User's Manual

Model AR-HP
Arrester for two-wire system pulse signal
(90V DC or less)

Scott

IM AR06-01E

Yokogawa M&C Corporation
Musashino Center Bldg.
1-19-18, Naka-cho Musashino-shi, Tokyo 180-0006 Japan
Phone: +81-422-55-8755 Facsimile: +81-422-55-8954

Please read through this Manual before using the arresters for correct handling.
Please keep this Manual carefully after use.

YOKOGAWA
Yokogawa M&C Corporation

IM AR06-01E
2nd Edition Sep. 2001 (MC)

1. Cautionary Notes for Safe Use of the Product

For the correct use of this product,read through this manual before use.The following safety symbol is indicated on the product to ensure safe use.

If this symbol is indicated on the product, the operator should refer to the explanation given in the instruction manual in order to avoid personnel injury or death to either themselves or other personnel, and/or damage to the instrument. The manual describes the special care the operator should exercise to avoid shock or other dangers that may result in injury or loss of life. The following symbol marks are used only in this manual.

IMPORTANT

Indicates that operating the hardware or software in a particular manner may damage it or result in a system failure.

NOTE

Draws attention to information that is essential for understanding the operations and/or features of the product.

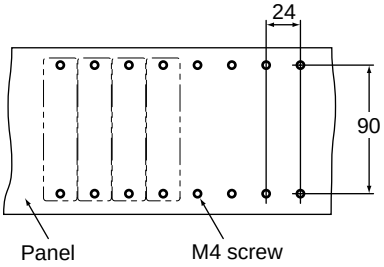
2. Mounting and Wiring

WARNING

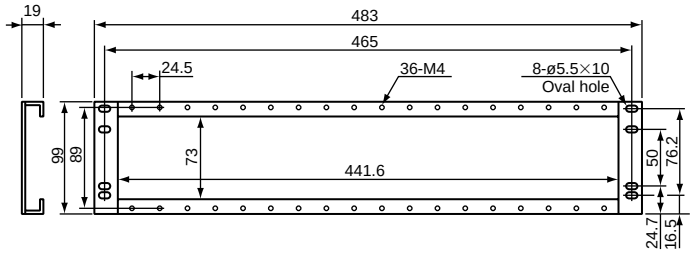
Wiring should be done after ensuring the break of each cable.

2.1 Mounting

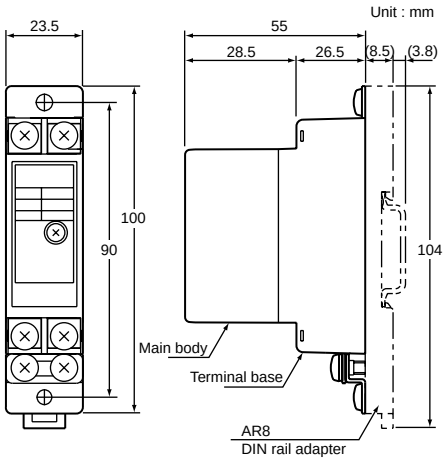
Mount the arrester referring the figure below.



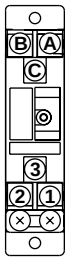
●FRK-16 (Panel)



2.2 External Dimensions



2.3 Terminal Arrangement

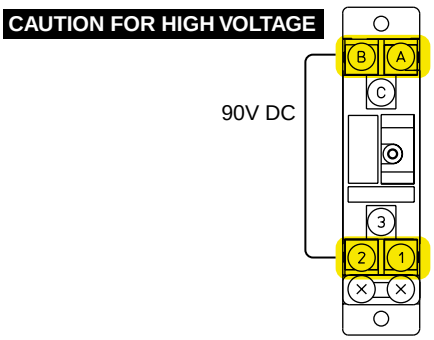


Use	Terminal No.	AR-HP
Protect side terminal	A	+
	B	–
	C	———
Surge side terminal	1	+
	2	–
	3	———

2.4 Wiring

IMPORTANT

- ***Use of arresters ignoring the specifications may cause electric shock, overheating or damage.***
  - ***(a) Input signal value applied to the arrester should meet the required specifications.***
  - ***(b) The external wiring to the terminals and wiring to ground are as specifications.***
- ***High voltage is applied on the terminals of arresters for pulse signal during power on, as shown in the figure below. Do not touch the terminals.***



Flexible twisted wire and durable round crimp-on terminal (JIS C2805) are recommended to use.

(1) Signal cable
Nominal cross-sectional area of conductor: 0.5 to 0.75 mm^2.
Example of suitable cable:
Vinyl code (VJF) (JIS C3306) for electronic instrument.
(2) Grounding cables
Nominal cross-sectional area of conductor:
2.0 mm^2 or more for grounding.
Example of suitable cable:
600V vinyl insulated cable (IV) (JIS C3307),
Vinyl insulated cable (KIV) (JIS C3316) for electronic instrument

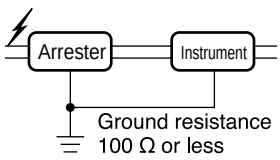
2.5 Grounding

Interconnect the ground terminals of the arrester and the instrument to be protected. Touch ground from the arreter side as shown in the figure below. Install the arrester and instrument as close as possible, and make the cable as short as possible. The wires for interconnect grounding should have lower effective resistance than ground resistance. Ground resistance should be 100 Ω or less. (JIS Class 3 grounding)

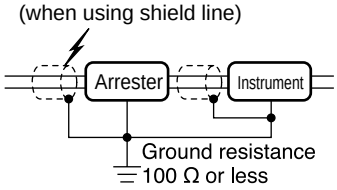
NOTE

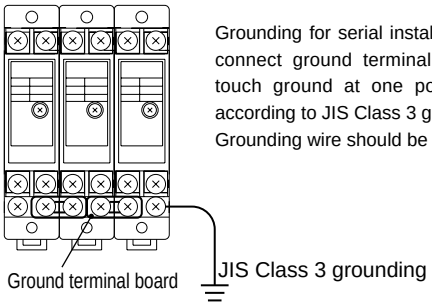
Wire tightening torque for arrester should not be 1.2 N•m or more.

(1) Interconnect Grounding



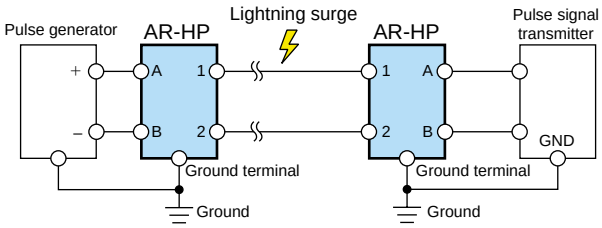
(2) Interconnect Grounding (when using shield line)





Grounding for serial installation of arresters is to connect ground terminal board in zigzag and touch ground at one point from last arrester according to JIS Class 3 grounding.
Grounding wire should be 2.0 mm^2 or more.

3. Connection of Arresters with Instruments to be Protected



4. Environmental Conditions

Ambient temperature: 0 to 50°C
Relative humidity: 5 to 90%RH (No condensation)
Altitude at installation site: Max.2000m above sea level
Installation category based on EN61010-1: II (see Note.)

NOTE

The "Installation Category" implies the regulation for impulse withstand voltage.It is also called the "Overvoltage category"." II " applies to electrical equipment."Pollution level" describes the degree to which a solid,liquid or gas which deteriorates dielectric strength is adhering."2" applies to a normal indoor atmosphere.

5. Maintenance

5.1 Arrester main body replacement

The arrester main body and terminal base are connected by plug-in. Circuit between surge side and protect side would not be open even if the main body is removed from the socket on terminal base by loosing mounting screw. So the arrester main body can easily be replaced with new one.

NOTE

- ***When replacing the arrester main body, make sure that the model and suffix codes indicated on the labels of the main body and terminal base are the same.***
- ***When replacing the arrester main body having specifications of surge discharge withstand current rating of 5000A, make sure that the style code indicated on the label of terminal base is "S2.0". If mounted to the terminal base of style code "S1.0", the specifications of the arrester main body can not be satisfied, because the surge discharge withstand current rating will be for 1000A specifications. To operate the arrester for 5000A specifications, the replacement of terminal base is also required.***

5.2 Arrester checking

To check the arrester performance, remove main body from the socket and check it by using the checker (option). Replace the main body if required.

5.3 Arrester check period

To protect the instrument from damage by induced lightning, the arrester should be checked periodically at least once a year. In areas where lightning occurs frequently, check should be done more often particularly after thunderstorms.

6. Hardware Specification

Permissible current leakage	Between lines	10 μA or less (at 90 V DC)
	Between ground	10 μA or less (at 90 V DC)
Instrument side voltage limit (at 10 kV, 1.2/50 μs)	Between lines	170 V or less
	Between ground	380 V or less
Suge discharge withstand capacity (at 8/20 μs)	Between lines	1000 A
	Between ground	5000 A
Discharge starting voltage	Between lines	135 V or more
	Between ground	135 V or more
Safety standards	Conforms to EN61010-1 Installation Category II	