User's Guide

CE

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CCT-80

Strain Gage Signal Conditioners

M2218/1201

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OPEN THE HOUSING

PROCEDURE

1. Insert a screwdriver or similar tool in the points marked ①.
2. Turn the screwdriver until the case walls begin to separate towards **A** and **B**, so the two side lugs ③, are free.
3. Grab the Signal Conditioner body, at the points marked ②, and pull it towards **C**, until the two side lugs ③ are out of their housing and the internal circuits are visible. See the sketch below for the disassembly of the circuit boards.
4. Before reinserting the Signal Conditioner body into the case, the following must be checked :

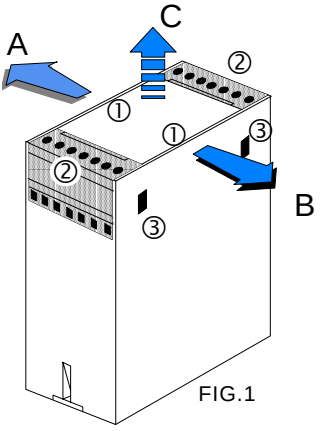


FIG.1

-The front label (blue color) must be in its correct position, with terminals 1 and 7 (power supply) separated from the other terminals.

-The three internal modules must be inserted correctly in their internal case guides.

INTERNAL OVERVIEW

A. "ME" Input module.
B. "MS" Output module.
C. "MA" Power supply module.
D. "MP" Input Board.

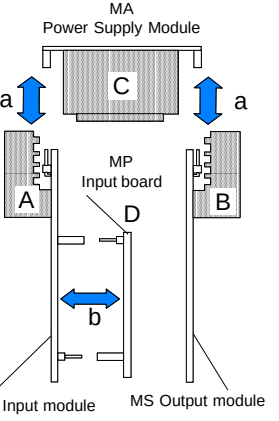


FIG.2

PROCEDURE FOR DISASSEMBLY

1. Pull out the "ME" input module towards "a".
2. Pull out the "MS" output module towards "a".
3. Pull out the "MP" input board towards "b".
4. To assemble reverse the procedure.

POWER SUPPLY

RECOMMENDED WIRING

The power supply must be connected to terminals 1 and 7. The characteristics of the power supply are shown on the side label.

WARNING.- If the power supply is dc voltage, be careful with the polarity indicated for each terminal.

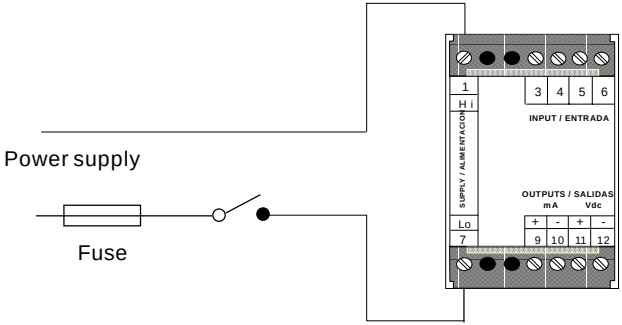


FIG. 3

PRECAUTIONS

The installation must incorporate safety devices to protect the operator and the process when using the Transmitter to control a machine or process where injury to personnel or damage to equipment or process, may occur as a result of failure of the Transmitter.

PROTECTIONS

See on table 1 the recommended value of the fuse for the different power supply availables.

Power supply	Fuse value
230 Vac	50 mA
115 Vac	100 mA
48 Vac	150 mA
24 Vac	300 mA
24 Vdc	300 mA

TABLE 1

CHANGING THE POWER SUPPLY

The unit is not provided with a system to change the power supply. Therefore if the power supply must be modified to other value, please replace the module MA for another one appropriate to the new characteristics. Contact your local distributor for instructions.

SIGNAL OUTPUT module MS

The signal conditioner provides two different analog output signals, both proportional to the signal input.

Output in Current: 4 to 20 mA, terminals 9 - 10
Output in Voltage: 0 to 10 Vdc, terminals 11 - 12

Do not use both outputs simultaneously. Only one selection can be made.
The side label shows which one is selected.

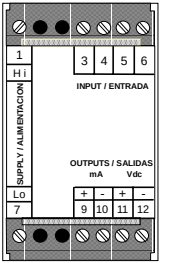


FIG.5

CHANGING THE SIGNAL OUTPUT

All signal conditioners are delivered as a standard version, with the analog output selected as 4 to 20 mA, unless specified otherwise. To select a 0 to 10 V output, remove jumpers E and F as shown in Figure 6. Other non-standard output voltage and current ranges may be obtained by adding and/or replacing resistors given in Tables 2 and 3.

NON STANDARD OUTPUT VOLTAGES

TABLE 2

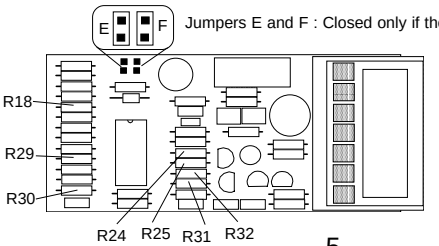
Output in V.	Value in KΩ for : R29	R30	R31	R32
±10	49.9	-----	200	----
0 to 1	-----	-----	11	100
0 to 5	-----	-----	100	100
1 to 5	-----	100	66.5	100

NON STANDARD OUTPUT CURRENTS

TABLE 3

Output in mA.	Value in Ω for : R18	R24	R25
0 to 5	-----	100	-----
0 to 10	-----	49.9	-----
1 to 5	100 K	124	-----
0 to 20	-----	-------	24.9

"-----" means "Resistor must not be installed"



Jumpers E and F : Closed only if the output is 4 to 20 mA.

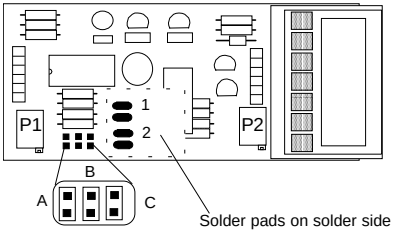
Replace or add the indicated resistors with the values shown in Tables 2 and 3 for the desired output.

FIG.6

SIGNAL INPUT, module ME
OVERVIEW

This module together with the "MP" input board, performs the signal conditioning (see Fig. 2). This module contains the trimmers and jumpers for the amplifier gain and the low level output (offset).
The signal input connections are made at Terminals 3, 4, 5 and 6.

FIG.7



P1 : Output zero adjustment.
P2 : Gain amplifier adjustment.

OFFSET ADJUST

Solder pad 1 if closed : Adjust the low range level of the output (Offset positive coarse).
Solder pad 2 if closed : Adjust the low range level of the output (Offset negative coarse).
Jumper A if closed : Adjust the low range level of the output (Offset negative fine).

AMPLIFIER GAIN

Jumper B if closed : Gain at maximum level
Jumper C if closed : Gain at medium level.
Jumpers B and C opened : Gain at minimum level.

CCT-80, ELECTRICAL FEATURES

This signal conditioner provides connection to 4- or 6-wire strain-gages (load-cells), which provide a nominal of 2 mV/V or 3 mV/V output with 350 Ω impedance. See the Connections Section.
The signal conditioner does not provides the bridge excitation voltage, therefore is necessary to use an external auxiliary power supply. It is advised that you use the model FAR-1 power supply, which senses the excitation voltage and compensates the errors due to lead resistance.
The FAR-1 provides a regulated 10 Vdc output.
The CCT-80 has an internal circuit which provides the user with tare adjust and compensation. See the tare paragraph.

INPUT

STANDARD SIGNAL	20 mV
TARE	by internal trimmer PT1, located on the "MP" input board

OUTPUT

0 to 20 mA or 4 to 20 mA	R_L < 600 Ω max. 22 mA ±3%
0 to 10 Vdc	R_L > 1000 Ω max. 11 V ±3%
ACCURACY	≤ 0.2 % FS
RESPONSE TIME	≤ 250 mS
GALVANIC ISOLATION	Input, Output and Power Supply are all isolated to 2 kVeff 50 Hz/1 m.

GENERAL SPECIFICATIONS

RIPPLE	≤ 0.5 %
BAND PASS	1.5 Hz (-3 dB)
STORAGE TEMPERATURE	-30° to +80°C
OPERATING TEMPERATURE	-10° to +60°C
TEMPERATURE COEFFICIENT	≤ 0.015 %/°C
STANDARD POWER SUPPLY	115 Vac (±10%) 50/60 Hz
POWER CONSUMPTION	≤ 1.5 VA
TEST VOLTAGE	4 kVeff. 50 Hz/1m.

SIGNAL INPUT RANGE SELECTION

The "MP" input board for this signal conditioner, does not have jumpers because it allows only one signal input (0 to 20 mV). To calibrate the signal conditioner, follow the adjustment and calibration procedure.
The user can field adjust the tare using the trimmer PT1, located on the "MP" input board. See Fig. 8.
The signal input 0 to 20 mV will be the standard range for all orders, unless specified otherwise.

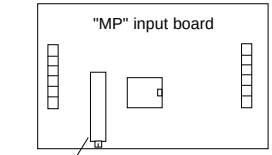


FIG.8

ADJUSTMENT AND CALIBRATION PROCEDURE

To calibrate the signal conditioner, use a calibrator or Vdc source from 0 to 20 mVdc.

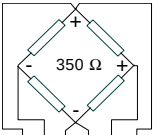
1. Open the signal conditioner case. (Fig. 2).
2. Check the "MA" module, if the selected power supply is correct. (Table 1).
3. Connect the calibrator to the signal conditioner terminals 5 - 6.
4. Connect a digital multimeter, to the signal output terminals to be used.
5. Power up the signal conditioner with the correct power supply.
6. Adjust the calibrator until it generates the low signal level (0 Vdc).
7. Turn the "ZERO" trimmer (P1), located on the "ME" input module, until the multimeter shows the desired low signal output level. (For example: 0 Vdc).
8. Adjust the calibrator until it generates the high signal level.
9. Turn the "GAIN" trimmer (P2), located on the "ME" input module, until the multimeter shows the desired high output level. (For example: 10 Vdc).
10. Repeat steps 6 to 9, until the two values are correct.

TARE ADJUST PROCEDURE

After the connections between the signal conditioner, load cell and external power supply are made, connect a multimeter to the output terminals. Do not forget that the load cell must be free of load.
If the multimeter does not read 0 Vdc or 4 mA, then adjust the trimmer PT1, located on the "MP" input board.
Check that the high level of the output signal does not change. If it does adjust the GAIN trimmer (P2) located on the "ME" input module (see Fig. 7).

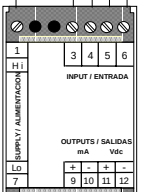
WIRING CONNECTIONS

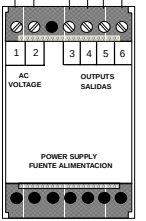
6-WIRE BRIDGE



+10 Vdc

FIG.9





POWER SUPPLY
The side label, shows the type and value of the power supply.

POWER SUPPLY

TARE ADJUST

When internal tare adjust (on the "ME" input board) is not used, the signal conditioner terminals 3 and 4, must not be connected.

SIGNAL OUTPUT
Current

SIGNAL OUTPUT
Voltage

4-WIRE BRIDGE

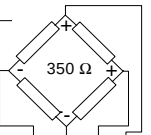
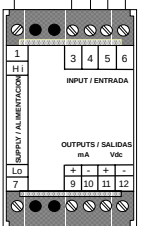
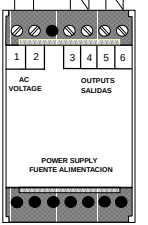


FIG.10

+10 Vdc





POWER SUPPLY
The side label, shows the type and value of the power supply.

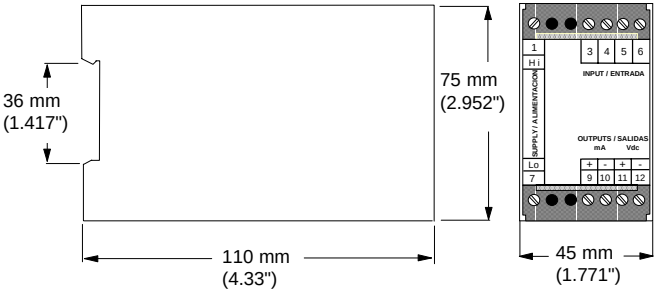
POWER SUPPLY

SIGNAL OUTPUT
Current

SIGNAL OUTPUT
Voltage

MECHANICAL

DIMENSIONS



TECHNICAL DATA

WEIGHT . . . . . 270 g.
HOUSING BASE . . . . . Polycarbonate, RAL 7032, UL 94 V-1 light grey, IP-40
TERMINAL HOUSING, COVER
AND BLIND PLUGS . . . . . Polycarbonate, UL 94 V-2 dark grey, IP-20
WIRE CROSS SECTION : . . . . . 4 mm^2
Provided with a snap fastener for attaching to DIN 46277 and DIN EN 50022 (35 x 7.5 mm) assembly rails.

NOTES

WARRANTY/DISCLAIMER

OMEGA ENGINEERING, INC. warrants this unit to be free of defects in materials and workmanship for a period of 13 months from date of purchase. OMEGA Warranty adds an additional one (1) month grace period to the normal one (1) year product warranty to cover handling and shipping time. This ensures that OMEGA's customers receive maximum coverage on each product.

If the unit should malfunction, it must be returned to the factory for evaluation. OMEGA's Customer Service Department will issue an Authorized Return (AR) number immediately upon phone or written request. Upon examination by OMEGA, if the unit is found to be defective it will be repaired or replaced at no charge. OMEGA's WARRANTY does not apply to defects resulting from any action of the purchaser, including but not limited to mishandling, improper interfacing, operation outside of design limits, improper repair, or unauthorized modification. This WARRANTY is VOID if the unit shows evidence of having been tampered with or shows evidence of being damaged as a result of excessive corrosion; or current, heat, moisture or vibration; improper specification; misapplication; misuse or other operating conditions outside of OMEGA's control. Components which wear are not warranted, including but not limited to contact points, fuses, and triacs.

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Direct all warranty and repair requests/inquiries to the OMEGA Customer Service Department. BEFORE RETURNING ANY PRODUCT(S) TO OMEGA, PURCHASER MUST OBTAIN AN AUTHORIZED RETURN (AR) NUMBER FROM OMEGA'S CUSTOMER SERVICE DEPARTMENT (IN ORDER TO AVOID PROCESSING DELAYS). The assigned AR number should then be marked on the outside of the return package and on any correspondence.

The purchaser is responsible for shipping charges, freight, insurance and proper packaging to prevent breakage in transit.

FOR WARRANTY RETURNS, please have the following information available BEFORE contacting OMEGA:

1. P.O. number under which the product was PURCHASED,
2. Model and serial number of the product under warranty, and
3. Repair instructions and/or specific problems relative to the product.

FOR NON-WARRANTY REPAIRS, consult OMEGA for current repair charges. Have the following information available BEFORE contacting OMEGA:

1. P.O. number to cover the COST of the repair,
2. Model and serial number of product, and
3. Repair instructions and/or specific problems relative to the product.

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