



5516C PROXIMITY SIGNAL CONDITIONER

Installation Manual



OVERVIEW

Converts a proximity transducer system to a transmitter for connection to a PLC or DCS. Replaces older monitor racks incrementally at lower cost. Provides 4-20 mA output proportional to shaft radial vibration. Dynamic signal is available at the signal conditioner or remotely.

INSTALLATION

Each transmitter is supplied with either a flanged base or a DIN rail adapter. When mounting the transmitter in either the 7595 explosion proof housing or the 7876 weathertight housing, the DIN rail adapter must be used. For best results, the transmitter should be installed within 1000 feet (300 m) of the probe driver to which it is connected.

WIRING

DRIVER (Signal Input): Connect the three conductor proximity probe driver cable leads to these terminals. The V terminal is factory set to -18VDC or -24VDC as indicated on the nameplate. Internal -V selection jumper JP1 and JP2 may be changed in the field. The cable shield (recommended) should be wired only on the transmitter end to the terminal marked COM.

4-20 mA (Current Source Output): Wire the receiving device to these terminals, observing correct polarity. The total resistance of the receiver input and wiring must not exceed 600 ohms.

SIG OUT (Signal Output): This signal is identical to the input signal (AC with DC bias) and is buffered for driving portable vibration analysis instruments and for verifying the probe gap. The terminal block terminals and the BNC connector are wired in parallel.

24 VDC (Power Input): The sum of the DC Power voltage, plus or minus AC ripple and noise, should be within 18 to 30 volts.

SENSOR MALFUNCTION

The transmitter is provided with a sensor malfunction detector, which causes the output current to drop below 3.5 mA if either the probe or extension cable to the probe driver are open, disconnected, or shorted, or if the cable to the position transmitter is open or shorted.

CALIBRATION

Each transmitter's 4-20 mA output is factory set to the Position range indicated on the nameplate. The most reliable way to check the calibration of the probe driver and transmitter as a system is to compare the transmitter current output with an independent accurate position measurement obtained via the transmitter BNC connector. If the calibration is in doubt, it can be checked as follows using feeler gauges.

- **Minimum Position:** Stop the machine in which the proximity probe is mounted, and adjust the gap for the proximity probe to the minimum position. Observe the output current which should be 4 mA ± 0.25 mA. If adjustment is required, the transmitter must be opened and R5 adjusted until 4 mA ± 0.25 mA is obtained. If an adjustment is made, the maximum position output should be checked as well.
- **Maximum Position:** Adjust the gap for the proximity probe to maximum position. Observe the current output, which should be 20 mA ± 0.25 mA. If adjustment is required, the transmitter must be opened and R6 adjusted until 20 mA ± 0.25 mA is obtained. Recheck the minimum position to ensure calibration is correct.

During normal operation, the transmitter current output is linearly proportional to the position range as follows between 4-20 mA:

5516C-001: 20-80 mils (min.-max.)

5516C-002: 30-70 mils (min.-max.)

EXAMPLE:

Measured mA	5516C-001 Actual Position	5516C-002 Actual Position
<3.5	Sensor fault	Sensor fault
4.0	20.0 mils	30.0 mils
12.0	50.0 mils	50.0 mils
20.0	80.0 mils	70.0 mils

FORMULA:

$$\frac{\text{Measured mA} - 4\text{mA}}{20\text{mA} - 4\text{mA}} \times (\text{max. position} - \text{min. position}) + \text{min. position} = \text{actual position}$$

EXAMPLE:

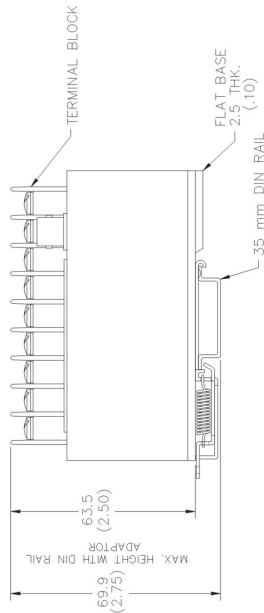
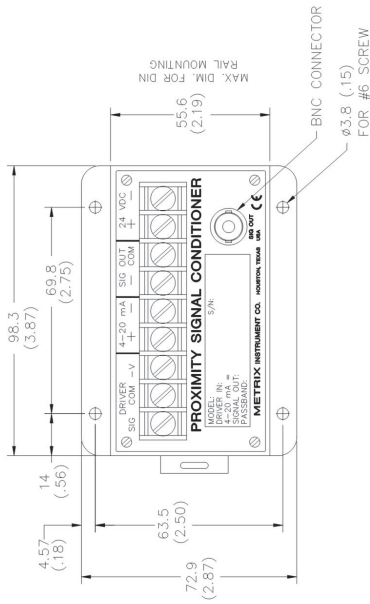
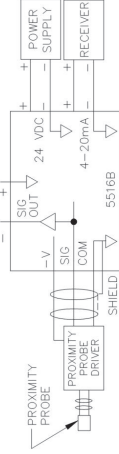
$$\left[\frac{12\text{mA} - 4\text{mA}}{16\text{mA}} \times (80 - 20) \right] + 20 = 50 \text{ mils}$$

REV	DESCRIPTION	BY	CHKD	DATE
A	ISSUE FOR RELEASE	AW	YJ	12-15-14
B	78556	AW	08-24-15	MEM
C	85700	AW	08-24-15	MEM
D	85700	AW	08-24-15	MEM
E	82559	AW		

SPECIFICATIONS:

INPUT: NON-CONTACT PROXIMITY PROBE, CABLE AND DRIVER
 INPUT (DRIVER) SENSITIVITY: 200 mV/MIL
 PROBE DRIVER (-V) POWER: -24VDC
 CURRENT SOURCE OUTPUT (4-20 mA): 4-20 mA DC PROPORTIONAL TO POSITION
 MAXIMUM LOAD RESISTANCE: 600 OHMS
 VIBRATION RANGES: SEE TABLE
 CALIBRATION: BASED ON DISPLACEMENT RESPONSE
 FREQUENCY RESPONSE: 0 Hz TO 100 Hz, -3dB
 BUFFERED INPUT SIGNAL (SIG OUT): 200 mV/MIL, INCLUDES DC BIAS FOR PROBE GAPPING.
 PROBE FAILURE: CAUSES OUTPUT TO FALL BELOW 3.5 mA
 ISOLATION: 500 V, CIRCUIT TO CASE
 TEMPERATURE LIMITS: -40°C TO +66°C
 POWER (24VDC): +18 TO +30 VDC, 60 mA

MODEL	4-20 mA RANGE	MOUNTING
5516C-001	20-80 MILS (500-2000 um)	FLAT BASE
5516C-002	30-70 MILS (750-1800 um)	FLAT BASE
5516C-101	20-80 MILS (500-2000 um)	DIN RAIL ADAPTOR
5516C-102	30-70 MILS (750-1800 um)	DIN RAIL ADAPTOR


WIRING DIAGRAM


DIMENSIONS IN mm (inches)

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U.S.A.
 SPECIFICATIONS: 5516C
 PROXIMITY SIGNAL CONDITIONER
 PROBE DRIVER INPUT
 DRAWING NO: 8464

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METRIX INSTRUMENT CO. 10000 METRIX DRIVE, FORT WORTH, TEXAS 76154
 PHONE: 817-440-1100 FAX: 817-440-1101
 WWW.METRIXINSTRUMENT.COM

ENVIRONMENTAL INFORMATION



This electronic equipment was manufactured according to high quality standards to ensure safe and reliable operation when used as intended. Due to its nature, this equipment may contain small quantities of substances known to be hazardous to the environment or to human health if released into the environment. For this reason, Waste Electrical and Electronic Equipment (commonly known as WEEE) should never be disposed of in the public waste stream. The “Crossed-Out Waste Bin” label affixed to this product is a reminder to dispose of this product in accordance with local WEEE regulations. If you have questions about the disposal process, please contact Metrix Customer Services.

info@metrixvibration.com

www.metrixvibration.com

8824 Fallbrook Dr. Houston, TX 77064, USA

Tel: 1.281.940.1802 • Fax: 1.713.559.9421

After Hours (CST) Technical Assistance: 1.713.452.9703