

INSTRUCTION MANUAL

VIBRATION TRANSMITTER XT-121V

MODEL XT-121 VIBRATION TRANSMITTERS

<u>Function</u>	<u>Specifications</u>
VIBRATION RANGE	0-0.5 inch/sec PEAK (12.5 mm/sec)
CONTROLLED LOOP CURRENT	4-20 mA DC High Limit: 24 – 30 mA Maximum Reverse Current: 180mA
FREQUENCY RESPONSE	600-60,000 CPM (> -5%) 480-75,000 CPM (> -3 db)
FILTER	BAND-PASS (> -5%) POINTS : 16 - 6000 Hz
ZERO CONTROL RANGE	+/- 5% FULL SCALE
LOW FREQUENCY ROLL OFF	24 db / OCTAVE
HIGH FREQUENCY ROLL OFF	24 db/ OCTAVE
SIGNAL OUTPUT (SIG CONNECTOR AND AUXILLARY OUT)	100 mV/g SOURCE RESISTANCE: < 3000 OHMS MAX LOAD: 0.1 mA
POWER SUPPLY	24.0 – 36.0 VDC (=Vsup) 36.0 VDC ABSOLUTE MAXIMUM 24 VDC NOMINAL
EXTERNAL LOOP RESISTANCE	50* (V sup –15) OHMS MAXIMUM
NOT OK LOOP CURRENT	DOWNSCALE OPEN SENSOR or CABLE
ACCELEROMETER	INDIKON MODEL A98 SENSITIVITY: 100 mV/g +/- 20%
TEMPERATURE RANGE	-40 Deg. Fahrenheit to +185 Deg. Fahrenheit (-40deg. Centigrade to +85 deg. Centigrade)
ISOLATION	Case isolated from connectors and terminals to a maximum of 350 VRMS or 500 VDC.

Model XT-121 – Two-wire Vibration Transmitter (Acceleration Input)

Description and Features:

1. **General** – The two-wire XT-121V Transmitter converts the vibration signal as sensed by an accelerometer to a DC voltage which proportionally controls a 4-20 mA current loop for a specified vibration range such as 0-1g (peak or average), or when the transmitter contains a signal integrator (suffix V), 0-0.5 inch/sec (peak or average) etc. The transmitter is powered solely by the current loop.
2. **Sensor** – The accelerometer measures the absolute (seismic) vibration of the surface to which it is mounted. Within the region of the flat frequency response, the output signal is proportional to the vibration amplitude (displacement) as well as the square of the vibration frequency. In other words, it is proportional to the acceleration expressed in g's or mm per second squared. Generally model A-98 is used, which is a piezoelectric device with a built-in pre-amplifier providing a low impedance output, making it independent of the cable length (up to 100 feet). The connected coaxial cable provides a constant DC current of about 3 mA to power the internal impedance converter. A bias voltage of about 10.7 volts is developed across the output that the dynamic acceleration signal is superimposed.
3. **SIG Output** – The output of the external accelerometer is accessible through the SIG coaxial connector and/or Auxiliary output screw terminals (Sig and Com) allowing connection to local diagnostic equipment. The signal scale factor is generally 100mV/g; the dynamic waveform is superimposed on a positive DC bias voltage.
4. **Current Loop Output** – Internally the dynamic portion of the SIG output goes to a detector via a bandpass filter and amplifier. Velocity ranges, the amplifier is the integrator. The detector converts the average value of the vibration waveform to a DC voltage, in turn, controls the 4-20 mA two wire current loop in proportion to the vibration level. A zero screwdriver control accommodates adjustment to 4.0 mA at zero vibration.
5. **Inherent Protection** – A current limiting circuit protects against excessive loop current when the vibration exceeds the specified vibration range. An internal diode across the current terminals protects against accidental polarity reversals of up to 180 mA.

ACCELEROMETER INSTALLATION

Each accelerometer is furnished with a coaxial cable model # 051M35 and XT-121V transmitter.

CAUTION

Handle the accelerometer with care; avoid rough handling or striking against rigid surfaces. This unit has sensitive electronic components.

Mounting - The sensing direction is perpendicular to the accelerometer base and should face the shaft radially at the bearing. Two units are normally desired for each side of the gear case, one mounted in the X plane and one in the Y plane. Accelerometers intended to monitor radial vibration shall be located on the radial-bearing housing. Accelerometers intended to monitor axial vibration shall be located on, or as near as possible, to the thrust bearing housing. Location and number of accelerometers should be determined by the end user for their particular application.

For each accelerometer (Model A98) prepare a smooth flat mounting surface 1.1 times the sensor diameter. This surface must be machined smooth with a flatness of 0.001" TIR with a minimum finish of 63µin (0,00016mm). (If it is not possible to properly machine this surface, consider adhesive mounting as a possible alternative mounting technique.) It is very important that the base maintains intimate contact with 100% of the mounting surface in order to attain good high frequency response.

Drill a hole in the center of the diameter of each prepared surface to a minimum depth of .350 and tap the hole with a ¼-28 UNF 2B to a minimum depth of .250. Ensure the hole is perpendicular to the surface within a +/- 5 degree arc to avoid mounting base stress. Ensure the mounting surface is free of burrs and foreign particles.

Thoroughly clean the mounting contact surfaces of contaminants, then install the accelerometer using the following guidelines.

- a.) Hand tighten the ¼-28 mounting stud into the base of the accelerometer until seated on the flange at the center stud.
- b.) Apply a thin layer of silicon grease (Dow Corning DC-4, or equivalent) to both mating surfaces. Adding this grease improves vibration transmission by filling small voids in surfaces.
- c.) Carefully thread the mounting stud into the mounting hole and hand tighten.
- d.) Torque the unit to 2-5 ft-lbs. Do not exceed this torque or damage may occur to the mounting stud. Adversely, applying too low of a torque may not couple the device to the surface/stud properly.

Terminal connections – Attach coaxial cable to the Accelerometer. Connect the SMA connector to the XT-121V and torque to 5 in-lbs (0.6N-m) using a 5/16" wrench. Do not over torque the connector, 8 in-lbs (0.9N-m) will cause the connector epoxy seal to break.

NOTE

Use care when connecting the connectors to avoid rupturing the seal. Connections must not touch metal parts to prevent grounding. The system should be grounded to the central system only.

APPLICABLE DRAWINGS (attached)

- Velocity Transmitter -Installation & Outline A-33345 (Figure 1)
- Accelerometer mounting dimensions (Figure 2)

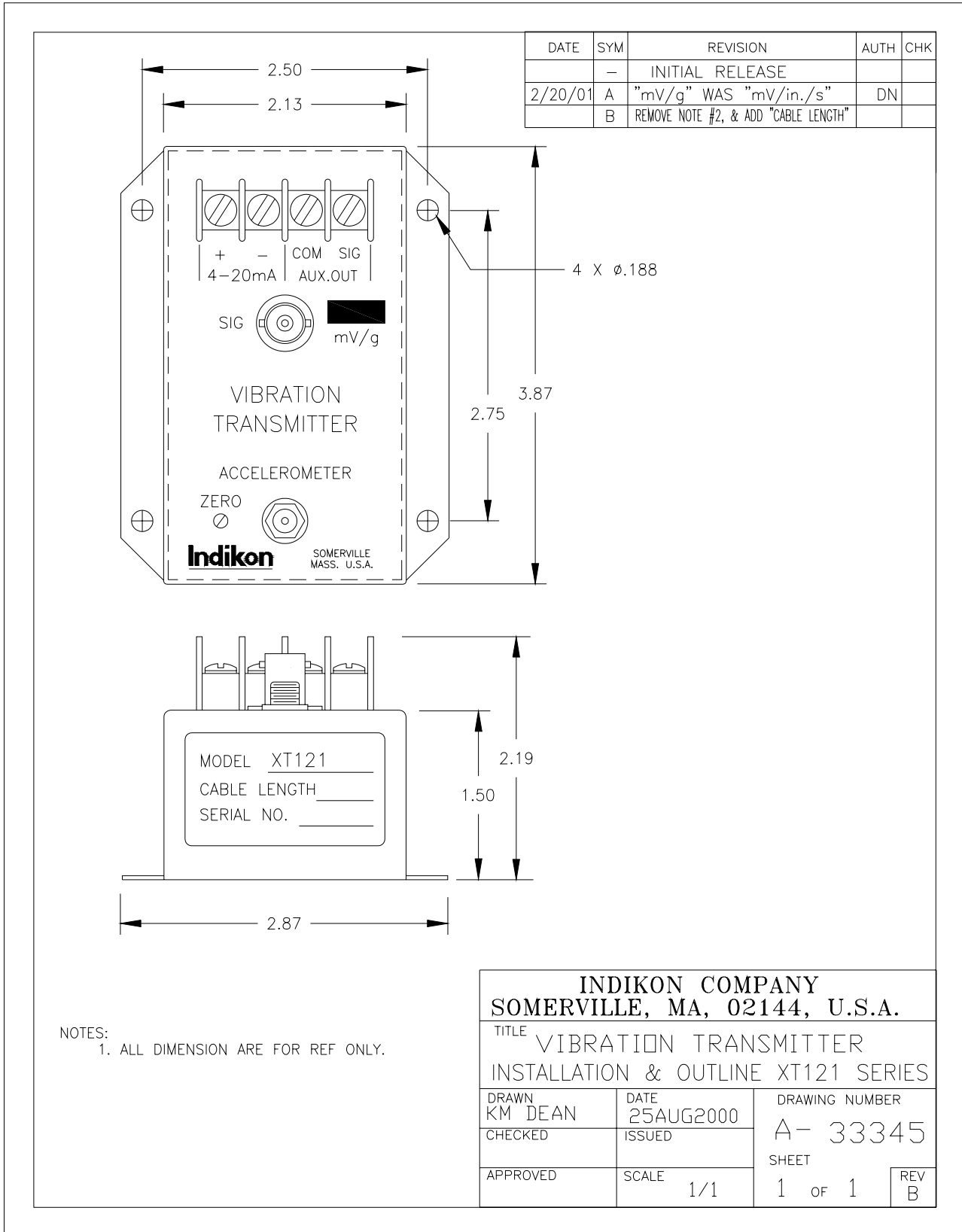


Figure 1

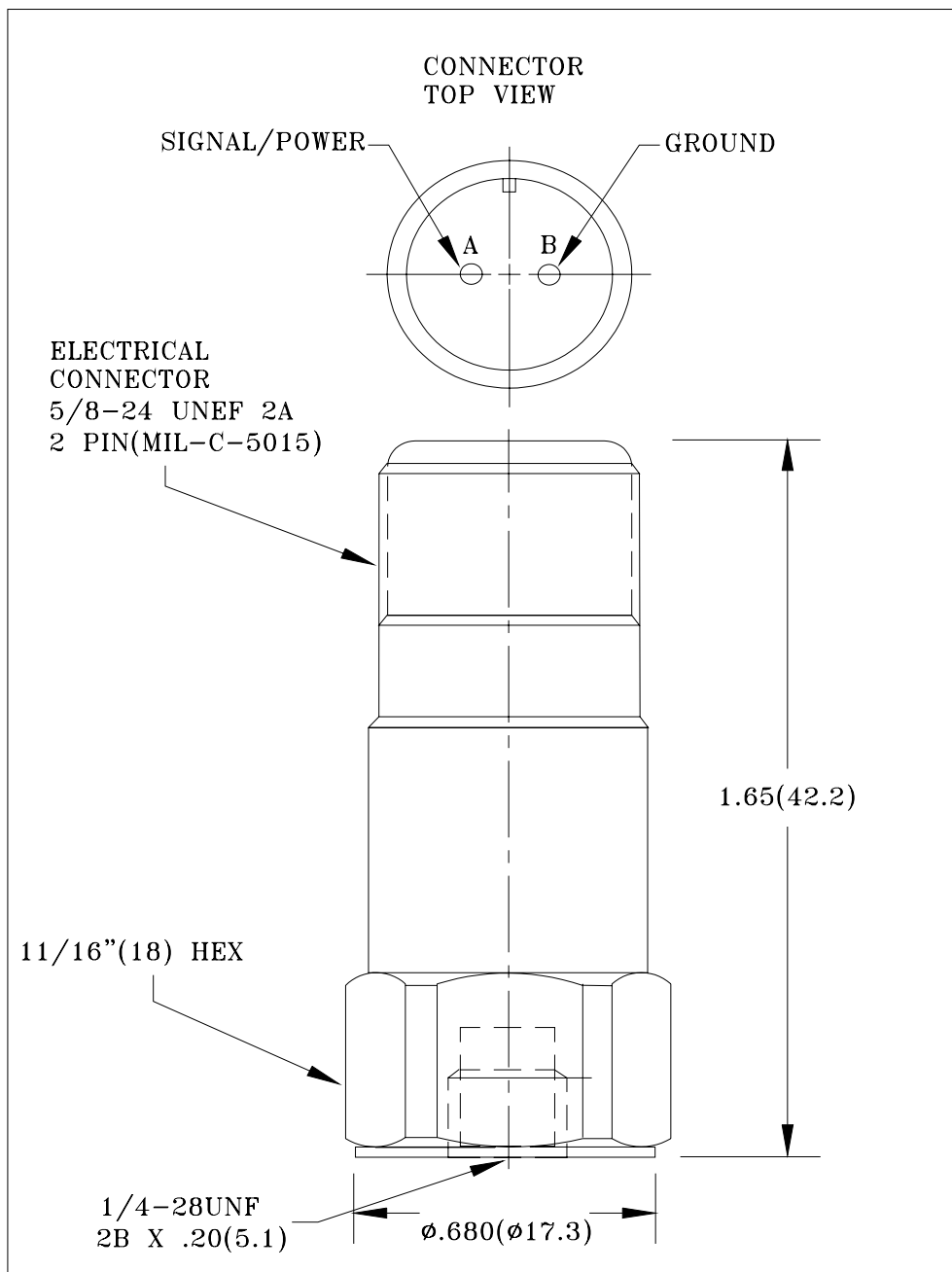


Figure 2

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 Indikon 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.

Indikon – A Riverhawk Company
215 Clinton Road
New Hartford, NY 13413
Office: 315-768-4855
Fax: 315-768-4941