IPT103

POSITION TRANSMITTER

Indikon 215 Clinton Road New Hartford, NY 13413 Voice: 315-624-7171 Fax: 315-624-7173

Model XT-103 – Two-wire Position Transmitter

Description and Features:

1. General – The XT-103 Position Transmitter connects to a proximity probe mounted parallel of a metal target. The transmitter generates DC voltage that is proportionate to the gap between the probe and the metal target. The signal as sensed by a proximity probe converted to a DC voltage proportionally controls a 4-20 mA current loop for a specified probe gap range such as 35 - 75 mils, 20 – 200 mils, 0.50 – 2.00 mm, etc.
   Note that the loop current solely powers the transmitter.

2. Sensor - The proximity probe operates in combination with an internal oscillator/demodulator and is connected via a coaxial cable with SMA-type connectors.

3. SIG Output – The output of the internal Oscillator/Demodulator is accessible by way of the SIG coaxial connector and/or Auxiliary Output screw terminals. It's output calibration is 100mV/mil or 200mV/mil and is used to for vibration diagnostics as well as for setting the probe gap, which is represented by the DC component of the signal voltage.

4. Current Loop Output – The voltage representing the probe gap proportionally controls the 4-20 mA output current loop via a voltage to current converter. A ZERO adjustment screw is provided to adjust to 4.0mA at the low end of the specified range. An optional SPAN control adjustment screw will allow a 10% adjustment of the span at the high end of the range and generally does not influence the zero setting. An exception is that Small ranges may result in increased sensitivity and will require alternating the ZERO and SPAN adjustments (See specifications).

5. Fault Detection – At a decreasing probe gap, the loop current goes below 4 mA when passing the low end of the transmitter's range. When the probe circuit malfunctions, e.g., a defective probe, a loose connector, the connector shell or shield touching machine ground, an open or shorted probe cable, the loop current goes to 3 mA or below. This should be kept in mind when programming a connecting system for a "not-OK" condition.

6. Inherent Protection – A current limiting circuit protects against excessive loop current when the position exceeds the specified gap range. An internal diode across the current terminals protects against accidental polarity reversals of up to 180mA.

MODEL XT-103 TRANSMITTERS

Function	Specifications
POSITION RANGE	20-100 mils
CONTROLLED LOOP CURRENT	4-20 mA DC High Limit: 25 +/- 4 mA Maximum Reverse Current: 180mA
FREQUENCY RESPONSE	0 – 1.67 Hz (-3db roll-off)
SIGNAL OUPUT (SIG connector and Auxiliary Output)	200 mV / mil Source Resistance: 1,820 ohms Maximum load: 0.5 mA
LOOP POWER SUPPLY	17.0 to 36.0 VDC (=V sup) 36.0 VDC is the absolute maximum
OVERALL LOOP RESISTANCE	50 (V sup –16) ohms maximum.
ZERO CONTROL RANGE	Approx. 10mA, allowing for 5 mil gap setting tolerance.
SPAN CONTROL RANGE	Approx 10%, Doesn't influence the Zero setting
NOT OK LOOP CURRENT	3.0 +/- .2 mA when gap voltage is outside of the 4.0-18.0 VDC
PROXIMITY PROBE (Eddy-Current)	Type LG; diameter .25" – Gap range 15-95 mils Gap setting: 0.03" +/- .005" for SIG voltage of 6.0 +/- .5 volt
CALIBRATION	Sensitivity: 200 mV/mil for a probe gap range of 0.010"-0.080". Target Material: AISI 4145 Calibrated for a probe cable length of 5 meters.
TEMPERATURE RANGE	-40 Deg. Centigrade to +85 Deg. Centigrade
ISOLATION	Case isolated from connectors and terminals to a maximum of 350 VRMS or 500 VDC.

TRANSMITTER INSTALLATION

The outline and mounting dimensions of the transmitter are shown in drawing No. A-32571 for models XT103. Model XT103 is most commonly used. Model XT103X and XT103Y are only used in applications where two probes are mounted in close proximity of each other. The XT103X and the XT103Y versions have different excitation frequencies to prevent interference. These Y units will have a "Y" identifier on the label for easy identification.

Since the probe cable length influences the calibration of the unit, it is important that the proper length be used, printed on its label. The allowable deviation of the total length, including extensions, is ± 2 Feet, which will amount to an equivalent deviation from calibrated output sensitivity of about ± 3%.

Mounting - The unit should be mounted in a protective housing, which may be a watertight, oil-tight or explosion proof housing, whatever is applicable. More than one unit may share a single housing to simplify an installation. Always locate transmitters in a place where easy access can be obtained.

Environment - Ambient temperatures should not exceed 149^{O}C (300^{O}F). The housing cover should always be closed whenever one is not working on the unit(s), for protection of wiring and terminals.

Probe Cable Connections - The probe cable furnished with the system, connects the probe to the transmitter via SMA-type coaxial connectors. A substitute cable from sources other than Indikon should not be used, as it may not be compatible and may seriously affect system accuracy.

NOTE: Guard against oil and dirt from getting into the connectors. When turning a connector's screw collar onto the mating device, do not allow the connector's body to rotate. This could otherwise result in twisting the cable shield, rupturing its bond to the body of the connector.

Excess length of probe cable can be coiled up inside the housing to accommodate placement of the housing. Connections must be tight; snug the connector's screw collar with a small 5/16" (8 mm) open-end wrench applying a torque of about 5 inch-lbs (0.6 N.m). Do not exceed 8 inch-lbs (0.9 N.m), it may otherwise rupture the connector's insulator and epoxy seal.

Probe connectors when mated, must not touch any machine metal parts to avoid faulty grounding, as the system should be grounded at the central system only. Where extension cables and/or probe cable armor are used, connector bodies may come in close proximity to machine ground. The mated connectors must therefore be insulated by means of Teflon tape or other reliable covering. Pipe fitter's Teflon thread sealant without adhesive coating would be a good choice.

Terminal connections - Strain relief for the cable connections should be provided by means of compression glands or conduit fittings. For shielded cables it is imperative that the shield be connected at the central system only and not here. At this end, cut off the shield at the cable outer jacket. If it has an aluminum/polyester shield, cut off the drain wire also and insulate the jacket termination.

PROXIMITY PROBE INSTALLATION

Environment - The probe tip temperature should not exceed +149 ^{O}C (300 ^{O}F).

Mounting - Refer to probe drawing No. _____ for dimensions and mounting details and to applicable machine parts and installation drawings. These LG-type probes are to be mounted radially to the shaft at a gap of 0.050± 0.005" (1.27± 0.13 mm). The observed shaft surface must have a roughness not to exceed 50 microinches (1.3 microns) and should be concentric. If this surface is rough, has discontinuities or excessive mechanical run-out, false vibration readings may become apparent.

To insure accuracy of measurement, the target area at the circumference of the shaft and concentric to the probe tip must have a diameter of at least 0.75" (l9 mm). Keyways, oil slingers, increases and decreases in shaft diameter should not enter into this target area. Furthermore, proper clearance around the probe tip must be provided. There should be no metal other than the target within a radius of 0.45" (11.4 mm) from the probe tip centerline over a distance of 0.75" (19 mm) from target towards the probe body.

When all connections to the transmitter have been made and the probe is locked in place at a torque in the range of 20-25 foot-lbs (recommended for 3/8-24 UNF thread), apply loop power. The voltage at the BNC connector (SIG) or AUX.OUT terminals (SIG and COM) should be 10.0± 0.5 volts for a 0.050" gap. For other gaps, this voltage changes at a rate of 200 mv/mil.

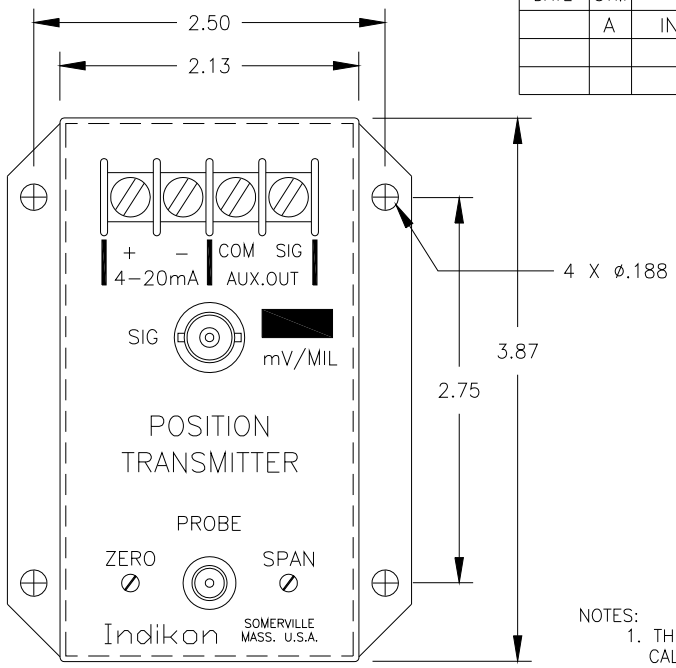
NOTE: The Zero and optional Span adjustment controls are for the loop current adjustment only and have no influence on the SIG voltage. The SPAN has been set at the factory for the specified type of target material and does not need adjustment. It is only used when deviating from the probe installation.

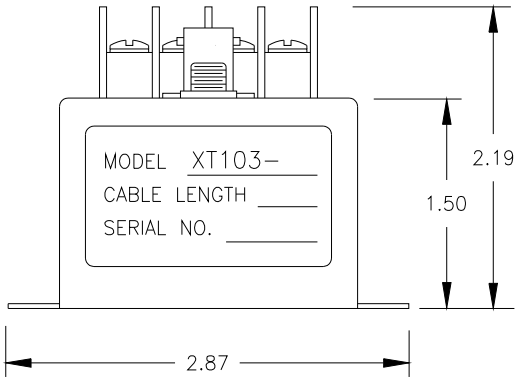
With the gap at the low end of the range, adjust the Zero for 4.0mA loop current. If the optional SPAN is provided, the ZERO control can be adjusted to a corresponding value at any other convenient point within the gap range. If the SPAN control is provided, adjust it for 20 mA loop current at the high end of the gap range or for any other current at its corresponding gap within the specified range. For small ranges (less than 10 mils), the Span control does influence the zero setting. Alternate adjustments of ZERO and SPAN controls will be necessary.

APPLICABLE DRAWINGS

Vibration Transmitter - Installation & Outline	A-32571
Typical LG Type probes with Conduit Adapter or requested alternate probe type	AP-1312
Cable with SMA Connector	none

DATE	SYM	REVISION	AUTH	CHK
	A	INITIAL RELEASE		





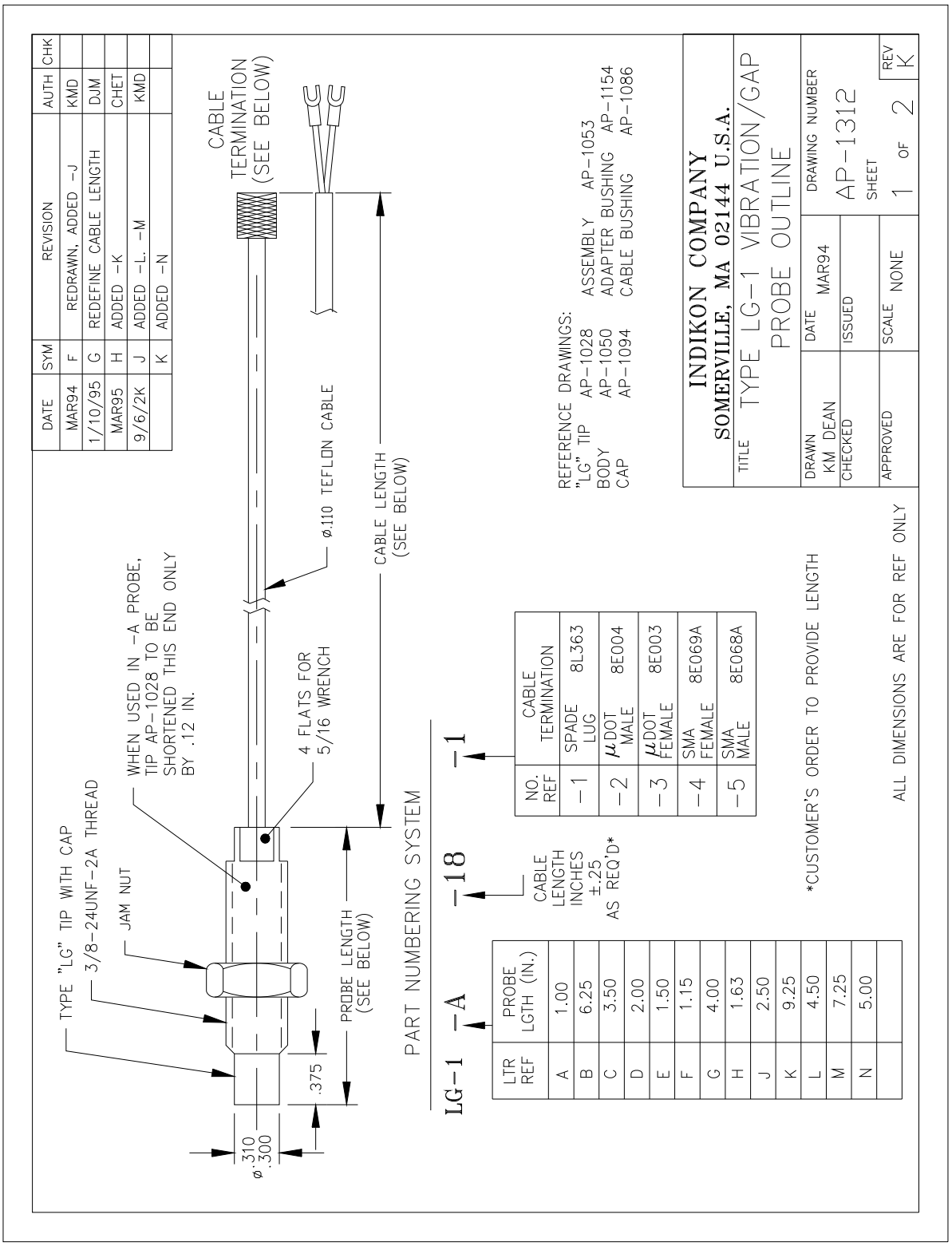
NOTES:
1. THE TRANSMITTER HAS BEEN CALIBRATED FOR A SPECIFIED PROBE CABLE LENGTH. THE ALLOWABLE DEVIATION FROM THIS LENGTH IS ±2 FEET.
2. FOR APPLICATIONS WHERE THE PROBES OF TWO TRANSMITTERS ARE IN CLOSE PROXIMITY TO EACH OTHER, ONE HAS A SUFFIX Y ADDED TO ITS MODEL NUMBER AND SHOWS A LARGE Y ON TOP FOR EASY IDENTIFICATION.
3. ALL DIMENSIONS ARE FOR REFERENCE ONLY.

INDIKON COMPANY, INC.
SOMERVILLE, MA, 02144, U.S.A.

TITLE: POSITION TRANSMITTER XT103 INSTALLATION & OUTLINE

DRAWN	DATE	DRAWING NUMBER
KM DEAN	4MAR96	A– 32571
CHECKED	ISSUED	SHEET
APPROVED	SCALE 1/1	1 OF 1

REV A



LTR REF	PROBE LGTH (IN.)
A	1.00
B	6.25
C	3.50
D	2.00
E	1.50
F	1.15
G	4.00
H	1.63
J	2.50
K	9.25
L	4.50
M	7.25
N	5.00

NO. REF	CABLE TERMINATION	
-1	SPADE LUG	8L363
-2	µDOT MALE	8E004
-3	µDOT FEMALE	8E003
-4	SMA FEMALE	8E069A
-5	SMA MALE	8E068A

LIMITED ONE YEAR WARRANTY

Limited Warranty: All products are warranted by the Seller for one year to be free from defects in both materials and workmanship under normal use and service. This warranty is in lieu of and excludes any other warranty, express or implied, including, but not limited to, any implied warranty derived from quote or fitness of purpose. (*Manufacturer's liability and Buyer's limited remedies under Manufacturer's warranty shall be limited solely to repair, replacement, credit or refund, at the Manufacturer's option, with respect to products supported by a Return Material Authorization number obtained from the Manufacturer and returned to the Manufacturer. The Manufacturer shall not be liable, under any circumstances, for consequential or incidental damages, including, but not limited to, labor costs or loss of profits arising in connection with the use of or inability to use products purchased from the Seller)*

Product Application: The Buyer is solely responsible in determining the suitability of the Manufacturer's products in its application regardless of circumstances.

Manufacturer reserves the right to make future design changes to any of its products without thereby incurring any obligations to make changes to or replacements of this product.

Manufacturer neither makes nor authorizes any person to make on its behalf any other guarantee or warranty concerning its products.

To obtain service under this Limited Warranty call Riverhawk Customer Service Department (315-624-7171) to obtain an RMA (Return Material Authorization) number. If you cannot deliver the product in person:

- Pack it in its original shipping container (or equivalent)
- Put the RMA number on the address label
- Put the RMA number on the shipping carton
- Insure it (or assume the risk of loss / damage during shipment)
- Deliver the product freight pre-paid

Manufacturer is not responsible for damage to inbound product.

Riverhawk Company (Headquarters)
215 Clinton Road
New Hartford, New York 13413
Office: 315.768.4855
Fax: 315.768.4941