacts with the same pole	1000VAC/1min		
Between contacts with the different pole	1500VAC/1min		
Between contacts and coils	2000VAC/1min		
Insulation resistance	≥500MΩ (500VDC)		
General			
Pick-up time (@ rated voltage)	≤20ms		
Release time (@ rated voltage)	≤20ms		
Operating frequency	18000 Ops/h		
Ambient Temperature	-55~+70°C (Non-freezing condition)		
Ambient humidity	35%~85%RH		
Atmosphere pressure	86~106KPa		
Shock resistance	10G		
Vibrant resistance	10~55Hz		
Electrical lifetime (frequency: 1s ON, 1s OFF)	$\geq 10^5$ times (1800 Ops/h)		
Mechanical lifetime (frequency: 300 times/1 min)	$\geq 10^7$ times (18000 Ops/h)		
Weight	About 35g		

Ordering Information

PID Assembly (A11) Relay PID Socket Retaining clip

Assembly specification	Technical Data	Package	Relay specification	Socket specification	Retaining clip specification
RER-S2C-D24 (A11)	2C/10A	10	RER-S2C-D24	0149-1T-08ST PID base	0149-14
RER-S2C-A120 (A11)	2C/10A		RER-S2C-A120		
RER-S2C-A230 (A11)	2C/10A		RER-S2C-A230		

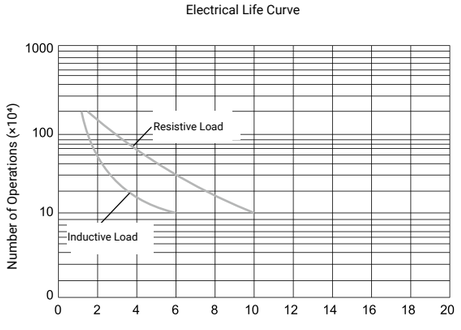
Clamping Cage Assembly (A03) Relay Cage clamp socket Retaining clip

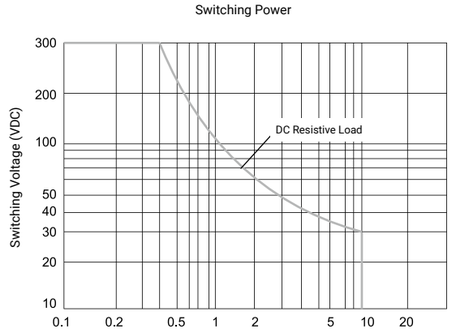
Assembly specification	Technical Data	Package	Relay specification	Socket specification	Retaining clip specification
RER-S2C-D24 (A03)	2C/10A	10	RER-S2C-D24	0149-13-08E Clamping cage base	0149-14
RER-S2C-A120 (A03)	2C/10A		RER-S2C-A120		
RER-S2C-A230 (A03)	2C/10A		RER-S2C-A230		

Screw Fastening Assembly (A01) Relay Screw Fastening Socket Retaining clip

Assembly specification	Technical Data	Package	Relay specification	Socket specification	Retaining clip specification
RER-S2C-D24 (A01)	2C/10A	10	RER-S2C-D24	0149-10-08A Screw Fastening Socket (A07)	0149-11ES
RER-S2C-A120 (A01)	2C/10A		RER-S2C-A120		
RER-S2C-A230 (A01)	2C/10A		RER-S2C-A230		

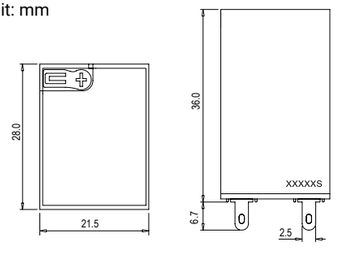
Performance Curves



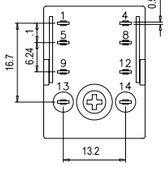


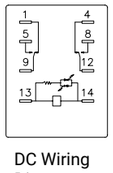
Dimensions and Electrical Connections

Unit: mm

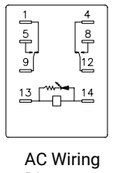


Serial No.
XXXXXS
Year : 2015=15
Month: Oct.=X,Nov.=Y,Dec.=Z
Day : 01~31th





DC Wiring Diagram



AC Wiring Diagram

RER-S4C-XXX Description

RER-S4C-XXXX
① ② ③

① **S =** Product specification

② **4C =** Number of contacts

③ **XXXX =** Voltage specification
D24 = DC24V
A120 = AC120V
A230 = AC230V

Specification			
Ordering Information	**RER-S4C-D24**	**RER-S4C-A120**	**RER-S4C-A230**
Coil features			
Rated Voltage	24VDC	120VAC	230VAC
Rated Current	36.9mA	9.2mA	5.5mA
Coil resistance	640Ω±10%	4430Ω±15%	16500Ω±15%
Pick-up voltage	18V(≤Rated voltage 75%)	96V(≤Rated voltage 80%)	184V(≤Rated voltage 80%)
Release voltage	2.4V(≥Rated voltage 10%)	36V(≥Rated voltage 30%)	69V(≥Rated voltage 30%)
Max. voltage	26.4V(Rated voltage 110%)	132V(Rated voltage 110%)	253V(Rated voltage 110%)
Coil power	0.9W	1.2VA	1.2VA
LED indicator	Green	Red	Red
Contacts Features			
Number of contacts	4C		
Resistive load (AC-1)	5A/250VAC, 30VDC		
Motor load (AC-15)	1/6HP, 240VAC		
Switching power (breaking)	1250VA, 150W		
Min. allowable load	10mA/17V		
Contacts material	AgNi		
Contact resistance	≤50mΩ		
Dielectric Strength			
Between contacts with the same pole	1000VAC/1min		
Between contacts with the different pole	1500VAC/1min		
Between contacts and coils	2000VAC/1min		
Insulation resistance	≥500MΩ (500VDC)		
General			
Pick-up time (@ rated voltage)	≤20ms		
Release time (@ rated voltage)	≤20ms		
Operating frequency	18000 Ops/h		
Ambient Temperature	-55~+70°C (Non-freezing condition)		
Ambient humidity	35%~85%RH		
Atmosphere pressure	86~106KPa		
Shock resistance	10G		
Vibrant resistance	10~55Hz		
Electrical lifetime (frequency: 1s ON, 1s OFF)	≥10^5 times (1800 Ops/h)		
Mechanical lifetime (frequency: 300 times/1 min)	≥10^7 times (18000 Ops/h)		
Weight	About 35g		

Ordering Information

PID Assembly (A12) = Relay + PID Socket + Retaining clip

Assembly specification	Technical Data	Package	Relay specification	Socket specification	Retaining clip specification
RER-S4C-D24 (A12)	4C/5A	10	RER-S4C-D24	0149-1T-14ST PID base	0149-14
RER-S4C-A120 (A12)	4C/5A		RER-S4C-A120		
RER-S4C-A230 (A12)	4C/5A		RER-S4C-A230		

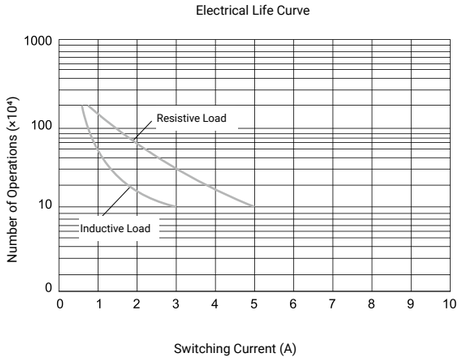
Clamping Cage Assembly (A04) = Relay + Cage clamp socket + Retaining clip

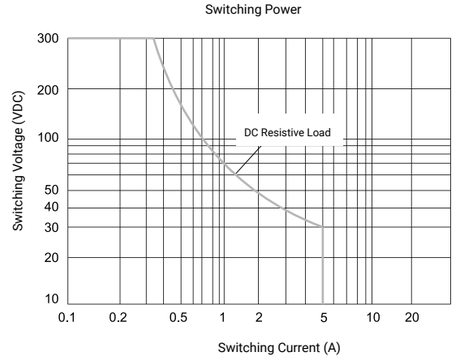
Assembly specification	Technical Data	Package	Relay specification	Socket specification	Retaining clip specification
RER-S4C-D24 (A04)	4C/5A	10	RER-S4C-D24	0149-13-14E Clamping cage base	0149-14
RER-S4C-A120 (A04)	4C/5A		RER-S4C-A120		
RER-S4C-A230 (A04)	4C/5A		RER-S4C-A230		

Screw Fastening Assembly (A02) = Relay + Screw Fastening Socket + Retaining clip

Assembly specification	Technical Data	Package	Relay specification	Socket specification	Retaining clip specification
RER-S4C-D24 (A02)	4C/5A	10	RER-S4C-D24	0149-10-14A Screw Fastening Base	0149-11
RER-S4C-A120 (A02)	4C/5A		RER-S4C-A120		
RER-S4C-A230 (A02)	4C/5A		RER-S4C-A230		

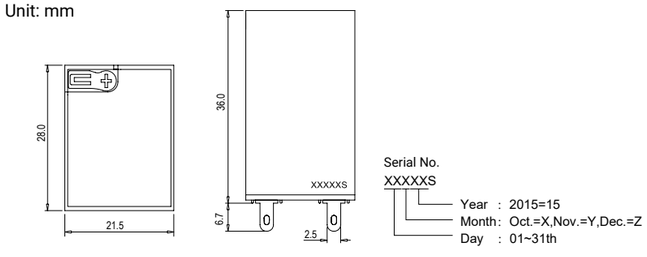
Performance Curves

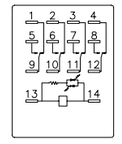




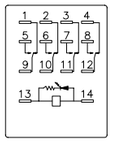
Dimensions and Electrical Connections

Unit: mm





DC Wiring Diagram



AC Wiring Diagram

RER-M2C-XXX Description

RER-M2C-XXXX
① ② ③

① **M =** Product specification

② **2C =** Number of contacts

③ **XXXX =** Voltage specification
D24 = DC24V
A120 = AC120V
A230 = AC230V

Specification			
Ordering Information	**RER-M2C-D24**	**RER-M2C-A120**	**RER-M2C-A230**
Coil features			
Rated Voltage	24VDC	120VAC	230VAC
Rated Current	36.9mA	9.2mA	5.5mA
Coil resistance	640Ω±10%	4430Ω±15%	16500Ω±15%
Pick-up voltage	18V(≤Rated voltage 75%)	96V(≤Rated voltage 80%)	184V(≤Rated voltage 80%)
Release voltage	2.4V(≥Rated voltage 10%)	36V(≥Rated voltage 30%)	69V(≥Rated voltage 30%)
Max. voltage	26.4V(Rated voltage 110%)	132V(Rated voltage 110%)	253V(Rated voltage 110%)
Coil power	0.9W	1.2VA	1.2VA
LED indicator	Green	Red	Red
Contacts Features			
Number of contacts	2C		
Resistive load (AC-1)	5A/250VAC, 30VDC		
Motor load (AC-15)	1/6HP 240VAC		
Switching power (breaking)	1250VA, 150W		
Min. allowable load	10mA/17V		
Contacts material	AgNi		
Contact resistance	≤50mΩ		
Dielectric Strength			
Between contacts with the same pole	1000VAC/1min		
Between contacts with the different pole	1500VAC/1min		
Between contacts and coils	2000VAC/1min		
Insulation resistance	≥500MΩ (500VDC)		
General			
Pick-up time (@ rated voltage)	≤20ms		
Release time (@ rated voltage)	≤20ms		
Operating frequency	18000 Ops/h		
Ambient Temperature	-55~+70°C (Non-freezing condition)		
Ambient humidity	35%~85%RH		
Atmosphere pressure	86~106KPa		
Shock resistance	10G		
Vibrant resistance	10~55Hz		
Electrical lifetime (frequency: 1s ON, 1s OFF)	≥10^5 times (1800 Ops/h)		
Mechanical lifetime (frequency: 300 times/1 min)	≥10^7 times (18000 Ops/h)		
Weight	About 35g		

Ordering Information

PID Assembly (A11) Relay PID Socket Retaining clip

Assembly specification	Technical Data	Package	Relay specification	Socket specification	Retaining clip specification
RER-M2C-D24 (A11)	2C/5A	10	RER-M2C-D24	0149-1T-08ST PID base	0149-14
RER-M2C-A120 (A11)	2C/5A		RER-M2C-A120		
RER-M2C-A230 (A11)	2C/5A		RER-M2C-A230		

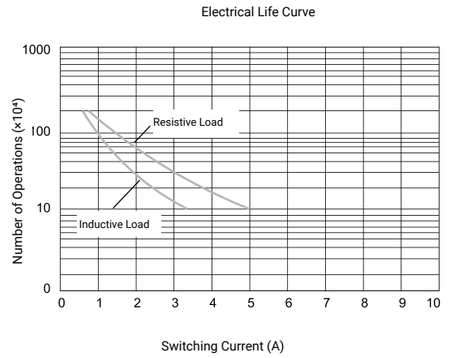
Clamping Cage Assembly (A03) Relay Cage clamp socket Retaining clip

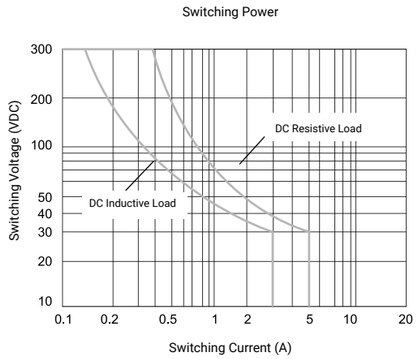
Assembly specification	Technical Data	Package	Relay specification	Socket specification	Retaining clip specification
RER-M2C-D24 (A03)	2C/5A	10	RER-M2C-D24	0149-13-08E Clamping cage base	0149-14
RER-M2C-A120 (A03)	2C/5A		RER-M2C-A120		
RER-M2C-A230 (A03)	2C/5A		RER-M2C-A230		

Screw Fastening Assembly (A01) Relay Screw Fastening Socket Retaining clip

Assembly specification	Technical Data	Package	Relay specification	Socket specification	Retaining clip specification
RER-M2C-D24 (A01)	2C/5A	10	RER-M2C-D24	0149-10-08A Screw Fastening Base	0149-11ES
RER-M2C-A120 (A01)	2C/5A		RER-M2C-A120		
RER-M2C-A230 (A01)	2C/5A		RER-M2C-A230		

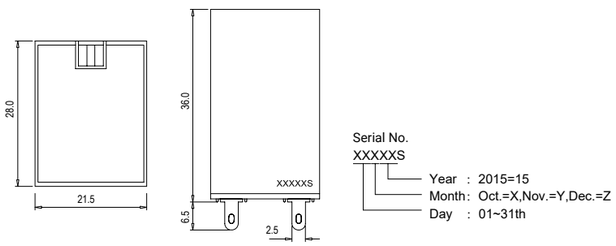
Performance Curves





Dimensions and Electrical Connections

Unit: mm



RER-M4C-XXX Description

RER-M4C-XXXX
① ② ③

① **M =** Product specification

② **4C =** Number of contacts

③ **XXXX =** Voltage specification
D24 = DC24V
A120 = AC120V
A230 = AC230V

Specification			
Ordering Information	**RER-M4C-D24**	**RER-M4C-A120**	**RER-M4C-A230**
Coil features			
Rated Voltage	24VDC	120VAC	230VAC
Rated Current	36.9mA	9.2mA	5.5mA
Coil resistance	640Ω±10%	4430Ω±15%	16500Ω±15%
Pick-up voltage	18V(≤Rated voltage 75%)	96V(≤Rated voltage 80%)	184V(≤Rated voltage 80%)
Release voltage	2.4V(≥Rated voltage 10%)	36V(≥Rated voltage 30%)	69V(≥Rated voltage 30%)
Max. voltage	26.4V(Rated voltage 110%)	132V(Rated voltage 110%)	253V(Rated voltage 110%)
Coil power	0.9W	1.2VA	1.2VA
LED indicator	Green	Red	Red
Contacts Features			
Number of contacts	4C		
Resistive load (AC-1)	3A/250VAC, 30VDC		
Motor load (AC-15)	1/12HP 240VAC		
Switching power (breaking)	750VA, 90W		
Min. allowable load	10mA/17V		
Contacts material	AgNi		
Contact resistance	≤50mΩ		
Dielectric Strength			
Between contacts with the same pole	1000VAC/1min		
Between contacts with the different pole	1500VAC/1min		
Between contacts and coils	2000VAC/1min		
Insulation resistance	≥500MΩ (500VDC)		
General			
Pick-up time (@ rated voltage)	≤20ms		
Release time (@ rated voltage)	≤20ms		
Operating frequency	18000 Ops/h		
Ambient Temperature	-55~+70°C (Non-freezing condition)		
Ambient humidity	35%~85%RH		
Atmosphere pressure	86~106KPa		
Shock resistance	10G		
Vibrant resistance	10~55Hz		
Electrical lifetime (frequency: 1s ON, 1s OFF)	≥10^5 times (1800 Ops/h)		
Mechanical lifetime (frequency: 300 times/1 min)	≥10^7 times (18000 Ops/h)		
Weight	About 35g		

Ordering Information

PID Assembly (A12) Relay PID Socket Retaining clip

Assembly specification	Technical Data	Package	Relay specification	Socket specification	Retaining clip specification
RER-M4C-D24 (A12)	4C/3A	10	RER-M4C-D24	0149-1T-14ST PID base	0149-14
RER-M4C-A120 (A12)	4C/3A		RER-M4C-A120		
RER-M4C-A230 (A12)	4C/3A		RER-M4C-A230		

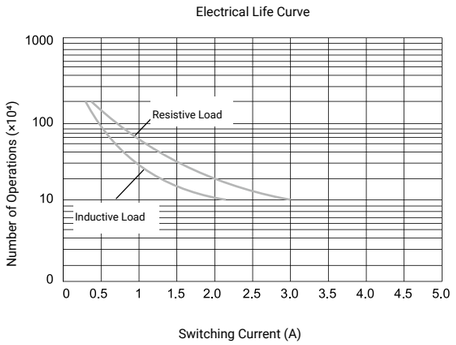
Clamping Cage Assembly (A04) Relay Cage clamp socket Retaining clip

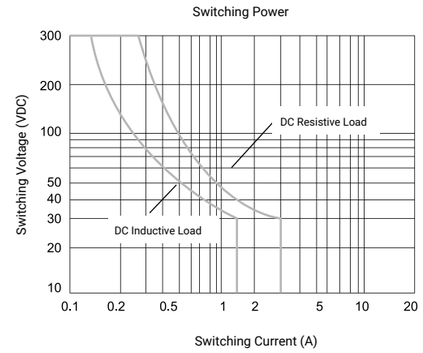
Assembly specification	Technical Data	Package	Relay specification	Socket specification	Retaining clip specification
RER-M4C-D24 (A04)	4C/3A	10	RER-M4C-D24	0149-13-14E Clamping cage base	0149-14
RER-M4C-A120 (A04)	4C/3A		RER-M4C-A120		
RER-M4C-A230 (A04)	4C/3A		RER-M4C-A230		

Screw Fastening Assembly (A02) Relay Screw Fastening Socket Retaining clip

Assembly specification	Technical Data	Package	Relay specification	Socket specification	Retaining clip specification
RER-M4C-D24 (A02)	4C/3A	10	RER-M4C-D24	0149-10-14A Screw Fastening Base	0149-11
RER-M4C-A120 (A02)	4C/3A		RER-M4C-A120		
RER-M4C-A230 (A02)	4C/3A		RER-M4C-A230		

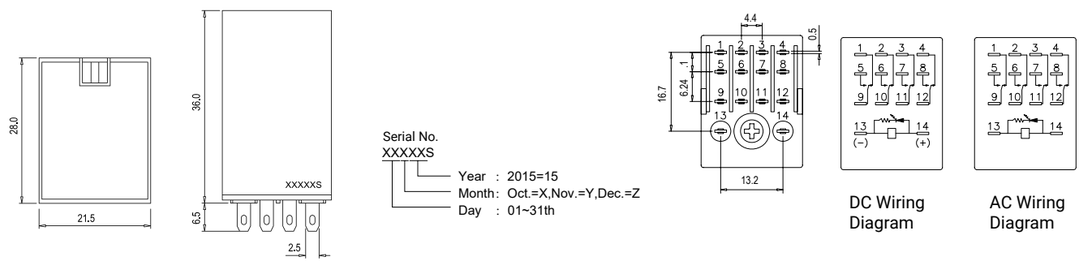
Performance Curves





Dimensions and Electrical Connections

Unit: mm



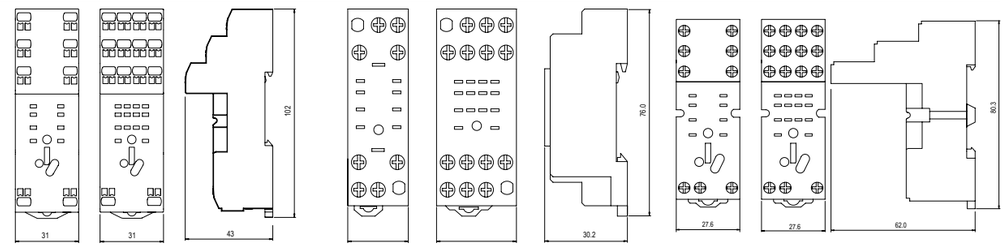
DC Wiring Diagram AC Wiring Diagram

Base Description

Ordering Information	0149-1T-08ST	0149-1T-14ST	0149-10-08A	0149-10-14A	0149-13-08E	0149-13-14E
Rated load current	12A	8A	10A	7A	12A	10A
Number of contacts	2C	4C	300V	300V	300V	300V
Rated load voltage	300V	300V	2000V/s	2000V/s	2500V/s	2500V/s
Withstand voltage	2500V/s	2500V/s	1.0Nm	1.0Nm	1.0Nm	1.0Nm
External connection wire	20-16 / 0.5-1.5	20-16 / 0.5-1.5	20-14 / 0.5-2.5 (AWG/mm²)	20-14 / 0.5-2.5 (AWG/mm²)	20-14 / 0.5-2.5 (AWG/mm²)	20-14 / 0.5-2.5 (AWG/mm²)
Ambient temperature	-40~+85°C	-40~+85°C	-40~+65°C	-40~+65°C	-40~+85°C	-40~+85°C
Weight	About 80g	About 80g	About 34g	About 52g	About 50g	About 62g
Min. Package	10pcs	10pcs	10pcs	10pcs	10pcs	10pcs
General-purpose models	RER-M2C / RER-S2C	RER-M4C / RER-S4C	RER-M2C / RER-S2C	RER-M4C / RER-S4C	RER-M2C / RER-S2C	RER-M4C / RER-S4C
Accessories						
Plastic retaining clip	0149-14	0149-14	-	-	0149-14 (@1pcs)	0149-14 (@1pcs)
Metal retaining clip	-	-	0149-11ES (@2pcs)	0149-11 (@2pcs)	-	-
Electronic components	0149-36 / 0149-36-240 0149-35-24 / 0149-35-240	0149-36 / 0149-36-240 0149-35-24 / 0149-35-240	-	-	0149-36 / 0149-36-240 0149-35-24 / 0149-35-240	0149-36 / 0149-36-240 0149-35-24 / 0149-35-240
DIN rail	TS-35	TS-35	TS-35	TS-35	TS-35	TS-35

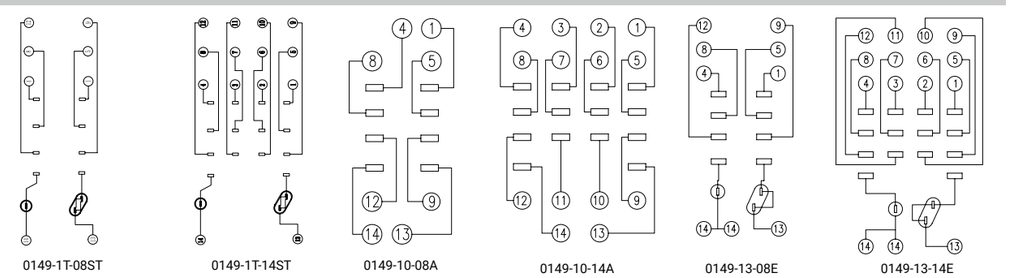
Dimensions

Unit: mm



0149-1T-08ST 0149-1T-14ST 0149-10-08A 0149-10-14A 0149-13-08E 0149-13-14E

Terminal arrangement and internal wiring diagram



0149-1T-08ST 0149-1T-14ST 0149-10-08A 0149-10-14A 0149-13-08E 0149-13-14E

RER-L2C-XXX Description

RER-L2C-XXXX
① ② ③

① **L =** Product specification
② **2C =** Number of contacts
③ **XXXX =** Voltage specification
D24 = DC24V
A120 = AC120V
A230 = AC230V

	Specification		
Ordering Information	**RER-L2C-D24**	**RER-L2C-A120**	**RER-L2C-A230**
Coil features			
Rated Voltage	24VDC	120VAC	230VAC
Rated Current	36.9mA	9.2mA	5.5mA
Coil resistance	640Ω±10%	4430Ω±15%	16500Ω±15%
Pick-up voltage	18V(≤Rated voltage 75%)	96V(≤Rated voltage 80%)	184V(≤Rated voltage 80%)
Release voltage	2.4V(≥Rated voltage 10%)	36V(≥Rated voltage 30%)	69V(≥Rated voltage 30%)
Max. voltage	26.4V(Rated voltage 110%)	132V(Rated voltage 110%)	253V(Rated voltage 110%)
Coil power	0.9W	1.2VA	1.2VA
LED indicator	Green	Red	Red
Contacts Features			
Number of contacts	2C		
Resistive load (AC-1)	10A/250VAC, 30VDC		
Motor load (AC-15)	1/3HP, 240VAC		
Switching power (breaking)	2500VA, 300W		
Min. allowable load	10mA/17V		
Contacts material	$AgSnO_2$		
Contact resistance	≤50mΩ		
Dielectric Strength			
Between contacts with the same pole	1000VAC/1min		
Between contacts with the different pole	2000VAC/1min		
Between contacts and coils	2000VAC/1min		
Insulation resistance	≥500MΩ (500VDC)		
General			
Pick-up time (@ rated voltage)	≤20ms		
Release time (@ rated voltage)	≤20ms		
Operating frequency	18000 Ops/h		
Ambient Temperature	-55~+70°C (Non-freezing condition)		
Ambient humidity	35%~85%RH		
Atmosphere pressure	86~106KPa		
Shock resistance	10G		
Vibrant resistance	10~55Hz		
Electrical lifetime (frequency: 1s ON, 1s OFF)	$\geq 10^5$ times (1800 Ops/h)		
Mechanical lifetime (frequency: 300 times/1 min)	$\geq 10^7$ times (18000 Ops/h)		
Weight	About 35g		

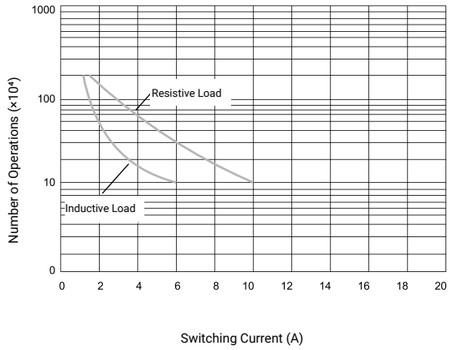
Ordering Information

Screw Fastening Assembly (A05) | Relay | Screw Fastening Socket | Retaining clip

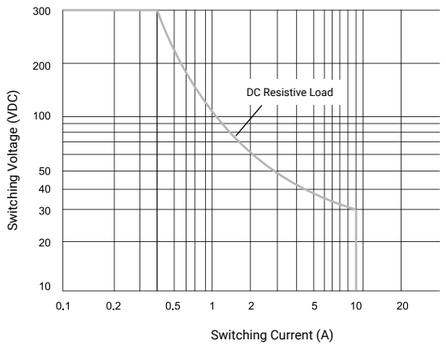
Assembly specification	Technical Data	Package	Relay specification	Socket specification	Retaining clip specification
RER-L2C-D24 (A05)	2C/10A	10	RER-L2C-D24	0149-20-08A Screw Fastening Socket (A07)	0149-21
RER-L2C-A120 (A05)	2C/10A		RER-L2C-A120		
RER-L2C-A230 (A05)	2C/10A		RER-L2C-A230		

Performance Curves

Electrical Life Curve

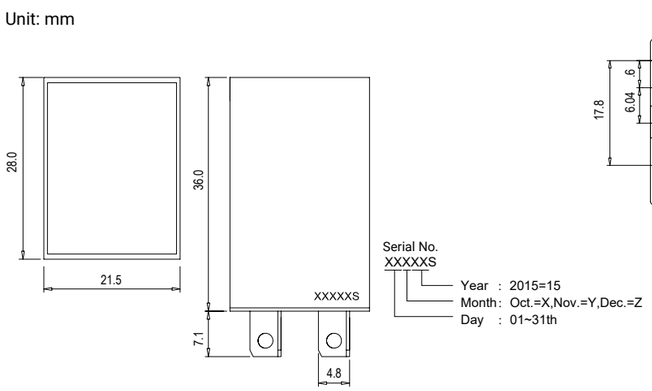


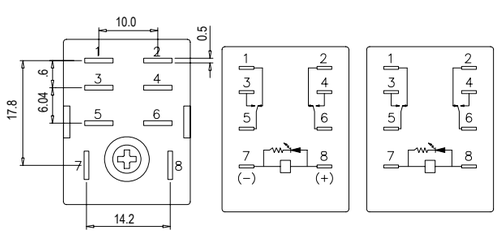
Switching Power



Dimensions and Electrical Connections

Unit: mm





DC Wiring Diagram

AC Wiring Diagram

RER-L4C-XXX Description

RER-L4C-XXXX
① ② ③

① **L =** Product specification
② **4C =** Number of contacts
③ **XXXX =** Voltage specification
D24 = DC24V
A120 = AC120V
A230 = AC230V

Ordering Information	Specification RER-L4C-D24	RER-L4C-A120	RER-L4C-A230
Coil features			
Rated Voltage	24VDC	120VAC	230VAC
Rated Current	69mA	21.8mA	10.8mA
Coil resistance	360Ω±10%	1680Ω±15%	8000Ω±15%
Pick-up voltage	18V(≤Rated voltage 75%)	96V(≤Rated voltage 80%)	184V(≤Rated voltage 80%)
Release voltage	2.4V(≥Rated voltage 10%)	36V(≥Rated voltage 30%)	69V(≥Rated voltage 30%)
Max. voltage	26.4V(Rated voltage 110%)	132V(Rated voltage 110%)	253V(Rated voltage 110%)
Coil power	1.5W	2.5VA	2.5VA
LED indicator	Green	Red	Red
Contacts Features			
Number of contacts	4C		
Resistive load (AC-1)	10A/250VAC, 30VDC		
Motor load (AC-15)	1/3HP, 240VAC		
Switching power (breaking)	2500VA, 300W		
Min. allowable load	10mA/17V		
Contacts material	$AgSnO_2$		
Contact resistance	≤50mΩ		
Dielectric Strength			
Between contacts with the same pole	1000VAC/1min		
Between contacts with the different pole	2000VAC/1min		
Between contacts and coils	2000VAC/1min		
Insulation resistance	≥500MΩ (500VDC)		
General			
Pick-up time (@ rated voltage)	≤20ms		
Release time (@ rated voltage)	≤20ms		
Operating frequency	18000 Ops/h		
Ambient Temperature	-55~+70°C (Non-freezing condition)		
Ambient humidity	35%~85%RH		
Atmosphere pressure	86~106KPa		
Shock resistance	10G		
Vibrant resistance	10~55Hz		
Electrical lifetime (frequency: 1s ON, 1s OFF)	≥10^5 times (1800 Ops/h)		
Mechanical lifetime (frequency: 300 times/1 min)	≥10^7 times (18000 Ops/h)		
Weight	About 65g		

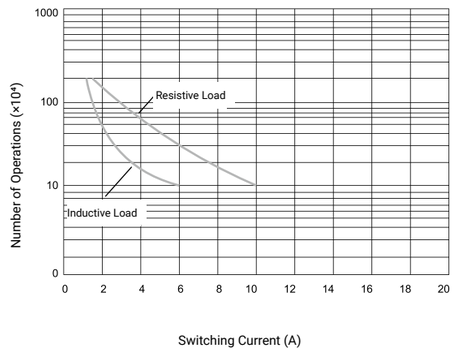
Ordering Information

Screw Fastening Assembly (A06) | Relay | Screw Fastening Socket | Retaining clip

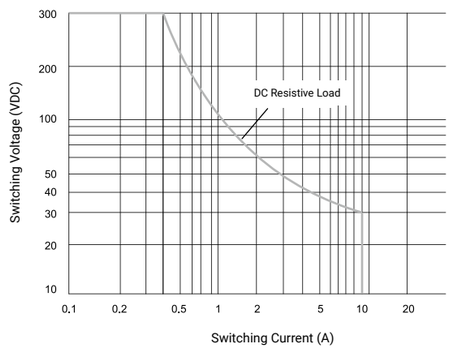
Assembly specification	Technical Data	Package	Relay specification	Socket specification	Retaining clip specification
RER-L4C-D24 (A06)	4C/10A	10	RER-L4C-D24	0149-20-14A Screw Fastening Socket (A07)	0149-21
RER-L4C-A120 (A06)	4C/10A		RER-L4C-A120		
RER-L4C-A230 (A06)	4C/10A		RER-L4C-A230		

Performance Curves

Electrical Life Curve

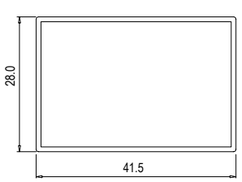


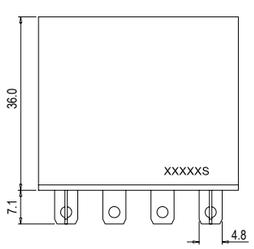
Switching Power



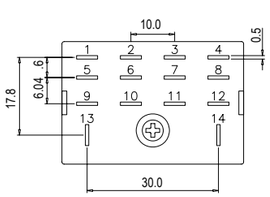
Dimensions and Electrical Connections

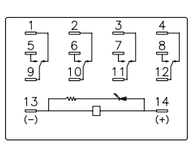
Unit: mm



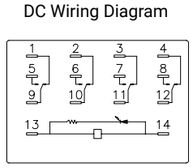


Serial No.
XXXXXS
Year : 2015=15
Month : Oct.=X,Nov.=Y,Dec.=Z
Day : 01~31th





DC Wiring Diagram



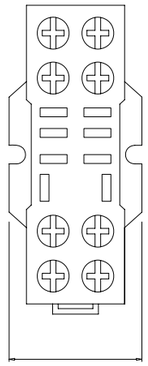
AC Wiring Diagram

Base Description

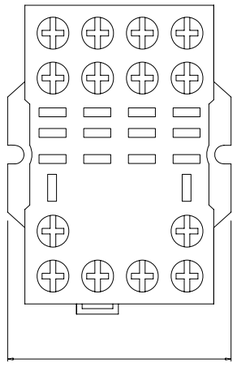
Ordering Information	0149-20-08A	0149-20-14A
Rated load current	10A	10A
Rated load voltage	300V	300V
Withstand voltage	2000V/s	2000V/s
Screw torque	1.0Nm	1.0Nm
External connection wire	20-14 / 0.5-2.5(AWG/mm²)	20-14 / 0.5-2.5(AWG/mm²)
Ambient temperature	-40~+85℃	-40~+85℃
Weight	About 43g	About 76g
Min. Package	10pcs	10pcs
General-purpose models	RER-L2C	RER-L4C
Accessories		
Plastic retaining clip	-	-
Metal retaining clip	0149-21 (@2pcs)	0149-21 (@2pcs)
Electronic components	-	-
DIN rail	TS-35	TS-35

Dimensions

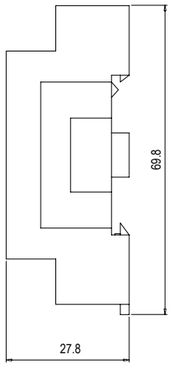
Unit: mm



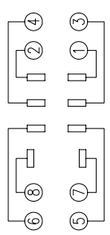
0149-20-08A



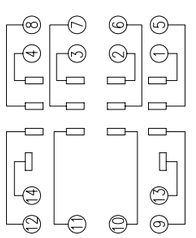
0149-20-14A



Terminal arrangement and internal wiring diagram



0149-20-08A

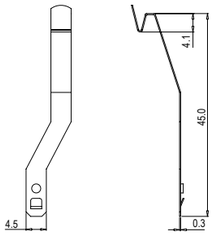


0149-20-14A

Accessories

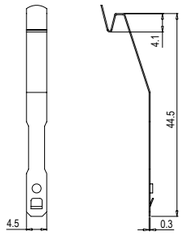
Metal retaining clip

0149-11ES

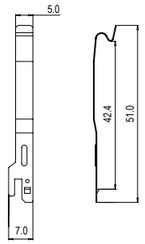


Ordering Information	Base Options	Min. Package
0149-11ES	0149-10-08A	20
0149-11	0149-10-14A	20
0149-21	0149-20-08A, 0149-20-14A	20

0149-11

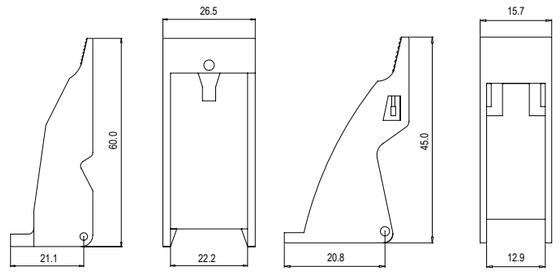


0149-21



Plastic retaining clip

0149-14



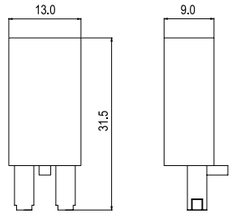
0149-32

Ordering Information	Base Options	Min. Package
0149-14	0149-13-08E, 0149-13-14E, 0149-1T-08ST, 0149-1T-14ST	5
0149-32	0149-33-05E, 0149-33-08E, 0149-3T-05ST, 0149-3T-08ST	10

Electronic components

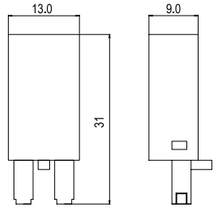
0149-36

6~250VDC
Voltage peak suppression component (for S, J series)



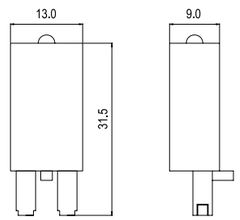
0149-36-240

220~240V
Voltage peak suppression component (for S, M, J series)



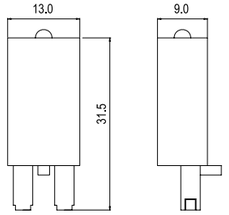
0149-35-24

6~24V
Working indicator (for S, J series)



0149-35-240

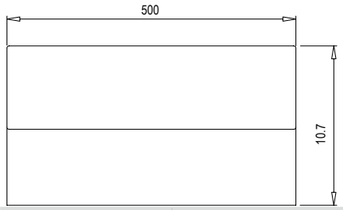
110~240V
Working indicator (for S, M, J series)



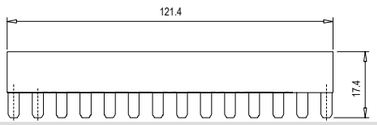
Ordering Information	Base Options	Min. Package
0149-36	0149-13-08E, 0149-13-14E, 0149-33-05E, 0149-33-08E, 0149-1T-08ST, 0149-1T-14ST, 0149-3T-05ST, 0149-3T-08ST	10
0149-36-240	0149-13-08E, 0149-13-14E, 0149-33-05E, 0149-33-08E, 0149-1T-08ST, 0149-1T-14ST, 0149-3T-05ST, 0149-3T-08ST	10
0149-35-24	0149-13-08E, 0149-13-14E, 0149-33-05E, 0149-33-08E, 0149-1T-08ST, 0149-1T-14ST, 0149-3T-05ST, 0149-3T-08ST	10
0149-35-240	0149-13-08E, 0149-13-14E, 0149-33-05E, 0149-33-08E, 0149-1T-08ST, 0149-1T-14ST, 0149-3T-05ST, 0149-3T-08ST	10

Short-circuit Bars

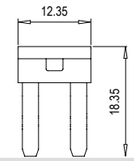
DSD03-M1500



0149-4S-20



0149-3U-02



Ordering Information	Base Options	Min. Package
DSD03-M1500	RER-H1C Series, RER-S1C Series	10
0149-4S-20	RER-24-1A, RER-110-2B, RER-230-3B, RER-24-4A, RER-110-5B, RER-230-6B	10
0149-3U-02	0149-3T-05ST, 0149-3T-08ST, 0149-1T-08ST, 0149-1T-14ST	10

Standards: UL 508, IEC 61810 - 1, GBT 21711.1

Description of contacts parameters

Contacts type

Name	Symbol	Marking	Designation
Normally open contacts		NO	A
Normally closed contacts		NC	B
Change-over contacts		CO	C

Contact resistance

Contact resistance is the sum of the resistances between the contacts and the resistances of the reed connected to the contacts, its leading-out terminals and the conductors that make up the circuit. The unit is ohm.
The resistance of the contacts depends on the contacts materials. Using appropriate contacts materials can reduce the temperature of contacts, thus extending the lifetime of the contacts.

Contacts load

It refers to the load value that the contacts can reliably change over under certain conditions. It is usually represented in the combination of voltage and current. Unless otherwise specified, the loads listed in the technical data generally are resistive loads.
For example, the 5A 230VAC / 30VDC shown in the sample indicates that under a resistive load, the maximum rated load current of the contact is 5A and the voltage will not exceed 230 VAC or 30 VDC.

Contacts material

Since relays are used in various industrial fields, it is necessary to select suitable materials that meet the requirements of different applications. The operating voltage and operating current play an important role in determining the suitability of contacts materials.
Other influencing factors include: contact resistance, burnout resistance, material creep, sticking tendency and chemical effects.

Description of contacts material

Contacts material	Material features	Typical Applications	Range of parameters
AgNi alloy	Standard materials used for relay contacts Great electrical and thermal conductivity Excellent burnout resistance Low sticking tendency	Suitable for medium to high loads DC circuit or inductive load	Rated current < 12A Normal impulse current, < 30A
$AgSnO_2$	Great burnout resistance when switching at high current Great transfer resistance of the material under DC loads	Suitable for high AC loads switching Also suitable for inductive loads	Rated current < 30A Normal impulse current, < 50A
		Lighting loads: inductive loads and some capacitive loads	Very high impulse current, up to 120A
AgNi + Au	Lower minimum on-state current Great electrical and thermal conductivity Normal sticking resistance Not easy to form oxide layer	Control loads: sensor loads	Minimum on-state current < 5mA

Standards: UL 508, IEC 61810 - 1, GBT 21711.1

Description of coil parameters

Release voltage (Max. drop-away voltage)

The release voltage refers to that when the relay is de-energized, the relay contacts can be normally switched and maintained at the specified position without any operation.

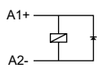
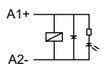
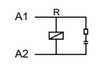
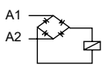
Pick-up voltage (Min. operating voltage)

The pick-up voltage refers to the minimum operating voltage at which the relay can be safely picked-up, allowing the relay contacts to switch normally and maintain at the proper position.

Coil impedance and features

The impedance of the coil can be measured with an ohmmeter. The value is measured at 23°C according to the safety standard. The margin of error is +10%. For an AC coil, the current and resistance value of the coil will not match due to self-inductance. At 230V, the self-inductance coefficient will be up to 90H. When the coil is disconnected, the induced voltage caused by self-inductance will affect the switching source.

Description of protection circuit

Type of Protection	Schematics	Applicable coils	Response Time	Applications	Range of parameters
Diode		DC coil	4 x release time	For damping the transient energy (induced breaking voltage) generated when the relay is released	Protection Class III (2000V) up to 60VDC Protection Class IV (4000V) 61 to 250VDC
Diode + LED		DC coil	4 x release time	For damping the transient energy (induced breaking voltage) generated when the relay is released	Protection Class III (2000V) up to 60VDC Protection Class IV (4000V) 61 to 250VDC
RC absorption		AC coil	-	For the suppressor grid on AC coil	Protection Class III (2000V)
Rectifying bridge		AC coil	3 x release time	For the AC coil, it can be used regardless of AC or DC if a rectifying bridge is used. Max. voltage up to 250V	Protection Class II (1000V) up to 24V Protection Class III (2000V) 25 to 60V Protection Class IV (1000V) 61 to 250V

Smart Meter

Smart Metering, Smart Management

- **Highly accurate measurements**
  Using advanced technology to provide highly accurate power utilization measurement, ensuring data accuracy and reliability

- **Stability and endurance**
  Designed to meet industrial standards, it can operate stably in various environments and is durable and suitable for long-term use

- **Multi-functions**
  n addition to the basic electricity consumption measurement, it can also provide other data such as voltage, current, power, etc., to have a comprehensive overview about the power utilization

- **User-friendly interface**
  Provides an intuitive display and operation interface, allowing users to easily read and manage data

- **Meter reading data transferring**
  Standard RS485 Modbus RTU communication, automatically transmit back to the backend through the communication system

- **Safety design**
  Various alarm parameters can be used to proactively report power factor, power frequency, abnormal voltage & current.
  Improve the reliability of power supply and provide users with a smarter and more efficient power utilization experience

Power meter is widely used in

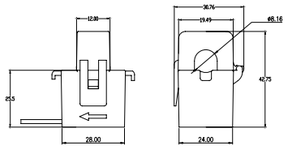
- industrial automation
- Commercial buildings, residential
- Public facilities
- Renewable energy

Provide users with reliable energy management solutions in various scenarios

Rail-mounted Smart Meter 0195-1111

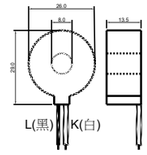
0195-CT00-11

Ct_rA=3000



0195-CT11-23

Ct_rA=1500



Electrical specifications

Communication	RS485
Operating voltage	90~265VAC 50/60Hz or 18~60VDC
Power consumption	AC：5VA max. or DC：2VA max.
Measurement method	True RMS
Sampling rate	128 point/cycle
Connection Method	1P2L / 1P3C / 1P3L
	3P3L / 3P3C / 3P4L
Input voltage	Max. 480VAC (V_{LN}) or max. 690VAC (V_{LL})
Current detection	1CT or 2CT or 3CT
Input Current	0~100 mA
Operating environment	0 ~ 60°C, 5 ~ 85%RH
Degree of protection	IP-20

EMC Standards

Item	EMC test standard
Electrostatic discharge disturbances	EN-61000-4-2
Radiated emission disturbances	EN-61000-4-3
Electrical fast transient/ burst	EN-61000-4-4
Surge disturbances	EN-61000-4-5
Conducted disturbances, induced by radio-frequency fields	EN-61000-4-6
Magnetic field disturbances	EN-61000-4-8
Voltage dips, short interruptions and voltage variation disturbances	EN-61000-4-11

Measurements Data

Parameters	Accuracy	Resolution	Measuring range
Voltage	±0.2%	0.1V	50 ~ 480VAC (V_{LN}), 50 ~ 690VAC (V_{LL})
Current	±0.2%	0.001A	0~100 mA
Active power (W)	±0.5%	0.1W	-19999999 ~ 99999999
Reactive power (Q)	±0.5%	0.1VAR	-19999999 ~ 99999999
Active electricity (kWh)	Class 0.5S (IEC62053-22)	0.001kWh	-19999999 ~ 99999999
Reactive electricity (kQh)	±0.5%	0.001kVarh	-19999999 ~ 99999999
Power frequency (Hz)	±0.5%	0.1Hz	45.0 ~ 70.0Hz
Power factor (PF)	±0.5%	0.01	-1.000 ~ 1.000

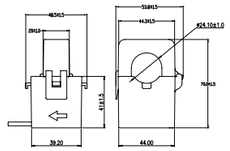
Display: V1 = V12 / V2 = V13 / V3 = V32

Input mode	Display block (kWh/kW)	Display block (V/A)
1P2L (1CT)	kWh → kW → CO_2	Vn/A → Hz → PF
1P3L (2CT)	kWh → kWh1 → kWh3 → kW → kW1 → kW3 → CO_2	Vn/A → V1n/A1 → V3n/A3 → Hz → PF
1P3C (3CT)	kWh → kWh1 → kWh2 → kWh3 → kW → kW1 → kW2 → kW3 → CO2	Vn/A → V1n/A1 → V2n/A2 → V3n/A3 → Hz → PF
3P3L (2CT)	kWh → kWh1 → kWh2 → kWh3 → kW → kW1 → kW2 → kW3 → CO_2	V/A → V1/A1 → V2/A2 → V3/A3 → Hz → PF
3P3C (3CT)	kWh → kWh1 → kWh2 → kWh3 → kW → kW1 → kW2 → kW3 →CO_2	V/A → V1/A1 → V2/A2 → V3/A3 → Hz → PF
3P4L (3CT)	kWh → kWh1 → kWh2 → kWh3 → kW → kW1 → kW2 → kW3 →CO_2	V/ A→ Vn/A → V1/A1 → V1n/A1 → V2/A2 → V2n/A2 → V3/A3 → V3n/A3 → Hz → PF

Rail-mounted Smart Meter 0195-1151

0195-CT00-12

Ct_rA=100



Electrical specifications

Communication	RS485
Operating voltage	90~265VAC 50/60Hz or 18~60VDC
Power consumption	AC：5VA max. or DC：2VA max.
Measurement method	True RMS
Sampling rate	128 point/cycle
Connection Method	1P2L / 1P3C / 1P3L
	3P3L / 3P3C / 3P4L
Input voltage	Max. 480VAC (V_{LN}) or max. 690VAC (V_{LL})
Current detection	1CT or 2CT or 3CT
Input Current	Max. 5A+20%
Operating environment	0 ~ 60°C, 5 ~ 85%RH
Degree of protection	IP-20

EMC Standards

Item	EMC test standard
Electrostatic discharge disturbances	EN-61000-4-2
Radiated emission disturbances	EN-61000-4-3
Electrical fast transient/ burst	EN-61000-4-4
Surge disturbances	EN-61000-4-5
Conducted disturbances, induced by radio-frequency fields	EN-61000-4-6
Magnetic field disturbances	EN-61000-4-8
Voltage dips, short interruptions and voltage variation disturbances	EN-61000-4-11

Measurements Data

Specification	Accuracy	Resolution	Measuring range
Voltage	±0.2%	0.1V	50 ~ 480VAC (V_{LN}), 50 ~ 690VAC (V_{LL})
Current	±0.2%	0.001A	0~5A (0~99999999)
Active power (W)	±0.5%	0.1W	-19999999 ~ 99999999
Reactive power (Q)	±0.5%	0.1V_{AR}	-19999999 ~ 99999999
Active electricity (kWh)	Class 0.5S (IEC62053-22)	0.001kWh	-19999999 ~ 99999999
Reactive electricity (kQh)	±0.5%	0.001kVarh	-19999999 ~ 99999999
Power frequency (Hz)	±0.5%	0.1Hz	45.0 ~ 70.0Hz
Power factor (PF)	±0.5%	0.01	-1.000 ~ 1.000

Display: V1 = V12 / V2 = V13 / V3 = V32

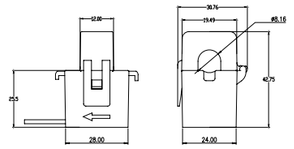
Input mode	Display block (kWh/kW)	Display block (V/A)
1P2L (1CT)	kWh → kW→ CO_2	Vn/A → Hz → PF
1P3L (2CT)	kWh → kWh1→ kWh3 → kW → kW1 → kW3 → CO_2	Vn/A → V1n/A1 → V3n/A3 → Hz→ PF
1P3C (3CT)	kWh → kWh1 → kWh2 → kWh3 → kW → kW1 → kW2 → kW3→ CO2	Vn/A → V1n/A1 → V2n/A2 → V3n/A3 → Hz → PF
3P3L (2CT)	kWh → kWh1 → kWh2 → kWh3 → kW → kW1 → kW2 → kW3 → CO_2	V/A → V1/A1 → V2/A2 → V3/A3 → Hz → PF
3P3C (3CT)	kWh → kWh1 → kWh2 → kWh3 → kW → kW1 → kW2 → kW3 → CO_2	V/A → V1/A1 → V2/A2 → V3/A3 → Hz → PF
3P4L (3CT)	kWh → kWh1 → kWh2 → kWh3 → kW → kW1 → kW2 → kW3 → CO_2	V/ A→ Vn/A → V1/A1 → V1n/A1 → V2/A2 → V2n/A2 → V3/A3 → V3n/A3 → Hz → PF

Panel-mounted Smart Meter 0195-2111

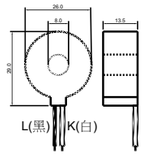
0195-CT00-11

0195-CT11-23

Ct_rA=3000



Ct_rA=1500



Electrical specifications

Communication	RS485
Operating voltage	90~265VAC 50/60Hz or 18~60VDC
Power consumption	AC：5VA max. or DC：2VA max.
Measurement method	True RMS
Sampling rate	128 point/cycle
Connection Method	1P2L / 1P3C / 1P3L
	3P3L / 3P3C / 3P4L
Input voltage	Max. 480VAC (V_{LN}) or max. 690VAC (V_{LL})
Current detection	1CT or 2CT or 3CT
Input Current	0~100 mA
Operating environment	0 ~ 60°C, 5 ~ 85%RH
Degree of protection	IP-20

EMC Standards

Item	EMC test standard
Electrostatic discharge immunity	EN-61000-4-2
Radiated Emission	EN-61000-4-3
Electrical fast transient	EN-61000-4-4
Surge disturbances	EN-61000-4-5
Conducted disturbances	EN-61000-4-6
Magnetic field disturbances	EN-61000-4-8
Voltage dips, short interruptions and voltage variation disturbances	EN-61000-4-11

Measurements Data

Specification	Accuracy	Resolution	Measuring range
Voltage	±0.2%	0.1V	50 ~ 480VAC (V_{LN}), 50 ~ 690VAC (V_{LL})
Current	±0.2%	0.001A	0~100 mA
Active power (W)	±0.5%	0.1W	-19999999 ~ 99999999
Reactive power (Q)	±0.5%	0.1V_{AR}	-19999999 ~ 99999999
Active electricity (kWh)	Class 0.5S (IEC62053-22)	0.001kWh	-19999999 ~ 99999999
Reactive electricity (kQh)	±0.5%	0.001kVarh	-19999999 ~ 99999999
Power frequency (Hz)	±0.5%	0.1Hz	45.0 ~ 70.0Hz
Power factor (PF)	±0.5%	0.01	-1.000 ~ 1.000

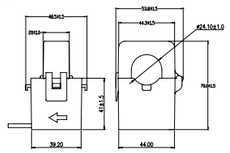
Display: V1 = V12 / V2 = V13 / V3 = V32

Input mode	Display block (kWh/kW)	Display block (V/A)
1P2L (1CT)	kWh → kW → CO_2	Vn/A → Hz → PF
1P3L (2CT)	kWh → kWh1 → kWh3 → kW → kW1 → kW3 → CO_2	Vn/A → V1n/A1 → V3n/A3 → Hz → PF
1P3C (3CT)	kWh → kWh1 → kWh2 → kWh3 → kW → kW1 → kW2 → kW3 → CO2	Vn/A → V1n/A1 → V2n/A2 → V3n/A3 → Hz → PF
3P3L (2CT)	kWh → kWh1 → kWh2 → kWh3 → kW → kW1 → kW2 → kW3 → CO_2	V/A → V1/A1 → V2/A2 → V3/A3 → Hz → PF
3P3C (3CT)	kWh → kWh1 → kWh2 → kWh3 → kW → kW1 → kW2 → kW3 → CO_2	V/A → V1/A1 → V2/A2 → V3/A3 → Hz → PF
3P4L (3CT)	kWh → kWh1 → kWh2 → kWh3 → kW → kW1 → kW2 → kW3 → CO_2	V/ A→ Vn/A → V1/A1 → V1n/A1 → V2/A2 → V2n/A2 → V3/A3 → V3n/A3 → Hz → PF

Panel-mounted Smart Meter 0195-2151

0195-CT00-12

Ct_rA=100



Electrical specifications

Communication	RS485
Operating voltage	90~265VAC 50/60Hz or 18~60VDC
Power consumption	AC：5VA max. or DC：2VA max.
Measurement method	True RMS
Sampling rate	128 point/cycle
Connection Method	1P2L / 1P3C / 1P3L
	3P3L / 3P3C / 3P4L
Input voltage	Max. 480VAC (V_{LN}) or max. 690VAC (V_{LL})
Current detection	1CT or 2CT or 3CT
Input Current	Max. 5A+20%
Operating environment	0 ~ 60°C, 5 ~ 85%RH
Degree of protection	IP-20

EMC Standards

Item	EMC test standard
Electrostatic discharge immunity	EN-61000-4-2
Radiated Emission	EN-61000-4-3
Electrical fast transient	EN-61000-4-4
Surge disturbances	EN-61000-4-5
Conducted disturbances	EN-61000-4-6
Magnetic field disturbances	EN-61000-4-8
Voltage dips, short interruptions and voltage variation disturbances	EN-61000-4-11

Measurements Data

Specification	Accuracy	Resolution	Measuring range
Voltage	±0.2%	0.1V	50 ~ 480VAC (V_{LN}), 50 ~ 690VAC (V_{LL})
Current	±0.2%	0.001A	0~5A (0~99999999)
Active power (W)	±0.5%	0.1W	-19999999 ~ 99999999
Reactive power (Q)	±0.5%	0.1V_{AR}	-19999999 ~ 99999999
Active electricity (kWh)	Class 0.5S (IEC62053-22)	0.001kWh	-19999999 ~ 99999999
Reactive electricity (kQh)	±0.5%	0.001kVarh	-19999999 ~ 99999999
Power frequency (Hz)	±0.5%	0.1Hz	45.0 ~ 70.0Hz
Power factor (PF)	±0.5%	0.01	-1.000 ~ 1.000

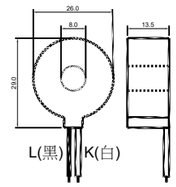
Display: V1 = V12 / V2 = V13 / V3 = V32

Input mode	Display block (kWh/kW)	Display block (V/A)
1P2L (1CT)	kWh → kW → CO_2	Vn/A → Hz → PF
1P3L (2CT)	kWh → kWh1 → kWh3 → kW → kW1 → kW3 → CO_2	Vn/A → V1n/A1 → V3n/A3 → Hz → PF
1P3C (3CT)	kWh → kWh1 → kWh2 → kWh3 → kW → kW1 → kW2 → kW3 → CO2	Vn/A → V1n/A1 → V2n/A2 → V3n/A3 → Hz → PF
3P3L (2CT)	kWh → kWh1 → kWh2 → kWh3 → kW → kW1 → kW2 → kW3 → CO_2	V/A → V1/A1 → V2/A2 → V3/A3 → Hz → PF
3P3C (3CT)	kWh → kWh1 → kWh2 → kWh3 → kW → kW1 → kW2 → kW3 → CO_2	V/A → V1/A1 → V2/A2 → V3/A3 → Hz → PF
3P4L (3CT)	kWh → kWh1 → kWh2 → kWh3 → kW → kW1 → kW2 → kW3 → CO_2	V/ A→ Vn/A → V1/A1 → V1n/A1 → V2/A2 → V2n/A2 → V3/A3 → V3n/A3 → Hz → PF

Current Conveyor 0195-3143

0195-CT11-23

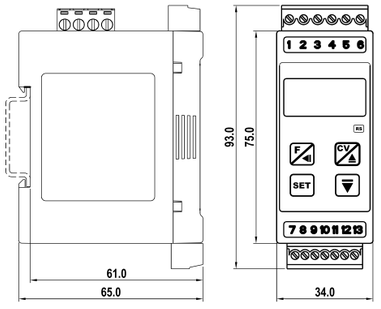
Ct_rA=1500

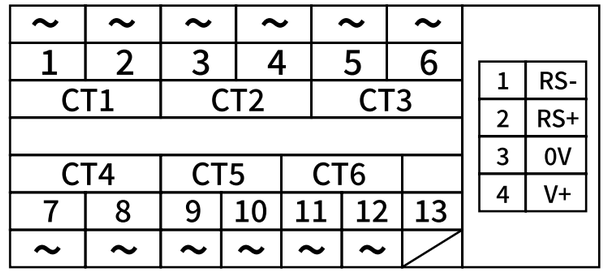


Electrical specifications

Communication	RS485
Operating voltage	24VDC/AC
Current detection	ON/OFF control or Phase control
Input Current	Max. 30mA (VAC)
Operating environment	- 25 ~ +75°C
Degree of protection	IP-20

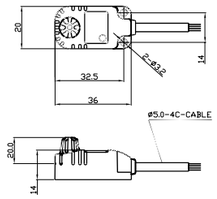
Operating chart



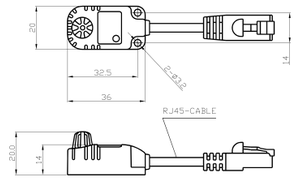


Temperature/Humidity/Dew Point Transducer 0402-1201-XX.X / 0402-1301-XX.X

0402-1201-XX.XX



0402-1301-XX.XX



Technical data	0402-1201-XX.X	0402-1301-XX.X
Lead wire type	Lead wire (4C/4.0Φ)	RJ45 Lead wire connector
Communication	RS-485 Modbus RTU	
Temperature	-20.0 ~ +80.0°C (-4.0 ~ +176.0°F)	
Humidity	0.0 ~ 100.0%RH	
Dew point	-40 ~ +20.0°C (-40.0 ~ +68.0°F)	
Resolution	Temperature: 0.1°C, Humidity: 0.1%	
Measurement error	Humidity: ±3% max. (Typical), Temperature: ±1.0°C max. (Typical)	
Response time	Humidity: 8 sec max., Temperature: 5 ~ 30 sec	
Stable time	300 seconds (Power ON)	
Operating voltage	10~30VDC	
Current consumption	Max. 2.0mA	
Display unit	°C or °F, selectable	
Indicator	Green LED: Power, Red LED: Communication	
Housing material	ABS Intensive	
Operating Temperature	- 25 ~ +75°C	
Ambient humidity for operation	35% ~ 85% RH max.	
Degree of protection	IPOX	

Parameter storage address

Address	Parameter	Description	W/R
00H 00H	Temperature	-20.0 ~ +80.0°C (-4.0 ~ +176.0°F)	W/R
00H 01H	Humidity	0.0 ~ 100.0%RH	W/R
00H 02H	Dew point	-40 ~ +20.0°C (-40.0 ~ +68.0°F)	R
00H 03H	Temperature unit selection	"0" = °C, "1" = °F	W/R
00H 04H	Filter	1~99	W/R
00H 05H	Id station	0 ~ 255	W/R
00H 06H	Protocol	0: RTU, 1: ASCII	W/R
00H 07H	BPS	0: 9600, 1: 19200, 2: 38400, 3: 115200	W/R
00H 08H	Configuration	0: 7O1, 1: 7E1, 2: 8N11, 3: 8O1, 4: 8E1, 5: 8N2	W/R

0402-XXXX-XX.X

① ②

① Lead wire type

Lead wire (4C/4.0Φ)	1201
RJ45 Lead wire connector	1301

② Length

0.5M	0.5
3M	3.0
10M	10.0

Wiring Diagram

1> Brown: +V
2> White: RS+
3> Blue: 0V
4> Black: RS-

Communication protocol [Modbus RTU]

0402: RTU/8N1/ 9600bps (Default setting)

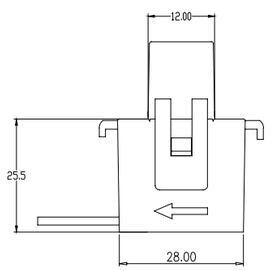
Press the "RESET" key to restore the communication protocol to the factory settings (ID=1/RTU/8N1/9600bps)

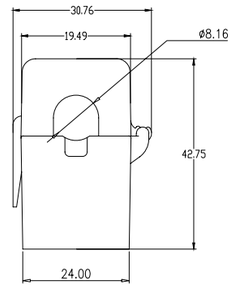
Pilots

1. "Green": when there is no communication, the green LED flashes once every 2 seconds in case of the factory communication settings, and once every 4 seconds for the non-factory communication settings

2. "Red": When communicating, the red LED flashes once every 2 seconds

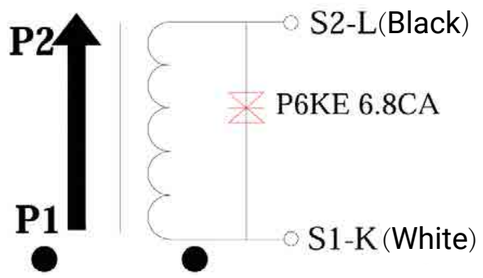
Current Transformer (CT) 0195-CT00-11



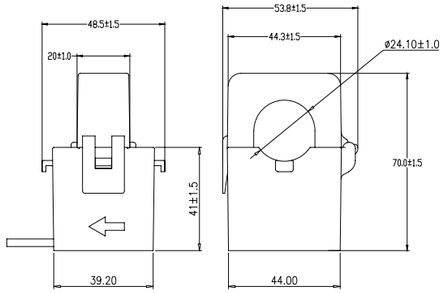


Electrical data	
Rated input	100A
Rated output	33.33mA
Rated load	10Ω
Withstand voltage @ operating frequency	4000V/10s, 1mA
Operating frequency	50Hz - 400Hz
Ratio difference of rating points	±0.5%
Angle difference of rating points	≤120′
Linear range	5%In - 120%In
Insulation resistance	100 MΩ/ 500VDC, 1min
Open circuit protection voltage	6-8V
Operating environment	
Ambient Temperature	-20°C~+50°C
Relative humidity	≤ 95%
Storage Temp.	-30°C~+85°C
Atmosphere pressure	70-106kpa
Construction	
Output wires	AWM2468-22AWG black and white flat cable, 3025±25mm extending from the housing, lead end tin-plated 5-10mm
Housing material	White, flame retardancy 94-V0
Environment protection	RoHS requirements

Wiring Diagram

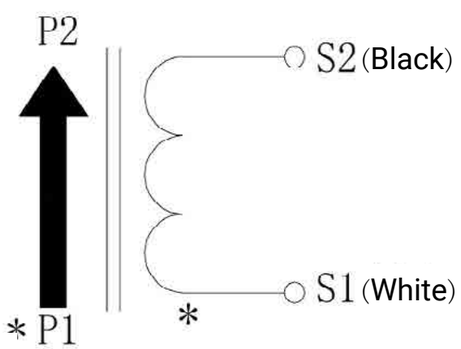


Current Transformer (CT) 0195-CT00-12

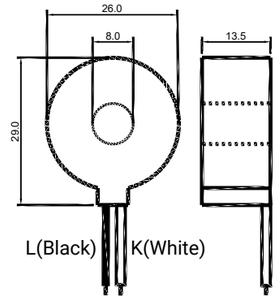


Electrical data	
Rated input	100A
Rated output	1A
Rated load	0.2VA
Withstand voltage @ operating frequency	4000V/10s, 1mA
Operating frequency	50Hz - 400Hz
Ratio difference of rating points	±1.0%
Angle difference of rating points	≤120’
Linear range	5%In - 120%In
Insulation resistance	100 MΩ/ 500VDC, 1min
Dotted terminals	P1 and white leads
Operating environment	
Ambient Temperature	-25°C~+70°C
Relative humidity	≤ 95%
Storage Temp.	-25°C~+70°C
Atmosphere pressure	70-106kpa
Construction	
Output wire	AWM2468-16AWG black and white flat cable, 3025±25mm extending from the housing, lead end tin-plated 5-10mm
Housing material	White, flame retardancy 94-V0
Environment protection	RoHS requirements

Wiring Diagram

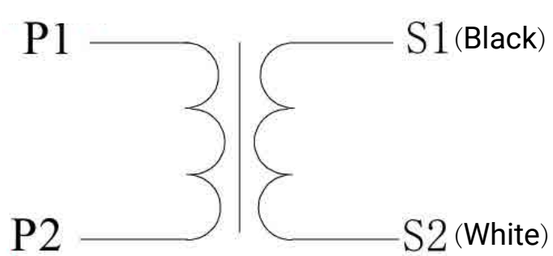


Current Transformer (CT) 0195-CT11-23



Electrical data	
Rated input	15A
Rated output	10mA
Rated load	20Ω
Withstand voltage @ operating frequency	3000V/10s, 1mA
Operating frequency	40Hz - 400Hz
Error, linear	≤0.1%
Phase shift, non-linear	≤10’
Linear range	5%In - 400%In
Insulation resistance	Fire
Temperature drift	10ppm/°C
Dotted terminals	Potting surface P1 and black leads are dotted
Operating environment	
Ambient Temperature	-40°C~+85°C
Relative humidity	≤ 85%
Storage Temp.	-40°C~+85°C
Atmosphere pressure	80-110kpa
Construction	
Primary input	Straight-through input P1-P2
Straight-through bore	Φ8mm
Output wire	AWM2468-26AWG black and white flat cable, 3025±25mm extending from the housing, lead end tin-plated 5-8mm
Housing material	Blue flame retardant material
Environment protection	RoHS requirements

Wiring Diagram



Power Supply

Dinkle power supplies are cost-effective, with a compact and narrow-width form factor. These power supplies accept a universal AC input voltage range, comply with harmonic current EN61000-3-2, Class A standards, and have obtained multiple international certifications.

• Input voltage: 85-264 VAC, 120-375 VDC
• Operating temperature : -20°C~+70°C

90%
Operating efficiency is greater than 90% under full load.

PFC
Built-inPFC in the circuit structure can effectively improve the power factor.

Safety
The circuit board is dust-proof, and it has a chemical pollution resistance treatment with multiple built-in safety protection functions.

700,000 **hours**
The mean time between failures is over 80 years.

0165N Series (30W~480W)

					
Models	**0165N-24V30W1AC**	**0165N-24V75W1AC**	**0165N-24V120W1AC**	**0165N-24V240W1AC**	**0165N-24V480W1AC**
Input Data					
Input Voltage Range	Single phase, 85-264 VAC		Single phase, 85-264 VAC (120-375 VDC)		
Input Frequency Range	47-63 Hz				
Input Current	< 0.8 A (115 VAC) < 0.4 A (230 VAC)	< 1.4 A (115 VAC) < 0.9 A (230 VAC)	< 2.2 A (115 VAC) < 1.2 A (230 VAC)	< 2.8 A (115 VAC) < 1.4 A (230 VAC)	< 5.4 A (115 VAC) < 2.7 A (230 VAC)
Max. Inrush Current	< 30 A (115 VAC) < 60 A (230 VAC)	< 80 A (230 VAC)	< 20 A (115 VAC) < 40 A (230 VAC)	< 20 A (115 VAC) < 40 A (230 VAC)	< 40 A (115 VAC) < 80 A (230 VAC)
Leakage Current (A)	< 0.5 mA (240 VAC)	< 1 mA (240 VAC)	< 0.25 mA (264 VAC)	< 1 mA (264 VAC)	< 1 mA (264 VAC)
Output Data					
Output Efficiency	88.0 % (230 VAC, 100 % load)	89.0 % (230 VAC, 100 % load)	88.0 % (230 VAC, 100 % load)	90.0 % (230 VAC, 100 % load)	88.0 % (230 VAC, 100 % load)
Rated Output Voltage	24 VDC				
Output Voltage Adjustment Range	21.6-26.4 VDC	21.6-26 VDC	22-28 VDC	22-28 VDC	22-28 VDC
Rated Output Current	1.25 A	3.125 A	5.0 A (120W max.)	10.0 A (240W max.)	20.0 A (480W max.)
Rated Output Power	30W	75W	120W	240W	480W
PARD (20MHz)	< 150 mVpp (0~70 °C) < 500 mVpp (0~-20 °C)	< 120 mVpp (-10~70 °C) < 360 mVpp (-10~-30 °C)	< 120 mVpp (-10~+70 °C) < 240 mVpp (-10~-70 °C)	< 120 mVpp (0~70 °C) < 240 mVpp (0~-10 °C) < 360 mVpp (0~70 °C)	< 120 mVpp (0~70 °C) < 240 mVpp (0~-10 °C) < 360 mVpp (0~70 °C)
Mechanical					
Housing material	Engineering plastics	Engineering plastics	SGCC / Aluminum	SGCC / Aluminum	SGCC / Aluminum
L x W x H (mm)	78 x 21 x 89.5 mm	123.6 x 27 x 102 mm	123.6 x 40 x 123.6 mm	123.6 x 60 x 123.6 mm	134.3 x 85.5 x 123.6 mm
Weight	0.10 kg	0.22 kg	0.54 kg	0.80 kg	1.3 kg
DC Indicator	Green				
Environment					
Operating Temperature	-20°C to + 70°C				
Storage Temp.	-40°C to + 85°C				
Relative Humidity	5 ~95 % RH (Non-condensing)				
Power De-rating*	-10°C to -20°C , 1 % / °C, > 55°C, 2.5 % / °C		>40°C, 1.67 % / °C, > 50°C, 2.5 % / °C		
Shock Test	IEC60068-2-27, Half-Sine Wave: 10 G				
Vibration Test	IEC60068-2-6, Half-Sine Wave: 19.6 m/S²				
Pollution Degree	2				
Operating Altitude	0~2000 m	ICE applications: 0~2000 m, ITE applications: 0~5000 m			
Protections					
Overcurrent	110-150 %	105-133 %	105-150 %	105-150 %	109-130 %
Overvoltage	Auto-Recovery	YES			
Over Temperature	Auto-Recovery	YES			
Short-circuit/Overcurrent	Auto-Recovery				
MTBF	> 700,000 Hours				
Expected Life Time	10 years				
Safety Standards / Directives					
Electrical Safety	SELV, EN 60950-1, IEC 60950-1, UL 60950-1, CSA C22.2				
UL	UL 508, CSAC 22.2				
CE	Comply with EMC Directive 2014/30/EU and Low Voltage Directive 2014/35/EU				
RoHs	Comply with RoHS Directive 2011/65/EU				
SEMI F47	NO	YES			
NEC class 2 & LPS	YES		NO		

01651/01652 Series (24V Output Voltage, 120W-960W)

				
Models	**01651-24V120W1AC**	**01651-24V240W1AC**	**01651-24V480W1AC**	**01652-24V960W1AC**
Input Data				
Input Voltage Range	90-264 VAC	90-264 VAC	90-264 VAC	180-264 V AC
Input Frequency Range	47-63 Hz	47-63 Hz	47-63 Hz	47-63 Hz
Input Current	1.3 A/230VAC	1.3 A/230VAC	2.4 A/230VAC	6 A/230VAC
Max. Inrush Current	92.5 A/230VAC	70 A/230VAC	70 A/230VAC	50 A/230VAC
Leakage Current (A)	1 mA/240VAC	2 mA/240VAC	5 mA/240VAC	5 mA/240VAC
Output Data				
Output Efficiency	88%/230VAC	87%/230VAC	92.5%/230VAC	93%/230VAC
Rated Output Voltage	24VDC	24VDC	24VDC	24VDC
Output Voltage Adjustment Range	24-28VDC	24-28VDC	24-28VDC	24-28VDC
Rated Output Current	5A	10A	20A	40A
Rated Output Power	120W	240W	480W	960W
PARD (20MHz)	120mVpp	150mVpp	150mVpp	180mVpp
Mechanical Data				
Housing material	Aluminum & Iron	Aluminum & Iron	Aluminum & Iron	Aluminum & Iron
L x W x H (mm)	40x113x125 mm	63x113.5x125mm	85.5x129x125mm	110x150x125.2 mm
Weight	0.52KG	0.91KG	1.45KG	2.35KG
LED Indicator	YES	YES	YES	YES
Environment				
Operating Temperature	–20…+70°C	–20…+70°C	–20…+70°C	–30…+70°C
Storage Temp.	–40…+85°C	–40…+85°C	–40…+85°C	–40…+85°C
Relative Humidity	20-90% RH non condensing	20-90% RH non condensing	20-90% RH non condensing	20-90% RH non condensing
Power De-rating*	>50°C, <100VAC	>50°C, <100VAC	>50°C, <100VAC	>50°C, <200VAC
Vibration Test	Component:10 ~ 500Hz, 2G 10min./1cycle, 60min. each along X, Y, Z axes; Mounting: Comply with IEC60068-2-6			
Pollution Degree	2	2	2	2
Operating Altitude	2000m	2000m	2000m	3000m
Protections				
Overcurrent	105-150 %	105-150 %	105-150 %	105-130 %
Overvoltage	29-33VAC	29-33VAC	29-33VAC	38-42VAC
Over Temperature	YES	YES	YES	YES
Short-circuit/Overcurrent	YES	YES	YES	YES
MTBF	408K hours	207K hours	135K hours	82K hours
Expected Life Time	10years	10years	10years	6 years @ 25°C full load
Safety Standards / Directives				
UL	UL508	UL508	UL508	UL61010
CE	Comply with EMC Directive 2014/30/EU and Low Voltage Directive 2014/35/EU			
RoHs	YES	YES	YES	YES
SEMI F47	/	/	/	/
NEC class 2 & LPS	NO	NO	NO	NO

01651/01652 Series (48V Output Voltage, 120W-960W)

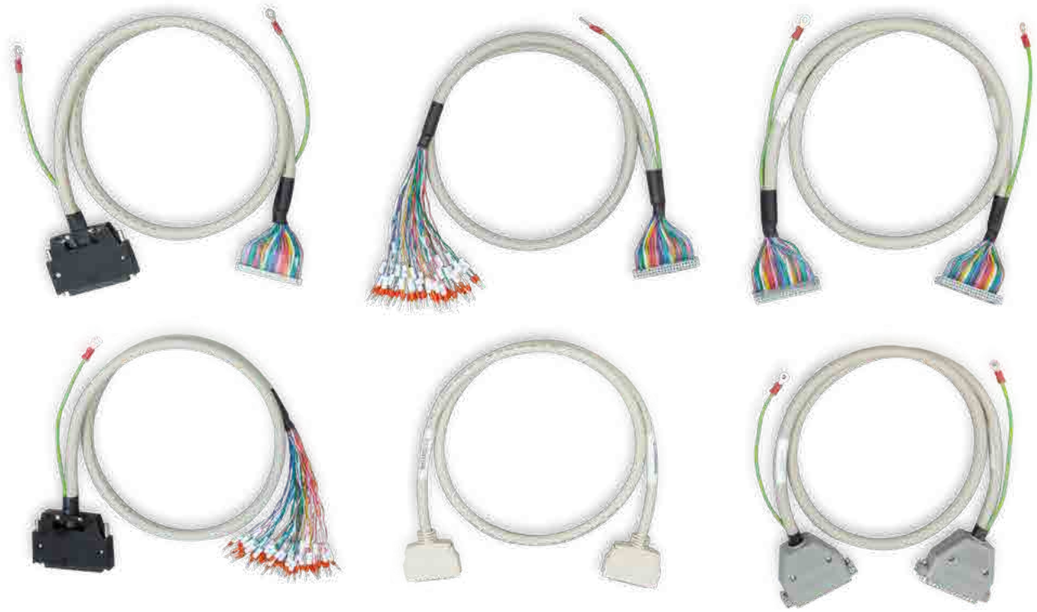
				
Models	**01651-48V120W1AC**	**01651-48V240W1AC**	**01651-48V480W1AC**	**01652-48V960W1AC**
Input Data				
Input Voltage Range	90-264VAC	90-264VAC	90-264VAC	180-264VAC
Input Frequency Range	47-63 Hz	47-63 Hz	47-63 Hz	47-63 Hz
Input Current	1.3 A/230VAC	1.3 A/230VAC	2.4 A/230VAC	6 A/230VAC
Max. Inrush Current	92.5 A/230VAC	70 A/230VAC	70 A/230VAC	50 A/230VAC
Leakage Current (A)	1 mA/240VAC	2 mA/240VAC	5 mA/240VAC	5 mA/240VAC
Output Data				
Output Efficiency	88%/230VAC	88%/230VAC	92.5%/230VAC	93%/230VAC
Rated Output Voltage	48VDC	48VDC	48VDC	48VDC
Output Voltage Adjustment Range	48-55VDC	48-55VDC	48-55VDC	48-55VDC
Rated Output Current	2.5A	5A	10A	20A
Rated Output Power	120W	240W	480W	960W
PARD (20MHz)	150mVpp	150mVpp	150mVpp	250mVpp
Mechanical Data				
Housing material	Aluminum & Iron	Aluminum & Iron	Aluminum & Iron	Aluminum & Iron
L x W x H (mm)	40x113x125 mm	63x113.5x125mm	85.5x129x125mm	110x150x125.2 mm
Weight	0.52KG	0.91KG	1.45KG	2.35KG
LED Indicator	YES	YES	YES	YES
Environment				
Operating Temperature	–20…+70°C	–20…+70°C	–20…+70°C	–30…+70°C
Storage Temp.	–40…+85°C	–40…+85°C	–40…+85°C	–40…+85°C
Relative Humidity	20-90% RH non condensing	20-90% RH non condensing	20-90% RH non condensing	20-90% RH non condensing
Power De-rating*	>50°C, <100VAC	>50°C, <100VAC	>50°C, <100VAC	>50°C, <200VAC
Vibration Test	Component:10 ~ 500Hz, 2G 10min./1cycle, 60min. each along X, Y, Z axes; Mounting: Comply with IEC60068-2-6			
Pollution Degree	2	2	2	2
Operating Altitude	2000m	2000m	2000m	3000m
Protections				
Overcurrent	105-150 %	105-150 %	105-150 %	105-130 %
Overvoltage	56-65VAC	56-65VAC	56-65VAC	56-65VAC
Over Temperature	YES	YES	YES	YES
Short-circuit/Overcurrent	YES	YES	YES	YES
MTBF	408K hours	207K hours	135K hours	82K hours
Expected Life Time	10years	10years	10years	10years
Safety Standards / Directives				
UL	UL508	UL508	UL508	UL61010
CE	Comply with EMC Directive 2014/30/EU and Low Voltage Directive 2014/35/EU			
RoHs	YES	YES	YES	YES
SEMI F47	/	/	/	/
NEC class 2 & LPS	NO	NO	NO	NO

0165R Series (Redundancy Module 24V/48V)

		
Models	**0165R-24VDC**	**0165R-48VDC**
Input Data		
Input Voltage Range	19-29 V DC	36-60 V DC
Input Frequency Range	/	/
Input Current	0-20A	0-20A
Max. Inrush Current	/	/
Leakage Current (A)	/	/
Output Data		
Output Efficiency	95%/24VDC	95%/48VDC
Rated Output Voltage	24VDC	48VDC
Output Voltage Adjustment Range	/	/
Rated Output Current	0-20A	0-20A
Rated Output Power	/	/
PARD (20MHz)	/	/
Mechanical Data		
Housing material	Aluminum & Iron	Aluminum & Iron
L x W x H (mm)	32x 100 x125 mm	32x 100 x125 mm
Weight	0.35KG	0.35KG
LED Indicator	YES	YES
Environment		
Operating Temperature	–40…+80°C	–40…+80°C
Storage Temp.	–40…+85°C	–40…+85°C
Relative Humidity	20-90% RH non condensing	20-90% RH non condensing
Power De-rating*	>60°C,	>60°C,
Vibration Test	Component:10 ~ 500Hz, 2G 10min./1cycle, 60min. each along X, Y, Z axes; Mounting: Comply with IEC60068-2-6	
Pollution Degree	2	2
Operating Altitude	2000m	2000m
Protections		
Overcurrent	<30A 5 sec.	<30A 5 sec.
Overvoltage	/	/
Over Temperature	/	/
Short-circuit/Overcurrent	YES	YES
MTBF	340K hours	340K hours
Expected Life Time	10years	10years
Safety Standards / Directives		
UL	/	/
CE	Comply with EMC Directive 2014/30/EU	
RoHs	YES	YES
SEMI F47	/	/
NEC class 2 & LPS	NO	NO

Wire Harness For Interface Modules

- Dinkle provides standard prefabricated cables for integrating with various manufacturers' PLC and controllers.
- In addition to the standard cable length of 0.5M~5M, Dinkle's prefabricated cables can be customized for specific lengths. The connector-to-connector prefabricated cables provide a correct 1-to-1 connection between the controlled device and the modules. Moreover, cables with quick-connect terminals that correspond to the connectors are available, making jumper wiring more convenient and flexible.

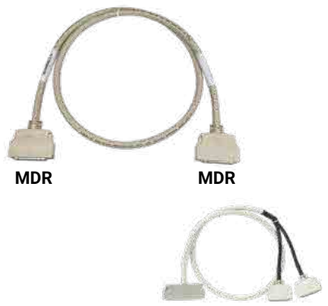


Wire Harness Selection Steps

Step 1: Select the appropriate connector type	Step 2: Determine the cable type	Step 3: Determine the cable length
	1. Unshielded Cable 2. Shielded Cable ※ For special wires and/or large quantities, customized wires are available on request.	5 different cable length are available (0.5m, 1m, 2m, 3m, 5m)

Wire Harness

MDR Cable



Connecting Poles	Cable	Length				
		0.5m	1m	2m	3m	5m
50P	Unshielded	WHN55-5005	WHN55-5010	WHN55-5020	WHN55-5030	WHN55-5050
	Shielded	WHS55-5005	WHS55-5010	WHS55-5020	WHS55-5030	WHS55-5050
68P	Unshielded	WHN55-6805	WHN55-6810	WHN55-6820	WHN55-6830	WHN55-6850
	Shielded	WHS55-6805	WHS55-6810	WHS55-6820	WHS55-6830	WHS55-6850
100P	Unshielded	WHN55-0005	WHN55-0010	WHN55-0020	WHN55-0030	WHN55-0050
	Shielded	WHS55-0005	WHS55-0010	WHS55-0020	WHS55-0030	WHS55-0050
100P-50Px2	Unshielded	WHN55-T0005	WHN55-T0010	WHN55-T0020	WHN55-T0030	WHN55-T0050

D-Sub Male - D-Sub Female Cable

Connecting Poles	Cable	Length				
		0.5m	1m	2m	3m	5m
37P	Unshielded	WHN10-3705	WHN10-3710	WHN10-3720	WHN10-3730	WHN10-3750
	Shielded	WHS10-3705	WHS10-3710	WHS10-3720	WHS10-3730	WHS10-3750
44P	Unshielded	WHN10-4405	WHN10-4410	WHN10-4420	WHN10-4430	WHN10-4450
	Shielded	WHS10-4405	WHS10-4410	WHS10-4420	WHS10-4430	WHS10-4450

Both-End D-sub Male Wire Harness

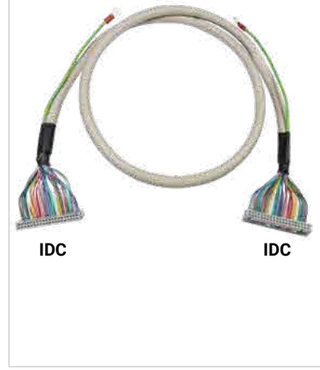
Connecting Poles	Cable	Length				
		0.5m	1m	2m	3m	5m
37P	Unshielded	WHN11-3705	WHN11-3710	WHN11-3720	WHN11-3730	WHN11-3750
	Shielded	WHS11-3705	WHS11-3710	WHS11-3720	WHS11-3730	WHS11-3750
44P	Unshielded	WHN11-4405	WHN11-4410	WHN11-4420	WHN11-4430	WHN11-4450
	Shielded	WHS11-4405	WHS11-4410	WHS11-4420	WHS11-4430	WHS11-4450

Wire Harness

FUJI-IDC Cable

Connecting Poles	Cable	Length				
		0.5m	1m	2m	3m	5m
40P	Unshielded	WHN37-4005	WHN37-4010	WHN37-4020	WHN37-4030	WHN37-4050
	Shielded	WHS37-4005	WHS37-4010	WHS37-4020	WHS37-4030	WHS37-4050

IDC-IDC Cable



Connecting Poles	Cable	Length				
		0.5m	1m	2m	3m	5m
14P	Unshielded	WHN33-1405	WHN33-1410	WHN33-1420	WHN33-1430	WHN33-1450
	Shielded	WHS33-1405	WHS33-1410	WHS33-1420	WHS33-1430	WHS33-1450
20P	Unshielded	WHN33-2005	WHN33-2010	WHN33-2020	WHN33-2030	WHN33-2050
	Shielded	WHS33-2005	WHS33-2010	WHS33-2020	WHS33-2030	WHS33-2050
26P	Unshielded	WHN33-2605	WHN33-2610	WHN33-2620	WHN33-2630	WHN33-2650
	Shielded	WHS33-2605	WHS33-2610	WHS33-2620	WHS33-2630	WHS33-2650
30P	Unshielded	WHN33-3005	WHN33-3010	WHN33-3020	WHN33-3030	WHN33-3050
	Shielded	WHS33-3005	WHS33-3010	WHS33-3020	WHS33-3030	WHS33-3050
34P	Unshielded	WHN33-3405	WHN33-3410	WHN33-3420	WHN33-3430	WHN33-3450
	Shielded	WHS33-3405	WHS33-3410	WHS33-3420	WHS33-3430	WHS33-3450
40P	Unshielded	WHN33-4005	WHN33-4010	WHN33-4020	WHN33-4030	WHN33-4050
	Shielded	WHS33-4005	WHS33-4010	WHS33-4020	WHS33-4030	WHS33-4050

Single-End FUJITSU-IDC Wire Harness

Connecting Poles	Cable	Length				
		0.5m	1m	2m	3m	5m
40P	Unshielded	WHNX7-4005	WHNX7-4010	WHNX7-4020	WHNX7-4030	WHNX7-4050
	Shielded	WHSX7-4005	WHSX7-4010	WHSX7-4020	WHSX7-4030	WHSX7-4050

Single-End IDC Wire Harness

Connecting Poles	Cable	Length				
		0.5m	1m	2m	3m	5m
20P	Unshielded	WHNX3-2005	WHNX3-2010	WHNX3-2020	WHNX3-2030	WHNX3-2050
	Shielded	WHSX3-2005	WHSX3-2010	WHSX3-2020	WHSX3-2030	WHSX3-2050
34P	Unshielded	WHNX3-3405	WHNX3-3410	WHNX3-3420	WHNX3-3430	WHNX3-3450
	Shielded	WHSX3-3405	WHSX3-3410	WHSX3-3420	WHSX3-3430	WHSX3-3450
40P	Unshielded	WHNX3-4005	WHNX3-4010	WHNX3-4020	WHNX3-4030	WHNX3-4050
	Shielded	WHSX3-4005	WHSX3-4010	WHSX3-4020	WHSX3-4030	WHSX3-4050

Safety Relay Modules

- RESR series safety relays are mainly used in the safety control circuit to monitor safety sensing components (such as emergency stop buttons, safety doors, two-hand buttons, safety light curtains, etc.) and motion controllers of mechanical equipment (such as solenoid valves, contactors, etc.).
- In the case of critical failure of safety sensing components, improper operations caused by the operator, operator issuing a stop command, the safety relays will handle such signals immediately and send signals to motion controllers to cut off the power source of the mechanical equipment. Thus, the equipment will be in a safe status, protecting the safety of personnel and equipment.

Overview

RESR Series Safety Relay Modules

RESR series safety relays are mainly used in the safety control circuit to monitor safety sensing components (such as emergency stop buttons, safety doors, two-hand buttons, safety light curtains, etc.) and motion controllers of mechanical equipment (such as solenoid valves, contactors, etc.). In the case of critical failure of safety sensing components, improper operations caused by the operator, operator issuing a stop command, the safety relays will handle such signals immediately and send signals to motion controllers to cut off the power source of the mechanical equipment. Thus, the equipment will be in a safe status, protecting the safety of personnel and equipment.

Certifications

- Performance Level: PLe
- Safety Category: Cat.4
- Safety Integrity Level: SIL3

Compliance

- Comply with the EMC requirements for safety instrumentations. IEC61326-3-1

Easy to install

- Standard 35 mm rail mounting and pluggable terminals, enabling easy and fast installation.

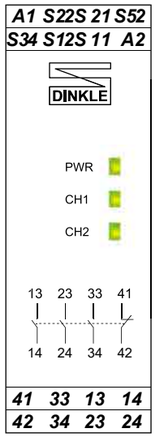
Branded components

- Use components from well-known brands

Versatile functions

- Single and dual channel operation, automatic/manual reset.
- Manual reset monitoring, short circuit between the channels monitoring.

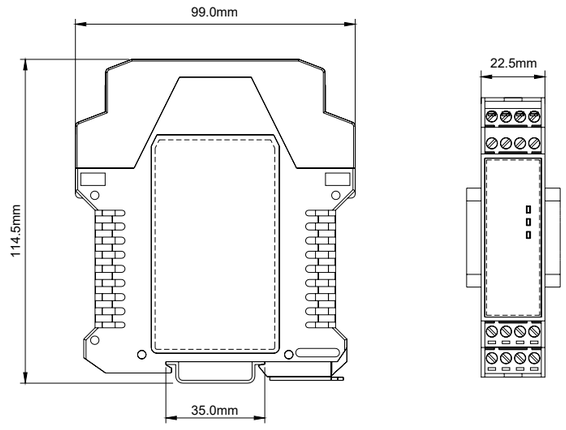
LED Indicator



PWR	Power
CH1	Safe Output 1
CH2	Safe Output 2

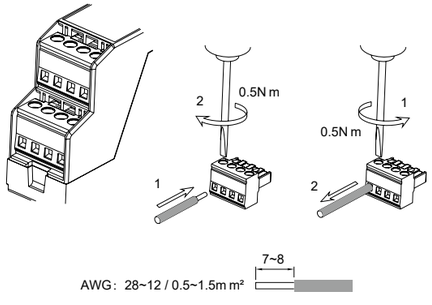
LED Indicator Status				Description
LED Color	PWR	CH1	CH2	
Green	ON	ON	ON	In normal operation.
	ON	ON	OFF	An error was detected, check external wiring and safety relays.
	ON	OFF	ON	An error was detected, check the external wiring and safety relay.
	ON	OFF	OFF	The external switch is activated and enters the protection state. Check the external wiring, external switch and safety relay.
	OFF	OFF	OFF	Check the external wiring and safety relay.

Dimensions



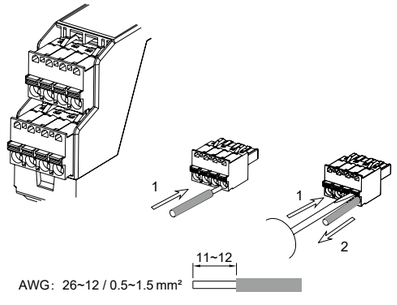
Wiring and Installation

Screw connection



1. Cross section of the leads on the input side must be larger than 0.5mm², and larger than 1mm² for the output side.
2. Stripped length of the lead is about 7~8mm.
3. Tightening torque ≤0.5Nm.

Spring connection



1. Cross section of the leads on the input side must be larger than 0.5mm², and larger than 1mm² for the output side.
2. Stripped length of the lead is about 11~12mm.

Product Description

RESR-01-3A1B-E

Outputs: 3 NO, 1 NC

RESR-01-3A1B-E is a safety relay suitable for the emergency stop, safety door, and PNP safety light curtain signals of various mechanical equipment. Based on the RESR-01-3A1B, it is designed with all domestically produced components and an excellent price-performance ratio, while maintaining the performance, specifications, and quality unchanged. Standard housing is used, easy for wiring, and compatible with the commonly used products in the market.

Specification

Technical Data

Power Supply: Supply voltage:24V DC/AC	Time: Pick-up buffer time: emergency stop operation ≤300ms in auto reset mode
Voltage tolerance: 0.85~1.1	Power-on delay ≤ 300ms in auto reset mode
Current loss: ≤90mA(24V DC)	Manual reset ≤ 150ms in manual rest mode
≤180mA(24V AC)	Release buffer time: emergency stop operation ≤30ms
Inputs: Input current: ≤50mA(24V DC)	Power failure ≤100ms
Resistance of the leads: ≤15Ω	Time to recover: emergency stop operation ≤30ms
Input devices: emergency button, safety door, PNP light curtain	Power failure ≤100ms
Outputs: Number of contacts: 3NO+1NC	Short power interruption: 20ms
Contacts material: $AgSnO_2$ + 0.2 µm Au	
Contacts fuse protection: 10A gL/gG NEOZED (normally open contacts) / 6A gL/gG NEOZED (normally closed contacts)	
Switching capacity (Comply with EN60947-5-1): AC-15, 5A / 250V; DC-13, 6A / 24V	

Environment

EMC: Comply with EN60947, EN61000-6-2, EN61000-6-4	Rated insulation voltage: 250V AC
Vibration frequency: 10~55Hz	Rated impulse voltage: 6000V(1.2/50us)
Amplitude of vibration: 0.3mm	Dielectric strength: 1500V AC, 1min
Electrical clearance and creepage distance: comply with EN 60947-1	Operating temperature: -20~+60℃
Overvoltage level: III	Storage temperature: -40~+85°C
Pollution degree: 2	Relative humidity: 10%~90%
Degree of protection: IP20	Mechanical lifetime of contacts: over 10^7 cycles

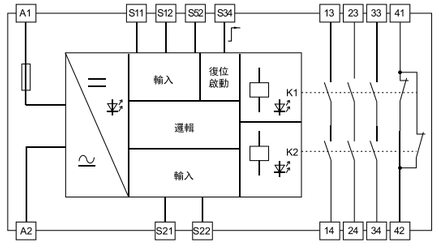
Safety

Performance Level: PLe	Comply with EN ISO13849	Mean time between dangerous failures for 10% of components (B_{10d}):
Safety Category (Cat.): Cat.4	Comply with EN ISO13849	
Mission Time (T_M): 20 years	Comply with EN ISO13849	DC-13 @ rated voltage (Ue)=24V:
Diagnostic coverage (DC/DC_{avg}): 99%	Comply with EN ISO13849	
Safety Integrity Level (SIL): SIL3	Comply with IEC61508, IEC62061	
Hardware Fault Tolerance (HFT): 1	Comply with IEC61508, IEC62061	
Safe Failure Fraction (SFF): 99%	Comply with IEC61508, IEC62061	AC-15 @ rated voltage (Ue)=250V:
Probability of Dangerous Failure (PFH_d): 3.09E-10/h	Comply with IEC61508, IEC62061	
Stop Category: 0	Comply with EN 60204-1	

Rated Current (Ie)	6A	3A	1.5A
Average Cycles	200,000	1,500,000	5,000,000

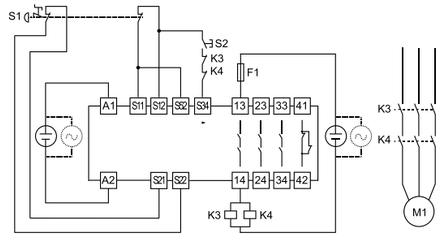
Rated Current (Ie)	5A	3A	1.5A
Average Cycles	300,000	1,000,000	2,000,000

Dimensions and Electrical Connections Overview

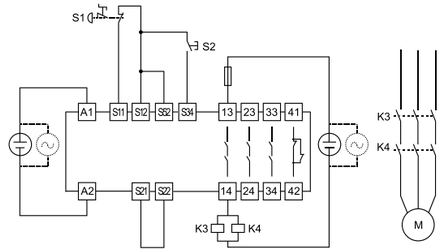


Ordering Information	Terminals	Package
RESR-01-3A1B-E	Screw connection	10

RESR-01-3A1B-E Wiring Schematics (Emergency stop button)

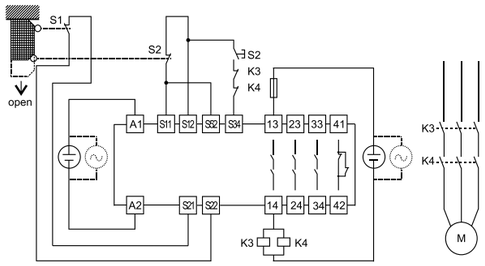


- Dual-channel emergency stop button input
- Short circuit between the channels monitoring
- Manual reset
- With output contact feedback
- Suitable for the highest Safety Category 4

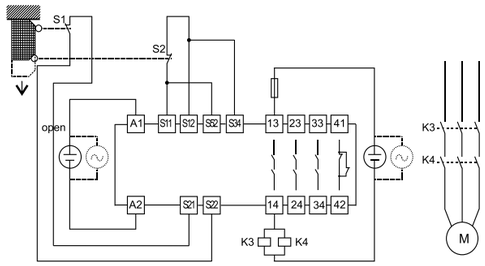


- Single-channel emergency stop button input
- Manual reset
- Suitable for the highest Safety Category 2

RESR-01-3A1B-E Wiring Schematics (Safety door)

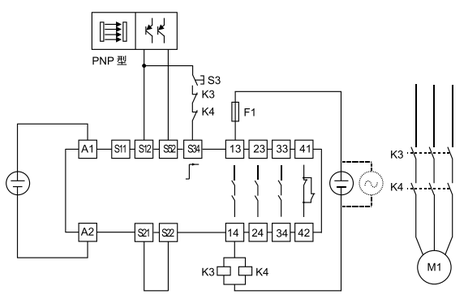


- Dual-channel safety door input
- Short circuit between the channels monitoring
- Manual reset
- With output contact feedback
- Suitable for the highest Safety Category 4

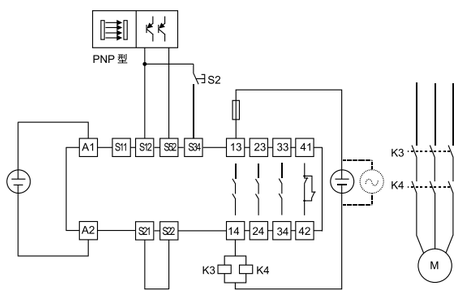


- Dual-channel safety door input
- Short circuit between the channels monitoring
- Auto reset
- Suitable for the highest safety level 4

RESR-01-3A1B-E Wiring Schematics (PNP Safety light curtain)



- Dual channel PNP safety light curtain input
- Manual reset
- With output contact feedback
- Suitable for the highest Safety Category 4



- Dual channel PNP safety light curtain input
- Manual reset
- Without output contact feedback
- Suitable for the highest Safety Category 4

Product Description

PLe Cat.4 EN/ISO13849

SIL3 IEC61508

CE

RESR-01-3A1B

Outputs: 3 NO, 1 NC

Emergency stop button

Safety door

RESR-01-3A1B is a safety relay suitable for the emergency stop button and the input for safety door control switch, with 3 NO (normally open) safety output contacts and 1 NC (normally closed) auxiliary output contact. It is possible to select single- or dual-channel operation, as well as manual or auto reset, with the function of monitoring short circuits between the channels.

Specification

Technical Data

Power Supply: Supply voltage:24V DC/AC	Time: Pick-up buffer time:
Voltage tolerance: 0.85~1.1	Emergency stop operation: ≤300ms, in auto reset mode
Current loss: ≤90mA(24V DC)	Power-on delay: ≤ 300ms, in auto reset mode
≤180mA(24V DC)	Manual reset: ≤ 150ms, in manual rest mode
Inputs: Input current: ≤50mA(24V DC)	Release buffer time:
Resistance of the leads: ≤15Ω	Emergency stop operation: ≤30ms
Input devices: emergency button, safety door	Power failure: ≤100ms
Outputs: Number of contacts: 3NO+1NC	Time to Recover:
Contacts material: $AgSnO_2$ + 0.2 μm Au	After emergency stop operation: ≤30ms
Contacts fuse protection: 10A gL/gG NEOZED (normally open contacts) / 6A gL/gG NEOZED (normally closed contacts)	After power failure: ≤100ms
Switching capacity (Comply with EN60947-5-1): AC-15, 5A / 230V; DC-13, 5A / 24V	Short power interruption: 20ms

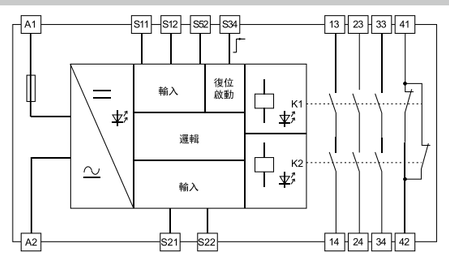
Environment

EMC: Comply with EN60947, EN61000-6-2, EN61000-6-4	Rated insulation voltage: 250V AC
Vibration frequency: 10~55Hz	Rated impulse voltage: 6000V(1.2/50us)
Amplitude of vibration: 0.35mm	Dielectric strength: 1500V AC, 1min
Electrical clearance and creepage distance: comply with EN 60947-1	Operating temperature: -20~+60°C
Overvoltage level: III	Storage temperature: -40~+85°C
Pollution degree: 2	Relative humidity: 10%~90%
Degree of protection: IP20	Mechanical lifetime of contacts: over 10^7 times

Safety

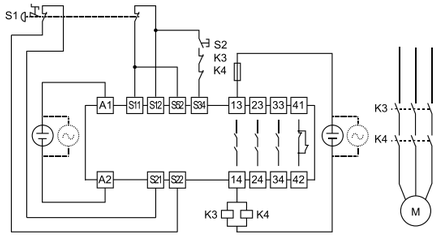
Performance Level: PLe	Comply with EN ISO13849	Mean time between dangerous failures for 10% of components (B_{10d}):			
Safety Category (Cat.): Cat.4	Comply with EN ISO13849	DC-13 @ rated voltage (Ue)=24V:			
Mission Time (T_M): 20 years	Comply with EN ISO13849	Rated Current (Ie)	5A	2A	1A
Diagnostic coverage (DC/DC_{avg}): 99%	Comply with EN ISO13849	Average Cycles	300,000	2,000,000	7,000,000
Safety Integrity Level (SIL): SIL3	Comply with IEC61508, IEC62061				
Hardware Fault Tolerance (HFT): 1	Comply with IEC61508, IEC62061				
Safe Failure Fraction (SFF): 99%	Comply with IEC61508, IEC62061	AC-15 @ rated voltage (Ue)=230V:			
Probability of Dangerous Failure (PFH_d): 3.09E-10/h	Comply with IEC61508, IEC62061	Rated Current (Ie)	5A	3A	1A
Stop Category: 0	Comply with EN 60204-1	Average Cycles	200,000	230,000	380,000

Dimensions and Electrical Connections Overview

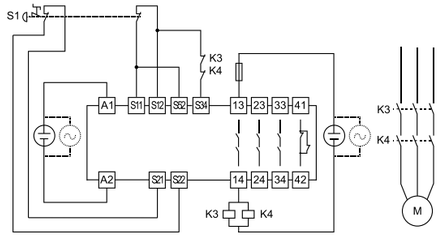


Ordering Information	Terminals	Package
RESR-01-3A1B	Screw connection	10
RESR-01-3A1B-S	Spring connection	10

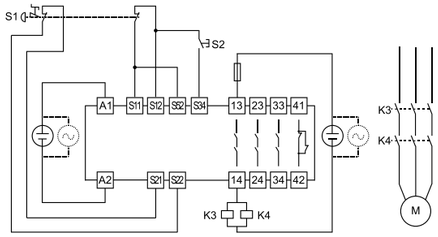
RESR-01-3A1B Wiring Schematics (Emergency stop button)



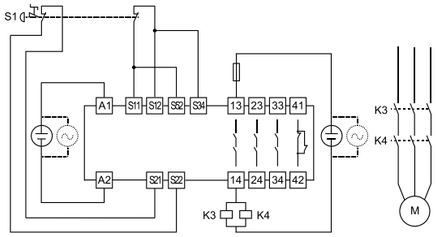
- Dual-channel emergency stop button input
- Short circuit between the channels monitoring
- Manual reset
- With output contact feedback
- Suitable for the highest Safety Category 4



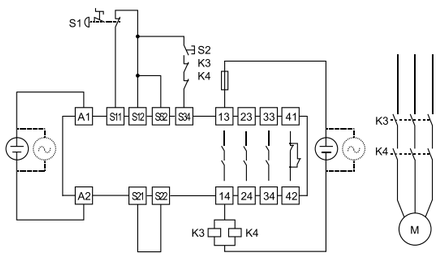
- Dual-channel emergency stop button input
- Short circuit between the channels monitoring
- Auto reset
- With output contact feedback
- Suitable for the highest Safety Category 4



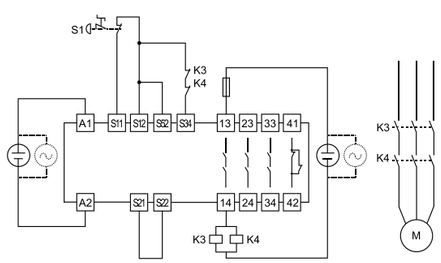
- Dual-channel emergency stop button input
- Short circuit between the channels monitoring
- Manual reset
- Suitable for the highest Safety Category 4



- Dual-channel emergency stop button input
- Short circuit between the channels monitoring
- Auto reset
- Suitable for the highest Safety Category 4

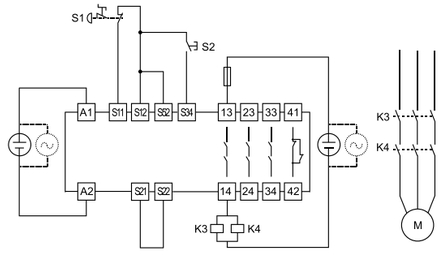


- Single-channel emergency stop button input
- Manual reset
- With output contact feedback
- Suitable for the highest Safety Category 2

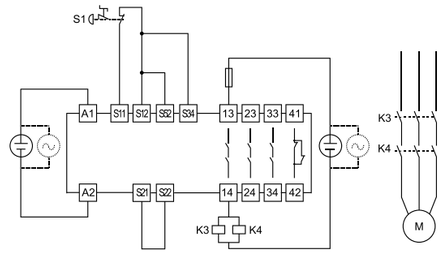


- Single-channel emergency stop button input
- Auto reset
- With output contact feedback
- Suitable for the highest safety level 2

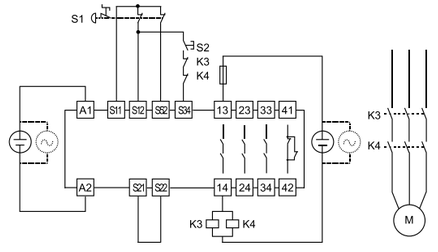
RESR-01-3A1B Wiring Schematics (Emergency stop button)



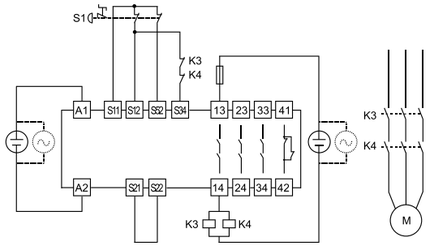
- Single-channel emergency stop button input
- Manual reset
- Suitable for the highest safety level 2



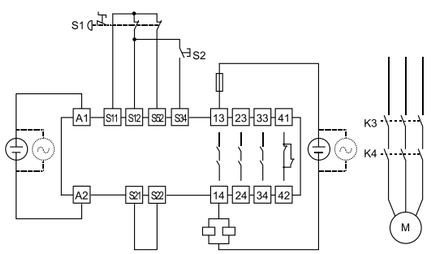
- Single-channel emergency stop button input
- Auto reset
- Suitable for the highest safety level 2



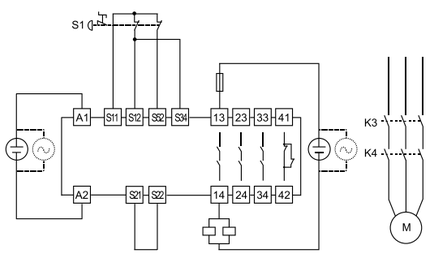
- Dual-channel emergency stop button input
- Manual reset
- With output contact feedback
- Suitable for the highest safety level 3



- Dual-channel emergency stop button input
- Auto reset
- With output contact feedback
- Suitable for the highest safety level 3

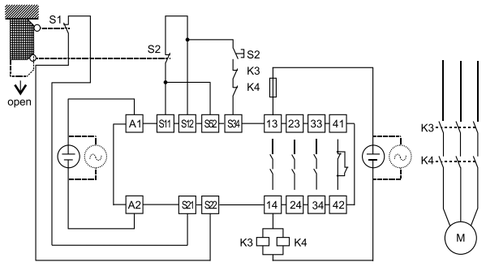


- Dual-channel emergency stop button input
- Manual reset
- Suitable for the highest safety level 3

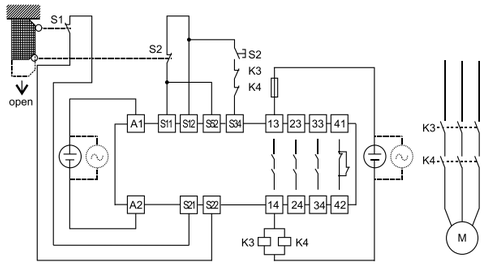


- Dual-channel emergency stop button input
- Auto reset
- Suitable for the highest safety level 3

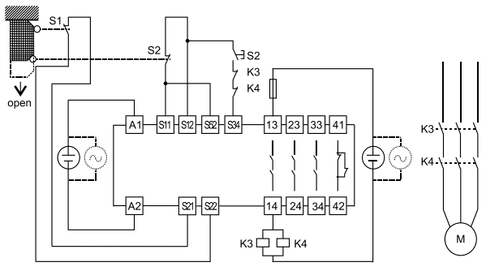
RESR-01-3A1B Wiring Schematics (Safety door)



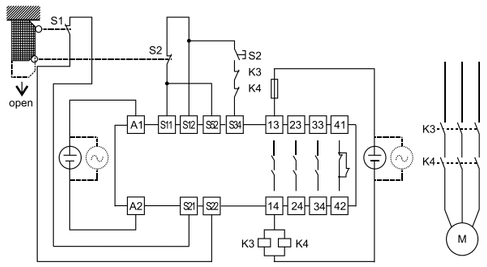
- Dual-channel safety door input
- Short circuit between the channels monitoring
- Manual reset
- With output contact feedback
- Suitable for the highest safety level 4



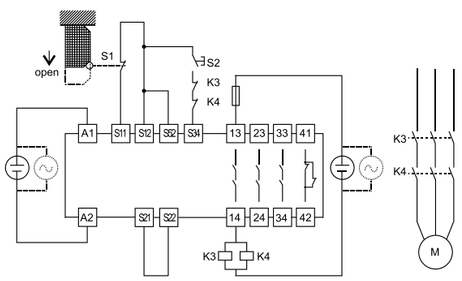
- Dual-channel safety door input
- Short circuit between the channels monitoring
- Auto reset
- With output contact feedback
- Suitable for the highest safety level 4



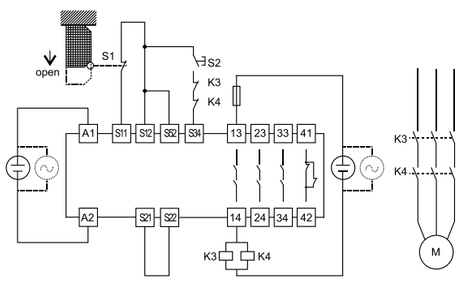
- Dual-channel safety door input
- Short circuit between the channels monitoring
- Manual reset
- Suitable for the highest safety level 4



- Dual-channel safety door input
- Short circuit between the channels monitoring
- Auto reset
- Suitable for the highest safety level 4

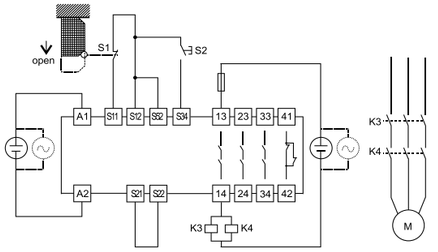


- Single-channel safety door input
- Manual reset
- With output contact feedback
- Suitable for the highest safety level 2

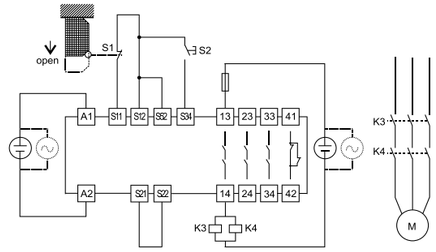


- Single-channel safety door input
- Auto reset
- With output contact feedback
- Suitable for the highest safety level 2

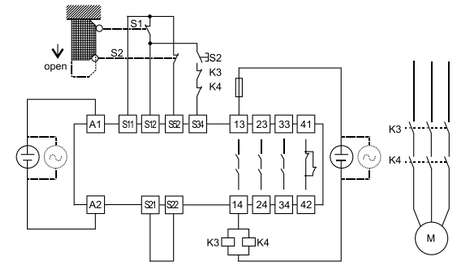
RESR-01-3A1B Wiring Schematics (Safety door)



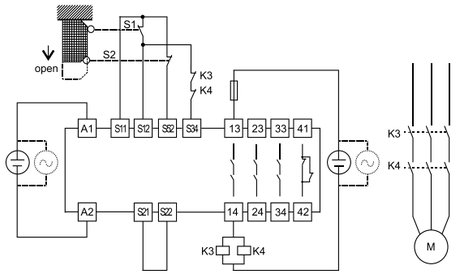
- Single-channel safety door input
- Manual reset
- Suitable for the highest safety level 2



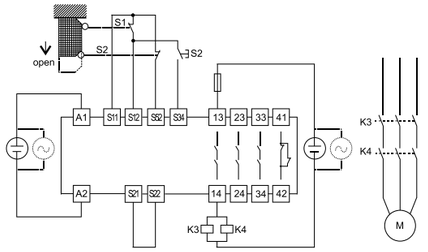
- Single-channel safety door input
- Auto reset
- Suitable for the highest safety level 2



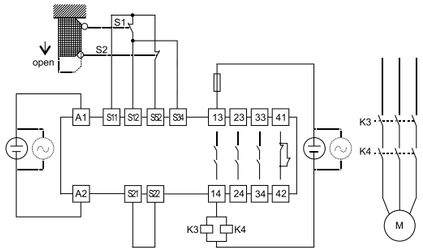
- Dual-channel safety door input
- Manual reset
- With output contact feedback
- Suitable for the highest safety level 3



- Dual-channel safety door input
- Auto reset
- With output contact feedback
- Suitable for the highest safety level 3

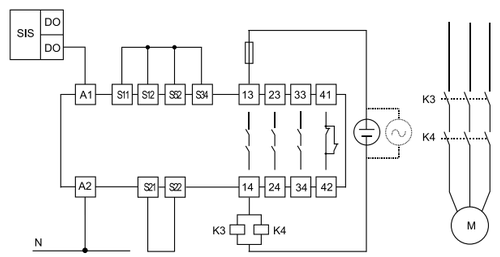


- Dual-channel safety door input
- Manual reset
- Suitable for the highest safety level 3



- Dual-channel safety door input
- Auto reset
- Suitable for the highest safety level 3

RESR-01-3A1B Wiring Schematics (Safety door)



- DO single input
- Auto reset

Product Description

RESR-01-3A1BM

Outputs: 3 NO, 1 NC

Emergency stop button | Safety door

RESR-01-3A1BM is a safety relay suitable for the emergency stop button and the input for safety door control switch, with 3 NO (normally open) safety output contacts and 1 NC (normally closed) auxiliary output contact. It is possible to select single- or dual-channel operation, as well as manual or auto reset, with the functions of monitoring short circuits between the channels and reset button monitoring.

Specification

Technical Data

Power Supply: Supply voltage:24V DC/AC	Time: Pick-up buffer time:
Voltage tolerance: 0.85~1.1	Manual reset: ≤ 150ms, in manual rest mode
Current loss: ≤90mA(24V DC)	Release buffer time:
≤180mA(24V DC)	Emergency stop operation: ≤30ms
Inputs: Input current: ≤50mA(24V DC)	Power failure: ≤100ms
Resistance of the leads: ≤15Ω	Time to Recover:
Input devices: emergency button, safety door	After emergency stop operation: ≤30ms
Outputs: Number of contacts: 3NO+1NC	After power failure: ≤100ms
Contacts material: $AgSnO_2$ + 0.2 μm Au	Short power interruption: 20ms
Contacts fuse protection: 10A gL/gG NEOZED (normally open contacts) / 6A gL/gG NEOZED (normally closed contacts)	
Switching capacity (Comply with EN60947-5-1): AC-15, 5A / 230V; DC-13, 5A / 24V	

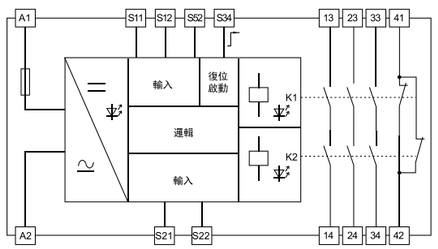
Environment

EMC: Comply with EN60947, EN61000-6-2, EN61000-6-4	Rated insulation voltage: 250V AC
Vibration frequency: 10~55Hz	Rated impulse voltage: 6000V(1.2/50us)
Amplitude of vibration: 0.35mm	Dielectric strength: 1500V AC, 1min
Electrical clearance and creepage distance: comply with EN 60947-1	Operating temperature: -20~+60°C
Overvoltage level: III	Storage temperature: -40~+85°C
Pollution degree: 2	Relative humidity: 10%~90%
Degree of protection: IP20	Mechanical lifetime of contacts: over 10^7 times

Safety

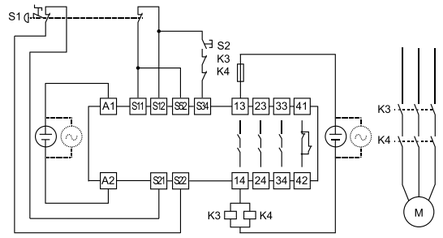
Performance Level: PLe	Comply with EN ISO13849	Mean time between dangerous failures for 10% of components (B_{10d}):			
Safety Level (Cat.): Cat.4	Comply with EN ISO13849	DC-13 @ rated voltage (Ue)=24V:			
Mission Time (T_M): 20 years	Comply with EN ISO13849				
Diagnostic coverage (DC/DC_{avg}): 99%	Comply with EN ISO13849	Rated Current (Ie)	5A	2A	1A
Safety Integrity Level (SIL): SIL3	Comply with IEC61508, IEC62061	Average Cycles	300,000	2,000,000	7,000,000
Hardware Fault Tolerance (HFT): 1	Comply with IEC61508, IEC62061				
Safe Failure Fraction (SFF): 99%	Comply with IEC61508, IEC62061	AC-15 @ rated voltage (Ue)=230V:			
Probability of Dangerous Failure (PFH_d): 3.09E-10/h	Comply with IEC61508, IEC62061	Rated Current (Ie)	5A	3A	1A
Stop Category: 0	Comply with EN 60204-1	Average Cycles	200,000	230,000	380,000

Dimensions and Electrical Connections Overview

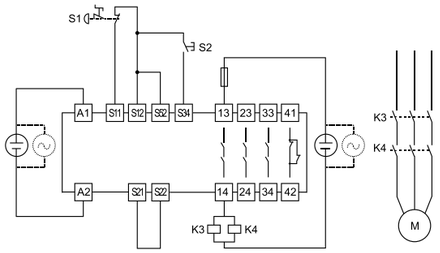


Ordering Information	Terminals	Package
RESR-01-3A1BM	Screw connection	10
RESR-01-3A1BM-S	Spring connection	10

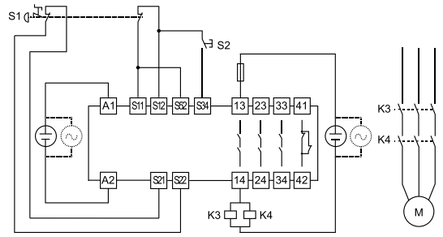
RESR-01-3A1BM Wiring Schematics (Emergency stop button)



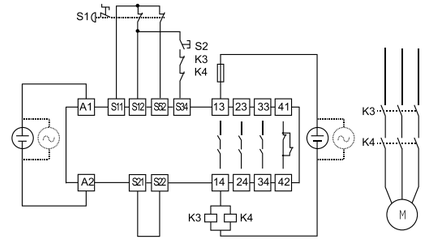
- Dual-channel emergency stop button input
- Short circuit between the channels monitoring
- Manual reset (Reset button monitoring)
- With output contact feedback
- Suitable for the highest safety level 4



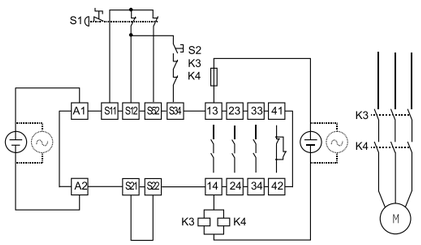
- Single-channel emergency stop button input
- Manual reset (Reset button monitoring)
- Suitable for the highest safety level 2



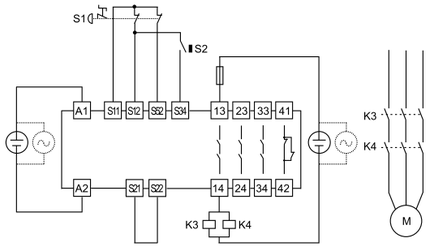
- Dual-channel emergency stop button input
- Short circuit between the channels monitoring
- Manual reset (Reset button monitoring)
- Suitable for the highest safety level 4



- Dual-channel emergency stop button input
- Manual reset (Reset button monitoring)
- With output contact feedback
- Suitable for the highest safety level 3

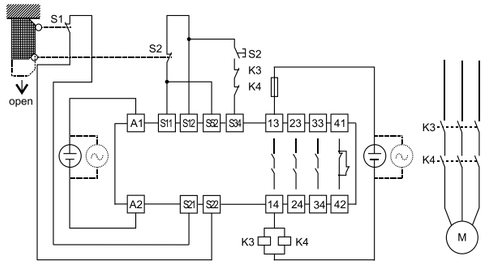


- Single-channel emergency stop button input
- Manual reset
- With output contact feedback
- Suitable for the highest safety level 2

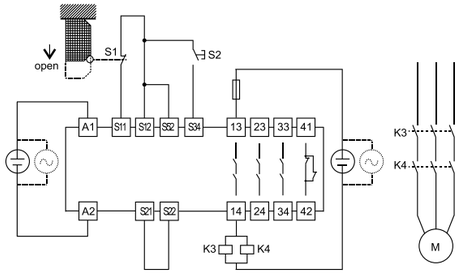


- Dual-channel emergency stop button input
- Manual reset (Reset button monitoring)
- Suitable for the highest safety level 3

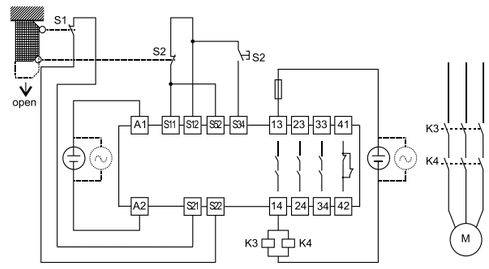
RESR-01-3A1BM Wiring Schematics (Safety door)



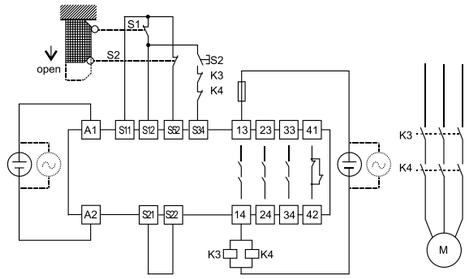
- Dual-channel safety door input
- Short circuit between the channels monitoring
- Manual reset (Reset button monitoring)
- With output contact feedback
- Suitable for the highest safety level 4



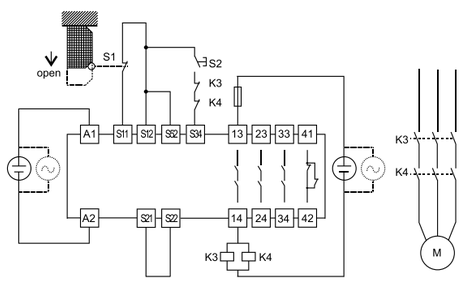
- Single-channel safety door input
- Manual reset (Reset button monitoring)
- Suitable for the highest safety level 2



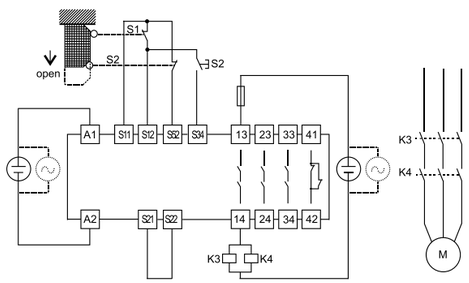
- Dual-channel safety door input
- Short circuit between the channels monitoring
- Manual reset (Reset button monitoring)
- Suitable for the highest safety level 4



- Dual-channel safety door input
- Manual reset (Reset button monitoring)
- Short circuit between the channels monitoring
- Suitable for the highest safety level 3



- Single-channel safety door input
- Manual reset (Reset button monitoring)
- With output contact feedback
- Suitable for the highest safety level 2



- Dual-channel safety door input
- Manual reset (Reset button monitoring)
- Suitable for the highest safety level 3

Product Description

RESR-11-3A1B-P

Outputs: 3 NO, 1 NC

Emergency stop button | Safety door | Safety light curtain

RESR-11-3A1B-P is a safety relay suitable for the emergency stop button and the safety door control switch, with 3 NO (normally open) safety output contacts and 1 NC (normally closed) auxiliary output contact. It is possible to select single- or dual-channel operation, as well as manual or auto reset, with the function of monitoring short circuits between the channels.

Specification

Technical Data

Power Supply: Supply voltage:24V DC/AC	Time: Pick-up buffer time:
Voltage tolerance: 0.85~1.1	Emergency stop operation ≤300ms in auto reset mode
Current loss: ≤90mA(24V DC)	Power-on delay: ≤ 300ms, in auto reset mode
≤180mA(24V DC)	Manual reset: ≤ 150ms, in manual rest mode
Inputs: Input current: ≤50mA(24V DC)	Release buffer time:
Resistance of the leads: ≤15Ω	Emergency stop operation: ≤30ms
Input devices: emergency button, safety door	Power failure: ≤100ms
Outputs: Number of contacts: 3NO+1NC	Time to Recover:
Contacts material: $AgSnO_2$ + 0.2 μm Au	After emergency stop operation: ≤30ms
Contacts fuse protection: 10A gL/gG NEOZED (normally open contacts) / 6A gL/gG NEOZED (normally closed contacts)	After power failure: ≤100ms
Switching capacity (Comply with EN60947-5-1): AC-15, 5A / 230V; DC-13, 5A / 24V	Short power interruption: 20ms

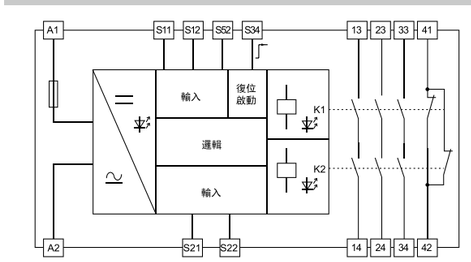
Environment

EMC: Comply with EN60947, EN61000-6-2, EN61000-6-4	Rated insulation voltage: 250V AC
Vibration frequency: 10~55Hz	Rated impulse voltage: 6000V(1.2/50us)
Amplitude of vibration: 0.35mm	Dielectric strength: 1500V AC, 1min
Electrical clearance and creepage distance: comply with EN 60947-1	Operating temperature: -20~+60℃
Overvoltage level: III	Storage temperature: -40~+85℃
Pollution degree: 2	Relative humidity: 10%~90%
Degree of protection: IP20	Mechanical lifetime of contacts: over 10^7 times

Safety

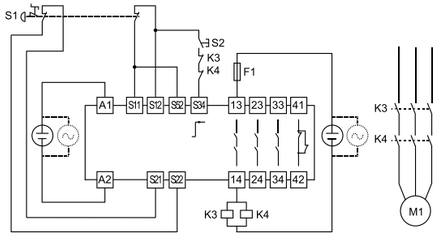
Performance Level: PLe	Comply with EN ISO13849	Mean time between dangerous failures for 10% of components (B_{10d}):			
Safety Level (Cat.): Cat.4	Comply with EN ISO13849	DC-13 @ rated voltage (Ue)=24V:			
Mission Time (T_M): 20 years	Comply with EN ISO13849	Rated Current (Ie)	5A	2A	1A
Diagnostic coverage (DC/DC_{avg}): 99%	Comply with EN ISO13849	Average Cycles	300,000	2,000,000	7,000,000
Safety Integrity Level (SIL): SIL3	Comply with IEC61508, IEC62061				
Hardware Fault Tolerance (HFT): 1	Comply with IEC61508, IEC62061				
Safe Failure Fraction (SFF): 99%	Comply with IEC61508, IEC62061	AC-15 @ rated voltage (Ue)=230V:			
Probability of Dangerous Failure (PFH_d): 3.09E-10/h	Comply with IEC61508, IEC62061	Rated Current (Ie)	5A	3A	1A
Stop Category: 0	Comply with EN 60204-1	Average Cycles	200,000	230,000	380,000

Dimensions and Electrical Connections Overview

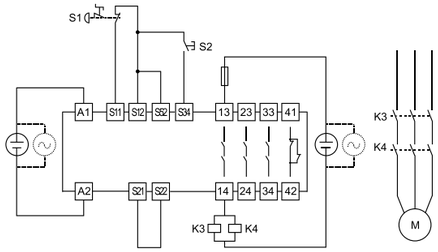


Ordering Information	Terminals	Package
RESR-11-3A1B-P	Screw connection	10
RESR-11-3A1B-PS	Spring connection	10

RESR-11-3A1B-P Wiring Schematics (Emergency stop button)

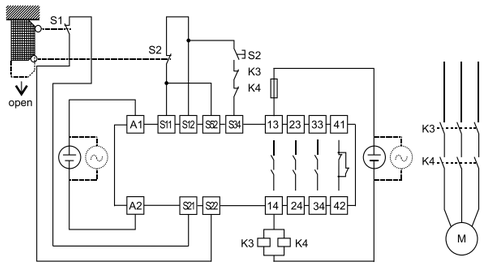


- Dual-channel emergency stop button input
- Short circuit between the channels monitoring
- Manual reset
- With output contact feedback
- Suitable for the highest safety level 4

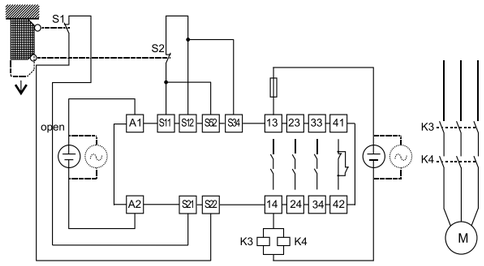


- Single-channel emergency stop button input
- Manual reset
- Suitable for the highest safety level 2

RESR-11-3A1B-P Wiring Schematics (Safety door)

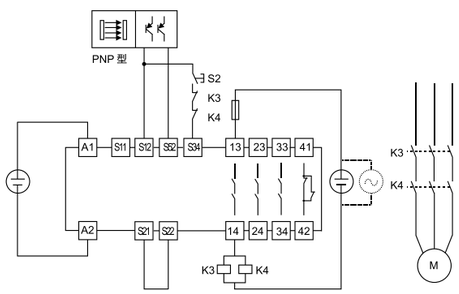


- Dual-channel safety door input
- Short circuit between the channels monitoring
- Manual reset
- With output contact feedback
- Suitable for the highest safety level 4

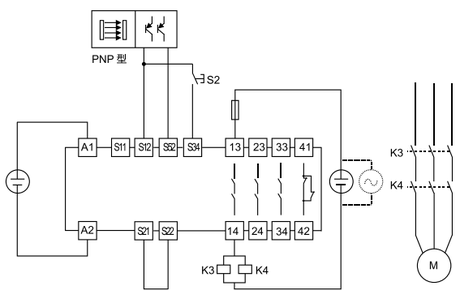


- Dual-channel safety door input
- Short circuit between the channels monitoring
- Auto reset
- Suitable for the highest safety level 4

RESR-11-3A1B-P Wiring Schematics (PNP Safety light curtain)



- Dual channel PNP safety light curtain input
- Manual reset
- With output contact feedback
- Suitable for the highest safety level 4



- Dual channel PNP safety light curtain input
- Manual reset
- Suitable for the highest safety level 4

Product Description

RESR-21-3A1B

Outputs: 3 NO, 1 NC

Two hand button

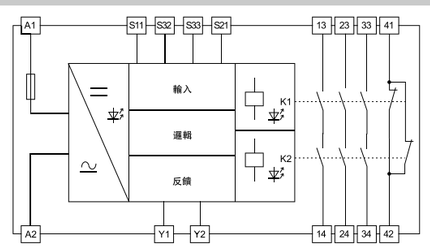
RESR-21-3A1B is a safety relay suitable for two-hand buttons, with 3 NO (normally open) safety output contacts and 1 NC (normally closed) auxiliary output contact. It has a dual-channel input mode, auto reset, and a synchronization detection function of no more than 0.5s.

Specification

Technical Data	
Power Supply: Supply voltage:24V DC/AC	Time: Pick-up buffer time: ≤ 30ms
Voltage tolerance: 0.85~1.1	Release buffer time: ≤ 15ms
Current loss: DC power supply: ≤60mA, 24V DC	Time to Recover: ≤ 250ms
AC power supply: ≤140mA, 24V AC	Time to synchronize: ≤500ms (Typical 300ms)
Inputs: Input current: ≤50mA(24V DC)	Short power interruption: 20ms
Resistance of the leads: ≤15Ω	
Input device: Two-hand button	
Outputs: Number of contacts: 3NO+1NC	
Contacts material: $AgSnO_2$ + 0.2 μm Au	
Contacts fuse protection: 10A gL/gG NEOZED (normally open contacts) / 6A gL/gG NEOZED (normally closed contacts)	
Switching capacity (Comply with EN60947-5-1): AC-15, 5A / 230V; DC-13, 5A / 24V	
Environment	
EMC: Comply with EN60947, EN61000-6-2, EN61000-6-4	Rated insulation voltage: 250V AC
Vibration frequency: 10~55Hz	Rated impulse voltage: 6000V(1.2/50us)
Amplitude of vibration: 0.35mm	Dielectric strength: 1500V AC, 1min
Electrical clearance and creepage distance: comply with EN 60947-1	Operating temperature: -20~+60°C
Overvoltage level: III	Storage temperature: -40~+85°C
Pollution degree: 2	Relative humidity: 10%~90%
Degree of protection: IP20	Mechanical lifetime of contacts: over 10^7 times

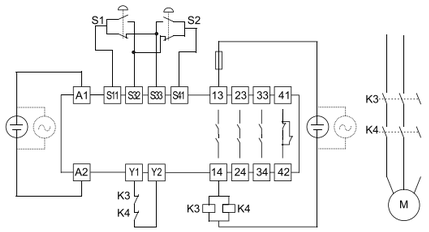
Safety					
Performance Level: PLe	Comply with EN ISO13849	Mean time between dangerous failures for 10% of components (B_{10d}):			
Safety Level (Cat.): Cat.4	Comply with EN ISO13849	DC-13 @ rated voltage (Ue)=24V:			
Mission Time (T_M): 20 years	Comply with EN ISO13849	Rated Current (Ie)	5A	2A	1A
Diagnostic coverage (DC/DC_{avg}): 99%	Comply with EN ISO13849	Average Cycles	300,000	2,000,000	7,000,000
Safety Integrity Level (SIL): SIL3	Comply with IEC61508, IEC62061				
Hardware Fault Tolerance (HFT): 1	Comply with IEC61508, IEC62061				
Safe Failure Fraction (SFF): 99%	Comply with IEC61508, IEC62061	AC-15 @ rated voltage (Ue)=230V:			
Probability of Dangerous Failure (PFH_d): 3.06E-10/h	Comply with IEC61508, IEC62061	Rated Current (Ie)	5A	3A	1A
Stop Category: 0	Comply with EN 60204-1	Average Cycles	200,000	230,000	380,000

Dimensions and Electrical Connections Overview

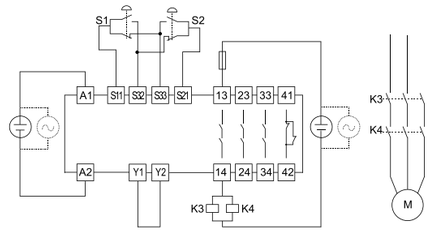


Ordering Information	Terminals	Package
RESR-21-3A1B	Screw connection	10
RESR-21-3A1B-S	Spring connection	10

RESR-21-3A1B Wiring Schematics (Two-hand button)



- Two-hand button input
- Auto reset
- With output contact feedback
- Suitable for the highest safety level 4



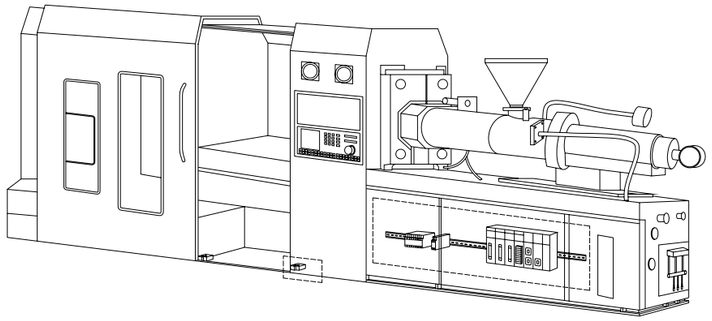
- Two-hand button input
- Manual reset
- Suitable for the highest safety level 4

Basics to Safety Relays

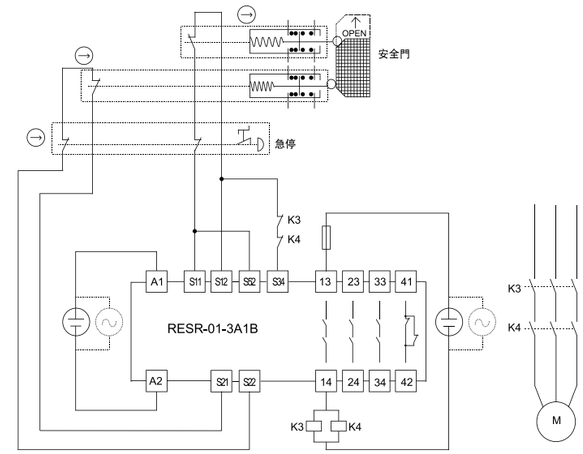
Safety relays are mainly used in the safety control circuit to monitor safety sensing components (such as emergency stop buttons, safety doors, two-hand buttons, safety light curtains, etc.) and motion controllers of mechanical equipment (such as solenoid valves, contactors, etc.).

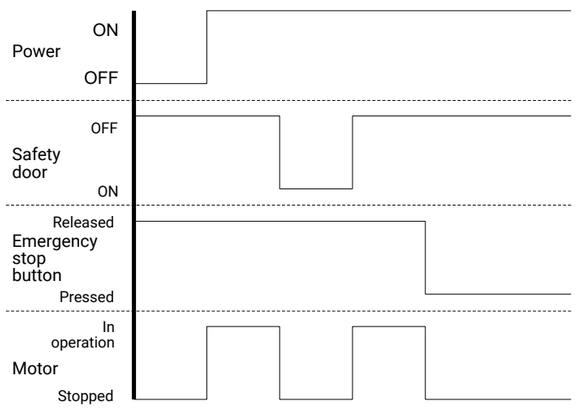
Appendix 1: Typical Applications of the Safety Relays

Applications 1: Injection Molding Machine



Wiring Schematics

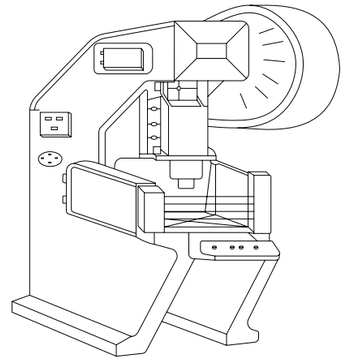




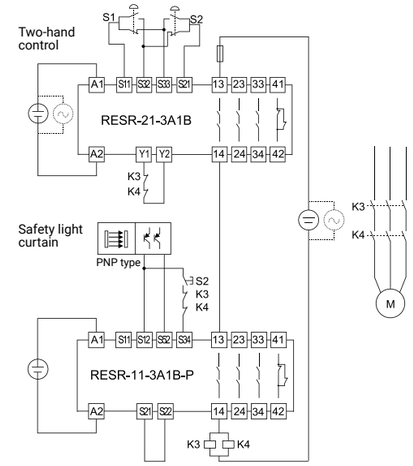
The safety control system of the injection molding machine is generally composed of devices such as safety doors, emergency stop buttons, and safety relays. The hazard mainly comes from the crushing of the mold closing. A safety door is used to keep the operator away from the hazardous area. When the safety door is closed, the mold closing activates (the motor is in operation), and when the safety door is opened, the mold closing stops (the motor stops). RESR series safety relays have TUV safety certification and EU CE certification, providing customers with reliable safety solutions.

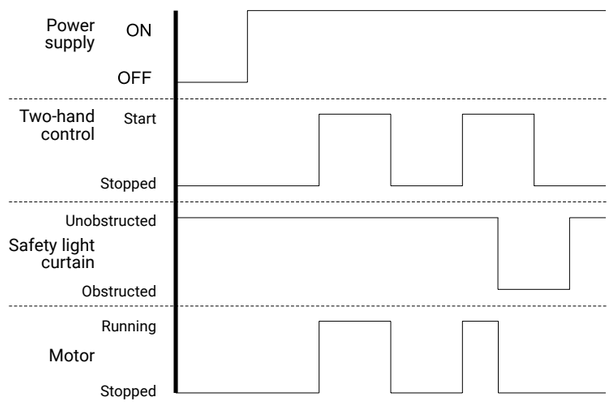
Appendix 1: Typical Applications of the Safety Relays

Application 2: Punching Machine



Wiring Schematics





The safety control system of the punching machine is generally composed of devices such as two-hand button, emergency stop buttons, safety light curtain, and safety relays. The hazard mainly comes from the impact. The operator needs to use both hands to start the punching operation (motor is in operation), and the safety light curtain will stop the punching operation (motor stops) when the operator's limbs enter the working area of the punching machine. RESR series safety relays have TUV safety certification and EU CE certification, providing customers with reliable safety solutions.

Appendix 2: Basics to Functional Safety of the Safety Relays

Introduction to Functional Safety Certification (SIL)

SIL 3 IEC61508

Certification standard: IEC 61508:2010 Functional safety of electrical/electronic/programmable electronic safety-related systems

The IEC 61508 international standard covers the functional safety-related activities at all stages in many industrial fields. It is currently the most authoritative functional safety standard for electrical, electronic, and programmable electronic (E/F/PES) safety-related systems. IEC 61508 proposes a common approach to the safe lifecycle activities for E/F/PES used for safety functions. The main goal is to develop corresponding functional safety standards for various industrial fields and provide a reasonable, unified, and consistent technical guideline.

Certification standard: IEC 62061:2012 Functional safety of safety-related electrical, electronic and programmable electronic control systems

The IEC 62021 international standard mainly focuses on the functional safety requirements for safety-related electrical, electronic, and programmable electronic control systems. It specifies a systematic procedure to be followed when implementing a safety system and is more suitable for evaluating more complex electronic systems. Based on the PFH (Probability of Dangerous Failure per Hour) of each control channel derived from relevant calculations, the components or systems are classified into three SIL levels: SIL 1, SIL 2, and SIL 3. These three SIL levels are only for electronic and electrical systems.

ANSI/ISA-84.00.01-2004 (61511-1 Mod) requires that equipment used in safety instrumented systems (SIS) shall obtain the required safety integrity level (SIL) certification, or be used reasonably according to the principle of prior use ANSI/ISA-84.00.01-2004 (IEC 61511-1 Mod, Section 11.5.3).

The role of the safety function is to reduce the risk of dangerous events to an acceptable level, thereby ensuring that the controlled equipment is in a safe state. SIL represents the ability of SIS to complete the required safety functions within a specified state and period. SIL is a discrete level. The higher the level, the lower the probability that the SIS can't complete the required safety function. SIL4 is the highest level, and SIL1 is the lowest level.

Safety integrity level requirements for target failure rate in high demand mode

SIL	Probability of Dangerous Failure per Hour (PFH)	PL
No specific requirement	$\geq 10^{-5}$ and $<10^{-4}$	a
1	$\geq 3x10^{-6}$ and $<10^{-5}$	b
1	$\geq 10^{-6}$ and $< 3x10^{-6}$	c
2	$\geq 10^{-7}$ and $<10^{-6}$	d
3	$\geq 10^{-8}$ and $<10^{-7}$	e

During the certification process of functional safety, the products are assess from the following aspects:

Assess the management system for the functional safety: To ensure that the implementation of E/E/PE safety-related systems can achieve and maintain the required functional safety, the management and technical activities of the organization or individual responsible for one or several stages of its life cycle must comply with the requirements of GB/T 20438, which is equivalent to IEC 61508.

Determine the SIL level: Failure rate calculation and FMEA analysis. Failure rate analysis should be performed on each component of the system and the average failure rate of the system should be obtained.

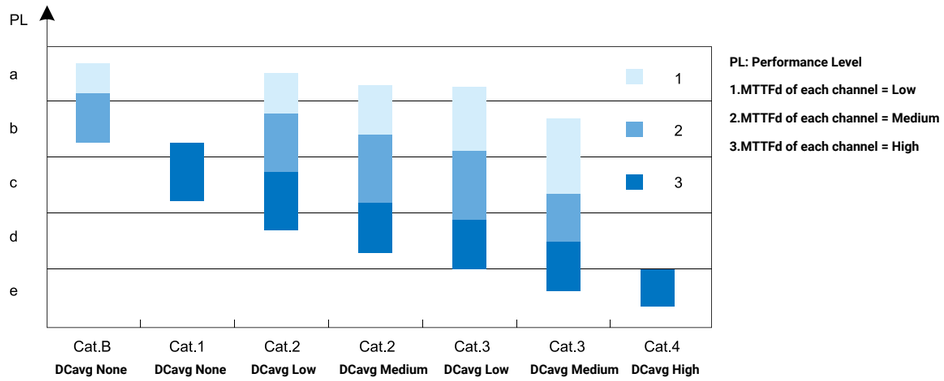
Assess the performance and environmental adaptability: Functional safety leads higher demands on EMC performance, and the severity of its inspection and testing is higher than the EMC performance requirements of general explosion-proof electrical products.

Appendix 2: Basics to Functional Safety of the Safety Relays

Mechanical Safety (PL) Introduction

Certification standard: ISO 13849-1: Safety of machinery – Safety-related parts of control systems Part 1: General principles for design

The ISO 13849 standard refers to the categories B, 1, 2, 3, and 4 of the previous EN 954-1. It considers comprehensively the reliability indicators such as the mean time to dangerous failure (MTTFd), diagnostic coverage (DC), and common cause failure (CCF) of components, and defines a new indicator for assessing the performance of safety control systems - PL (performance level). The five performance levels (a to e) are expressed as specified ranges of probability of dangerous failure per hour and can correspond to SIL classifications.



The relationship among Performance Level (PL), the category of each channel, DCavg, and MTTFd.

Description of Certification Parameters

Performance Level (PL): Discrete level used to specify the ability of safety-related parts of control systems to perform a safety function under foreseeable conditions. There are five levels: a, b, c, d, and e. Level e is the highest level.

Safety Category (Cat): The classification of the safety-related parts of a control system in respect of their resistance to faults and their subsequent behavior in the fault condition, and which is achieved by the structural arrangement of the parts and/or by their reliability.

Mission Time (T_M): The period during which the safety components of the control system are intended to be used. The larger the value, the better.

Diagnostic Coverage (DC/DC_{avg}): A measure of the diagnostic effectiveness, which can be the ratio of the failure rate of diagnosable dangerous failures to the failure rate of all dangerous failures.

Safety Integrity Level (SIL): A discrete level (one of four possible levels) used to specify the safety integrity requirements of the safety functions assigned to E/E/PE safety-related systems. Here, Safety Integrity Level 4 is the highest and Safety Integrity Level 1 is the lowest.

Hardware Fault Tolerance (HFT)：A hardware fault tolerance N means that N+1 faults will result in loss of full functionality. When determining the hardware fault tolerance, other measures that may control the impact of the faults, such as diagnostics, are not considered.

Safe Failure Fraction (SFF): The ratio of the average safe failure rate plus the average detected dangerous failure rate to the total average failure rate.

Probability of Dangerous Failure (PFH_d): The probability of a failure occurring hourly that would result in a safety-related system being in a potentially dangerous or non-functional state.

Stop Category: There are three stop categories:

Stop Category 0 – Stopping by immediately removing the electrical power to the machine drives.

Stop Category 1 – The stop is controlled, with the electrical power to the machine drives maintained during the stopping process, and then removing the power when the stop is achieved.

Stop Category 2 – The stop is controlled, but the drives are energized.

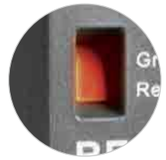
B_{10d}: Mean time between 10% of components fail dangerously.

T2 Surge Protection Device RES2 Series

- Used for the surge protection of 220V/380VAC power grids
- Used for the surge protection of power supply below 1500VDC
- High energy gas discharge tube (GDT module)
- Surge protection device modules: supports hot-swap, easy maintenance
- Visualized indication window for operating status
- With remote signaling function (for the models with “F”)

T2 Surge Protection Device RES2 Series

The induced lightning current generated by lightning, switch operation, etc. could be hazardous to the power supply system. Once the power supply fails, it will cause huge losses, especially for industrial facilities. With Dinkle T2 Surge Protection Devices, complete lightning protection for the power supply system is achieved, reducing the property damages and preventing personal injury.



Status indicator window

The alarm indicator window on the protection device shows the operating status of the protection device (Green indicates normal operation, Red indicates malfunction and needs to be replaced).

Hot-swap capability

Modular plug-in structure provides users with high convenience

Remote alarming function

The remote alarming function is achieved by reliable mechanical dry contacts.

Innovative patented technology

- Patent (Patent No.: ZL201720580629.7) Tripping design, completely isolates the electrodes after tripping. Short circuit withstand up to 1000A (without external disconnector)
- Innovative welding and automatic production process, with a reliable quality
- Salt spray (96 hours), vibration (2G), environmental testing (-40 ~ 110°C) according to the highest industry standards, suitable for harsh environments such as offshore and high altitude.

Quality Assurance

Intellectual Property Office
3 Utility Model Patents
Patent No.: ZL201720580629.7
ZL201720580446.5
ZL201720578782.6

Shanghai Lightning Protection Product Test Center
Lightning protection performance test

Intertek
CE Certification

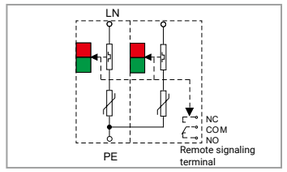
T2 Surge Protection Device RES2 Series (40kA)

Used for the surge protection of 220V/380VAC power grid

- Operating status indicator
  Green: normal
  Red: failed
- With remote signaling function (for the models with “F”)
- Ultra-low leakage current, response in seconds
- Standards for Testing:
  GB/T 18802.11
  IEC 61643-11
- Installation: Power distribution control cabinet

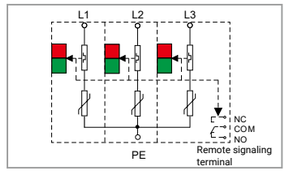
Single phase (TN)

RES2-40-2P
RES2-40-2PF



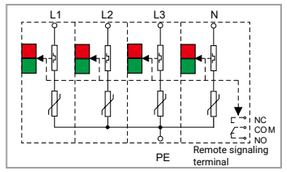
3-phase 4-wire (TN-C)、3-phase 3-wire (IT)

RES2-40-3P
RES2-40-3PF



3-phase 5-wire (TN-S)

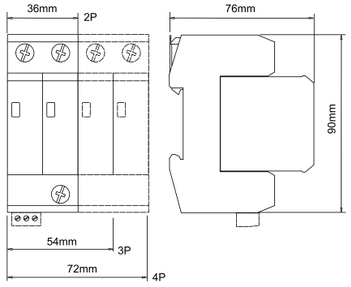
RES2-40-4P
RES2-40-4PF



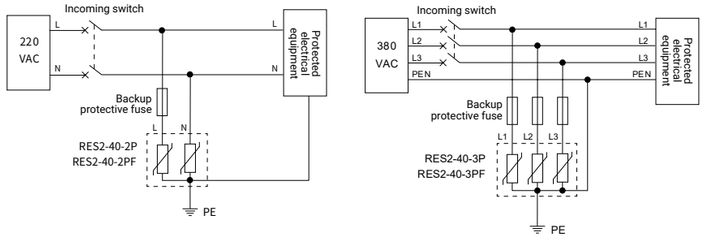
Technical Data

SPD according to IEC 61643-11	Class II		
Max. Operating Voltage Uc	385VAC		
Rated Discharge Current In(8/20μs)	20kA		
Max. Discharge Current Imax(8/20μs)	40kA		
Voltage Protection Level Up	1.7kV		
Recommended Backup Fuse	80A gG		
Short-circuit Withstand I_{SCCR} (without external disconnector)	1000A		
Recommended Copper Grounding Wire Diameter	4~35mm²		
Response Time	＜ 25 ns		
Operating Temperature	-40 °C ~ +70 °C		
Leakage Current	＜ 20μA		
Remote Signaling Interface (for the models with “F”)	250VAC/0.5A, 24VDC/0.5A		
Degree of protection for Housing (according to IEC60529)	IP 20		
Housing material / flame retardancy (UL94)	PA66 / V0		
Installation	35 mm DIN rail		
Standards for Testing	GB/T 18802.11 / IEC 61643-11		
Min. package	10pcs		
Dimension (TxHxW), in mm	36×76x90	54×76x90	72×76x90
Certified	CE		
Lightning protection performance test	Shanghai Lightning Protection Product Test Center		

Dimensions



Typical Applications



Note: An overcurrent protection device should be connected in series upstream of the SPD to prevent damage to the power supply system due to SPD aging or short circuit.
The upper lead of the SPD (connected to L/N) should use a copper wire with a diameter ≥4mm², while the lower lead (connected to PE) should use a copper wire with a diameter ≥6mm2.

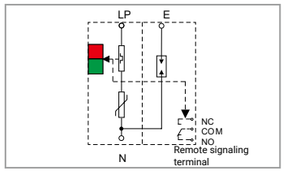
T2 Surge Protection Device RES2 Series (40kA)

Used for the surge protection of 220V/380VAC power grid

- Operating status indicator
  Green: normal
  Red: failed
- With remote signaling function (for the models with “F”)
- Ultra-low leakage current, response in seconds
- Standards for Testing:
  GB/T 18802.11
  IEC 61643-11
- Installation: Power distribution control cabinet

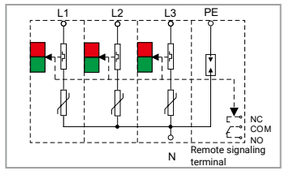
Single phase (TN)

RES2-40-1PN1
RES2-40-1PN1F



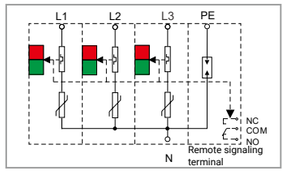
3-phase 4-wire (TT)

RES2-40-3PN1
RES2-40-3PN1F



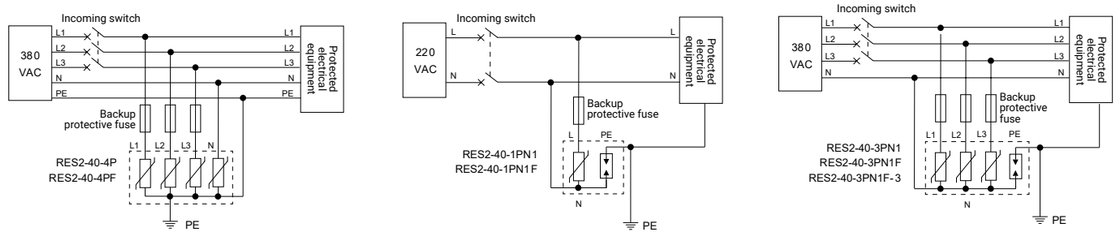
3-phase 4-wire (TT)

RES2-40-3PN1F-3



Technical Data	RES2-80G Module (GDT Module)	RES2-80G Module (GDT Module)	RES2-80G Module (GDT Module)
Class II			
385VAC	255VAC	255VAC	255VAC
20kA	40kA	40kA	40kA
40kA	80kA	80kA	80kA
1.7kV	1.2kV	1.2kV	1.2kV
80A gG			
1000A			
4~35mm²			
＜ 25 ns			
-40 °C ~ +70 °C			
＜ 20μA			
250VAC/0.5A, 24VDC/0.5A			
IP 20			
PA66 / V0			
35 mm DIN rail			
GB/T 18802.11 / IEC 61643-11			
10pcs			
-	36×76x90	72×76x90	72×76x90
CE			
Shanghai Lightning Protection Product Test Center			

Typical Applications



Note: An overcurrent protection device should be connected in series upstream of the SPD to prevent damage to the power supply system due to SPD aging or short circuit.
The upper lead of the SPD (connected to L/N) should use a copper wire with a diameter ≥4mm², while the lower lead (connected to PE) should use a copper wire with a diameter ≥6mm2.

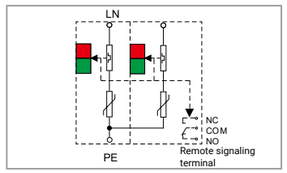
T2 Surge Protection Device RES2 Series (80kA)

Used for the surge protection of 220V/380VAC power grid

- Operating status indicator
  Green: normal
  Red: failed
- With remote signaling function (for the models with “F”)
- Ultra-low leakage current, response in seconds
- Standards for Testing:
  GB/T 18802.11
  IEC 61643-11
- Installation: Power distribution control cabinet

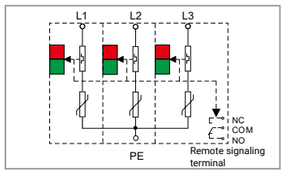
Single phase (TN)

RES2-80-2P
RES2-80-2PF



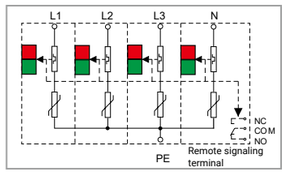
3-phase 4-wire (TN-C)、3-phase 3-wire (IT)

RES2-80-3P
RES2-80-3PF



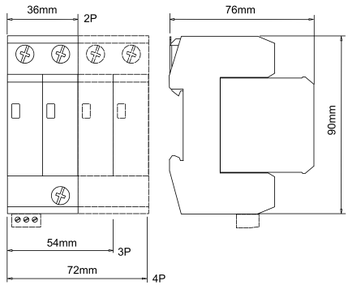
3-phase 5-wire (TN-S)

RES2-80-4P
RES2-80-4PF

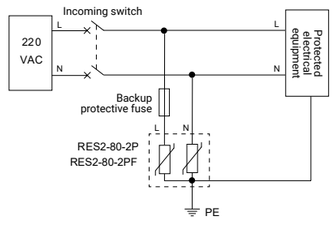


Technical Data			
SPD according to IEC 61643-11	Class II		
Max. Operating Voltage Uc	385VAC		
Rated Discharge Current In(8/20μs)	40kA		
Max. Discharge Current Imax(8/20μs)	80kA		
Voltage Protection Level Up	2.0kV		
Backup Fuse Recommended	125A gG		
Short-circuit Withstand I_{SCCR} (without external disconnector)	1000A		
Recommended Copper Grounding Wire Diameter	4~35mm²		
Response Time	＜25 ns		
Operating Temperature	-40 °C ~ +70 °C		
Leakage Current	＜20μA		
Remote Signaling Interface (for the models with “F”)	250VAC/0.5A, 24VDC/0.5A		
Degree of protection for Housing (according to IEC60529)	IP 20		
Housing material / flame retardancy (UL94)	PA66 / V0		
Installation	35 mm DIN rail		
Standards for Testing	GB/T 18802.11 / IEC 61643-11		
Min. package	10pcs		
Dimension (TxHxW), in mm	36×76x90	54×76x90	72×76x90
Certified	CE		
Lightning protection performance test	Shanghai Lightning Protection Product Test Center		

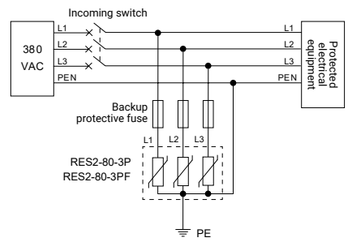
Dimensions



Typical Applications



Single phase (TN)



3-phase 4-wire (TN-C)

Note: An overcurrent protection device should be connected in series upstream of the SPD to prevent damage to the power supply system due to SPD aging or short circuit.
The upper lead of the SPD (connected to L/N) should use a copper wire with a diameter ≥4mm², while the lower lead (connected to PE) should use a copper wire with a diameter ≥6mm2.

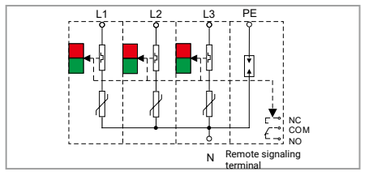
T2 Surge Protection Device RES2 Series (80kA)

Used for the surge protection of 220V/380VAC power grid

- Operating status indicator
  Green: normal
  Red: failed
- With remote signaling function (for the models with “F”)
- Ultra-low leakage current, response in seconds
- Standards for Testing:
  GB/T 18802.11
  IEC 61643-11
- Installation: Power distribution control cabinet

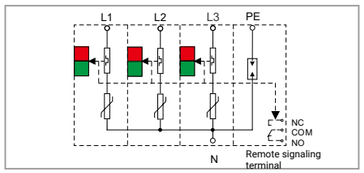
3-phase 4-wire (TT)

RES2-80-3PN1
RES2-80-3PN1F



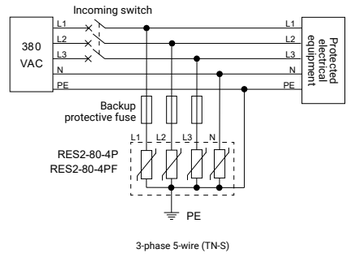
3-phase 4-wire (TT)

RES2-80-3PN1F-3

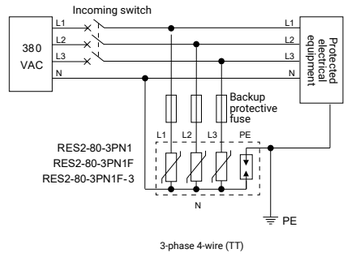


Technical Data	RES2-80G Module (GDT Module)	RES2-80G Module (GDT Module)
Class II		
385VAC	255VAC	255VAC
40kA	40kA	40kA
80kA	80kA	80kA
2.0kV	1.2kV	1.2kV
125A gG		
1000A		
4~35mm²		
＜25 ns		
-40 °C ~ +70 °C		
＜20μA		
250VAC/0.5A, 24VDC/0.5A		
IP 20		
PA66 / V0		
35 mm DIN rail		
GB/T 18802.11 / IEC 61643-11		
10pcs		
-	72×76x90	72×76x90
CE		
Shanghai Lightning Protection Product Test Center		

Typical Applications



3-phase 5-wire (TN-S)



3-phase 4-wire (TT)

Note: An overcurrent protection device should be connected in series upstream of the SPD to prevent damage to the power supply system due to SPD aging or short circuit.
The upper lead of the SPD (connected to L/N) should use a copper wire with a diameter ≥4mm², while the lower lead (connected to PE) should use a copper wire with a diameter ≥6mm2.

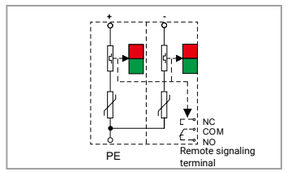
T2 Surge Protection Device RES2 Series (DC)

Used for the surge protection of power grid below 220VDC

- Operating status indicator
  Green: normal
  Red: failed
- With remote signaling function (for the models with “F”)
- Ultra-low leakage current, response in seconds
- Standards for Testing:
  GB/T 18802.11
  IEC 61643-11
- Installation: Power distribution control cabinet

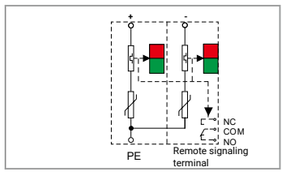

24VDC

RES2-40-24
RES2-40-24F



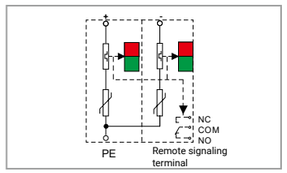

110VDC

RES2-40-110
RES2-40-110F



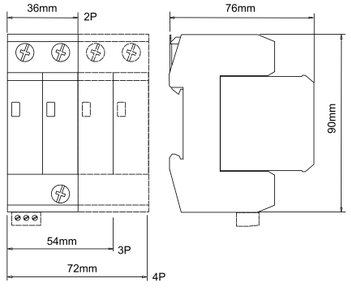

220VDC

RES2-40-220
RES2-40-220F

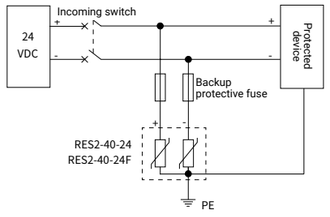


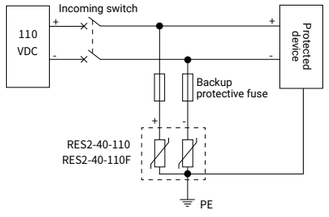
Technical Data			
SPD according to IEC 61643-11	Class II	Class II	Class II
Max. Operating Voltage Uc	90VDC / 60VAC	180VDC / 120VAC	320VDC / 220VAC
Rated Discharge Current In(8/20μs)	20kA	20kA	20kA
Max. Discharge Current Imax(8/20μs)	40kA	40kA	40kA
Voltage Protection Level Up	600V	800V	1.2kV
Backup Fuse Recommended	80A gG		
Short-circuit Withstand I_{SCCR} (without external disconnector)	1000A		
Recommended Copper Grounding Wire Diameter	4~35mm²		
Response Time	25 ns		
Operating Temperature	-40 °C ~ +70 °C		
Leakage Current	＜10μA		
Remote Signaling Interface (for the models with “F”)	250VAC/0.5A, 24VDC/0.5A		
Degree of protection for Housing (according to IEC60529)	IP 20		
Housing material / flame retardancy (UL94)	PA66 / V0		
Installation	35 mm DIN rail		
Standards for Testing	GB/T 18802.11 / IEC 61643-11		
Min. package	10pcs		
Dimension (TxHxW), in mm	36×76x90	54×76x90	72×76x90
Certified	CE		
Lightning protection performance test	Shanghai Lightning Protection Product Test Center		

Dimensions



Typical Applications





Note: An overcurrent protection device should be connected in series upstream of the SPD to prevent damage to the power supply system due to SPD aging or short circuit.
The upper lead of the SPD (connected to L/N) should use a copper wire with a diameter ≥4mm², while the lower lead (connected to PE) should use a copper wire with a diameter ≥6mm2.

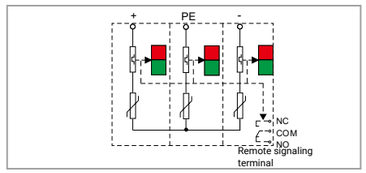
T2 Surge Protection Device RES2 Series (Photovoltaic)

Used for the surge protection of power grid below 1500VDC

- Operating status indicator
  Green: normal
  Red: failed
- With remote signaling function (for the models with “F”)
- Ultra-low leakage current, response in seconds
- Standards for Testing:
  GB/T 18802.31
  IEC 61643-31
- Installation: Power distribution control cabinet

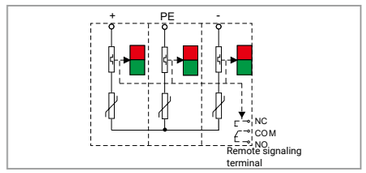

1000VDC

RES2-40-1000
RES2-40-1000F



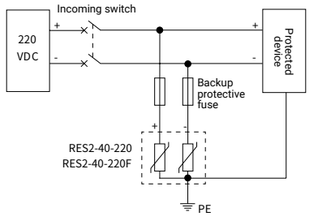

1500VDC

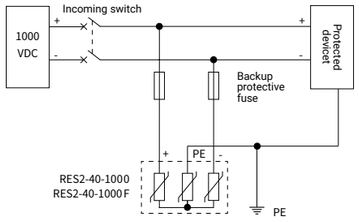
RES2-40-1500
RES2-40-1500F

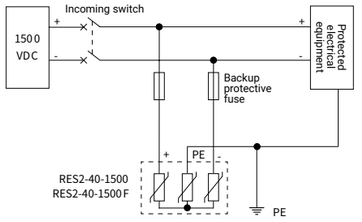


Technical Data		
SPD according to IEC 61643-11	Class II	Class II
Max. Operating Voltage Ucpv	1000VDC	1500VDC
Rated Short-circuit Current Iscpv	1000A	1000A
Rated Discharge Current In(8/20μs)	20kA	20kA
Max. Discharge Current Imax(8/20μs)	40kA	40kA
Voltage Protection Level Up	4kV	6kV
Recommended Backup Fuse (if used)	80A gG	
Recommended Copper Grounding Wire Diameter	4~35mm²	
Response Time	25 ns	
Operating Temperature	-40 °C ~ +70 °C	
Leakage Current	＜10μA	
Remote Signaling Interface (for the models with “F”)	250VAC/0.5A, 24VDC/0.5A	
Degree of protection for Housing (according to IEC60529)	IP 20	
Housing material / flame retardancy (UL94)	PA66 / V0	
Installation	35 mm DIN rail	
Standards for Testing	GB/T 18802.31 / IEC 61643-31	
Min. package	10pcs	
Dimension (TxHxW), in mm	54×76x90	
Certified	CE	
Lightning protection performance test	Shanghai Lightning Protection Product Test Center	

Typical Applications







Note: An overcurrent protection device should be connected in series upstream of the SPD to prevent damage to the power supply system due to SPD aging or short circuit.
The upper lead of the SPD (connected to L/N) should use a copper wire with a diameter ≥4mm², while the lower lead (connected to PE) should use a copper wire with a diameter ≥6mm2.

T2 Surge Protection Device RESC2 Series

- Used for surge protection of various power grids of 220V/380VAC
- Used for the surge protection of power supply below 1800VDC
- High energy gas discharge tube (GDT module)
- Ultra-low leakage current, response in seconds
- Visualized indication window for operating status
- With remote signaling function (for the models with “F”)

T2 Surge Protection Device RESC2 Series

Power SPD is used for the lightning protection of important electrical equipment in the power supply system, such as transformers, combiner boxes, inverters, charging piles, wind turbines, UPS, frequency conversion/servo systems, PLC, etc. Suitable for 24~220VDC and IT, TT, TN-C, TN-S in 220/380VAC AC power supply systems.

2024 NEW

Failure indicator

Alarm indicator window. Green indicates normal operation, Red indicates malfunction and needs to be replaced.

Redundant wiring

1 hole for 1 wire, easy V-type wiring

Remote alarming function

Both NO and NC contacts, pluggable terminals

Compact size

Localized production, the thickness of a single piece is only 12mm, saving installation space

Fire and corrosion resistance

V0 flame retardant housing is used, with fire and corrosion resistance, 96H salt spray, 2G vibration

Quality Assurance

SGS certified

Intellectual Property Office
3 Utility Model Patents
Patent No.: ZL201720580629.7
ZL201720580446.5
ZL201720578782.6

Shanghai Lightning Protection Product Test Center
Lightning protection performance test

Application submitted

T2 Surge Protection Device RESC2 Series (40kA)

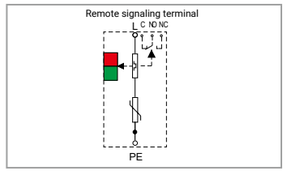
Used for the surge protection of 220V/380VAC power grid

- Operating status indicator
  Green: normal
  Red: failed
- With remote signaling function (for the models with “F”)
- Ultra-low leakage current, response in seconds
- Standards for Testing:
  GB/T 18802.11
  IEC 61643-11
- Installation: Power distribution control cabinet

CE SGS

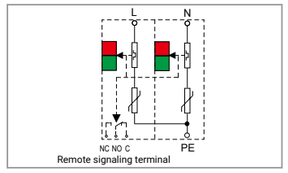
Single phase (TN)

RESC2-40-1P
RESC2-40-1PF



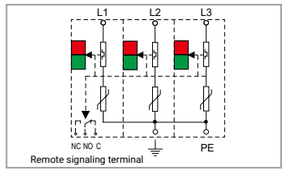
Single phase (TN)

RESC2-40-2P
RESC2-40-2PF



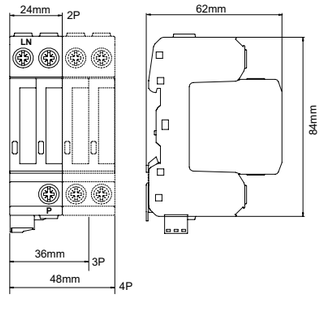
3-phase 3-wire (IT)、3-phase 4-wire (TN-C)

RESC2-40-3P
RESC2-40-3PF

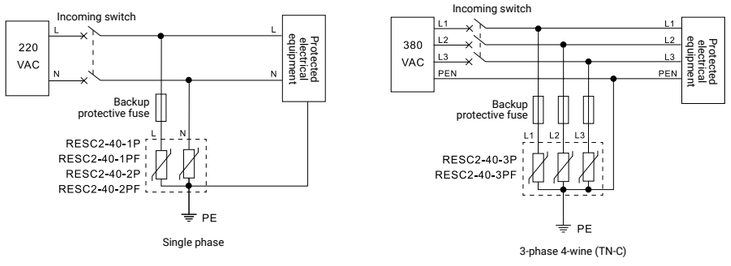


Technical Data			
SPD according to IEC 61643-11	Class II		
Max. Operating Voltage Uc	385VAC		
Rated Discharge Current In(8/20μs)	20kA		
Max. Discharge Current Imax(8/20μs)	40kA		
Voltage Protection Level Up	1.7kV		
Backup Fuse Recommended	80A gG		
Short-circuit Withstand I_{SCCR} (without external disconnector)	1000A		
Wiring diameter (single strand/multi-strand)	4~25mm² / 4~16mm²		
Response Time	25 ns		
Leakage Current	＜ 20μA		
Remote Signaling Interface (for the models with “F”)	250VAC/0.5A, 24VDC/0.5A		
Degree of protection for Housing (according to IEC60529)	IP 20		
Housing material / flame retardancy (UL94)	PA66 / V0		
Installation	35 mm DIN rail		
Standards for Testing	GB/T 18802.11 / IEC 61643-11		
Min. package	10pcs		
Dimension (TxHxW), in mm	12x62x84	24x62x84	36x62x84
Certified	CE SGS		
Lightning protection performance test	Shanghai Lightning Protection Product Test Center		

Dimensions



Typical Applications

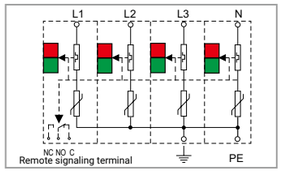


Note: An overcurrent protection device should be connected in series upstream of the SPD to prevent damage to the power supply system due to SPD aging or short circuit.
The upper lead of the SPD (connected to L/N) should use a copper wire with a diameter ≥4mm², while the lower lead (connected to PE) should use a copper wire with a diameter ≥6mm2.

T2 Surge Protection Device RESC2 Series (40kA)

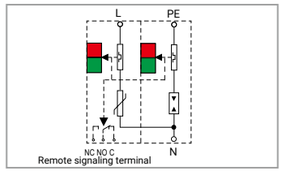
3-phase 5-wire (TN-S)

RESC2-40-4P
RESC2-40-4PF



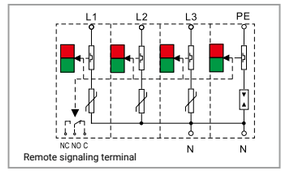
Single phase (TN)

RESC2-40-1PN1
RESC2-40-1PN1F



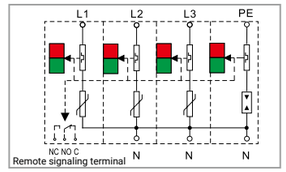
3-phase 4-wire (TT)

RESC2-40-3PN1
RESC2-40-3PN1F



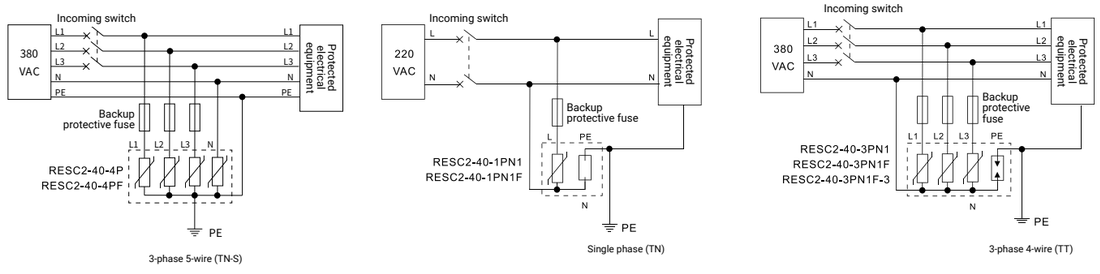
3-phase 4-wire (TT)

RESC2-40-3PN1F-3



Technical Data	RESC2-40G Module (GDT Module)	RESC2-40G Module (GDT Module)	RESC2-40G Module (GDT Module)
Class II			
385VAC	255VAC	255VAC	255VAC
20kA	20kA	20kA	20kA
40kA	40kA	40kA	40kA
1.7kV	1.5kV	1.5kV	1.5kV
80A gG			
1000A			
4~25mm² / 4~16mm²			
25 ns			
＜ 20μA			
250VAC/0.5A, 24VDC/0.5A			
IP 20			
PA66 / V0			
35 mm DIN rail			
GB/T 18802.11 / IEC 61643-11			
10pcs			
48x62x84	24x62x84	48x62x84	48x62x84
CE SGS			
Shanghai Lightning Protection Product Test Center			

Typical Applications



Note: An overcurrent protection device should be connected in series upstream of the SPD to prevent damage to the power supply system due to SPD aging or short circuit.
The upper lead of the SPD (connected to L/N) should use a copper wire with a diameter ≥4mm², while the lower lead (connected to PE) should use a copper wire with a diameter ≥6mm2.

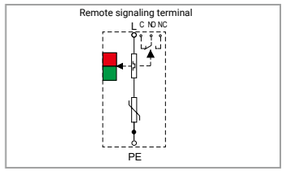
T2 Surge Protection Device RESC2 Series (80kA)

Used for the surge protection of 220V/380VAC power grid

- Operating status indicator
  Green: normal
  Red: failed
- With remote signaling function (for the models with “F”)
- Ultra-low leakage current, response in seconds
- Standards for Testing:
  GB/T 18802.11
  IEC 61643-11
- Installation: Power distribution control cabinet

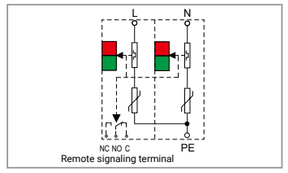
Single phase (TN)

RESC2-80-1P
RESC2-80-1PF



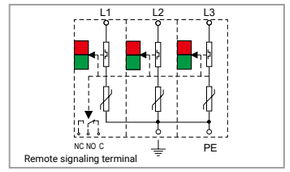
Single phase (TN)

RESC2-80-2P
RESC2-80-2PF



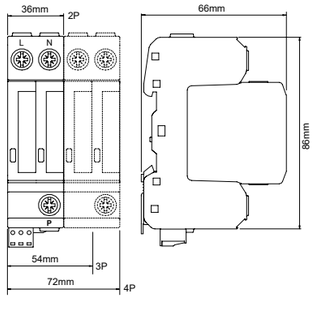
3-phase 3-wire (IT)、3-phase 4-wire (TN-C)

RESC2-80-3P
RESC2-80-3PF

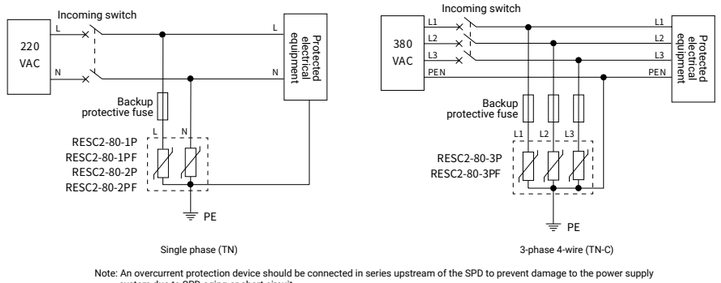


Technical Data			
SPD according to IEC 61643-11	Class II		
Max. Operating Voltage Uc	385VAC		
Rated Discharge Current In(8/20μs)	40kA		
Max. Discharge Current Imax(8/20μs)	80kA		
Voltage Protection Level Up	2.0kV		
Backup Fuse Recommended	125A gG		
Short-circuit Withstand I_{SCCR} (without external disconnector)	1000A		
Wiring diameter (single strand/multi-strand)	4~25mm² / 4~16mm²		
Response Time	25 ns		
Leakage Current	＜20μA		
Remote Signaling Interface (for the models with “F”)	250VAC/0.5A, 24VDC/0.5A		
Degree of protection for Housing (according to IEC60529)	IP 20		
Housing material / flame retardancy (UL94)	PA66 / V0		
Installation	35 mm DIN rail		
Standards for Testing	GB/T 18802.1 / IEC 61643-11		
Min. package	10pcs		
Dimension (TxHxW), in mm	18x66x86	36x66x86	54x66x86
Certified	CE SGS		
Lightning protection performance test	Shanghai Lightning Protection Product Test Center		

Dimensions



Typical Applications

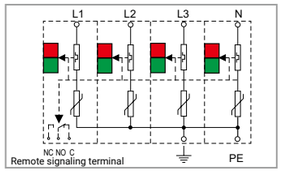


Note: An overcurrent protection device should be connected in series upstream of the SPD to prevent damage to the power supply system due to SPD aging or short circuit.
The upper lead of the SPD (connected to L/N) should use a copper wire with a diameter ≥4mm², while the lower lead (connected to PE) should use a copper wire with a diameter ≥6mm2.

T2 Surge Protection Device RESC2 Series (80kA)

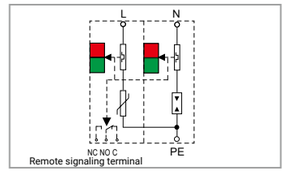
3-phase 5-wire (TN-S)

RESC2-80-4P
RESC2-80-4PF



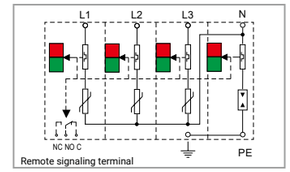
Single phase (TN)

RESC2-80-1PN1
RESC2-80-1PN1F



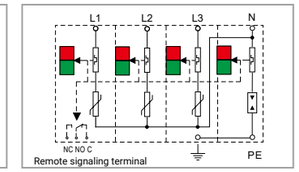
3-phase 4-wire (TT)

RESC2-80-3PN1
RESC2-80-3PN1F



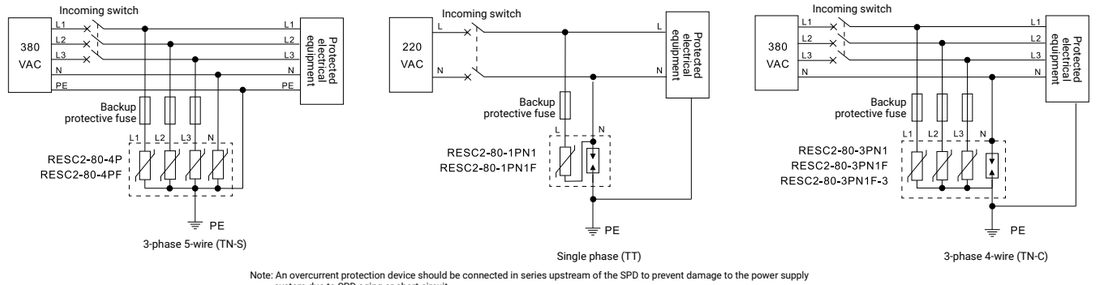
3-phase 4-wire (TT)

RESC2-80-3PN1F-3



Technical Data	RESC2-80G Module (GDT Module)	RESC2-80G Module (GDT Module)	RESC2-80G Module (GDT Module)
Class II			
385VAC	255VAC	255VAC	255VAC
20kA	40kA	40kA	40kA
40kA	80kA	80kA	80kA
1.7kV	1.5kV	1.5kV	1.5kV
80A gG			
1000A			
4~25mm² / 4~16mm²			
25 ns			
＜20μA			
250VAC/0.5A, 24VDC/0.5A			
IP 20			
PA66 / V0			
35 mm DIN rail			
GB/T 18802.1 / IEC 61643-11			
10pcs			
72x66x86	36x66x86	54x66x86	72x66x86
CE SGS			
Shanghai Lightning Protection Product Test Center			

Typical Applications



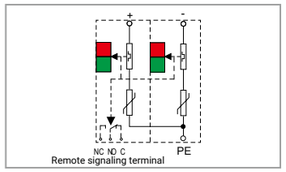
Note: An overcurrent protection device should be connected in series upstream of the SPD to prevent damage to the power supply system due to SPD aging or short circuit.
The upper lead of the SPD (connected to L/N) should use a copper wire with a diameter ≥4mm², while the lower lead (connected to PE) should use a copper wire with a diameter ≥6mm2.

T2 Surge Protection Device RESC2 Series (DC)

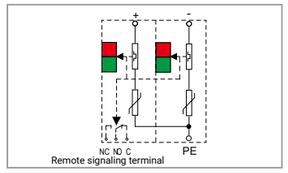
Used for the surge protection of 220VDC power grid

- Operating status indicator
  Green: normal
  Red: failed
- With remote signaling function (for the models with “F”)
- Ultra-low leakage current, response in seconds
- Standards for Testing:
  GB/T 18802.11
  IEC 61643-11
- Installation: Power distribution control cabinet

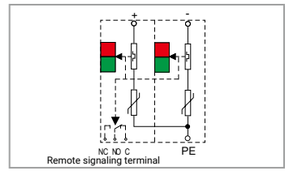
RESC2-40-24
RESC2-40-24F



RESC2-40-110
RESC2-40-110F



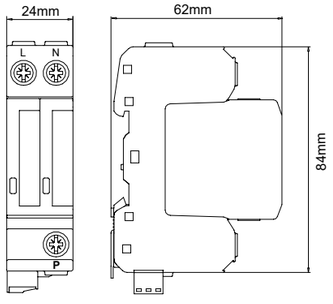
RESC2-40-220
RESC2-40-220F



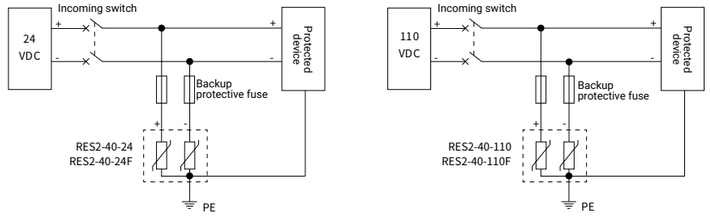
Technical Data

SPD according to IEC 61643-11	Class II	Class II	Class II
Max. Operating Voltage Uc	90VDC / 60VAC	180VDC / 120VAC	320VDC / 220VAC
Rated Discharge Current In(8/20μs)	20kA	20kA	20kA
Max. Discharge Current Imax(8/20μs)	40kA	40kA	40kA
Voltage Protection Level Up	600V	800V	1.2kV
Backup Fuse Recommended	80A gG		
Short-circuit Withstand I_{SCCR} (without external disconnector)	1000A		
Recommended Copper Grounding Wire Diameter	4~35mm²		
Response Time	25 ns		
Leakage Current	<10μA		
Remote Signaling Interface (for the models with “F”)	250VAC/0.5A, 24VDC/0.5A		
Degree of protection for Housing (according to IEC60529)	IP 20		
Housing material / flame retardancy (UL94)	PA66 / V0		
Installation	35 mm DIN rail		
Standards for Testing	GB/T 18802.11 / IEC 61643-11		
Min. package	10pcs		
Dimension (TxHxW), in mm	24x62x84		
Certified	CE SGS		
Lightning protection performance test	Shanghai Lightning Protection Product Test Center		

Dimensions



Typical Applications



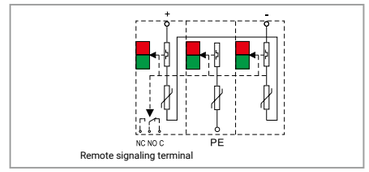
Note: An overcurrent protection device should be connected in series upstream of the SPD to prevent damage to the power supply system due to SPD aging or short circuit.
The upper lead of the SPD (connected to L/N) should use a copper wire with a diameter ≥4mm², while the lower lead (connected to PE) should use a copper wire with a diameter ≥6mm2.

T2 Surge Protection Device RESC2 Series (Photovoltaic)

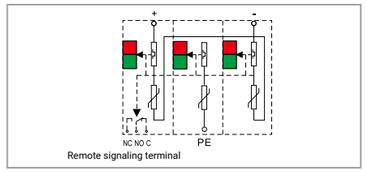
Used for the surge protection of power grid below 1800VDC

- Operating status indicator
  Green: normal
  Red: failed
- With remote signaling function (for the models with “F”)
- Ultra-low leakage current, response in seconds
- Standards for Testing:
  GB/T 18802.11
  IEC 61643-11
- Installation: Power distribution control cabinet

RESC2-40-1000
RESC2-40-1000F



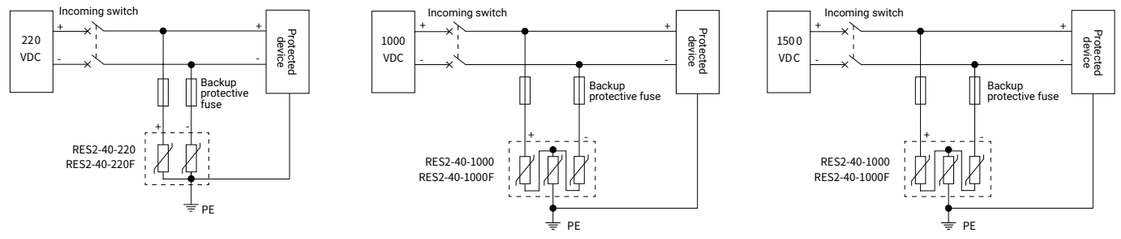
RESC2-40-1500
RESC2-40-1500F



Technical Data

SPD according to IEC 61643-11	Class II	Class II
Max. Operating Voltage Ucpv	1200VDC	1800VDC
Rated Short-circuit Current Iscpv	1000A	1000A
Rated Discharge Current In(8/20μs)	20kA	20kA
Max. Discharge Current Imax(8/20μs)	40kA	40kA
Voltage Protection Level Up	4kV	6kV
Recommended Backup Fuse (if used)	80A gG	
Recommended Copper Grounding Wire Diameter	4~35mm²	
Response Time	25 ns	
Leakage Current	＜10μA	
Remote Signaling Interface (for the models with “F”)	250VAC/0.5A, 24VDC/0.5A	
Degree of protection for Housing (according to IEC60529)	IP 20	
Housing material / flame retardancy (UL94)	PA66 / V0	
Installation	35 mm DIN rail	
Standards for Testing	GB/T 18802.31 / IEC 61643-31	
Min. package	10pcs	
Dimension (TxHxW), in mm	54x66x86	
Certified	CE SGS	
Lightning protection performance test	Shanghai Lightning Protection Product Test Center	

Typical Applications



Note: An overcurrent protection device should be connected in series upstream of the SPD to prevent damage to the power supply system due to SPD aging or short circuit.
The upper lead of the SPD (connected to L/N) should use a copper wire with a diameter ≥4mm², while the lower lead (connected to PE) should use a copper wire with a diameter ≥6mm2.

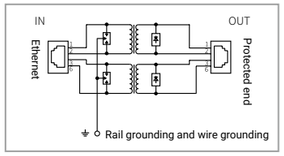
T3 Surge Protection Device RESW Series

- Metal housing, with good electromagnetic shielding
- Compatible with 100M, 1000M network, PoE (Power over Ethernet), meet different application requirements
- Maximum input current up to 10kA, ensuring the safe operation of the equipment
- Insertion loss less than 0.5dB, ensuring the high efficiency of signal transmission
- Rail-mounted, fast and easy

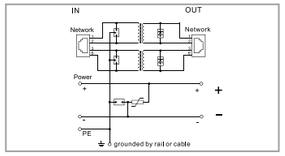
T3 Network Surge Protection Device RESW Series

- Full-metal housing, with good electromagnetic shielding
- Applicable to all types of network cameras
- Grounding can be achieved via rail or via grounding wire

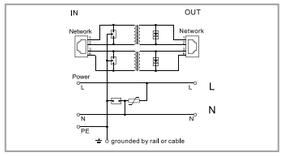
RESW-02-8DM



RESW-10-24DM

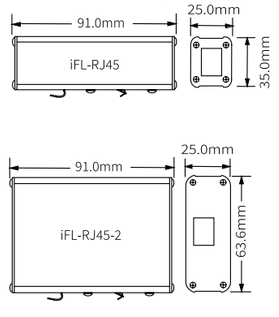


RESW-03-220AM

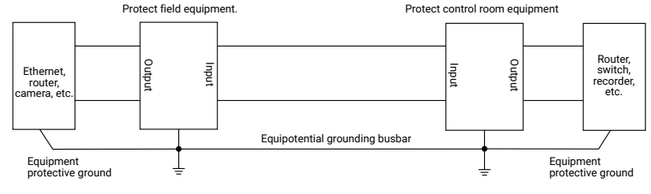


Technical Data					
Product Profiles	RJ45	RJ45 (100M)	24VDC (power supply)	RJ45 (100M)	220VAC (power supply)
Max. Operating Voltage Uc	8VDC	8VDC	58VDC/40VAC	8VDC	275VAC
Nominal Discharge Current In	2kA	2kA	10kA	2kA	3kA
Voltage Protection Level Up, Line-to-Line / Line-to-Ground	900V/300V	900V/300V	300V/850V	900V/300V	1kV/1.3kV
Bandwidth (-0.5dB)	45MHz	45MHz	-	45MHz	-
Protected Wire Pair	1/2,3/6	1/2,3/6	+/-	1/2,3/6	L/N
Connection Method	RJ45	RJ45	PID	RJ45	PID
Degree of protection for Housing (according to IEC60529)	IP20	IP20		IP20	
Housing material (body/end face)	Aluminum alloy/304 stainless steel	Aluminum alloy/304 stainless steel		Aluminum alloy/304 stainless steel	
Standards for Testing	GB/T 18802.21/IEC 61643-21	GB/T 18802.21/IEC 61643-21		GB/T 18802.21/IEC 61643-21	
Dimensions	91.0mm×35.0mm×25.0mm	91.0mm×63.6mm×25.0mm		91.0mm×63.6mm×25.0mm	
Certified					
Lightning protection performance test	Shanghai Lightning Protection Product Test Center	Shanghai Lightning Protection Product Test Center		Shanghai Lightning Protection Product Test Center	

Dimensions



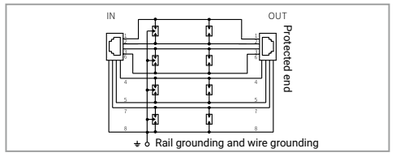
Typical Applications



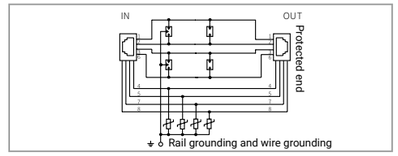
T3 Network Surge Protection Device RESW Series

- Full-metal housing, with good electromagnetic shielding
- Applicable to all types of network cameras
- Grounding can be achieved via rail or via grounding wire

RESW-02-60DK



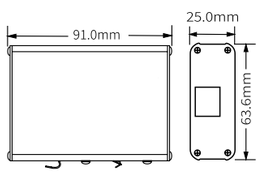
RESW-02-60DP



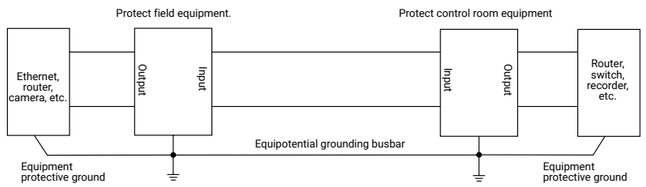
Technical Data

Product Profiles	1000M	PoE
Max. Operating Voltage Uc	60VDC	60VDC
Nominal Discharge Current In	2kA	2kA
Voltage Protection Level Up, L-L,L-G	1.2KV/900V	1.2kV/900V
Bandwidth (-0.5dB)	155MHz	155MHz
Protected Wire Pair	1/2,3/6,4/5,7/8	1/2,3/6 (network), 4/5,7/8 (power supply)
Connection Method	RJ45	RJ45
Degree of protection for Housing (according to IEC60529)	IP20	IP20
Housing material (body/face end)	Aluminum alloy/304 stainless steel	Aluminum alloy/304 stainless steel
Standards for Testing	GB/T 18802.21/IEC 61643-21	GB/T 18802.21/IEC 61643-21
Dimensions	91.0mm×63.6mm×25.0mm	91.0mm×63.6mm×25.0mm

Dimensions



Typical Applications



T3 Surge Protection Device RESC / RES Series

- 6~12.5mm compact design
- Suitable for surge protection of 5~24VDC ultra-low voltage signals
- Both PID and screw connection are available
- The surge protection module supports hot-swap, with no interruption after unplugging. The surge protection device can be tested separately, easy for maintenance
- Products for two-wire and three-wire systems are available
- Directly grounded through metal rails

T3 Surge Protection Device RES & RESC Series

Signal SPD is used for lightning protection of signaling equipment, such as I/O ports, DCS, SCADA, transmitters, flow meters, solenoid valves, sensors, etc. Suitable for common signal types such as AI, AO, DI, DO, RS485, RS232, RS422, RTD, thermocouple, etc.

2024 NEW

Push-In Design

Save at least 60% wiring time
6mm slim design, saving installation space

Laser engraving

Products have labels and markings to improve the correctness of wiring
Laser engraving, energy-saving, environmentally friendly, and not easy to wear out

DIN rail mounting

The bottom retainer is securely connected to the rail at four points and grounded via the metal rail.

Reliable performance

Products for two-wire and three-wire systems, with high current discharge capacity
C2: 20kV/10kA
D1: 2.5kA

Quality Assurance

SGS certified

Intellectual Property Office
1 Invention Patent
Patent No.: ZL201310585812.2
4 Utility Model Patents
Patent No.: ZL201320735795.1
ZL201320735794.7
ZL201320735776.
9ZL201320735791.3

Shanghai Lightning Protection Product Test Center
Lightning protection performance test

Quality Supervision and Inspection Center
Functional Safety (SIL) Certification
Instrumentation products for industrial automation

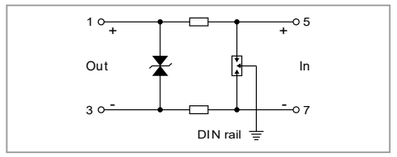
T3 Surge Protection Device RES Series (General-purpose)

- 12.5mm compact design
- 5V is suitable for signal circuits such as thermocouples, RTD, CAN, RS-485, RS-422, etc. with line-to-ground isolation voltage >500V
- Grounded through DIN35 metal rails
- Products for two-wire and three-wire systems are available

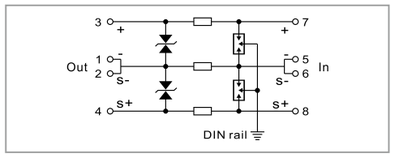

Two-wire system


3-wire system

RES-05L



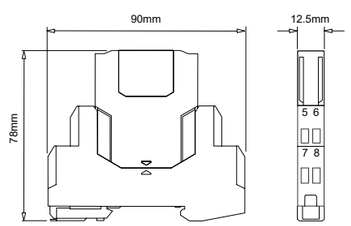
RES-05L3



Technical Data

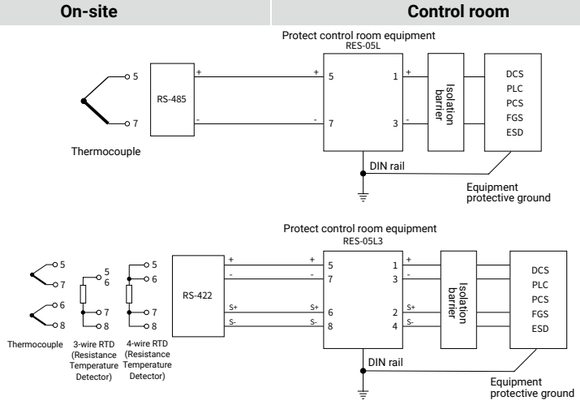
Max. Operating Voltage Uc	6V DC
Rated Operating Current I_L	800mA
Channel Resistance	1Ω
Rated Discharge Current In(8/20μs)	10kA
Max. Discharge Current Imax(8/20μs)	20kA
Impulse Current Iimp(10/350μs)	2.5kA
Voltage Protection Level Up(8/20μs), Line-to-Line / Line-to-Ground	40V / 600V
Voltage Protection Level Up(1kV/μs), Line-to-Line / Line-to-Ground	20V / 600V
Bandwidth (-0.5dB)	45MHz
Max. Wire Cross-section	2.5mm²
Response Time	1 ns
Leakage Current	＜ 10μA
Degree of protection for Housing (according to IEC60529)	IP 20
Housing material / flame retardancy (UL94)	PA66/V0
Standards for Testing	GB/T 18802.21 / IEC 61643-21
Min. package	10pcs
Dimension (TxHxW), in mm	12.5x78x90
Certified	SIL3
Lightning protection performance test	Shanghai Lightning Protection Product Test Center

Dimensions



Typical Applications

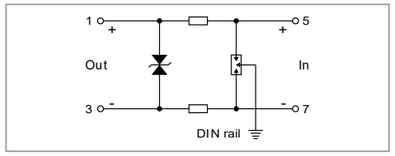
On-site	Control room



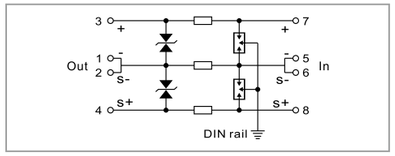
T3 Surge Protection Device RES Series (General-purpose)

- 12.5mm compact design
- 24V is suitable for AI, AO, DI, DO, RS-232 and other signal circuits with line-to-ground isolation voltage >500V
- Grounded through DIN35 metal rails
- Products for two-wire and three-wire systems are available

RES-24L

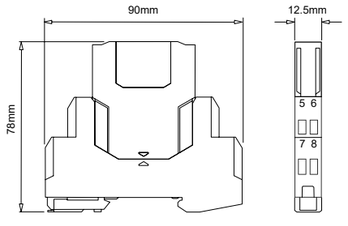


RES-24L3



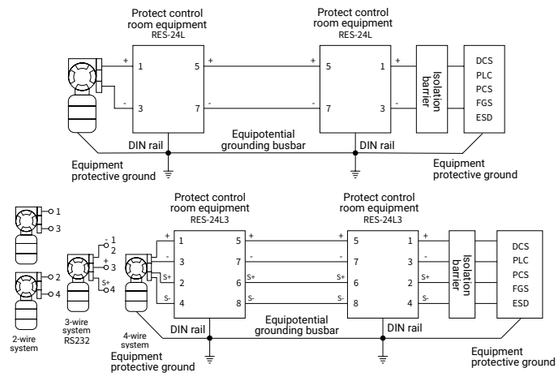
Technical Data	
Max. Operating Voltage Uc	32V DC
Rated Operating Current I_L	800mA
Channel Resistance	1Ω
Rated Discharge Current In(8/20μs)	10kA
Max. Discharge Current Imax(8/20μs)	20kA
Impulse Current Iimp(10/350μs)	2.5kA
Voltage Protection Level Up(8/20μs), Line-to-Line / Line-to-Ground	60V / 600V
Voltage Protection Level Up(1kV/μs), Line-to-Line / Line-to-Ground	40V / 600V
Bandwidth (-0.5dB)	45MHz
Max. Wire Cross-section	2.5mm²
Response Time	1 ns
Leakage Current	＜1μA
Degree of protection for Housing (according to IEC60529)	IP 20
Housing material / flame retardancy (UL94)	PA66/V0
Standards for Testing	GB/T 18802.21 / IEC 61643-21
Min. package	10pcs
Dimension (TxHxW), in mm	12.5x78x90
Certified	SIL3
Lightning protection performance test	Shanghai Lightning Protection Product Test Center

Dimensions



Typical Applications

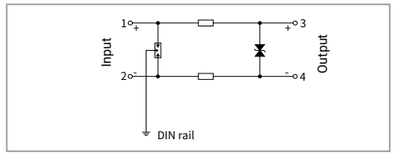
On-site	Control room



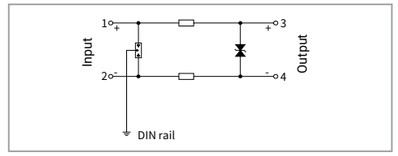
T3 Surge Protection Device RESC Series (6mm Signal SPD)

- 6mm slim design
- Directly grounded through metal rails
- Integrated structural design
- PID wiring
- bandwidth (-0.5dB): 40MHz
- Product for two-wire system

RESC-05L

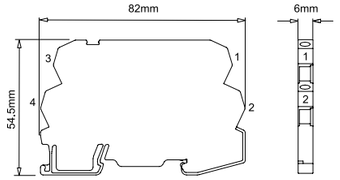


RESC-24L



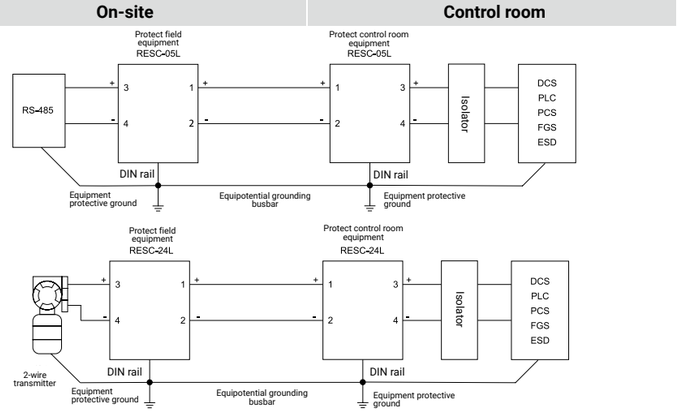
Technical Data		
Max. Operating Voltage U_c	6V DC	32V DC
Rated Operating Current I_L	800mA	800mA
Channel Resistance	1Ω	1Ω
Rated Discharge Current In(8/20μs)	10kA	10kA
Max. Discharge Current Imax(8/20μs)	20kA	20kA
Impulse Current Iimp(10/350μs)	2.5kA	2.5kA
Voltage Protection Level Up(8/20μs), Line-to-Line / Line-to-Ground	L-L: 40V / L-G: 600V	L-L: 60V / L-G: 600V
Bandwidth (-0.5dB)	40MHz	40MHz
Max. Wire Cross-section	2.5mm²	2.5mm²
Response Time	L-L: 1ns / L-G: 100ns	L-L: 1ns / L-G: 100ns
Leakage Current	＜10μA	＜10μA
Degree of protection for Housing (according to IEC60529)	IP 20	IP 20
Housing material / flame retardancy (UL94)	PA66/V0	PA66/V0
Standards for Testing	GB/T 18802.21 / IEC 61643-21	GB/T 18802.21 / IEC 61643-21
Min. package	10pcs	10pcs
Dimension (TxHxW), in mm	6x54.5x82	6x54.5x82
Certified	CE SGS, SIL3	CE SGS, SIL3
Lightning protection performance test	Shanghai Lightning Protection Product Test Center	Shanghai Lightning Protection Product Test Center

Dimensions



Typical Applications

On-site	Control room



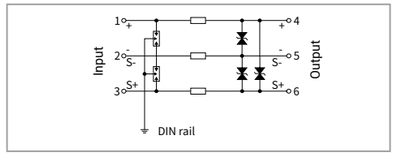
T3 Surge Protection Device RESC Series (6mm Signal SPD)

- 6mm slim design
- Directly grounded through metal rails
- Integrated structural design
- PID wiring
- Bandwidth (-0.5dB): 40MHz
- Product for three-wire system

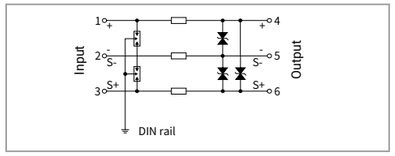
3-Wire system (RTD)

3-Wire system
(AI, AO, DI, DO, RS-232)

RESC-05L3



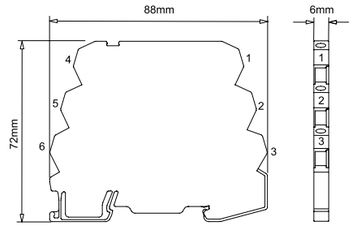
RESC-24L3



Technical Data

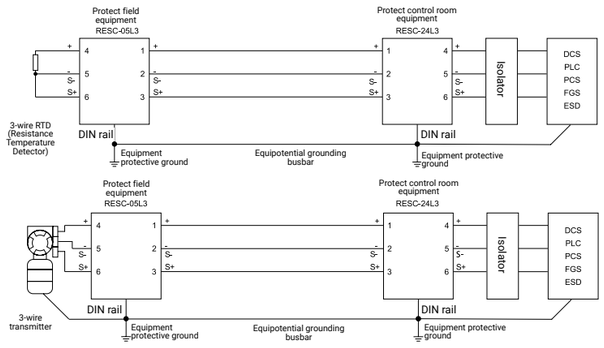
Max. Operating Voltage U_c	6V DC	32V DC
Rated Operating Current I_L	800mA	800mA
Channel Resistance	1Ω	1Ω
Rated Discharge Current In(8/20μs)	10kA	10kA
Max. Discharge Current Imax(8/20μs)	20kA	20kA
Impulse Current Iimp(10/350μs)	2.5kA	2.5kA
Voltage Protection Level Up(8/20μs), Line-to-Line / Line-to-Ground	L-L: 40V / L-G: 600V	L-L: 40V / L-G: 600V
Bandwidth (-0.5dB)	40MHz	40MHz
Max. Wire Cross-section	2.5mm²	2.5mm²
Response Time	L-L: 1ns / L-G: 100ns	L-L: 1s / L-G: 100ns
Leakage Current	< 10μA	< 10μA
Degree of protection for Housing (according to IEC60529)	IP 20	IP 20
Housing material / flame retardancy (UL94)	PA66/V0	PA66/V0
Standards for Testing	GB/T 18802.21 / IEC 61643-21	GB/T 18802.211 / IEC 61643-21
Min. package	10pcs	10pcs
Dimension (TxHxW), in mm	6x72x88	6x72x88
Certified	CE SGS, SIL3	CE SGS, SIL3
Lightning protection performance test	Shanghai Lightning Protection Product Test Center	Shanghai Lightning Protection Product Test Center

Dimensions



Typical Applications

On-site	Control room



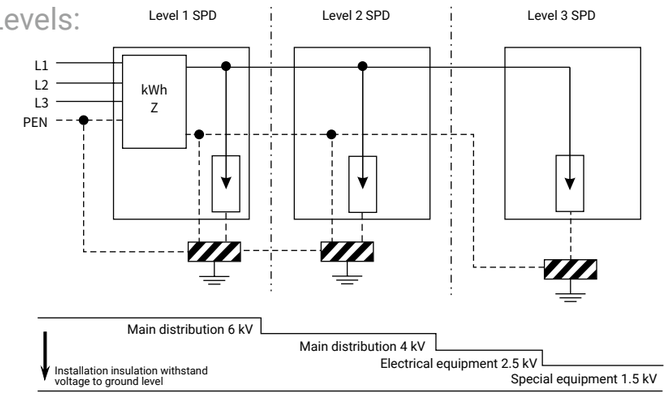
Information about SPD

- Surge Protective Device (SPD) also known as surge protector, lightning protection grid, lightning surge protectors, lightning arresters, etc. Components used to limit transient overvoltages and divert surge currents. SPD protects by diverting the high-energy surge current into the ground.
- Applicable to the lightning protection for various power supplies and signal circuits, and protection against transient overvoltage (switching surge, electrostatic discharge, etc.).
- Depending on the applications, Power SPD and Signal SPD are available.
- Power SPD is used to protect various power supply systems and power-consuming equipment, such as inverters, UPS, and power supplies for switches.
- Signal SPD is used to protect various control systems, instrumentations, PLC, DCS, SCADA, transmitters, flow meters.

Arrange Power SPD

The installed levels of SPD depend on the lightning protection zone and the withstand voltage requirement of the protected equipment. For the low-voltage power systems and electronic information systems, multiple levels of SPD may be needed to gradually reduce the lightning transient overvoltages, temporary overvoltages, and energy within the system, until the safety and immunity requirements of the protected equipment are met. Certain principles must be followed between each level of SPD to coordinate the energy and the activation.

SPDProtection Levels:



Based on the importance, the usage and its value, and the probability and consequences of lightning accidents, various types of buildings are classified according to the lightning protection requirements:

Lightning Protection Level	Electronic Information System
Class A	1. Electronic information systems used for national-level computing centers, national-level communication facilities, important financial facilities, large and medium-sized airports, national and provincial radio and television centers, harbors & ports, important railway stations, and important public utilities of the cities such as water, electricity, gas, and heat, 2. CCTV or alarm systems used in national museums or archives, 3. Electronic medical equipment used in medical centers.
Class B	1. Electronic information systems used in medium-scale computing centers, secondary financial facilities, medium-scale communication facilities, mobile communication base stations, large stadiums, small airports, large ports, and large railway stations. 2. CCTV or alarm systems used in provincial museums or archives, 3. Electronic information systems used in radar stations and microwave stations, highway monitoring and ETC system, 4. Electronic medical equipment used in regional hospitals. 5. Electronic information systems used in 5-star or above hotels.
Class C	1. Electronic information systems used in the rest financial facilities, small-scale communication facilities, 2. Large and medium-scale cable TV systems, 3. Electronic information systems used in 4-star or below hotels.
Class D	General-purpose electronic information systems and equipment requiring protection other than the above-mentioned Class A, B, and C.

Note: For the electronic information systems not listed in the table, the protection level can also be selected by referring to this table.

The recommended values of the impulse current and nominal discharge current parameters of the SPD used in power lines shall follow the table below:

Lightning Protection Level	Level 1 SPD Main switchboard		Level 2 SPD Distribution box	Level 3 SPD Distribution box inside the equipment room, and at the electronic information equipment connection port that requires special protection	
	Boundary between LPZ0 and LPZ1		Boundary between LPZ1 and LPZ2	Boundary of the downstream protection zones	
	10/350us Class I test	8/20us Class II test	8/20us Class II test	8/20us Class II test	Composite wave of 1.2/50us and 8/20us Class III test
	Iimp (kA)	In (kA)	In (kA)	In (kA)	Uoc (kV)/Isc (kA)
Class A	≥20	≥80	≥40	≥5	≥10/≥5
Class B	≥15	≥60	≥30	≥5	≥10/≥5
Class C	≥12.5	≥50	≥20	≥3	≥6/≥3
Class D	≥12.5	≥50	≥10	≥3	≥6/≥3

Note: The SPD levels should be determined based on factors such as the protection distance, the length of the SPD connection wire, and the rated impulse voltage of the protected equipment.

Select Power SPD

1. Maximum continuous operating voltage Uc

Maximum continuous operating voltage (Uc): the maximum AC RMS voltage or DC voltage that can be continuously applied to the SPD protection mode, also known as the maximum operating voltage.
When the system is operating normally, the SPD needs to be in a high-resistance (open-circuit) state.Therefore, the Uc value of the SPD must be higher than the maximum continuous operating voltage that may occur in the system. Otherwise, a continuous current will flow through the SPD, resulting the SPD being damaged before the surge happens, and may even cause a fire incident.

For the selection of Uc, GB 50343 advises the following:

Installation location of SPD	System features of power distribution network				
	TT system	TN-C system	TN-S system	IT system with neutral line	IT system without neutral line
Between each phase line and neutral line	1.15U0	Not Applicable	1.15U0	1.15U0	Not Applicable
Between each phase line and PE line	1.15U0	Not Applicable	1.15U0	√3 U0*	Line voltage*
Between neutral line and PE line	U0*	Not Applicable	U0*	U0*	Not Applicable
Between each phase line and PEN line	Not Applicable	1.15U0	Not Applicable	Not Applicable	Not Applicable

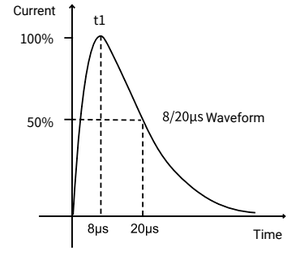
Note: a) The value marked with * is the worst case under fault conditions; thus, there is no need to take into account the 15% tolerance.
b) U0 refers to the nominal voltage between a phase line and the neutral line in the low-voltage system, i.e. the phase voltage is 220V
c) This table is applicable to the SPD products complying with GB 18802 standard.

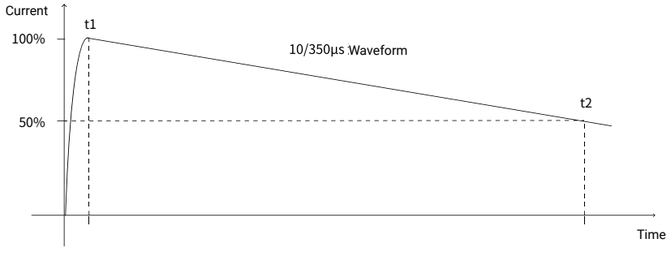
Note on the difference between phase voltage and line voltage:
For example, in 220/380VAC power system, the phase voltage (L-N) is 220VAC, and line voltage is (L-L) is 380VAC,
Power SPD is usually installed between L-N or L-PE, thus, Ucvalue should be compared with the phase voltage U0,
In the practical applications, generally, a certain margin will be given to the Uc value. The quality of power grids varies in different countries.
The power grids in developed European countries are relatively stable; thus, the margin for Uc would be smaller. Uc:275VAC is usually selected.
For a country with average power grid quality, Uc will have a larger margin, and Uc:385VAC is commonly used.

2. Discharge capacity

Discharge capacity is the key performance indicator of SPD. The instantaneous current impulse is highly destructive. Therefore, both the internal components of SPD and the SPD as a whole shall be able to withstand such current. Theoretically, the larger the discharge capacity of SPD, the better. It is usually selected based on the degree of importance of the system to be protected and the installation location of SPD.

SPD discharge capacity includes the following parameters:
a) Nominal discharge current In: The peak value of the 8/20μs current waveform flowing through the SPD. The SPD can withstand such a current impulse at least 10 times,
b) Maximum discharge current Imax: The peak value of the 8/20μs current waveform flowing through the SPD. The SPD can withstand such a current impulse at least 1 times,
c) Impulse discharge current Iimp: The current waveform flowing with the charge and energy specified by the SPD within the specified time, usually a 10/350 waveform.
The SPD can withstand such a current impulse at least 1 time.





For example, 8/20μs waveform indicates that t1=8μs, and t2=20μs,
t1: rise time, it used to characterize the speed at which lightning "rises",
t2: decay time, it used to characterize the speed at which lightning "decays",
Compared to the 8/20μs waveform, 10/350μs waveform has a longer decay time. Under the same current peak, the energy contained in the 10/350μs waveform ($Q=I^2Rt$) is much higher than that of the 8/20μs waveform. When selecting the models, such a distinction needs to be noted to avoid any confusion.

Select Power SPD

3. Voltage Protection Level Up

Voltage protection level Up: The maximum voltage expected to happen between the two ends of the SPD due to the application of an impulse with specified steepness and an impulse current with specified amplitude and waveform, i.e. the residual voltage during the In or Iimp impulse. The declared Up value is a threshold; therefore, the actual value shall be "less than (<)" such value. Theoretically, the smaller Up is, the better. But practically, Up is related to the Uc and impulse current. The larger the Uc or the larger the impulse current, the larger the Up. In GB50343 standard, Up≤0.8Uw is advised, where Uw is the withstand voltage of the equipment. In general, such condition is not difficult to meet.

In a 220V/380V 3-phase power distribution system, the rated impulse withstand voltage Uw of various equipment:

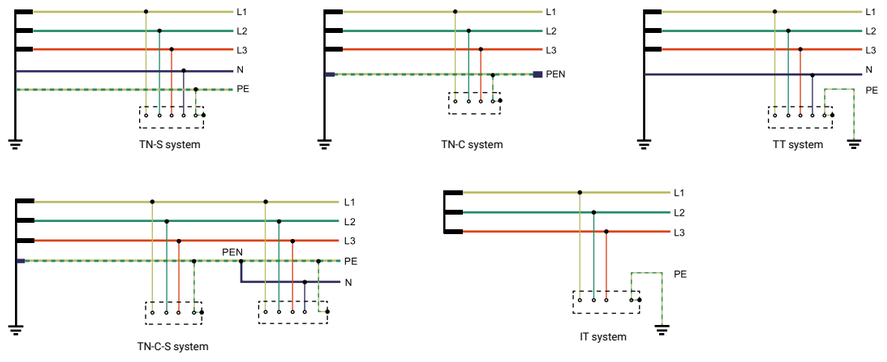
Equipment location	Equipment at power supply input side	Equipment on distribution branch line	Electrical equipment	Electronic information equipment needs to be protected
Impulse withstand voltage categories	Category IV	Category III	Category II	Category I
Uw (kV)	6	4	2.5	1.5

The equipment corresponding to the impulse voltage categories is as follows:

Category IV: e.g. electrical measuring instruments, primary line overcurrent protection devices, and filters.
Category III: e.g. switchboards, circuit breakers, wiring systems (including cables, busbars, junction boxes, switches, sockets and other fixed devices), as well as some other equipment such as equipment used in industry and stationary motors permanently connected to fixed devices.
Category II: e.g. household appliances (excluding computers), portable tools, uninterruptible power supply (UPS), rectifiers and similar loads.
Category I: Equipment that requires to limit transient overvoltage to a specific level, such as equipment containing electronic circuits, computers and electrical equipment containing computer programs.

4. Protection Mode of Power SPD

The protection mode of the power SPD shall be selected based on the type of power system. There are several types:
The first letter indicates the grounding condition of the power system: T - directly grounded, I - not grounded or grounded via high impedance.
The second letter indicates the grounding condition of the exposed conductive parts of the device (indicated by the dotted box): N - grounded through the grounding point of the power supply, T - directly grounded without passing through the grounding point of the power supply
C (combination) means N and PE are combined.
S (separation) means N and PE are separated.



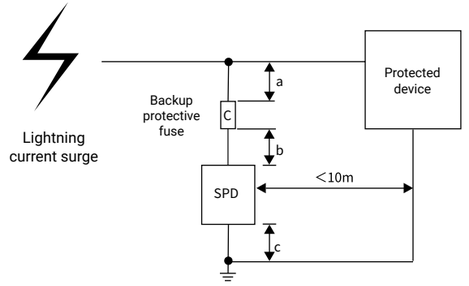
In the power supply system, current may be present on the neutral line N, e.g., when the three-phase voltage is unbalanced.

a) In the TN-S system, N and PE are separated; there is current on the N line, but no current on the PE line. Thus, the safety level is higher. In the TN-S system, N and PE are connected together only at the neutral point of the transformer. Since N is not allowed to be grounded repeatedly, but PE is allowed to be grounded repeatedly, an SPD is required between N and PE. TN-S system is currently the most widely used power supply system. GB50057 and GB50343 state: "When the power supply adopts the TN system, the power supply from the building's main switchboard to the distribution lines within the building and the branch lines must adopt the TN-S system",
b) In the TN-C system, N and PE are combined; thus, this approach is not very safe and is not suitable for places where human activities are present for a long time,
c) TN-C-S system, that is, the first half adopts the TN-C system and the second half adopts the TN-S system, taking into account both cost and safety,
d) In the TT system, the power supply side and the device side are grounded separately. Compared with the TN-S system, one less PE line is used, so the cost is lower. Compared with TN system, when a ground fault occurs in a device, the fault voltage will not be transmitted to other devices along the PE or PEN line. Therefore, it is more commonly used in outdoor devices where it is inconvenient to make equipotential bondings.
e) In IT systems, when a (single-phase) ground fault occurs, since the power supply end is not grounded, a fault current loop can not be formed. The fault current is very small and the ground fault voltage is low, which will not cause personal safety incidents. Also, the power supply will not be cut off. Thus, it is suitable for electrical devices with high demands for uninterrupted power supply. However, since there is no neutral line, it is not possible to provide single-phase power. Thus, only 3-phase electrical equipment can be connected to. Select SPD based on the type of the power systems, e.g. for the TN-S system, 4P shall be selected.

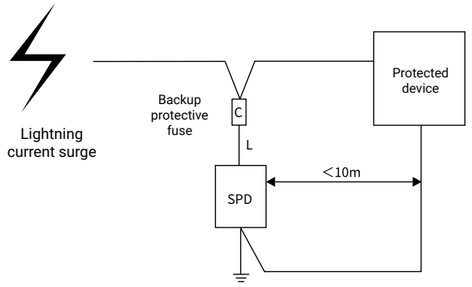
Install Power SPD

1. SPD wiring

Various levels of Power SPD shall be installed at the upstream of the power supply line for the protected equipment. The wiring terminals of SPD shall be connected to the dotted terminals of the phase line inside the distribution box. The grounding terminal of the SPD is connected to the protective grounding wire (PE) grounding terminal block of the distribution box. The grounding terminal block of the distribution box should be connected to the equipotential grounding terminal block in the lightning protection zone to which it belongs. To minimize the residual impulse voltage flowing into the protected equipment, when installing the SPD, the connecting wire should be straight and as short as possible. Its minimum cross-section should comply with the IEC 61643-12 requirements. Generally, a+b+c shall be <0.5m. If this is not possible due to the on-site conditions, Kevin connection (V-type connection) shall be used. The distance between the SPD and the protected equipment shall be < 10m, and the grounding terminal of the protected equipment housing shall be grounded through the SPD grounding terminal.



General wiring (a+b+c<0.5m)



Kelvin connection (L <0.5m)

Minimum cross-section of the SPD connecting wire:

SPD Level	SPD Type	Wire Cross-section (mm^2)	
		SPD connected to the copper wire of the phase line	SPD grounding terminal connected to the copper wire
Level 1	Switching type or voltage-limiting type	6	10
Level 2	Voltage-limiting type	4	6
Level 3	Voltage-limiting type	2.5	4
Level 4	Voltage-limiting type	2.5	4

Note: The connecting wires shall be insulated multi-strand copper core cables or wires.

2. Install an upstream overcurrent protection device for the Power SPD

The upstream overcurrent protection device for the Power SPD can be selected according to the correction values listed in the table below. For example: if the In (8/20us) (correction value after testing) of the SPD is 10kA, it matches a fuse rated at 40A gG; if In=40kA, it matches a fuse rated at 125A gG; if Iimp (10/350) =15kA, it matches a fuse rated at 200A gG.

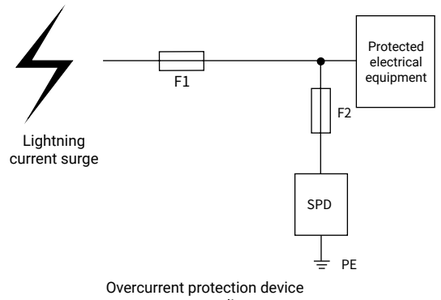
Recommended fuse ratings which match the SPD discharge capability (IEC 61643-12):

8/20us		10/350us		Fuse rated current (A) Cylindrical fusegG
Calculated value (kA)	Corrected value after testing (kA)	Calculated value (kA)	Corrected value after testing (kA)	
7.6	5			25
9.6	7			32
13.4	10			40
17.3	15			50
23.1	17			63
32.2	25			80
41.4	30	8.8	5	100
53.4	40	11.3	7	125
		15.3	10	160
		19.75	15	200
		27.93	20	250
		34.21	25	315

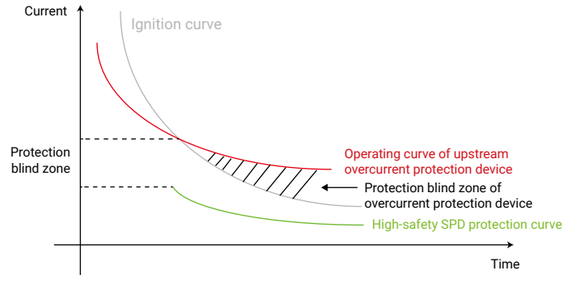
Install Power SPD

3. Description of upstream overcurrent protection device

When the Power SPD is operating, if the SPD is subjected to a lightning current that exceeds its withstand capacity, or an overvoltage occurs due to a fault in the power grid, a short circuit failure of the SPD may occur. In such a case, an overcurrent protection device is required to disconnect the SPD from the line.



Overcurrent protection device arrangement diagram



Overcurrent protection curve

a) F2 arrangement for the upstream overcurrent protection device of the SPD shall meet the following requirements:
Requirement 1: Match the discharge capacity of the SPD and do not operate when a lightning surge strikes;
Requirement 2: F2 should operate promptly and reliably when a short circuit occurs in the SPD;
Requirement 3: When a short circuit occurs in the SPD, F2 operates but F1 does not.
b) Generally speaking, circuit breakers cannot meet all these requirements at the same time. In practical applications, it is recommended to use fuses;
c) The rated current of F2 should be neither too small (requirement 1) nor too large (requirement 3). In practical application, if not all requirements can be met at once, it is necessary to select according to the actual conditions. If a downtime could result in a huge loss, the priority should be given to the coordination between F2 and F1. If the loss due to a power outage is relatively small, priority should be given to ensuring the coordination between F2 and the discharge capacity of the SPD;

Assuming that the recommended backup fuse rating of the SPD is A, the selections of F1 and F2 are as follows (see the table below):

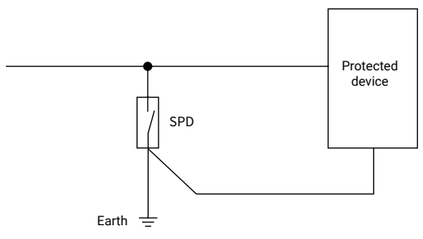
F1 and A relation	Ensure the continuity of power supply	Ensure the continuous protection of SPD
F1≥1.6A	F2 = A	F2 = A
A≤F1 < 1.6A	F2 = F1/1.6	F2 = A
F1 < A	F2 = F1/1.6	No need of F2

d) F2 shall also be blown promptly when a short circuit occurs in the SPD (Requirement 2).
Based on this requirement, the rated current cannot be too large, otherwise its operating time will be too long and a protection blind spot may occur, which may cause an accident. As for SPD, with a higher short-circuit withstand capacity, it can cover more effectively the protection blind spot of the fuse, so that the SPD is safer.

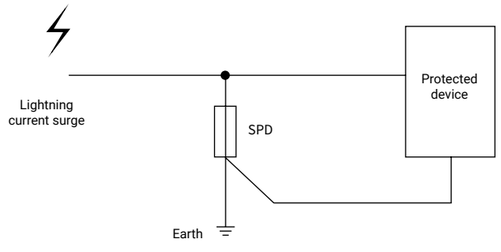
Operating principle of Power SPD

When lightning current happens in the power grid, the SPD will activate within nanoseconds, instantly discharging the lightning current to the ground and limiting the voltage to a certain level, thereby protecting electrical equipment from damage.

Operating principle of Power SPD Schematics



When no lightning current, SPD remains open to earth



When lightning current passes, SPD instantly shorts to earth, discharging the lightning current to earth

Arrange Signal SPD

Determine the implementation of instrument lightning protection system

The implementation of instrument lightning protection systems can be determined based on one of the following conditions:
1. In case a building is equipped with lightning protection according to GB50057 and instruments are installed inside, especially if there are outdoor signal lines, an instrument lightning protection system can be implemented to prevent the lightning from being introduced into the room through the outdoor signal lines, damaging electronic equipment, and endangering personal safety.
2. The instrument lightning protection system shall be implemented in factory areas where lightning strikes have occurred, causing personnel injury and endangering production safety.
3. If the regulatory authority or the owner assessed and determined that the potential economic losses caused by a lightning strike are greater than the tolerable economic losses, or the expected risk of a lightning strike is greater than the tolerable risk, an instrument lightning protection system shall be implemented.
4. If the number of lightning strikes with a current intensity of more than 150kA in the factory area is ≥2 times/year, an instrument lightning protection system can be implemented. The number of lightning strikes and the intensity of lightning current can be determined based on the data of the local meteorological department or the results of self-measurement.
5. Departments with corresponding management or regulatory authority may require to implementation an instrument lightning protection system, without assessment.

Set up SPD

1. The instrument SPD shall be maintenance-free and shall be able to withstand multiple lightning surges without damage.
2. Use SPD with a monitoring function and equip it with the corresponding centralized monitoring equipment.
3. SPD shall be tested for parameters and performance by batch, with the test certificate attached. The manufacturer of SPD shall be equipped with surge testing equipment to simulate the standard test waveforms. The test shall be performed by the manufacturer per GB/T 18802.21 or the manufacturer's standards. Organizations or institutions without a simulated surge test and test equipment with standard lightning test waveforms are not allowed to perform the test.
4. 4mA~20mA signal instruments or other signal type instruments in the two-wire and three-wire systems, as well as 24V DC circuits that supply power to a single outdoor instrument, shall be equipped with a surge protection device according to the signal types.
5. The power supply of four-wire instruments powered by AC or DC 220V should be equipped with a surge protection device according to the 220V power supply category.
6. The communication network for the control system shall be equipped with SPD according to the type of communication, and the specifications and parameters shall be suitable for the connected communication equipment.
7. SPD with multiple signal channels shall not be used. For DC-powered four-wire instruments, since the power supply current value is close to the signal current value, the power supply line is treated as the signal channel and a dual-channel SPD can be used.
8. SPD shall not affect or change the signal and transmission characteristics of instruments and lines.
9. Signal SPD for field instruments is available in assembling type and built-in types. Assembling SPDs shall be connected in parallel.

When the horizontal path length of the signal cable laid above the outdoor ground is greater than 100m or the vertical height above the ground is greater than 10m, the SPD is required for the instruments on the control side. SPD is required for the control room side instrument in the above-ground tank area:
a) Transmitters and other electrical and electronic measuring instruments that convert signals into electrical signals
b) Gas detectors and analyzers
c) Electrical converters, electrical valve positioners, solenoid valves, electric actuators and other electrical signal actuators
d) RTD
e) Electronic switches
f) Relay coils
g) Network and communication equipment
h) Other instruments that are sensitive to lightning surges or have poor withstand capacity

Instruments that SPD is not necessary:
a) Thermocouples
b) Mechanical contact switches and buttons
c) Other instruments that can withstand lightning surges

Select Signal SPD

1. Maximum continuous operating voltage Uc

Uc shall be greater than the maximum operating voltage of the circuit and have a certain margin. Usually, for instruments with a rated operating voltage of 24V, Uc=32V.
(Rated operating voltage Un: the optimum voltage for electrical and electronic equipment to operate normally for a long time)

2. Discharge capacity

Theoretically, the greater the discharge capacity, the better. Generally, C2: 20kV/10kA and D1: 2.5kA are required.
(C2: represents a fast rise rate, its open circuit voltage waveform is 1.2/50μs, the short circuit current waveform is 8/20μs, and the virtual impedance is 2Ω. D1: represents high energy, its open circuit voltage is ≥1kV, and the current waveform is 10/350μs.)

3. Rated Operating Current IL

Signal SPD is generally installed in series. The current continuously flows through the SPD. It shall not be less than the continuous operating current of the working circuit in general. Otherwise, the SPD will overheat and burn out. Be aware of this parameter for the high-power instruments.

4. Voltage Protection Level Up

Signal SPD generally adopts level 2 protection, with a lower Up value. This parameter can generally meet the requirements.

Select Signal SPD

5. Bandwidth:

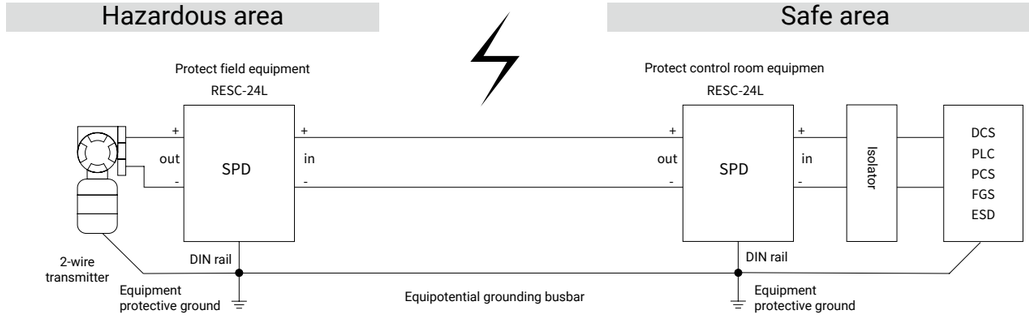
When SPD is connected to the line, it will cause the attenuation of high-frequency signals. This effect is expressed in terms of bandwidth. For example, -0.5dB, 10MHz, which means that at a frequency of 10MHz, the signal will be attenuated by 0.5dB. The signal frequency in industrial sites usually will not exceed 40kHz. Thus, there is no need to consider this parameter when selecting.

Install Signal SPD

1. Signal SPD

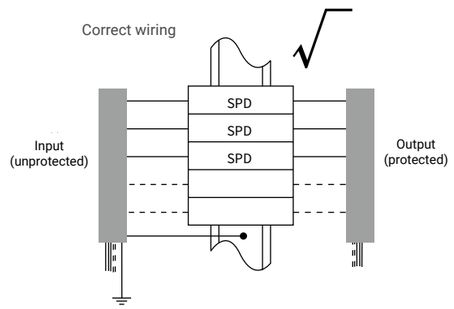
Signal SPD is commonly used for the protection of ports in a control cabinet. It is usually connected in series to the signal circuit and installed on a standard 35mm DIN rail. The output end of the SPD is the protected end. The protected equipment shall be connected to the output end of the SPD; no need to consider the transmission direction of the signal (such as AI or AO). SPD shall be installed upstream before the outdoor cable enters the control room and connects to the instrument (safety barrier, isolator I/O, etc.). SPD is not a safety barrier in an intrinsically safe system, and the two can not replace each other.

Signal SPD installation schematics:

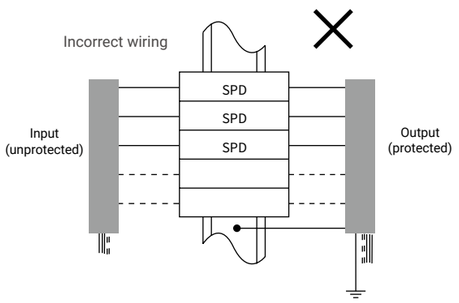


2. Arrangement and wiring of signal SPD in the cabinet

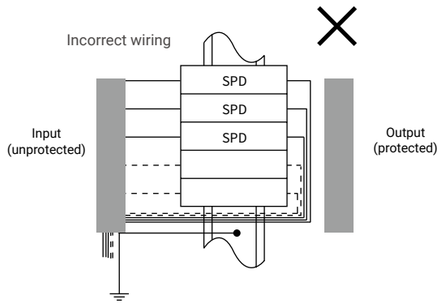
The grounding wire of the SPD shall be connected to the grounding terminal of the protected equipment housing with a jumper wire and connected to the ground at the SPD grounding point.



Ground wire located on unprotected side



Ground wire mixed with protected signal wires



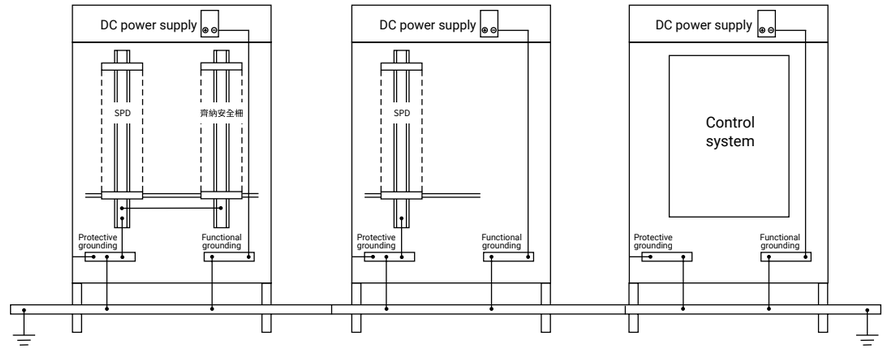
Protected signal wires mixed with unprotected signal wires

Install Signal SPD

3. Grounding of SPD cabinet

The control room instrument SPD shall be installed in the cabinet and use a rail busbar type SPD. The SPD shall be mounted on a metal rail, and this rail shall be used as the grounding busbar. The SPD grounding rail in the cabinet shall be directly connected to the grounding bar at the bottom of the cabinet or connected to the protective grounding busbar nearby in the cabinet. Insulation spacer shall not be used between the SPD grounding rail and the cabinet. The SPD and safety barrier can be installed in parallel in the same cabinet or different cabinets. When installed in the same cabinet, they shall be installed in parallel and shall not be installed on the same rail.

Below is the grounding schematics of SPD cabinet:



The cabinet body shall be connected to the protective grounding busbar inside the cabinet. Copper material or hot-dip galvanized flat steel with a cross-section of ≥40mm×4mm (width×thickness) shall be laid as the grounding bar along the power supply cable path for instruments, operating equipment and metal operating tables that need to be grounded. The operating table shall be grounded to the nearest grounding bar.

The insulated multi-strand copper core wires shall be used for grounding connection, with the following cross-section:

a) Grounding wire for single instrument and field instrument: 1.5mm^2 ～ 2.5mm^2

b) Connecting wires between bus rails or grounding busbars in the cabinet: 2.5mm^2 ～ 6.0mm^2

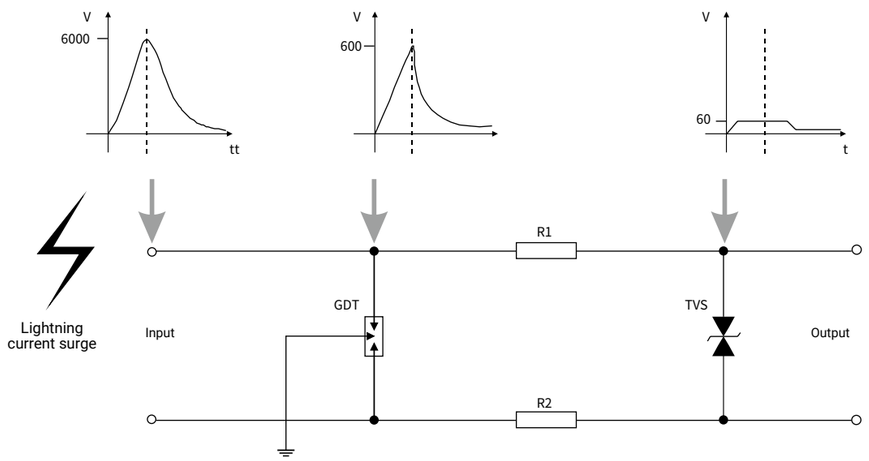
c) Connecting wire between cabinet and grounding bar: 6.0mm^2 ～ 16mm^2

d) The appearance of all grounding wires should be in green or yellow-green.

Operating principle of Signal SPD

When lightning current happens in the signal circuit, the fastest-response transient voltage suppressor diode (TVS) activates first, followed by the GDT, which discharges the lightning current into the ground. They are coordinating with each other through coupling components (resistors or inductors) to prevent the TVS from exceeding the limit. For example: when a 6KV/3KA lightning current is applied to the Signal SPD, the voltage is limited to about 600V after passing through the GDT. The output voltage is then limited to about 60V through TVS clamping. In this way, the protected electronic equipment only needs to withstand a lower transient overvoltage so that the damage can be prevented. For general instrument ports, the surge protection capability is up to 1kV, and for the power ports, it is up to 2kV.

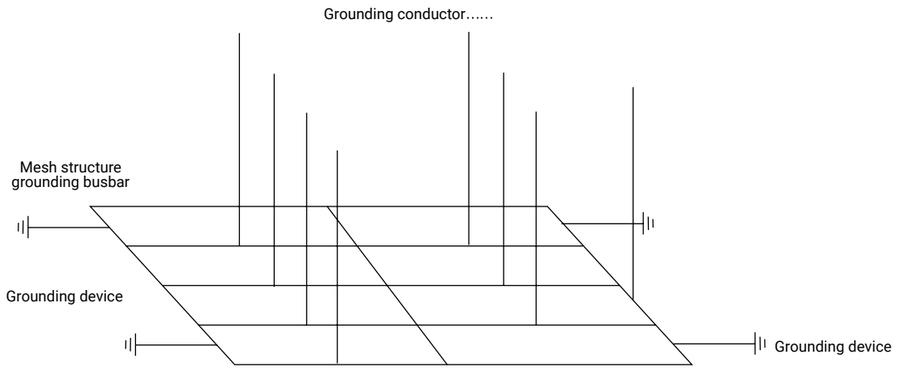
Operating principle of Signal SPD Schematics:



Grounding System

1. The control room instrument grounding system shall adopt a grounding system with a mesh structure, which can be used in all kinds of rooms with instruments.
2. The protective grounding, operating grounding, intrinsically safe grounding, shielding grounding, ESD grounding, SPD grounding, etc. of the control room should be connected to a unified mesh grounding system nearby.
3. No distinction of grounding types shall be incorporated in the mesh grounding system.
4. The mesh structure shall be in the form that multiple grounding bars are connected into a grid: the grounding bars shall be arranged under the movable floor, in the cable trench, or an appropriate space under all cabinets or operating tables according to the arrangement of the instrument cabinets or operating tables.
5. The grounding network for more than two rows of cabinets shall be connected at both ends and in the middle. The spacing between grid rows and columns shall be ≤5m, or the circumference of a single mesh shall be ≤20m.

Mesh structure diagram



The AC power supply for instruments shall be grounded through the grounding wire of the TN-S system. For the grounding wire (PE wire) from the power supply system, a grounding busbar shall be set up in the distribution cabinet for instruments. The mesh-structured grounding bar and the distribution cabinet housing shall be connected to the grounding busbar in the distribution cabinet using multi-strand copper wires with a cross-section ≥16mm² and 6mm², respectively.

a) Operating grounding: grounding required for normal operation of instruments and controls

b) Protective grounding: Grounding to protect instruments and personal safety, also known as safety grounding

c) Intrinsically safe grounding: grounding required for normal operation of intrinsically safe instruments (Zener barrier grounding, negative pole of shunt diode, etc.)

d) Shielding grounding: grounding to avoid electromagnetic interference to instruments and signals

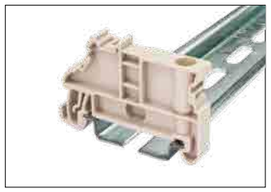
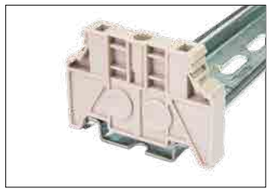
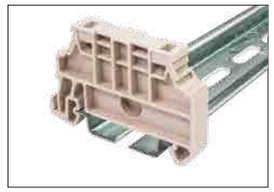
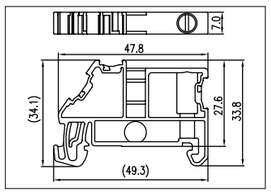
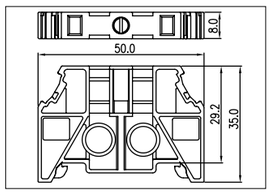
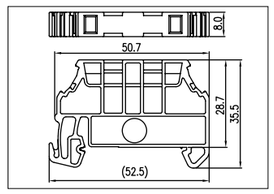
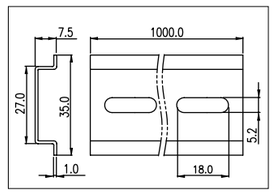
e) Lightning protection grounding: grounding required for the discharging of lightning current and the normal operation of SPD

f) Electrostatic grounding: to prevent the accumulation of electrostatic charges

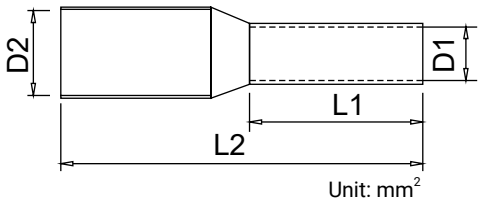
Accessories

Dinkle provides ergonomic tools and complies with international standards such as DIN, ISO and ANSI. Tools and ferrules make it easier for users to complete wiring work. In addition, we also provide durable end bracket and DIN Rails.

End Bracket & DIN Rail

SS2N	SS4N	SS5N	TS-35-1000
			
			

Ferrules For Single Wire



Unit: mm^2

Part number	Diameter AWG (mm^2)	Size(mm)				Package		DIN 46228/4 color
		D1	D2	L1	L2	Pcs / bag	Pcs / box	
DN00208D	24 (0.2)	0.75	1.9	8	12	1000	10	Light Blue
DN00308D	22 (0.34)	0.8	1.9	8	12	1000	10	Turquoise
DN00508D	20 (0.5)	1.0	2.6	8	14	500	10	White
DN00510D				10	16	500	8	
DN00708D	18 (0.75)	1.2	2.8	8	14	500	8	Grey
DN00710D				10	16			
DN00712D				12	18			
DN01008D	(1)	1.4	3.0	8	14	500	6	Red
DN01010D				10	16			
DN01012D				12	18			
DN01508D	16 (1.5)	1.7	3.5	8	14	500	4	Black
DN01510D				10	16			
DN01512D				12	18			
DN02508D	14 (2.5)	2.2	4.2	8	14	500	4	Blue
DN02510D				10	16	500	3	
DN02512D				12	18			
DN04010D	12 (4)	2.8	4.8	10	17	500	2	Grey
DN04012D				12	20			
DN06012D	10 (6)	3.5	6.3	12	20	500	1	Yellow
DN10012D	7 (10)	4.5	7.6	12	22	200	1	Red

Tools

DNT13-0102

0.08~10mm^2 / AWG 28~7

DNT04-2616A

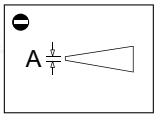
0.2~1.25mm^2 / AWG26~16

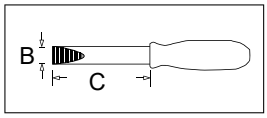
DNT04-2010A

0.6~5mm^2 / AWG20~10

Screwdriver

Slotted Screwdriver





Models	A	B	C	Pcs / box
DNT11-0102	0.4	2.5	75	12
DNT11-0107	0.6	3.5	100	12
DNT11-0109	0.8	4.0	100	12
DNT11-0111	1.0	5.5	150	12