

SIGNAL TRANSMITTER

(single- and dual-channel output loop powered isolator)

MODEL **B3VS/2**
B3VS/1

BEFORE USE

Thank you for choosing M-System. Before use, please check contents of the package you received as outlined below.

If you have any problems or questions with the product, please contact M-System's Sales Office or representatives.

■ PACKAGE INCLUDES:

Signal conditioner..... (1)

■ MODEL NO.

Confirm Model No. marking on the product to be exactly what you ordered.

■ INSTRUCTION MANUAL

This manual describes necessary points of caution when you use this product, including installation, connection and basic maintenance procedures.

POINTS OF CAUTION

■ CONFORMITY WITH UL

- This equipment is suitable for use in a Pollution Degree 2 environment.
- This equipment is to be used with the maximum operating voltage 30Vrms and 42.4Vpeak or 60V DC.
- The equipment must be mounted inside a suitable fire enclosure.
- Operating temperature: -40 to +55°C (-40 to +131°F)
- Altitude up to 2000 meters

■ CONFORMITY WITH EC DIRECTIVES

- Functional insulation is maintained between the input and output. The input must be 70V or less in order to conform to the CE marking.
- The equipment must be mounted inside a panel.
- Insert noise filters for the power source, input and output connected to the unit. COSEL Model NAC-04-472, TDK Model ZCAT 3035-1330 or equivalent is recommended.
- Install lightning surge protectors for those wires connected to remote locations.
- The actual installation environments such as panel configurations, connected devices, connected wires, may affect the protection level of this unit when it is integrated in a panel system. The user may have to review the CE requirements in regard to the whole system and employ additional protective measures to ensure the CE conformity.

■ SAFETY PRECAUTION

- Before you remove the unit or mount it, turn off the power supply and input signal for safety.

■ ENVIRONMENT

- Indoor use
- When heavy dust or metal particles are present in the air, install the unit inside proper housing with sufficient ventilation.
- Do not install the unit where it is subjected to continuous vibration. Do not subject the unit to physical impact.
- Environmental temperature must be within -40 to +85°C (-40 to +185°F) with relative humidity within 0 to 95% RH in order to ensure adequate life span and operation.
- Be sure that the ventilation slits are not covered with cables, etc.

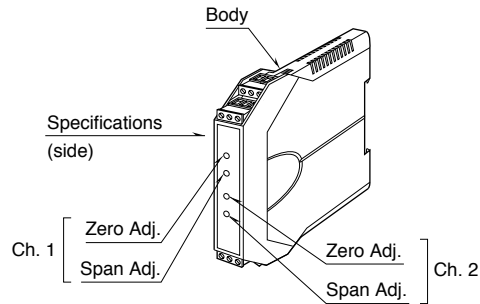
■ WIRING

- Do not install cables (power supply, input and output) close to noise sources (relay drive cable, high frequency line, etc.).
- Do not bind these cables together with those in which noises are present. Do not install them in the same duct.

■ AND

- The unit is designed to function as soon as power is supplied, however, a warm up for 10 minutes is required for satisfying complete performance described in the data sheet.

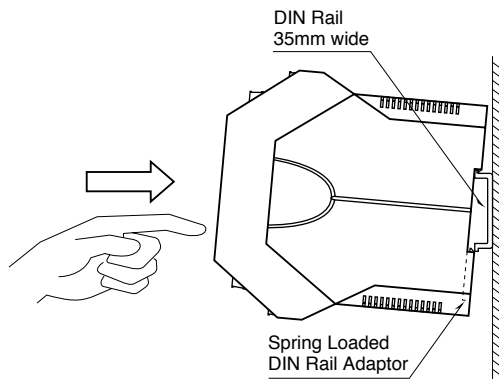
COMPONENT IDENTIFICATION



INSTALLATION

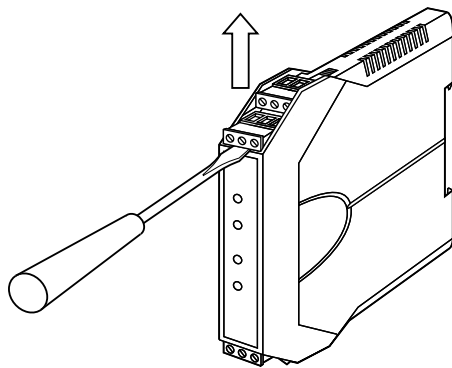
■ DIN RAIL MOUNTING

Set the unit so that its DIN rail adaptor is at the bottom. Position the upper hook at the rear side of the unit on the DIN rail and push in the lower. When removing the unit, push down the DIN rail adaptor utilizing a minus screwdriver and pull.



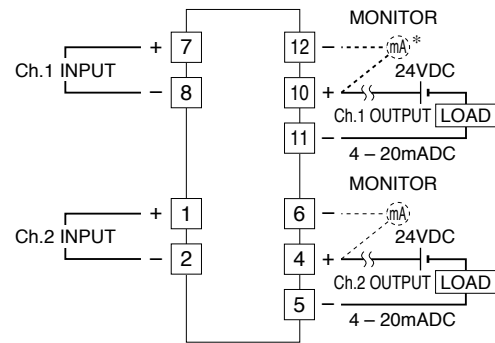
■ HOW TO SEPARATE THE TERMINAL BLOCKS

When you need to separate the terminal blocks from the transmitter body for wiring, insert a minus driver between the terminal block and the housing body, pull up the driver and pull out the terminal block.



TERMINAL CONNECTIONS

Connect the unit as in the diagram below.



*DC ammeter's internal resistance 10 ohms max.

■ WIRING INSTRUCTIONS

• Applicable wire size

Solid: 0.2 to 2.5 mm² (0.55 to 1.75 dia.)

Stranded: 0.2 to 2.5 mm²

Tinning wire ends may cause contact failure and therefore is not recommended.

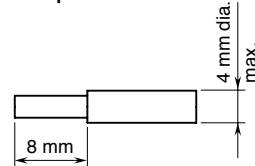
Ferruled: 0.2 to 1.5 mm² (0.55 to 1.35 dia.)

The following Phoenix Contact terminals are recommended:

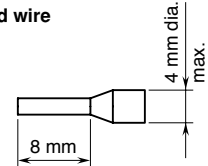
AI 0.25-8YE	0.2 to 0.25 mm ²
AI 0.34-8TQ	0.25 to 0.34 mm ²
AI 0.5-8WH	0.34 to 0.5 mm ²
AI 0.75-8GY	0.5 to 0.75 mm ²
AI 1.0-8RD	0.75 to 1.0 mm ²
AI 1.5-8BK	1.0 to 1.5 mm ²

• Expose wire conductors by 8 mm (0.31").

Wire exposure



Recommended ferruled wire



CHECKING

- 1) Terminal wiring: Check that all cables are correctly connected according to the connection diagram.
- 2) Input: Check that the input voltage is within 0 – 100% of full-scale.
- 3) Output: Check that the load is within the permissible limit including wiring resistance.

$$\text{Load Resistance } (\Omega) = \frac{\text{Supply Voltage (V)} - 12 \text{ (V)}}{0.02 \text{ (A)}}$$

(including leadwire resistance)

- 4) When you check the output signal, connect an ammeter of which the internal resistance is of 10Ω max. to the monitor terminals.

ADJUSTMENT PROCEDURE

This unit is calibrated at the factory to meet the ordered specifications, therefore you usually do not need any calibration.

For matching the signal to a receiving instrument or in case of regular calibration, adjust the output as explained in the following.

■ HOW TO CALIBRATE THE OUTPUT SIGNAL

Use a signal source and measuring instruments of sufficient accuracy level. Turn the power supply on and warm up for more than 10 minutes.

- 1) ZERO: Apply 0% input and adjust output to 0%.
- 2) SPAN: Apply 100% input and adjust output to 100%.
- 3) Check ZERO adjustment again with 0% input.
- 4) When ZERO value is changed, repeat the above procedure 1) – 3).

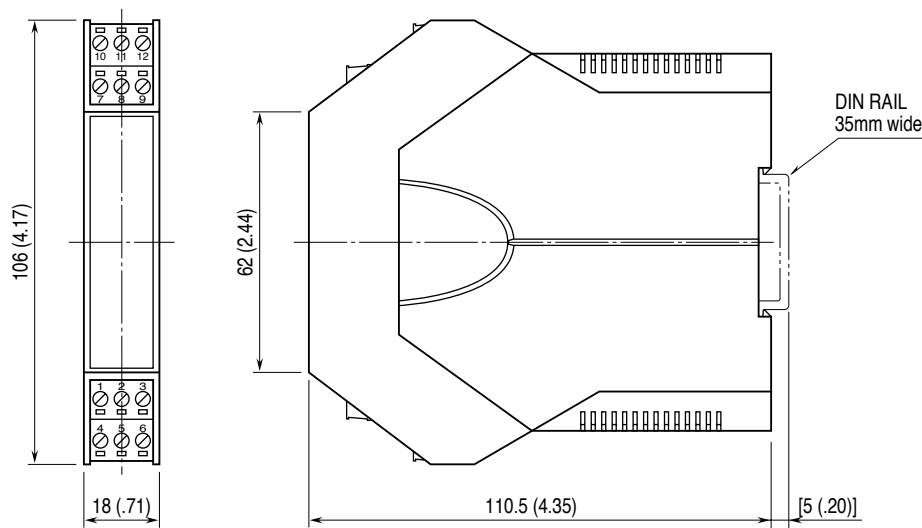
MAINTENANCE

Regular calibration procedure is explained below:

■ CALIBRATION

Warm up the unit for at least 10 minutes. Apply 0%, 25%, 50%, 75% and 100% input signal. Check that the output signal for the respective input signal remains within accuracy described in the data sheet. When the output is out of tolerance, recalibrate the unit according to the “ADJUSTMENT PROCEDURE” explained earlier.

EXTERNAL DIMENSIONS mm (inch)



• When mounting, no extra space is needed between units.

M-SYSTEM WARRANTY

M-System warrants such new M-System product which it manufactures to be free from defects in materials and workmanship during the 36-month period following the date that such product was originally purchased if such product has been used under normal operating conditions and properly maintained, M-System's sole liability, and purchaser's exclusive remedies, under this warranty are, at M-System's option, the repair, replacement or refund of the purchase price of any M-System product which is defective under the terms of this warranty. To submit a claim under this warranty, the purchaser must return, at its expense, the defective M-System product to the below address together with a copy of its original sales invoice.

THIS IS THE ONLY WARRANTY APPLICABLE TO M-SYSTEM PRODUCT AND IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. M-SYSTEM SHALL HAVE NO LIABILITY FOR CONSEQUENTIAL, INCIDENTAL OR SPECIAL DAMAGES OF ANY KIND WHATSOEVER.

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