

TWI-FO

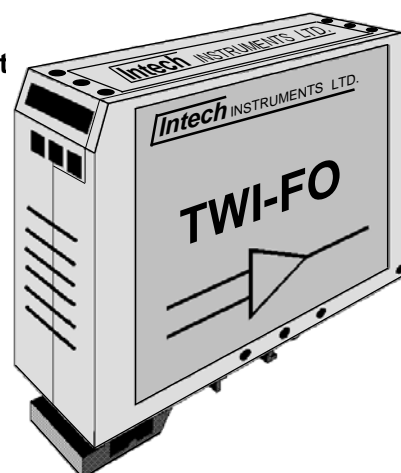
Isolating 3-wire DC Current or DC Voltage
Input to 3-wire Frequency Output.

TWN-FO

Non-isolating DC Current or DC Voltage
Input to 3-wire Frequency Output.

Features.

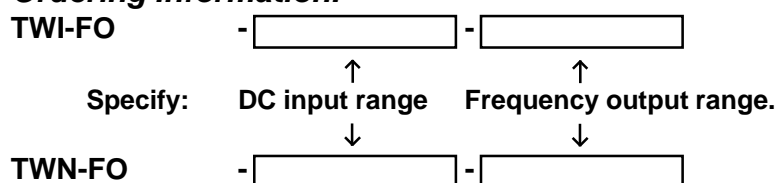
- PLC Interface. Converts 4~20mA Signal Into a Frequency for Direct Conversion Into a Digital Input
- Isolated Input to Output 1.6kV. (TWI-FO only.)
- High Accuracy.
- LED Indication of Frequency Output.
- Low Cost.
- Easy to Install.
- Compact DIN Rail Mount Enclosure.
- Reverse Polarity Protection.
- Externally Accessible Span & Zero Adjustments.



Description.

The TWI-FO and TWN-FO are designed as a low cost alternative to expensive A/D cards on PLCs, computers, and data acquisition systems. The TWI-FO and TWN-FO convert an analogue signal into a linear, frequency output signal, with a 50:50 mark space ratio. Ideally designed to be used with a PLC to convert a 4~20mA signal into a 10~1010Hz frequency, (Other calibrations available.) allowing direct connection into a digital input on a PLC (Use with interrupts.) and powered by the PLC's 24Vdc power supply. Refer to 'Connection Diagrams' for the multiple connection variations.

Ordering Information.

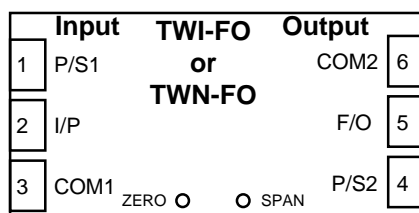


Ordering Examples.

- TWN-FO 4~20mA 10~1010Hz** Non-Isolated TWN-FO; Standard Range.
TWI-FO 0~10V 0~100Hz Isolated TWI-FO; 0~10V Input; 0~100Hz Output.

Note: The conversion from TWN-FO to TWI-FO is easily achieved by the removal of two internal links. Refer to ranging information.

Connections.



Terminations.

- | | | |
|--------|---|------------------------|
| Input | 1 | Power Supply 1 (P/S1) |
| | 2 | Input (I/P) |
| | 3 | Common 1 (COM1) |
| Output | 4 | Power Supply 2 (P/S2) |
| | 5 | Frequency Output (F/O) |
| | 6 | Common 2 (COM2) |

Note: For TWN-FO: P/S1 & P/S2, and COM1 & COM2 are connected internally.

Quality Assurance Programme.

The modern technology and strict procedures of the ISO9001 Quality Assurance Programme applied during design, development, production and final inspection grant the long term reliability of the instrument.

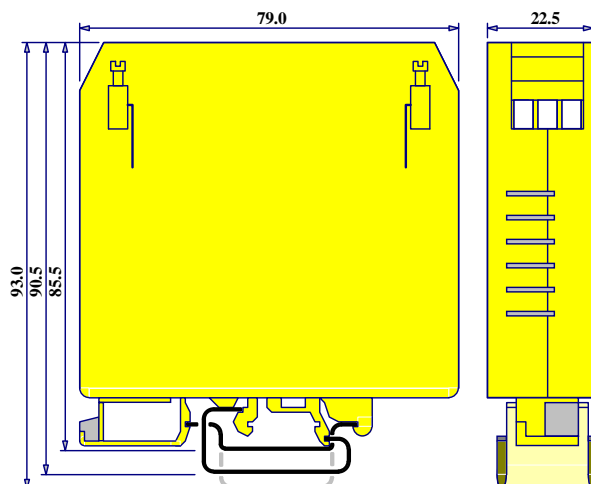
TWI-FO and TWN-FO Specifications.

| | | |
|--------------------------------------|-----------------|--|
| Input | - Current | Standard: 4~20mA Input Resistance = 25Ω. |
| | -Voltage | Options: 0~5mA, 1~5mA, 0~10mA, 2~10mA, 0~20mA, 0~50mA, 10~50mA. Options: 0~5V, 1~5V, 0~10V, 2~10V. Minimum Input Resistance = 200kΩ. Other inputs available on request. |
| Output Ranges | -Standard: | 10~1010Hz. |
| | -Options, J1=0: | 0~3.9Hz, 0~7.8Hz, 0~15.6Hz, 0~31.3Hz, 0~62.5Hz, 0~125Hz, 0~250Hz, 0~500Hz, 0~1kHz, 0~2kHz, 0~4kHz, 0~8kHz. |
| | -Options, J1=C: | 0~3.13Hz, 0~6.25Hz, 0~12.5Hz, 0~25Hz, 0~50Hz, 0~100Hz, 0~200Hz, 0~400Hz, 0~800Hz, 0~1.6kHz, 0~3.2kHz, 0~6.4kHz. |
| | -Function | Other outputs available on request, with or without offsets. Squarewave Output; 50:50 Mark / Space Ratio. |
| | -Amplitude | (Power Supply 2) - 2V. (No Load.) |
| | -Load | Limited to Sink / Source 100mA @ 24Vdc. (50mA @ 12Vdc.) Maximum load = 100mA @ 24Vdc. Suitable for most optocoupler inputs. Other variations available on request. |
| Power Supply (1 & 2) | | 11~28Vdc. |
| Current Usage | -TWI-FO | P/S1 = 20mA, P/S2 = 20mA. |
| | -TWN-FO | 40mA. |
| Supply Voltage Sensitivity | | <±0.001%/V FSO. |
| Accurate to | | <±0.1% FSO Typical. |
| Linearity & Repeatability | | <±0.1% FSO Typical. |
| Ambient Drift | | <±0.02%/C FSO Typical. |
| Noise Immunity | | 125dB CMRR Average. (1600Vdc Limit.) (TWI-FO Only.) |
| EMC Compliances | | Emissions EN 55022-A. Immunity EN 50082-1, <1% Effect FSO Typical. |
| Isolation Test Voltage (TWI-FO Only) | | Input to Output 1600Vdc for 1min. |
| Response Time | | 200msec Typical. (10 to 90% 50msec Typical.) |
| Operating Temperature | | 0~70C. |
| Storage Temperature | | -20~80C. |
| Operating Humidity | | 5~85%RH Max. Non-Condensing. |
| Dimensions and Construction | | L=79, W=22.5, H=85mm. Polyamide Thermoplastic Rail Mount Enclosure. |

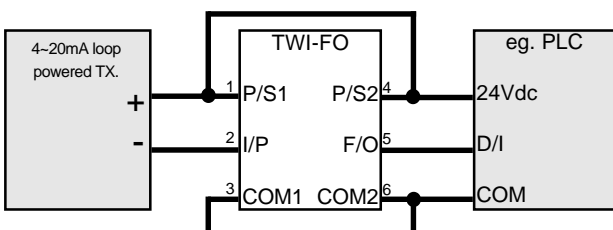
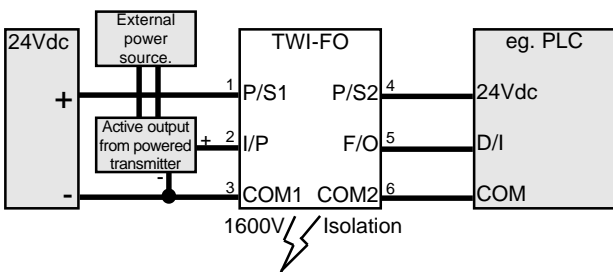
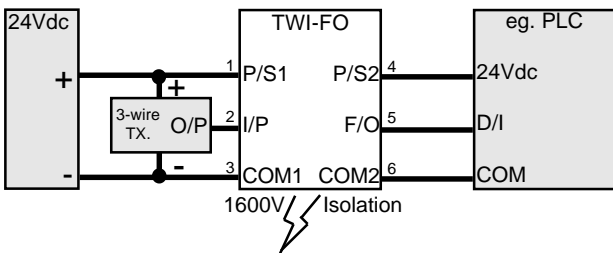
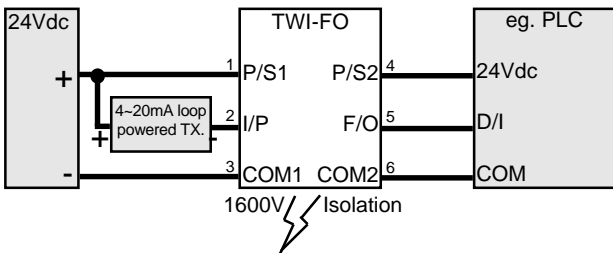
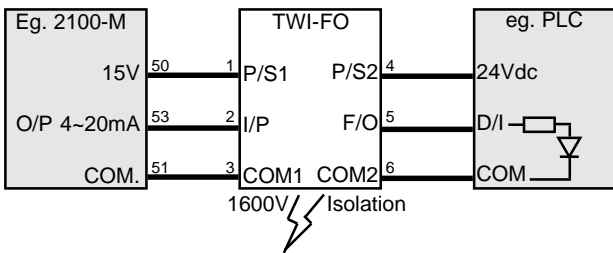
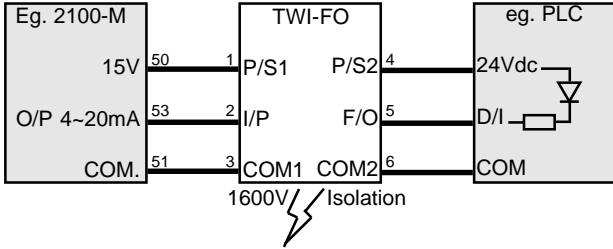
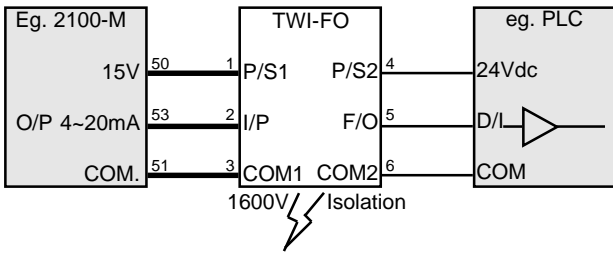
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Warning: These products are not designed for use in, and should not be used for patient connected applications. In any critical installation an independent fail-safe back-up system must always be implemented.

TW-FO Dimensions.

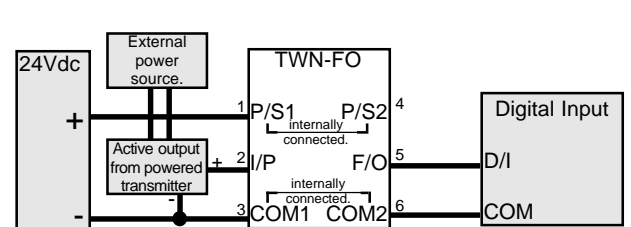
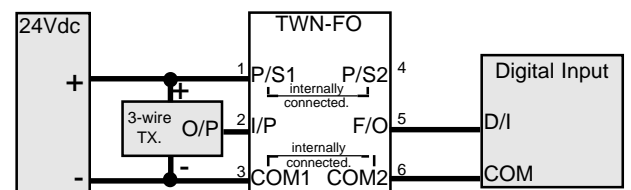
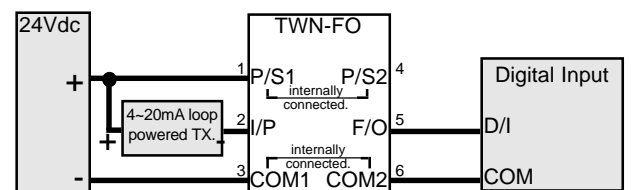
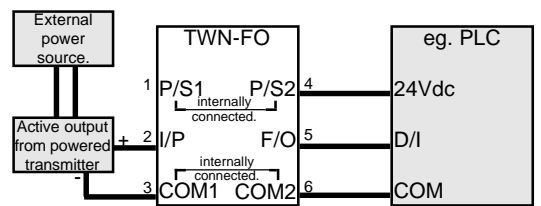
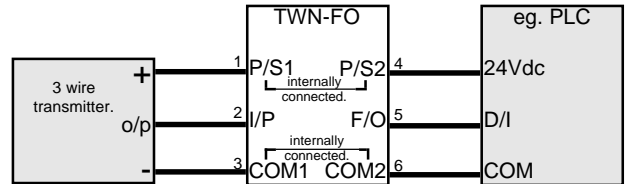
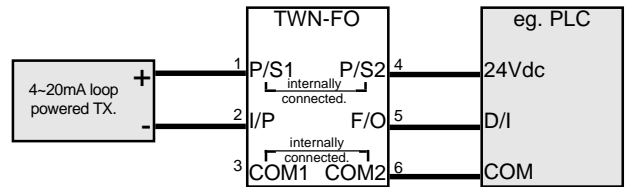


TWI-FO Connection Examples.



Note: No isolation in this configuration

TWN-FO Connection Examples.



TWI-FO and TWN-FO Ranging.

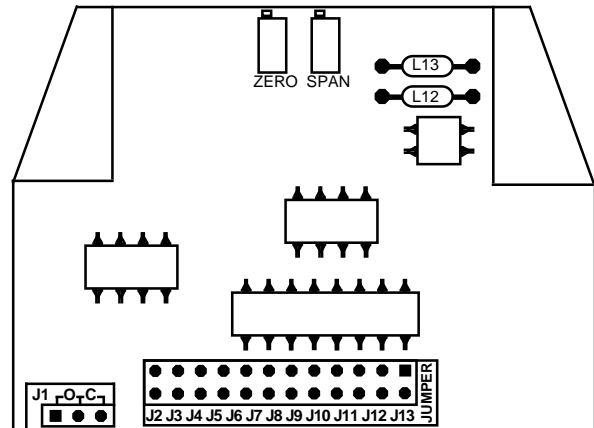
To convert the unit from a TWN-FO to a TWI-FO, cut out the links marked L12 and L13.

To change the output frequency range:

1. Select the frequency range required from the table below. Only one jumper may be inserted from J2 to J13.
2. Insert Jumper J1 'C' reduces any range selected from J2 to J13 by 20%. Insert Jumper J1 'O' has no effect.
3. Check all new ranges and fine tune using the Zero and Span pots.

Note: Offsets of up to 10% can be achieved by adjusting the Zero pot.

| Ranging For TWI-FO and TWN-FO | | |
|-------------------------------|----------|---------|
| Output Frequency. | | Jumper. |
| J1 = 'O' | J1 = 'C' | |
| 0~3.9Hz | 0~3.13Hz | J2 |
| 0~7.8Hz | 0~6.25Hz | J3 |
| 0~15.6Hz | 0~12.5Hz | J4 |
| 0~31.3Hz | 0~25Hz | J5 |
| 0~62.5Hz | 0~50Hz | J6 |
| 0~125Hz | 0~100Hz | J7 |
| 0~250Hz | 0~200Hz | J8 |
| 0~500Hz | 0~400Hz | J9 |
| 0~1000Hz | 0~800Hz | J10 |
| 0~2000Hz | 0~1600Hz | J11 |
| 0~4000Hz | 0~3200Hz | J12 |
| 0~8000Hz | 0~6400Hz | J13 |



Note. Custom Ranges available from the factory. Please Ring for a quote.

The Proper Installation & Maintenance of TWI-FO or TWN-FO.

All power and signals must be de-energised before connecting any wiring, or altering any Jumpers or Dip Switches.

MOUNTING.

- (1) Mount in a clean environment in an electrical cabinet on DIN or EN rail.
- (2) Draft holes must have minimum free air space of 20mm. Foreign matter must not enter or block draft holes
- (3) Do not subject to vibration or excess temperature or humidity variations.
- (4) Avoid mounting in cabinets with power control equipment.
- (5) To maintain compliance with the EMC Directives, the TWI-FO or TWN-FO must be mounted in a fully enclosed, metal, electrical cabinet. The cabinet must be properly earthed, with appropriate input / output entry points, cabling and filtering.

WIRING.

- (1) All cables should be good quality overall screened INSTRUMENTATION CABLE with the screen earthed at one end only.
- (2) Signal cables should be laid a minimum distance of 300mm from any power cables.
- (3) For 2 wire current loops and 2 wire voltage signals or 2 wire current signals, Austral Standard Cables B5102ES is recommended. For 3 wire transmitters Austral Standard Cables B5103ES is recommended.
- (4) It is recommended that you do not ground current loops and use power supplies with ungrounded outputs.
- (5) Lightning arrestors should be used when there is a danger from this source.
- (6) Refer to diagrams for connection information.

COMMISSIONING.

- (1) Once all the above conditions have been carried out and the wiring checked apply power to the TWI-FO or TWN-FO loop and allow five minutes for it to stabilize.
- (2) Take a low (approx. 10%) and high (approx. 90%) reading of the variable being measured by the transducer supplying the signal to the TWI-FO or TWN-FO, and ensure that this agrees with the level being indicated by the PLC or indicator, etc., that the TWI-FO or TWN-FO is connected to. Adjust for any difference using the Zero & Span Pots in the top of the TWI-FO or TWN-FO enclosure with a small screwdriver, until the two levels agree. (Clockwise to increase the output reading and anti-clockwise to decrease the output reading.)

MAINTENANCE.

- (1) Repeat (2) of Commissioning.
- (2) Do it regularly - at least once every 12 months.

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