

ANALOG SIGNAL PROTECTION

Protecting analog signals (4-20 mA current loop) with the PLUGTRAB PT 1X2... and PT 2X2...

TRABTECH
Application Note
2554A

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1 Description

Analog signals, such as 4-20 mA current loops, can be protected with the PLUGTRAB PT 1X2... or PT 2X2... series. These modules provide protection for one (PT 1X2...) or two (PT 2X2...) pairs of signal circuits.

The PLUGTRAB is installed in one of two base elements: the PT...+F-BE base provides isolation between the shield and ground while the PT...-BE base bonds the shield to ground. The bond in the PT...-BE base provides a drain for noise collected on the shield. Using the PT...+F-BE base prevents unwanted ground loops by isolating the shield and ground.

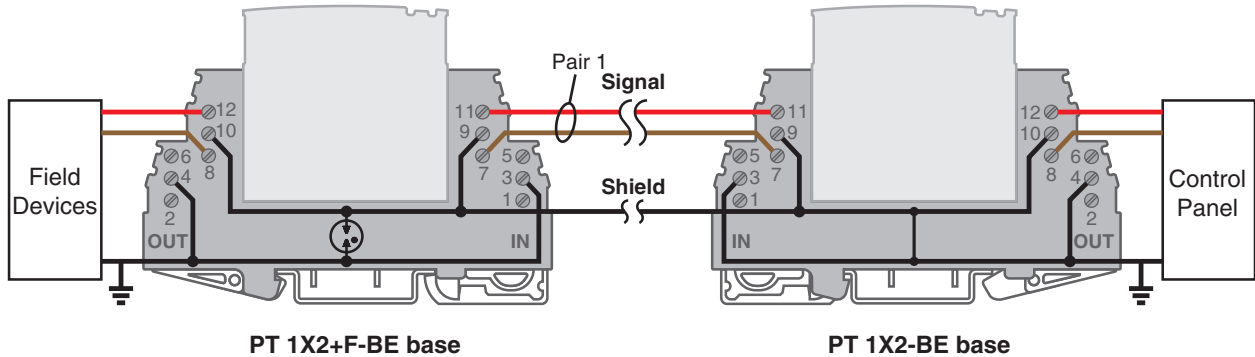


Figure 1. Typical Base Wiring for PT 1X2

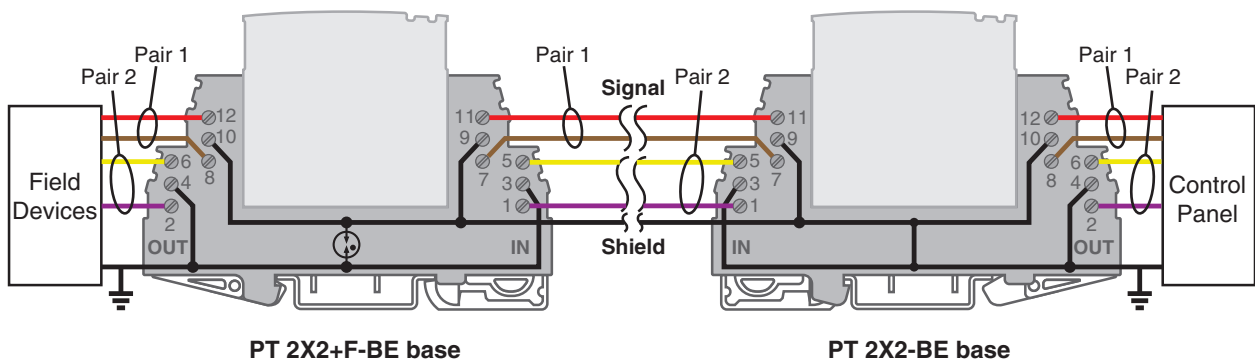


Figure 2. Typical Base Wiring for PT 2X2

1.1 Proper Grounding

The PLUGTRAB prevents surge energy from reaching the control equipment by diverting this energy to the ground circuit. Figure 3 shows a grounding block attached to the DIN rail. A ground wire should be connected from the grounding block to the AC power ground. The wire should be:

- the same diameter/gauge as the power ground wire.
- not placed next to or near a signal wire.

During a surge event, energy can come from several signal cables. If multiple PLUGTRABs are used to protect different signal lines, they will all divert the surge energy to the ground, via the DIN rail, requiring a large diameter wire.

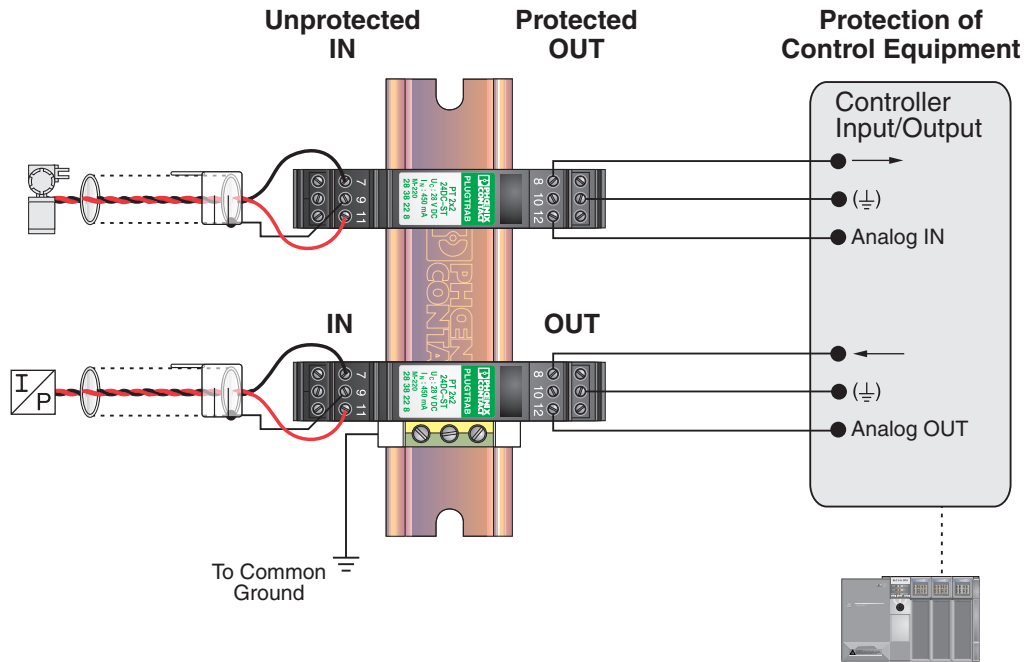


Figure 3. Proper grounding with the PT...X2-BE

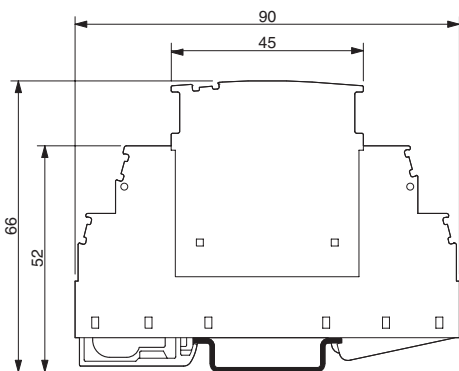


Figure 4. Dimensions

2 Products

Description of analog one circuit protection	Type	Order No.
PLUGTRAB plug, 5 V DC	PT 1X2-5DC-ST	2856016
PLUGTRAB plug, 12 V DC	PT 1X2-12DC-ST	2856029
PLUGTRAB plug, 24 V DC	PT 1X2-24DC-ST	2856032
PLUGTRAB plug, 12 V AC	PT 1X2-12AC-ST	2856045
PLUGTRAB plug, 24 V AC	PT 1X2-24AC-ST	2856058
PLUGTRAB base element, accepts PT 1X2 plugs	PT 1X2-BE	2856113
PLUGTRAB base element, includes integrated gas discharge tube, accepts PT 1X2 plugs	PT 1X2+F-BE	2856126

Description of analog two circuit protection	Type	Order No.
PLUGTRAB plug, 5 V DC	PT 2X2-5DC-ST	2838241
PLUGTRAB plug, 12 V DC	PT 2X2-12DC-ST	2838254
PLUGTRAB plug, 24 V DC	PT 2X2-24DC-ST	2838228
PLUGTRAB plug, 12 V AC	PT 2X2-12AC-ST	2838270
PLUGTRAB plug, 24 V AC	PT 2X2-24AC-ST	2838283
PLUGTRAB base element, accepts PT 2X2 plugs	PT 2X2-BE	2839208
PLUGTRAB base element, includes integrated gas discharge tube, accepts PT 2X2 plugs	PT 2X2+F-BE	2839224

3 Accessories

Description	Type	Order No.
Tester, for checking the functions of TRABTECH protective devices, includes adapter for PLUGTRAB devices	CHECKMASTER	2838924
Test Adapter, for PLUGTRAB	CM-PA-PT/A	2816933