4-20 mA configurable vibration transmitter module

iT300

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The iT300 transmitter provides an easy means to connect a standard IEPE vibration sensor to a PLC, DCS or SCADA system. The transmitter's input provides power to and measures the signal from either an accelerometer, piezovelocity sensor or dual output sensor. The input circuitry has a wide frequency response, capable of measuring signals between 0.2 Hz and 20,000 Hz.

The transmitter has two independent processing bands with flexible mapping options to two separate 4-20 mA analog outputs. The processing channels contain selectable integration, allowing input from accelerometers to be output as acceleration or velocity. Selectable band filters and detector types (i.e. RMS, peak) make it easy to tailor the processing to specific machines or applications.
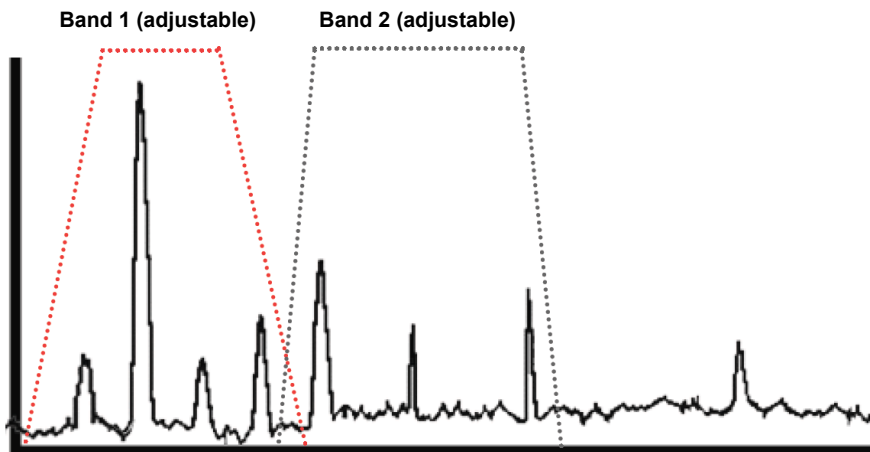
Band 1 (adjustable)   Band 2 (adjustable)

Key features

- Accepts input from accelerometers (single and dual output) or piezovelocity sensors
- Input signal is split into two independent processing bands
- Measures real time sensor bands, BOV, true peak and temperature (if available)
- Built-in web server allows custom configuration of bandwidth and detection type
- 2 x 4-20 mA outputs, user-defined
- Text field for user entry of machine information
- Configurations can be stored for easy recall
- Selectable speed range to monitor high- or low-speed machinery

Certifications

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Note: Due to continuous process improvement, specifications are subject to change without notice.
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SPECIFICATIONS

INPUT

IEPE sensor input type		Single ended, DC coupled
Temperature sensor input		10 mV/°C
IEPE power source		+24 VDC, 4.5 mA
Sensitivity range	acceleration	9 - 11,000 mV/g
	velocity	9 - 11,000 mV/ips
Full scale input range		±10 VDC
Frequency response		0.2 - 20 kHz (-3 dB, -0.1 dB)
Fmax options		200 Hz, 500 Hz, 1 kHz, 2 kHz, 5 kHz, 10 kHz, 20 kHz
Accuracy		±0.2% of full scale, 100 Hz
ADC sampling rate		48 kbps, 24 bits delta-sigma
FFT resolution, windowing		1,600 lines, Hanning window
Dynamic range		>90 dB

CONFIGURABLE OPTIONS

Frequency bands 1 and 2		Sensor unit[1] or single integration[2]
		Fstart[3]
		Fstop[3]
		Detection type: rms, peak, peak-peak
Fixed measurement bands		True peak, BOV, temperature[4]

MAPPABLE OUTPUTS

4-20 mA output		2 user-configurable, based on (5) mappable options
Max loop resistance		500 Ω
Output scaling[1]	acceleration	g (m/sec^2) - rms, peak, peak-peak
	velocity	ips (mm/sec) rms, peak, peak-peak
	displacement	mils (mm) rms, peak, peak-peak
Output ranges[1]	acceleration	1 - 50 g (10 - 500 m/sec^2)
	velocity	0.1 - 5 ips (2 - 100 mm/sec)
	displacement	10 - 200 mils (0.2 - 5.0 mm)

ENVIRONMENTAL

Temperature range	-40 to +70° C, storage: -40 to +85° C
Power	11 - 32 VDC, 3.8 watts max (158 mA @ 24 VDC)
Isolation	500 VAC
Connection type	screw terminal, 14-24 AWG
Mounting	35 mm DIN rail
Dimensions (W x H x D)	22.5 mm x 99.2 mm x 114.5 mm

Contact

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Notes:

[1] Based on IEPE sensor type (accelerometer or piezovelocity).
[2] Acceleration signal to velocity, velocity signal to displacement.
[3] The available selections are affected by the Fmax setting.
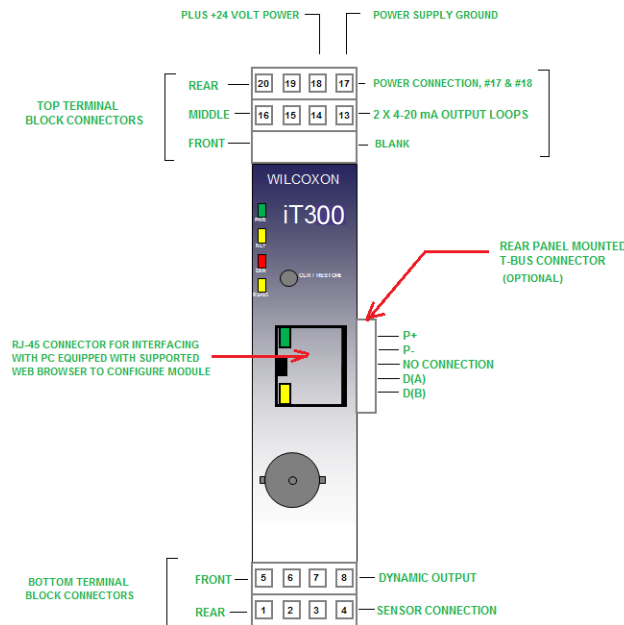[4] 786T style sensors only.

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System architecture

Legend:
- Power input
- 4-20 mA outputs
- Input/output µprocessor

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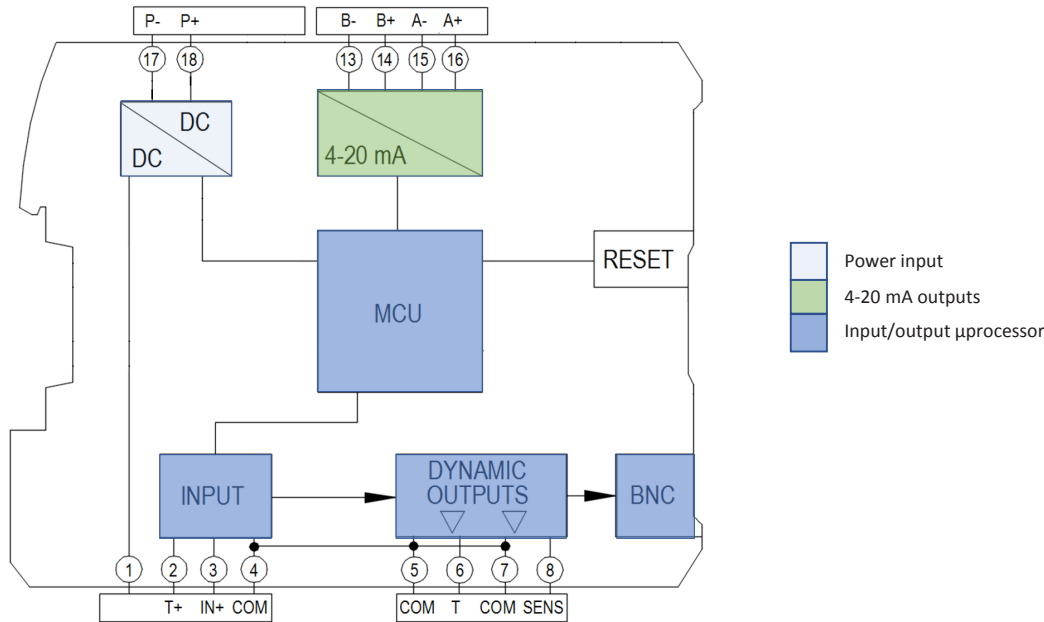
IO Port	Terminal numbers and signal assignments
Vibration sensor	1 – No connection 2 – Temperature sensor (in T+) 3 – Signal in / Sensor Power (IN+) 4 – Circuit Common (COM)
Temperature dynamic output	5 – Circuit Common (COM) 6 – Temperature out (T)
Sensor dynamic output	7 – Circuit Common (COM) 8 – Sensor out (SENS)
4-20 mA Loop B	13 – B- 14 – B+
4-20 mA Loop A	15 – A- 16 – A+
Power input	17 – P- 18 – P+
Not used	19 – 20 –

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iT300 built-in web server – user-configurable

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| Login required before any changes can be made |

Settings changes do not take effect until the "Save & Enable Changes" button is pressed | Save & Enable Changes | Abandon Changes | Login |

| User entry of machine indentity |

Machine Information

| Location | Machine Location | | Machine ID | Machine ID |
| Machine Name | Machine Name | | Measurement Point | Measurement Point |

| User entry of sensor parameters |

Sensor Input

Sensor Type	Acceleration		IEPE Power	Enabled
Sensitivity (mV/g)	100	?	Serial Number	Sensor Serial Number
Averaging Time	1 sec			

| User selection of frequency analysis range |

Frequency Range

| F max | 5 kHz | | F min | 5 Hz |

| Analysis band type and frequency limits |

Sensor Band Configuration

	Output Type	F start (Hz)	F stop (Hz)	Detector Type
Band 1	Velocity	5	5000	RMS
Band 2	Acceleration	5	5000	RMS

| Measurement results |

Measurement Results

	Result Unit	Present Level
Band 1	in/sec	0.617 in/sec
Band 2	g	1.000 g
True Peak	g	1.424 g
Temperature	Fahrenheit	145.8 °F
BOV	Volts	10.7 Volts

| 4-20 mA mapping |

Current Loops

	Loop Source	Full Scale	Level	Destination	Force Loop	Force Value (mA)
Loop A	Band 1	5	in/sec 5.97 mA	Loop A Dest	○ □ ?	10
Loop B	Disabled	5	0.00 mA	Loop B Dest	○ □ ?	10

| Default configuration. Consult full manual on configuring your PC network adaptor |

Network Configuration

| IP Address | 10.17.4.221 | | Subnet Mask | 255.255.0.0 |
| Default Gateway | 10.17.2.8 | | MAC Address | 00:50:C2:19:BF:FE |

Module Information

| Model | iT300 | | Hardware Revision | D8 |
| Serial Number | 9999999998 | | Firmware Revision | 1.01 |

| Default user: user Default password: admin Remember to save your changes to have new values take effect |

| Change Password | Load Configuration from File | Save Configuration to File | Restore Factory Defaults | Update Firmware |

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