CN232 and CN233 arresters (surge protective devices) for low voltage circuit

■ Description

Arresters (surge protective devices) protect devices connected to power supplies from lightning damage by absorbing inductive lightning surges from power supply.

■ Features

- Normal-mode surges and common-mode surges can be absorbed using only one arrester.
- Coordinated operation of 2 types of varistor enables extremely fast response to surges and a high level of surge absorption.
- Built-in thermal fuses prevent problems such as short-circuit due to deterioration of elements.
- Indicators for easy confirmation of device status (i.e., normal or malfunction)
- Integrated terminal construction reduces space and wiring requirements for easier handling of the arrester.
- Mount to rails, using screws, or to brackets for standardized distribution boards.
- Standard-feature terminal cover to protect against electrical shock

CN23232

CN23332

■ Applications

- Electronic devices, such as computers, measurement devices, and communications devices
- Inverters
- Electronic devices inside distribution boards (e.g., power distribution boards and lighting distribution boards)

■ Specifications

Type		CN23211	CN23212	CN23232		CN2324E	CN2324L
Applicable circuit and rated voltage (max. continuous operating voltage) Uc (50/60Hz)		Single-phase, 2-wire, 120V	Single-phase, 2-wire, 240V	Single-phase, 3-wire, 100/200V	3-phase, 3-wire, 240V	3-phase, 3-wire, 440V (voltage to ground)	3-phase, 3-wire, 440V (between wires)
Test class (JIS C 5381-1)		Class II					
Max. discharge current Ima x (8/20μs)	Voltage to ground	10kA	10kA	10kA		10kA	–
	Between wires	5kA	5kA	5kA		–	5kA
Nominal discharge current In (8/20μs)	Voltage to ground	5kA	5kA	5kA		5kA	–
	Between wires	1.5kA	1.5kA	1.5kA		–	1.5kA
Discharge start voltage (V 1mA)	Voltage to ground	420 to 520V	610 to 750V	610 to 750V		990 to 1,210V	–
	Between wires	240 to 310V	420 to 520V	420 to 520V		–	800 to 1,100V
Voltage protection level (Up)	Voltage to ground	1,100V max.	1,500V max.	1,500V max.		2,500V max.	–
	Between wires	700V max.	1,100V max.	1,100V max.		–	2,000V max.
Operating environment		Temperature: –20 to 60°C, Humidity: 95% max. RH (no icing or condensation)					
Connection terminals/connection wires		Screw terminal connection: M5 (with protective cover for charged parts)					
		Applicable connection wire: 2 to 14mm, Max. round crimp terminal width: 12.4mm (nominal size: JIS C 2805 R14-5), Tightening torque: 2.0 to 2.5 N·m					
Dimensions (L x W x H)		95 x 50 x 60 mm					

■ Specifications

Type		CN23311	CN23312	CN23332		CN2334E
Applicable circuit and rated voltage (max. continuous operating voltage) Uc (50/60Hz)		Single-phase, 2-wire, 120V	Single-phase, 2-wire, 240V	Single-phase, 3-wire, 100/200V	3-phase, 3-wire, 240V	3-phase, 3-wire, 440V (voltage to ground)
Test class (JIS C 5381-1)		Class II				
Max. discharge current Ima x (8/20µs)	Voltage to ground	20kA	20kA	20kA		20kA
	Between wires	5kA	5kA	5kA		–
Nominal discharge current In (8/20µs)	Voltage to ground	5kA	5kA	5kA		5kA
	Between wires	1.5kA	1.5kA	1.5kA		–
Discharge start voltage (V 1mA)	Voltage to ground	420 to 520V	610 to 750V	610 to 750V		850 to 1,100V
	Between wires	240 to 310V	420 to 520V	420 to 520V		–
Voltage protection level (Up)	Voltage to ground	1,100V max.	1,500V max.	1,500V max.		2,500V max.
	Between wires	700V max.	1,100V max.	1,100V max.		–
Operating environment		Temperature: –20 to 60°C, Humidity: 95% max. RH (no icing or condensation)				
Connection terminals/connection wires		Screw terminal connection: M5 (with protective cover for charged parts)				
		Applicable connection wire: 2 to 14mm, Max. round crimp terminal width: 12.4mm (nominal size: JIS C 2805 R14-5), Tightening torque: 2.0 to 2.5 N·m				
Dimensions (L x W x H)		95 x 50 x 83 mm				

• Selection table for power supply arresters and arrester shunts

Arrester shunt	Plug fuse		Circuit breaker			
Max. discharge current	10kA	20kA	10kA			
Type	AFaC-30X x 3 (rail mounting)*	AFaC-60 x 3	EA33AC/30	SA33C/30	SA53C/30	SA53RC/30
Interrupting capacity	600V AC 100kA		220V AC 2.5kA 440V AC 1.5kA	220V AC 5kA 440V AC 2.5kA	220V AC 10kA 440V AC 7.5kA	220V AC 25kA 440V AC 10kA

Arrester shunt	Circuit breaker					
Max. discharge current	20kA					
Type	EA53AC/50	EA53C/50	SA53C/50	SA53RC/50	SA63RC/60	SA103C/60
Interrupting capacity	220V AC 2.5kA 440V AC 1.5kA	220V AC 5kA 440V AC 2.5kA	220V AC 10kA 440V AC 7.5kA	220V AC 25kA 440V AC 10kA	220V AC 25kA 440V AC 10kA	220V AC 50kA 440V AC 25kA

* If required, separately order a protective cover for charged parts (30A). (Type number: CG-30)

■ Type number nomenclature

CN23 2 32

Rated voltage
- 11: Single-phase 2-wire, 120V
- 12: Single-phase 2-wire, 240V
- 32: 3-phase 3-wire, 240V
  Single-phase 3-wire, 100/200V
- 4E: 3-phase 3-wire, 440V (for common-mode surges)
- 4L: 3-phase 3-wire, 440V (for normal-mode surges)

Discharge current (ground)
- 2: 10kA
- 3: 20kA

Basic type

■ Ambient conditions

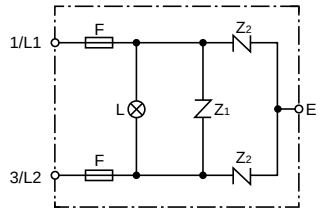
- Ambient operating temperature: –20 to 50˚C (No condensation)
- Relative operating humidity: 45 to 85% (No condensation)
- For indoor use

■ Ordering information

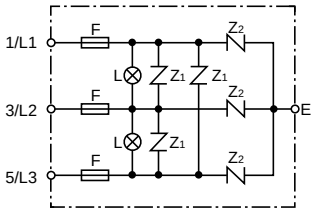
Specify the following :
1. Type number or ordering code

■ Internal circuit diagrams

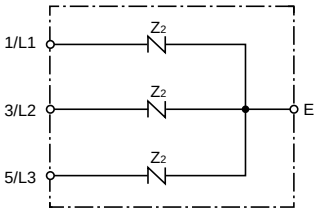
CN23211, CN23212
CN23311, CN23312



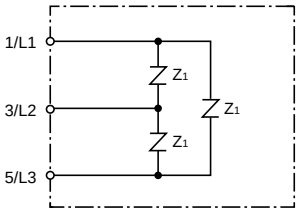
CN23232
CN23332



CN2324E
CN2334E



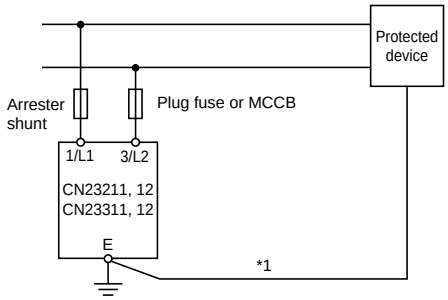
CN2324L



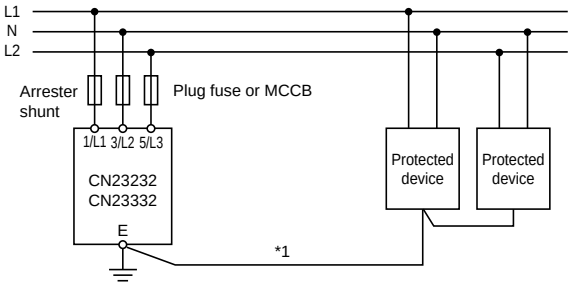
F: Thermal fuse
L: Indicator
Z_1, Z_2: Components for surge protective devices

■ Application examples

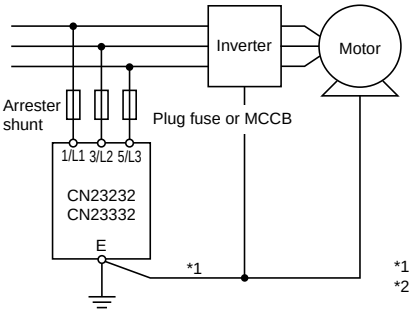
Single-phase 2-wire, 120V, 240V AC



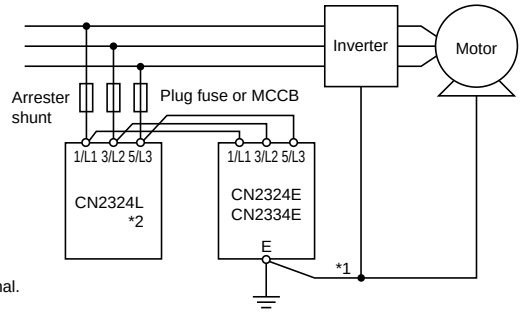
Single-phase 3-wire, 100/200V AC



3-phase 3-wire, 240V AC



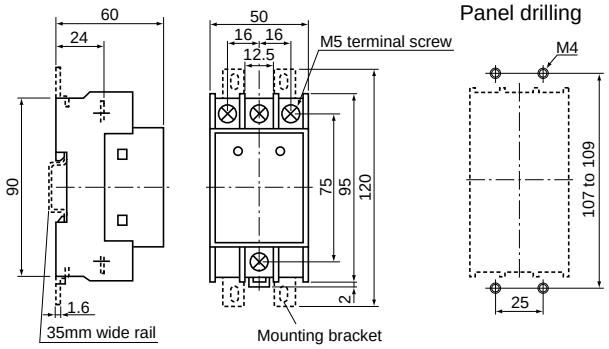
3-phase 3-wire, 440V AC



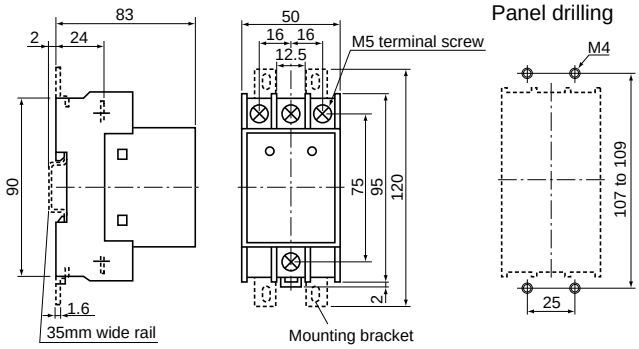
*1 Male the connection at the shortest distance.
*2 Do not wire to the black-colored screw terminal.

■ Dimensions, mm

CN232

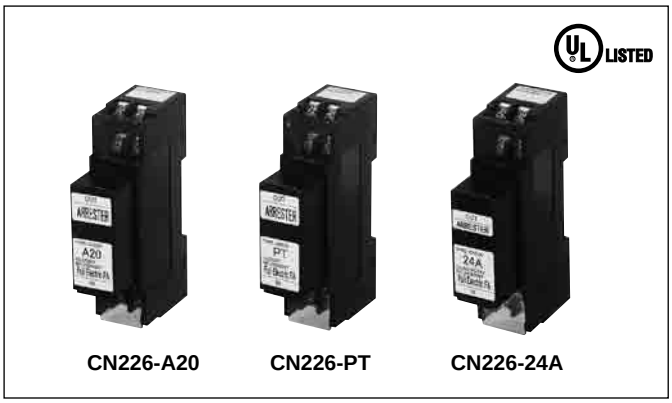


CN233



09

CN226 series arresters (surge protective devices) for signal line and control circuit



■ Features

- Highly effective surge suppression using protection method combining gas discharge tube, varistor, and avalanche diode.
- Large surge discharge current
- Fast response to surges reduces influence on device.
- A comprehensive lineup to suit all kinds of signal line applications (e.g., transducers, remote terminals, and sensors).
- Simple mounting to IEC rail.
- The arrester mounts to the terminal block using a plug-in connection for simple inspection and replacement. Signal lines are not opened even if the arrester is removed.

■ Specifications

• For signal line circuit

Type		CN226-A20	CN226-A50	CN226-TC	CN226-PT	CN226-PM	CN226-SP	CN226-24	CN226-48	CN226-100
Application		4-20mA	10-50mA	Thermocouple	Resistance thermometer	Potentiometr	Slow pulse	24V DC	48V DC	100V DC
Rated voltage		24V DC	48V DC	5V DC	8V DC	5V DC	12V DC	24V DC	48V DC	100V DC
Rated current		100mA						200mA		
Leakage current		5μA max.		10μA max.	2μA max.	10μA max.		5μA max.		
Operation start voltage (V1mA)	Between wires	30V min.	61V min.	6.7V min.	11V min.	6.7V min.	14V min.	30V min.	60V min.	150V min.
	Voltage to ground	150V min.								180V min.
Clamping voltage (Vp)	Between wires	40V max.	100V max.	14V max.	22V max.	14V max.	25V max.	55V max.	130V max.	700V max.
	Voltage to ground	300V max.								800V max.
Internal resistance		10Ω 10% (Single)			2Ω 10% (Single)	10Ω 10% (Single)		1Ω 10% (Single)		
No. of ports		2-port, combination type								
Response time		0.1μs max.								
Max.discharge current (8/20μs)	Between wires	5,000A								
	Voltage to ground	10,000A								

• For control power supply circuit

Type		CN226-24A	CN226-48A	CN226-100B
Application		24V AC/DC	48V AC/DC	100V AC/DC
Rated voltage		24V AC/DC	48V AC/DC	100V AC/DC
Rated current		2A		
Leakage current		10A max.		
Operation start voltage (V1mA)	Between wires	40V min.	84V min.	370V min.
	Voltage to ground	300V min.		400V min.
Clamping voltage (Vp)	Between wires	250V max.	400V max.	850V max.
	Voltage to ground	400V max.		1,000V max.
Internal resistance		–	–	–
No. of ports		1-port, combination type		
Response time		0.1μs max.		
Max.discharge current (8/20μs)	Between wires	2,000A		5,000A
	Voltage to ground	2,000A		5,000A

■ Type number nomenclature

CN226 - □

Application circuit
- A20: 4 to 20mA
- A50: 10 to 50mA
- TC: Thermocouple
- PT: Resistance thermometer
- PM: Potentiometer
- SP: Slow pulse

- 24: Signal circuit 24V DC
- 48: Signal circuit 48V DC
- 100: Signal circuit 100V DC
- 24A: Control power supply circuit 24V AC/DC
- 48A: Control power supply circuit 48V AC/DC
- 100B: Control power supply circuit 110V AC/DC

Basic type

■ UL-approved type (Applicable standard: UL 497B File No. E253735)

Category	Signal circuit							
Type number (i.e., product code)	CN226-A20	CN226-A50	CN226-TC	CN226-PT	CN226-PM	CN226-SP	CN226-24	CN226-48
Application	4-20mA	10-50mA	Thermocouple	Resistance thermometer	Potentiometer	Slow pulse	24V DC	48V DC

* Refer to the table above or rated specifications, prices, and shipment.

■ Ambient conditions

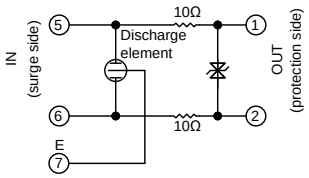
- Ambient operating temperature: –20 to 50˚C (No condensation)
- Relative operating humidity: 45% to 85% (No condensation)
- For indoor use

■ Ordering information

Specify the following:
1. Type number or ordering code

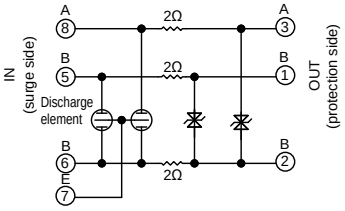
■ Internal wiring

4 to 20mA, 10 to 50mA [*1]
Type: A20, A50

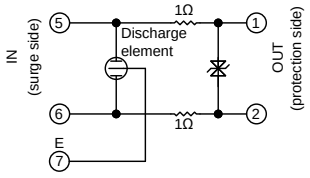


*1: Connection can be made regardless of polarity.

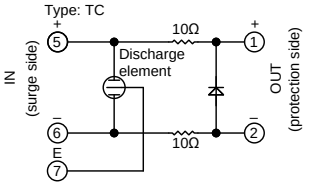
Resistance thermometer [*1]
Type: PT



24V, 48V, 100V DC for signal [*1]
Type: 24, 48, 100

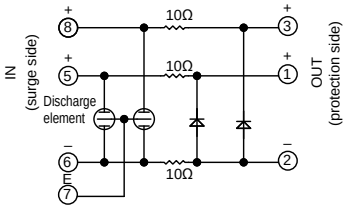


Thermocouple [*2]
Type: TC

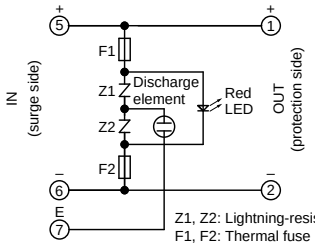


*2: Be careful of polarity when making the connection.

Potentiometer and slow pulse [*2]
Type: PM, SP

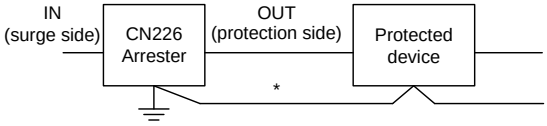


24V, 48V, 100V AC/DC control power supply [*2]
Type: 24A, 48A, 100B

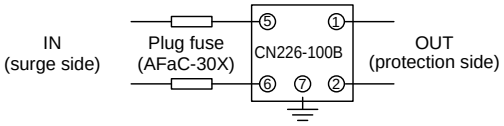


Z1, Z2: Lightning-resistant elements
F1, F2: Thermal fuse

■ Application circuit example

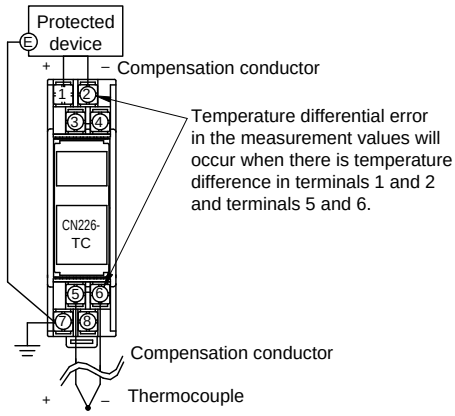


* Make the connection at the shortest distance.

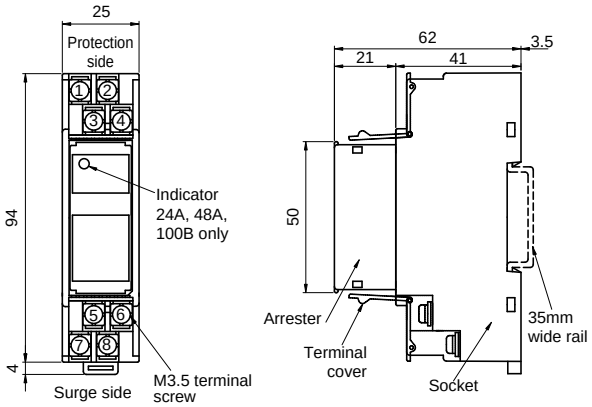


Note: When using a CN226-100A arrester, use a plug fuse (AFaC-30X) for disconnection and short-circuit protection.

Note for CN226-TC thermocouple



■ Dimensions, mm



Operating precautions

- Install the arrester as close as possible to the protected device.
- Be sure to securely connect the grounding terminal (E terminal) to the grounding the terminal of the panel. Consecutively ground the protected device and the arrester at the shortest distance using a grounding wire of 2mm^2 min. with grounding on the arrester side.
- Use an arrester that is appropriate for the operating voltage and application. Incorrect application may result in failure or loss of protection.
- Remove the arrester from the socket before performing a withstand test or insulation resistance test on the device. Incorrect testing may damage the arrester or result in measurement value errors.
- Use a DC power supply with the following specifications to connect to the signal arrester.
  Using a large-capacity power supply may result in damage or fire due to inability to interrupt the short-circuit current that flows when the arrester operates.
  Applicable types: CN226-24, CN226-48, CN226-100
  DC power supply: CN226-24: 24V DC, 40W max, 1.7A max.,
  CN226-48: 48V DC, 30W max., 0.6A max.,
  CN226-100: 100V DC, 40W max., 0.4A max.

09

■ Features

The arrester protects network circuits from lightning surges.

- Communications networks are supported (e.g., 10Base-5, 100Base-TX, RS-485, PLC T-Link).
- Ideal design for applications with high-performance in protection against lightning surges.
- Support for CN227-EBT
  High-speed communications (100Mbps min.) enables high-performance response to surges.
  Compact, lightweight, and easy to connect (RJ-45 modular connector).
- CN227-EB5
  Extremely small signal loss enables high-performance response.
  Easy installation and replacement (mounting bracket and grounding wire included).
- CN227-RS42, RS44
  The body is slim (22.5mm wide) and European-style terminal blocks are used.
  Types are available to support 2-wire (RS42) or 4-wire (RS44).
  The arrester provides a long service life and high surge resistance (10kA, 8/20μs) and protection characteristics that satisfied categories C2 and D1 of the JIS C 5381-21 standard.

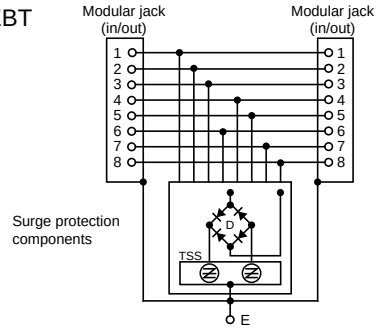
■ Ratings, specifications, models, product codes, prices (excluding tax), and shipment

Type		CN227-EBT	CN227-EB5	CN227-RS42	CN227-RS44
Application		Ethernet 10Base-T 100Base-TX	Internet 10Base-5	RS-485, PLC (T link), remote terminals, 60V DC max. signal circuits	
				2-wire	4-wire
Max. continuous operating voltage (Uc)		52V DC	3.5V DC	60V DC	
Rated current		100mA	100mA	500mA	
Transmission frequency bandwidth		DC 0 to 100MHz	DC 0 to 20MHz	DC 0 to 2MHz	
Insertion loss		2dB max.	0.5dB max.	1dB max.	
Transmission speed/DC resistance		100Mbps	10Mbps	DC resistance: 0.1Ω max.	
DC operating voltage (V 1mA)/DC discharge start voltage (100V/s)	Between wires	–	DC4.5V±15% (100V/s)	DC82V±10% (V_{1mA})	
	Voltage to ground	DC65V±15% (100V/s)	DC90V±25% (100V/s)	DC90V±20% (100V/s)	
Voltage protection level (impulse limit voltage) (Up)	Between wires *1	150V max.	40V max.	400V max.	
	Voltage to ground	150V max.	350V max.	400V max.	
Impulse withstand *2	Category C2 (8/20μs)	500A	10kA	10kA	
	Category D1 (8/350μs)	–	–	2.5kA	
Environment		Temperature: –20 to 60°C, Humidity: 95% max. RH (no icing or condensation)			
Interface and applicable connection wire		Modular (RJ-45)	Coaxial tap (transceiver connection)	Screw terminal connection method Solid wire: 0.4 to 1.6mm dia., stranded wire: 0.14 to 2.5mm^2	
Mechanical durability	Vibration resistance (durability)	–	–	Frequency: 10 to 55Hz, Double amplitude: 0.75mm (4.5G max.), 2 hours in each direction for a total of 6 hours	
Dimensions (L x W x H)		(Thickness: Oval) 35 x 40 x (length) 81 mm	28 x 67 x 119 mm	90 x 22.5 x 70 mm	

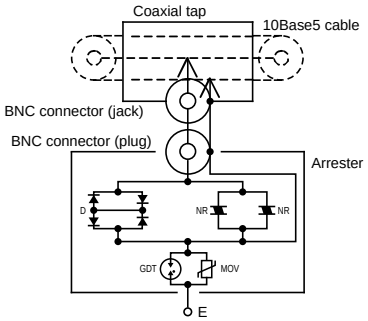
Note *1: This gives the value when lightning surge voltage is applied between wires with one wire grounded.
*2: This gives the total value for voltage to ground for each wire. Category C2 indicates the current value with power applied 5 times each for positive and negative polarities at a current waveform of 8/20μs, and category D1 indicates the current value with power applied one time each for positive and negative polarities at a current waveform of 10/350μs.

■ Internal wiring

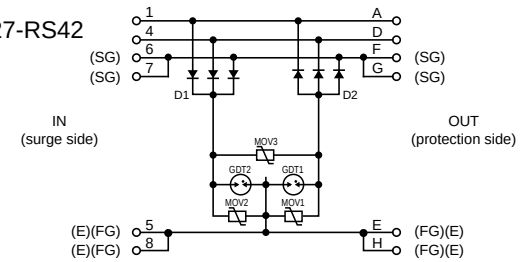
CN227-EBT



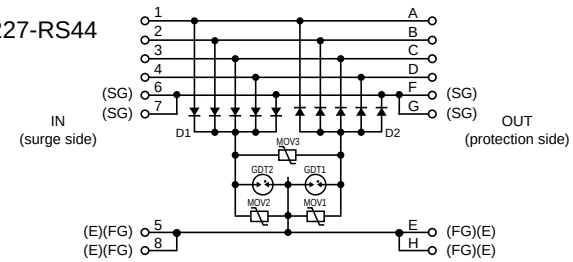
CN227-EB5



CN227-RS42

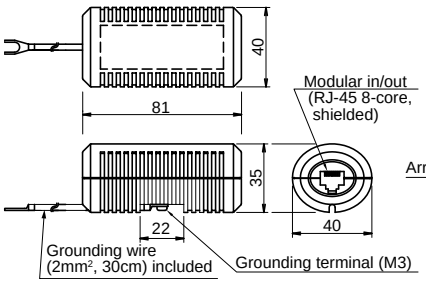


CN227-RS44

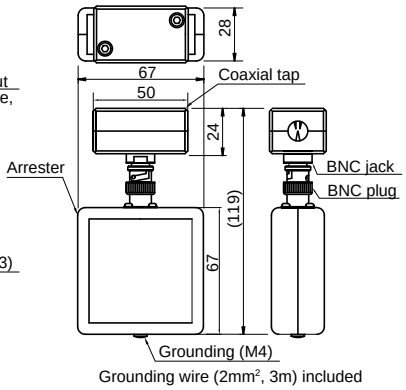


■ Dimensions, mm

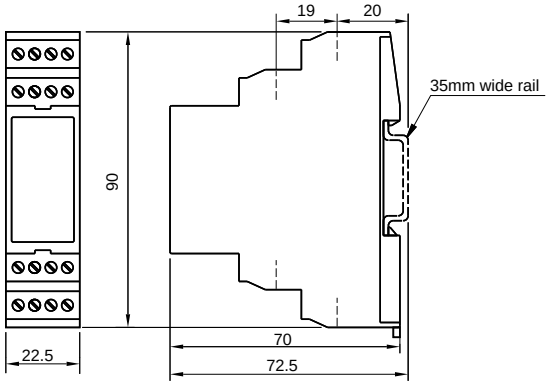
CN227-EBT



CN227-EB5



CN227-RS42, -RS44



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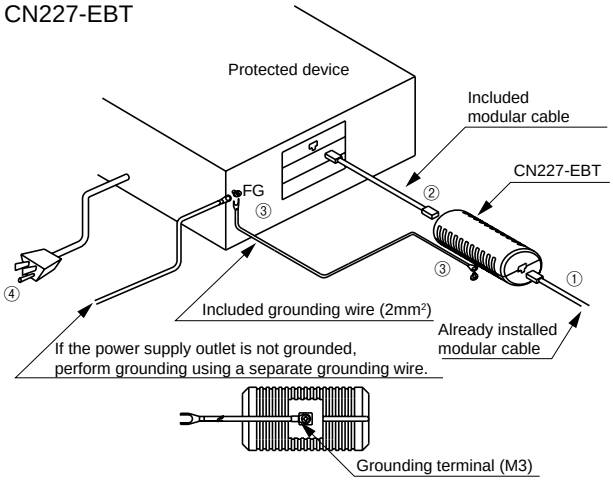
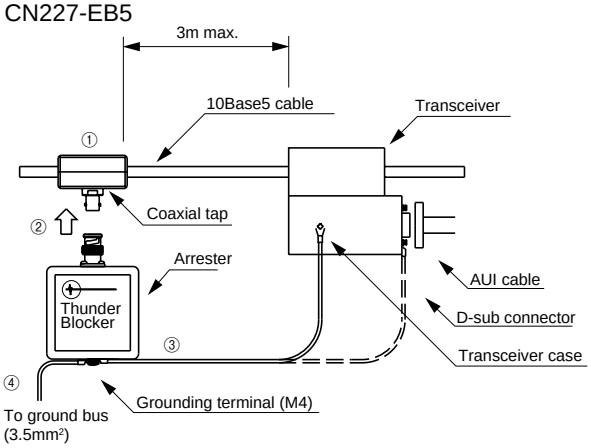
■ Application circuit example

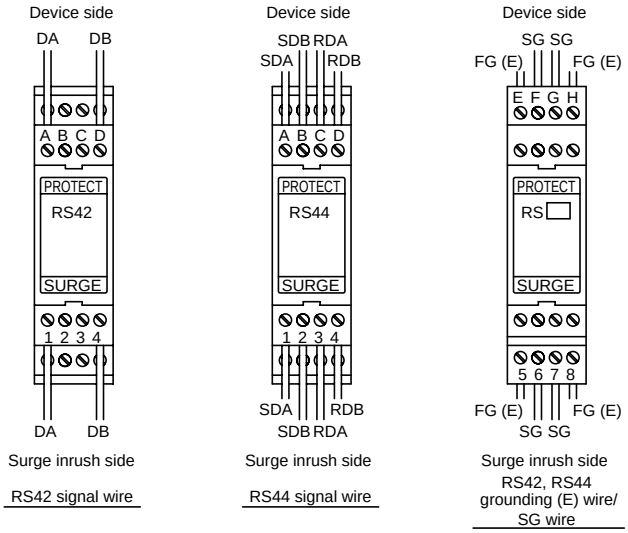
CN227-EBT



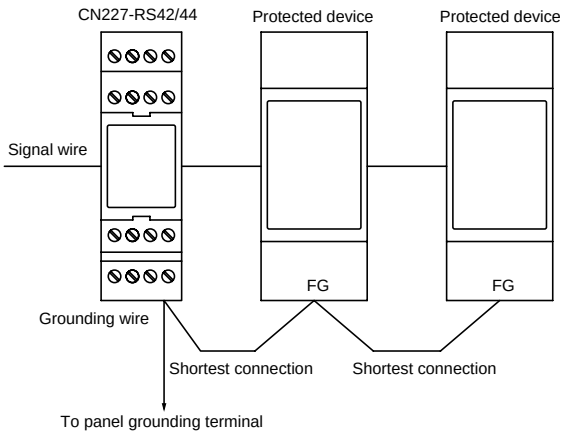
CN227-EB5



■ Wiring method



■ Grounding wiring



The arrester protects network circuits from lightning surges.

• **CN227-RS44A**

■ **Application**

• Devices are protected from lightning surges that may enter instrument cables or control cables of RS-485, 24V DC-max. signal circuits.

■ **Features**

• Entrance of high-frequency noise from arrester grounding circuits is prevented.
• Protection characteristics satisfy categories C2 and D1 of the JIS C5381-21 standard.
• Use of screwless connection terminals eliminates the need for crimp terminals.
• IEC rail mounting.

• **CN227-350S**

■ **Application**

• Broadcasting equipment is protected from lightning surges that may enter broadcasting speaker circuits or 100/200V-AC contact signal circuits.

■ **Features**

• Protection characteristics satisfy categories C2 and D1 of the JIS C5381-21 standard.
• Use of screwless connection terminals eliminates the need for crimp terminals.
• IEC rail mounting.

• **CN227-SD**

■ **Application**

• Communications equipment is protected from lightning surges that may enter telephone lines or other communications lines.

■ **Features**

• Protection characteristics satisfy categories C2 and D1 of the JIS C5381-21 standard.
• Use of screwless connection terminals eliminates the need for crimp terminals.
• IEC rail mounting.

• **CN227-UCP**

■ **Application**

• Communications equipment is protected from lightning surges that may enter telephone lines or other communications lines.

■ **Features**

• Support for UCS (universal connection system).
• Modular plug-in for high-density wiring system.
• Equipped with failure display.

• **CN227-NT**

■ **Application**

• Equipment is protected from lightning surges that may enter coaxial cables of ITV and monitor cameras or data transmission devices.

■ **Features**

• Ideal protection for ITV coaxial lines with weak withstand voltage.
• Transmission noise is absorbed with improved production characteristics by combining gas discharge tubes at noise filters.
• Protection characteristics satisfy categories C2 and D1 of the JIS C5381-21 standard.
• IEC rail mounting.
• Ideal for transmission lines on which a DC power supply(30V DC, 250mA max.) is superimposed on the coaxial.

• **CN227-TV**

■ **Application**

• Devices are protected from lightning surges that may enter coaxial cables for a satellite digital TV.

■ **Features**

• Composed with coaxial connectors and high-performance gas discharge tubes.
• Compact size with high impulse resistance.
• Excellent transmission performance (large frequency bandwidth and little insertion loss).

■ Ratings, specifications, types, prices (excluding tax), and shipment

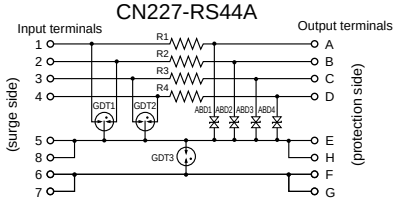
Type		CN227-RS44A	CN227-350S	CN227-SD
Application		RS-485, remote terminals, 24V DC max. signal circuits	Broadcasting speaker circuits 100/200V AC contact signal circuits	General telephone lines
		Low electrostatic capacity, 4-wire	4-wire	2-wire
Max. continuous operating voltage (Uc)		27V DC	275V AC/350V DC	180V DC
Rated current		100mA	2A	120mA
Transmission frequency bandwidth		DC 0 to 500kHz	DC 0 to 100MHz	DC 0 to 5MHz
Insertion loss		1dB max.	1dB max.	1.5dB max.
Transmission speed/DC resistance		DC resistance: 5Ω±10% (1 wire)	DC resistance: 0.5Ω max.	DC resistance: 20Ω max. (1 wire)
DC operating voltage (V1mA)/DC discharge start voltage (100V/s)	Between wires	–	–	–
	Voltage to ground	Between 1, 2, 3, 4-5, 8: 33V±10% DC (V_{1mA}) Between 5, 8-6, 7: 90V±20% DC (100V/s)	Between 1, 2, 3, 4-5, 8: 470V±10% DC (V_{1mA}) Between 5, 8-6, 7: 90V±20% DC (100V/s)	230V DC±20% (100V/s)
Voltage protection level (impulse limit voltage) (Up)	Between wires *1	Between A, B, C, D: 100V max.	Between A, B, C, D: 1,300V max.	400V max.
	Voltage to ground	Between A, B, C, D-E, H: 100V max.	Between B, C, D-E, H: 1,300V max.	400V max.
		Between E, H-F, G: 600V max.	Between E, H-F, G: 600V max.	
Impulse withstand *2	Category C2 (8/20μs)	10kA	10kA	10kA
	Category D1 (8/350μs)	2.5kA	0.5kA	5kA
Environment		Temperature: –20 to 60°C, Humidity: 95% max. RH (no icing or condensation)		
Interface and applicable connection wire		Screw terminal connection method Solid wire: 0.4 to 1.6mm dia., stranded wire: 0.14 to 2.5mm^2		
Mechanical durability	Vibration resistance (durability)	Frequency: 10 to 55Hz, Double amplitude: 0.75mm (4.5G max.), 2 hours in each direction for a total of 6 hours		
Dimensions (L x W x H)		90 x 22.5 x 70 mm		

Type		CN227-UCP	CN227-NT	CN227-TV
Application		General telephone lines (modular)	ITV and monitor cameras	Satellite digital TV
		2-wire		
Max. continuous operating voltage (Uc)		170V DC	30V DC	60V DC
Rated current		130mA	250mA	500mA
Transmission frequency bandwidth		DC 0 to 10MHz	DC 0 to 10MHz	DC 0 to 2.2GHz
Insertion loss		1dB max.	1.5dB max.	0.5dB max.
Transmission speed/DC resistance		DC resistance: 13Ω max. (1 wire)	DC resistance: 4Ω max.	–
DC operating voltage (V1mA)/DC discharge start voltage (100V/s)	Between wires	–	–	–
	Voltage to ground	175 to 275V DC (100V/s)	90V DC±20% (100V/s)	90V DC±20% (100V/s)
Voltage protection level (impulse limit voltage) (Up)	Between wires *1	300V max.	250V max.	–
	Voltage to ground	300V max.	250V max.	600V max. (between central conductor and external conductor)
Impulse withstand *2	Category C2 (8/20μs)	10kA	10kA	10kA
	Category D1 (8/350μs)	2.5kA	2.5kA	2.5kA
Environment		Temperature: –20 to 60°C, Humidity: 95% max. RH (no icing or condensation)		
Interface and applicable connection wire		Plug-in solid wire: 0.4 to 0.8 dia.	BNC jack - BNC jack	F jack - F jack
Mechanical durability	Vibration resistance (durability)	–	Frequency: 10 to 55Hz, Double amplitude: 0.75mm (4.5G max.), 2 hours in each direction for a total of 6 hours	
Dimensions (L x W x H)		19 x 9.5 x 59.5 mm	60 x 32 x 91 mm	(Thickness) 28 x 30 x (length) 60 mm

Note *1: This gives the value when lightning surge voltage is applied between wires with one wire grounded.
*2: This gives the total value for voltage to ground for each wire. Category C2 indicates the current value with power applied 5 times each for positive and negative polarities at a current waveform of 8/20μs, and category D1 indicates the current value with power applied one time each for positive and negative polarities at a current waveform of 8/350μs.

■ Internal wiring

CN227-RS44A



Terminal number

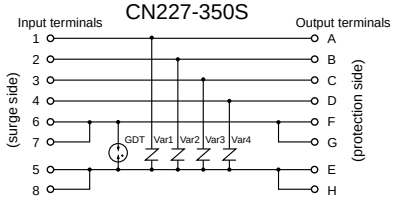
Protection of device with low withstand voltage between signal line and grounding wire

Terminal name	Signal line terminal	Ground terminal
surge side	1/2/3/4	5/8 (to ground pole)
protection side	A/B/C/D	E/H (to device case)

Reducing electrostatic capacity between signal line and ground line

Terminal name	Signal line terminal	Ground terminal
surge side	1/2/3/4	6/7 (to ground pole)
protection side	A/B/C/D	F/G (to device case)

CN227-350S



Terminal number

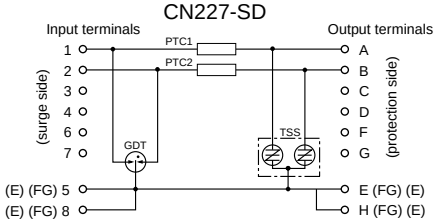
Protection of device with low withstand voltage between signal line and grounding wire

Terminal name	Signal line terminal	Ground terminal
surge side	1/2/3/4	5/8 (to ground pole)
protection side	A/B/C/D	E/H (to device case)

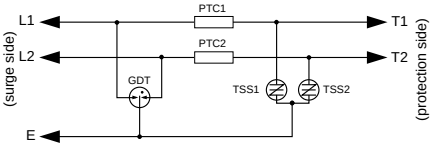
Relay contact signal circuit

Terminal name	Signal line terminal	Common terminal	Ground terminal
surge side	1/2/3/4	5/8	6/7 (to ground pole)
protection side	A/B/C/D	E/H	E/H (to device case)

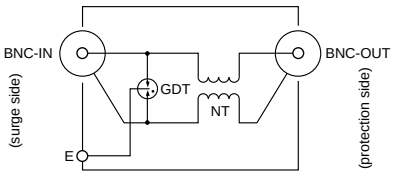
CN227-SD



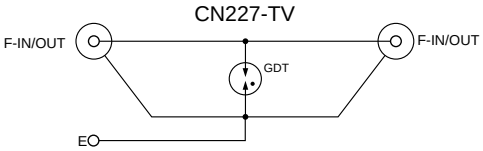
CN227-UCP



CN227-NT

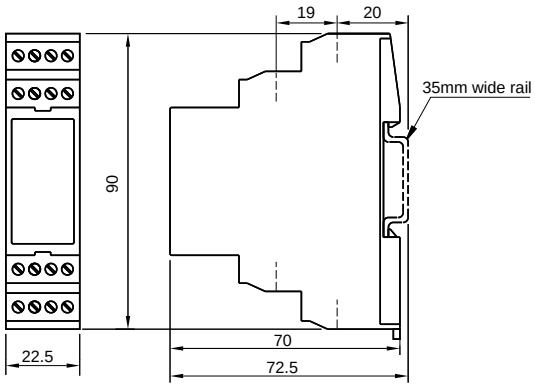


CN227-TV

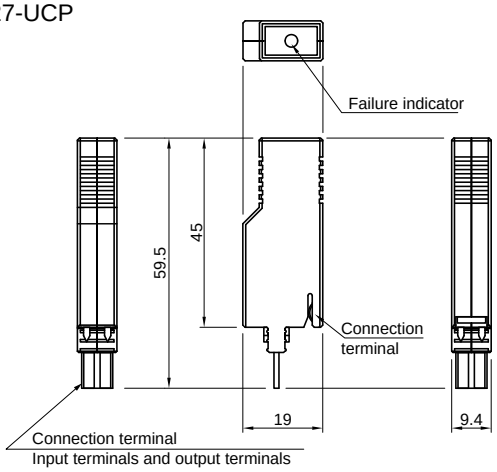


■ Dimensions, mm

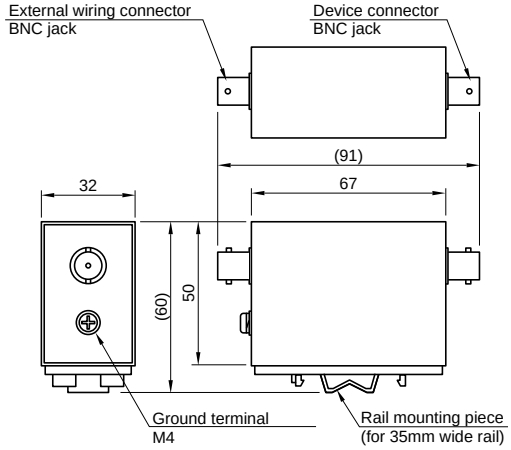
CN227-RS44A, -350S, -SD



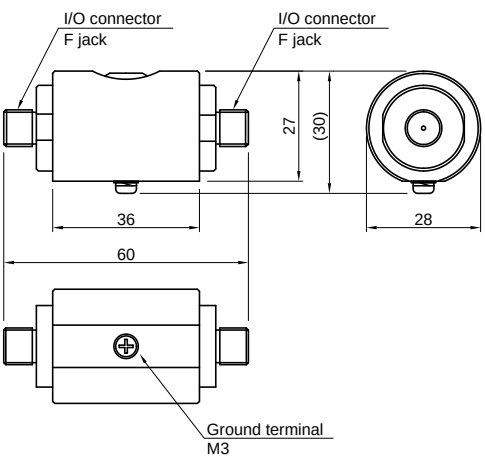
CN227-UCP



CN227-NT



CN227-TV



09

■ Overview and features

- The AS-i arrester protects AS-interface modules connected to AS-i networks and networks from overvoltage due to inductive lightning surge and switching surge.
- Only the AS-i arrester is required to protect AS-i signal circuits and auxiliary power supply circuits.
- The construction, network connectivity, and protection level (IP67) of the AS-i arrester are the same as for waterproof connector slaves (slim type).
- The AS-i arrester does not require assigning addresses in the AS-interface network.
- A FM6B1-04FE or FM6B2-04FE slave base is required to connect the AS-interface cable (yellow) and auxiliary power supply cable (black).

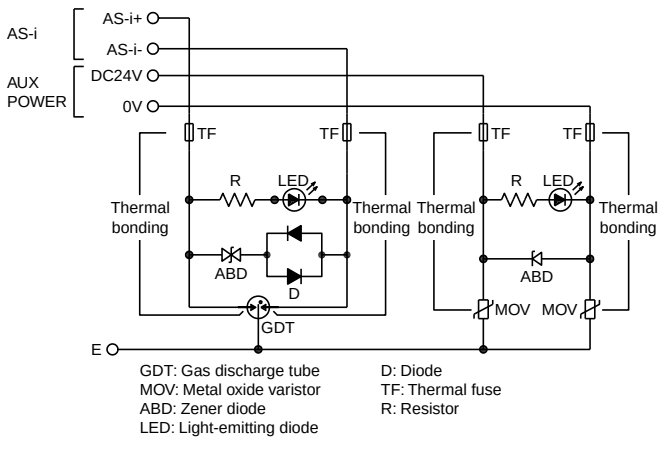
■ Ratings, specifications, types, prices (excluding tax), and shipment

Type		CN227-ASI	
Application		AS-i signal circuit	Auxiliary power supply circuit
Max. continuous operating voltage (Uc)		31.6V DC	30V DC
Rated current (In)		0.5A	5A
Insertion loss: DC 0 to 5MHz (110Ω)		0.2dB max.	–
Electrostatic capacity (100kHz)	Between wires	100pF max.	–
	Voltage to ground	10pF max.	–
Voltage protection level (Up)	Between wires	100V max.	100V max.
	Voltage to ground	700V max.	400V max.
Impulse withstand category C2 *1	Between wires	8/20μs 400A	8/20μs 400A
	Voltage to ground	8/20μs 1000A	8/20μs 1000A
Impulse withstand current *2	Voltage to ground	8/20μs 2000A	8/20μs 2000A

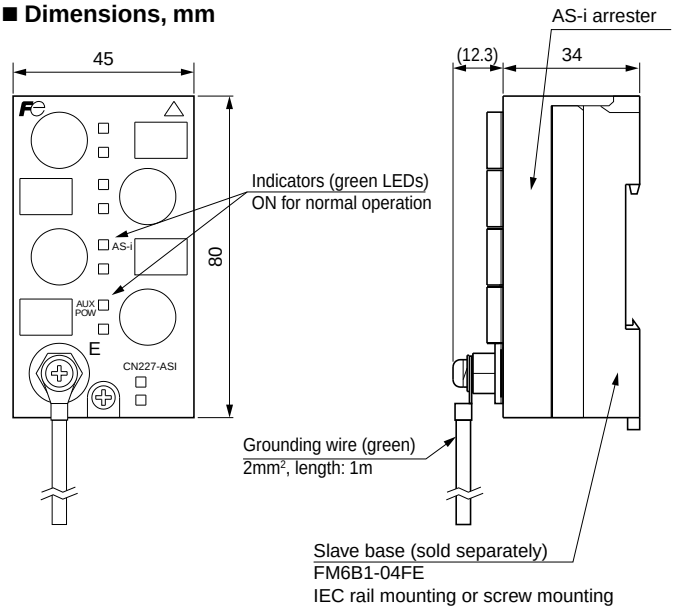
Type		CN227-ASI	
Application		AS-i signal circuit	Auxiliary power supply circuit
DC operating voltage	Between wires	DC39V±10% (V=5mA)	DC39V±10% (V=5mA)
	Voltage to ground	DC90V±20 (100V/s)	DC82V±10% (V=1mA)
Operating environment		Temperature: -20 to 60°C, Humidity: 95% max. (no condensation)	
Shock resistance	Rail mounting	150m/s^2 (11ms)	
Vibration resistance	Rail mounting	10 to 55Hz, 0.5mm single amplitude	

Note *1: Impulse withstand category C2 indicates the performance that is possible with power applied 5 times for positive and negative polarities at a current waveform of 8/20μs.
*2: Impulse withstand current indicates the performance possible with power applied for 1 time max. at a current wavelength of 8/20μs.

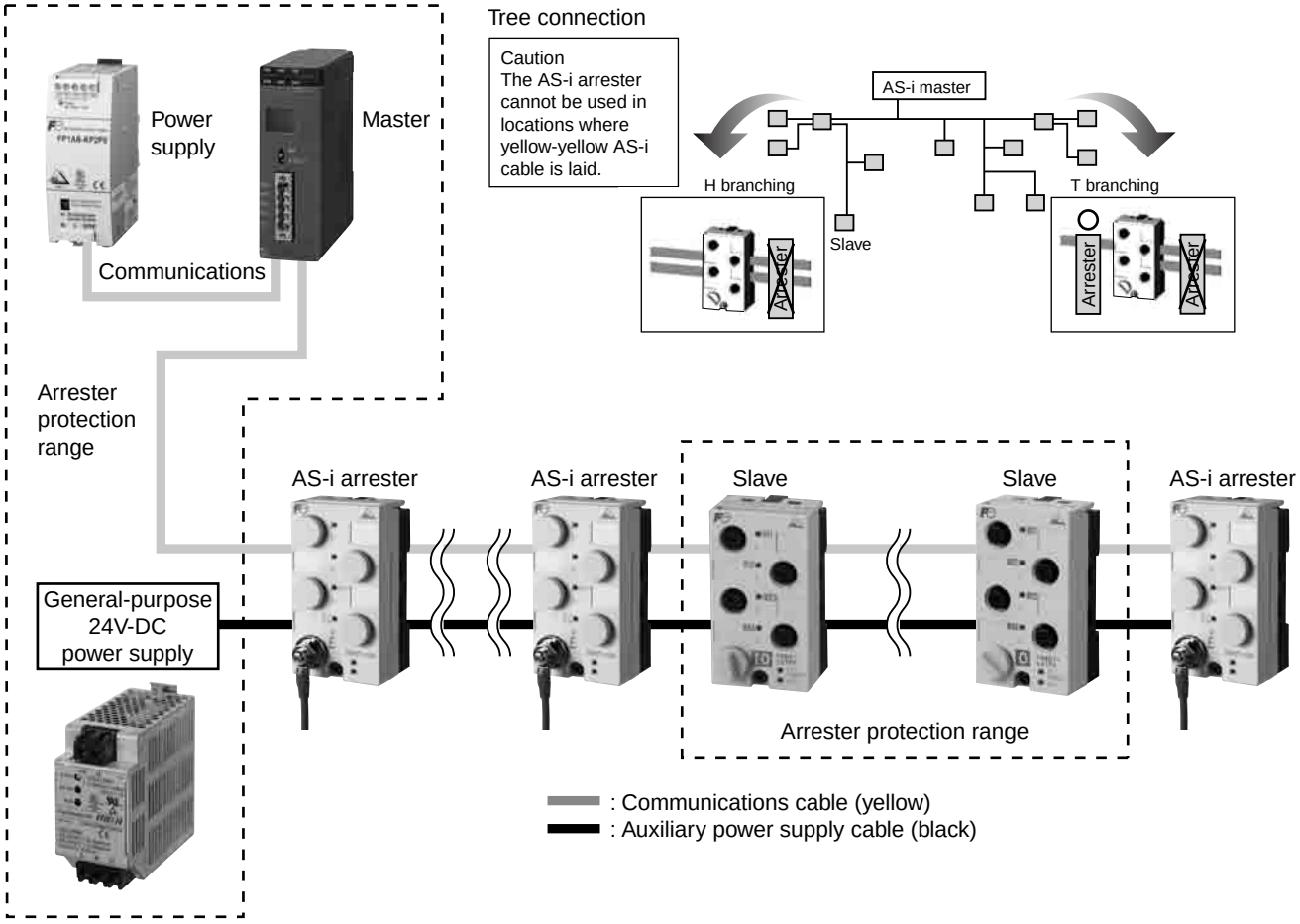
■ Internal wiring



■ Dimensions, mm

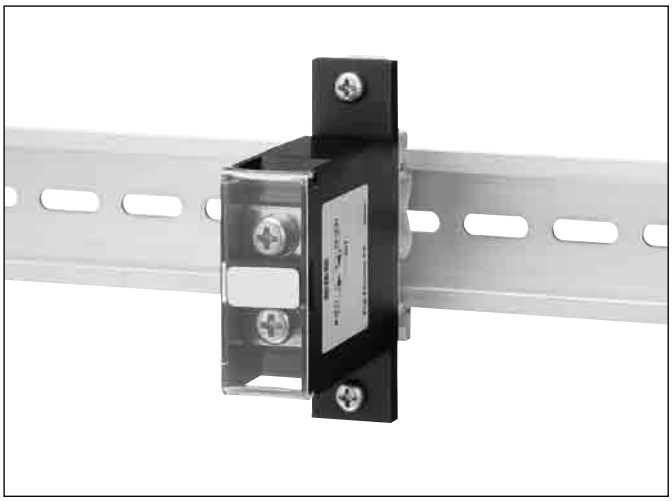


■ **Application circuit example**



09

■ Features



Single-pole arrester with gas discharge tube.
Is important to use the same equipotential bonding and ground when building systems to protect against lightning.
Sometimes, however, various types of grounds are independently installed inside equipment, and grounding circuit arresters enable potential equalization between grounding polls.

- CN2340: Used when the same ground cannot be used between power circuits.
  (For example, performing grounding with provisions based on electrical equipment technology standards, such as independent B-type grounding.)
- CN2341: Used when the same ground cannot be used for power circuits and control circuits.
  (For example, performing independent grounding of devices to prevent noise from entering, such as with inverter grounding.)
- With a rail mounting construction that is 18mm wide, the design is ideal for applications.

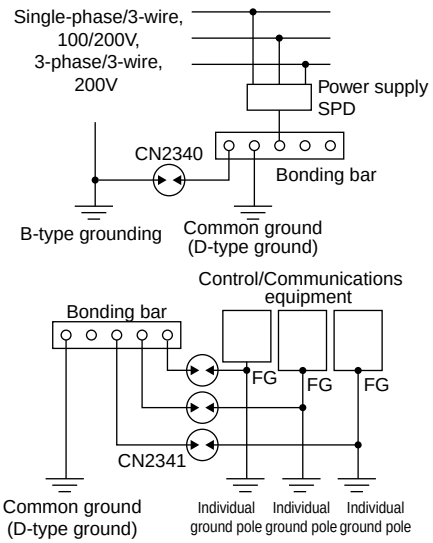
■ Ratings, specifications, types, prices (excluding tax), and shipment

Type	**CN2340**	**CN2341**
Application	Between ground and grounded circuits Grounding between power circuits	Between ground and grounded circuits Grounding between power circuits and control circuits
Test class	Class I/II	Class I/II
Voltage protection level (Up) (limit voltage)	1,500V max.	800V max.
Operation start voltage	490V DC±70V	90V DC±18V
Impulse current (I imp)	10/350μs 5kA	10/350μs 2.5kA
Nominal discharge current (In)	8/20μs 20kA	8/20μs 20kA
Max. discharge current (I max)	8/20μs 30kA	8/20μs 25kA
Connection terminals/connection wires	Screw terminal connection: M5 (for bare round crimp terminals)	
	Recommended connection wire (stranded wire: 3.5 to 14mm^2) Round crimp terminal size: 3.5mm^2: R3.5 to 5 8mm^2: R8 to 5 5.5mm^2: R5.5 to 5 14mm^2: R14 to 5	
Operating environment	Temperature: –20 to 60°C, Humidity: 95% max. (no condensation)	

■ Internal wiring

GDT: Gas discharge tube

■ Application circuit example



■ Dimensions, mm