

4-20 mA vibration transmitter modules

iT150 series

SPECIFICATIONS

INPUT	
Sensor types	IEPE accelerometers, IEPE piezovelocity transducers, IEPE dual output (vibration and temperature) sensors
Sensor sensitivities accepted:	
Accelerometer	10, 100, 500 mV/g
Piezovelocity	10, 100, 500 mV/ips
Dual output ¹	10 mV/°C
Frequency response:	
Acceleration ²	0.2 Hz - 20 kHz (-3 dB, -0.1 dB)
Velocity	0.2 Hz - 5 kHz
Sensor powering:	
Open circuit voltage	24 VDC, ±5%
Constant-current	4.5 mA, ±20%
Maximum dynamic signal input, for linear response	20 Volts peak-to-peak
OUTPUT, 4-20 mA loop current	
Full scale, ±2%	see Ordering information on page 2
Output type	true RMS, equivalent peak, equivalent peak-peak, true peak
Maximum 4-20 mA loop load resistance	500 Ω
Accuracy	±0.2% of full scale
Turn on time	<30 seconds
OUTPUT, buffered dynamic	
Gain, RTI sensor	1.0 ±2%
Noise RTO, broadband, 1 Hz - 10 kHz, RMS	≤0.0001 Volts
Output type	DC-coupled
ENVIRONMENTAL	
Power:	
Voltage (Vin)	11 - 32 VDC
Current draw	125 mA at 24 VDC (3 watts max)
Temperature, operating, ambient	-40° to +70°C
PHYSICAL	
Mounting	snap into 35 mm DIN rail
Dimensions:	
Width	22.5 mm (0.86")
Depth (front of BNC to back of DIN rail)	127 mm (4.98")
Height	100 mm (3.90")



Key features

- Temperature measurement
- Slim 22.5 mm case
- Front panel BNC for dynamic signal output
- Manufactured in ISO 9001 facility

For dimensions and ordering information, see page 2.

For system architecture, see page 3.

Notes: ¹ Compatible with Wilcoxon models 786T and 787T (measurement range: 0° to 120°C, input signal: 0 - 1.2 VDC).

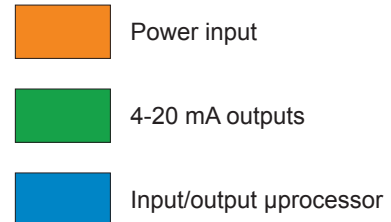
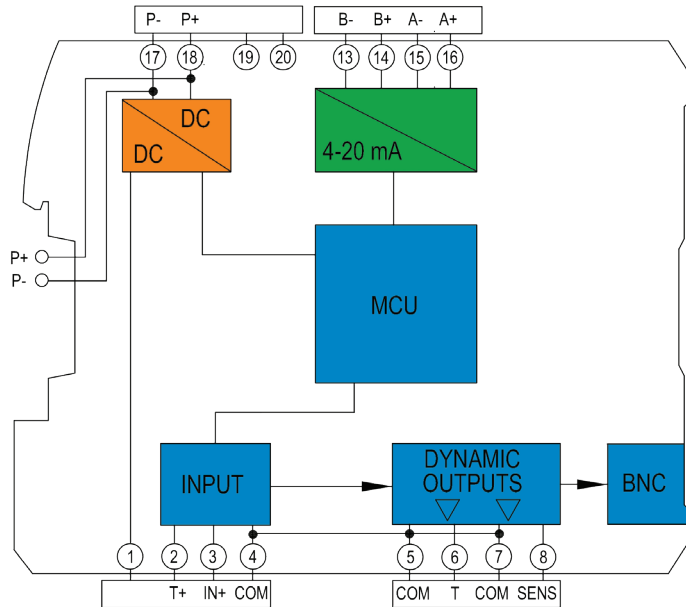
² True peak frequency response: 10 Hz to 25 kHz.



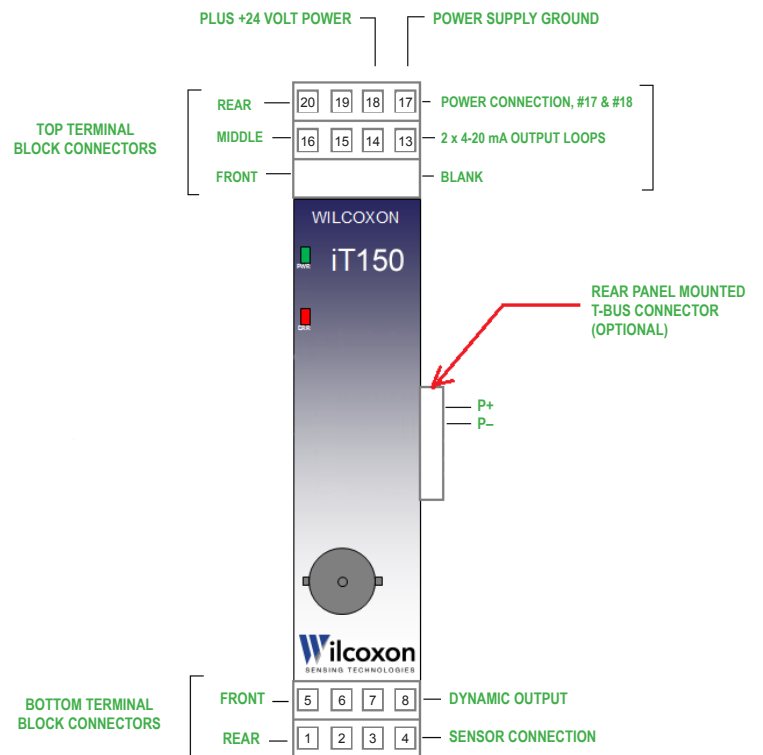
Note: Due to continuous process improvement, specifications are subject to change without notice. This document is cleared for public release.



System architecture



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)
Sensor dynamic output	6 - Temperature out (T)
	7 - Circuit common (COM)
	8 - Sensor out (SENS)
4-20 mA Loop B Temperature	13 - B-
	14 - B+
4-20 mA Loop A Vibration	15 - A-
	16 - A+
Power input	17 - P-
	18 - P+
Not used	19
	20

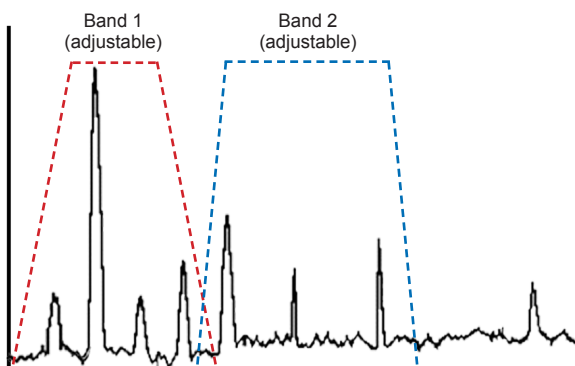


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4-20 mA configurable vibration transmitter module

iT300

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.



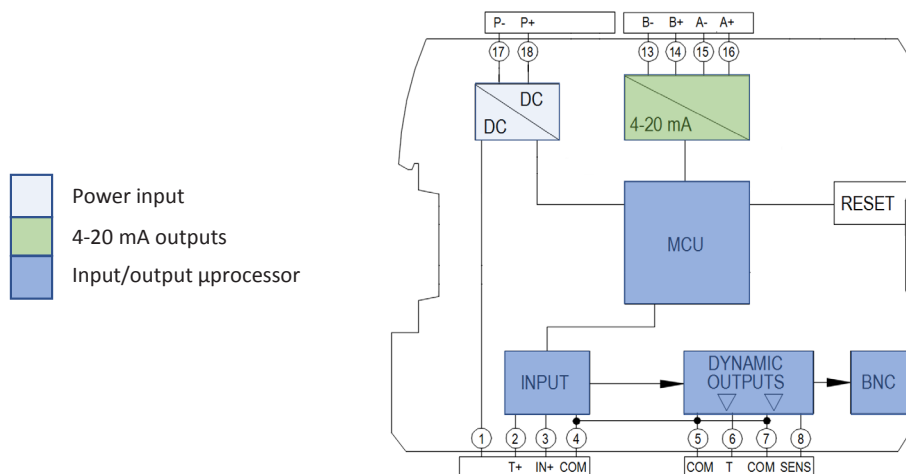
The transmitter has two independent processing bands with flexible mapping options to two separate 4-20 mA analog outputs. The processing channels contain selectable integration, allowing input from accelerometers to be output as acceleration or velocity. Selectable band filters and detector types make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



Key features

- Accepts input from accelerometers (single or 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 applicable)
- Built-in web server for custom configuration of bandwidth/detection type
- 2 x 4-20 mA outputs, user-defined
- Text field for user entry of machine information
- Configurations can be stored
- Selectable speed range
- Manufactured in an approved ISO 9001 facility

System architecture – input/output



Certifications



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4-20 mA configurable vibration transmitter module

iT300

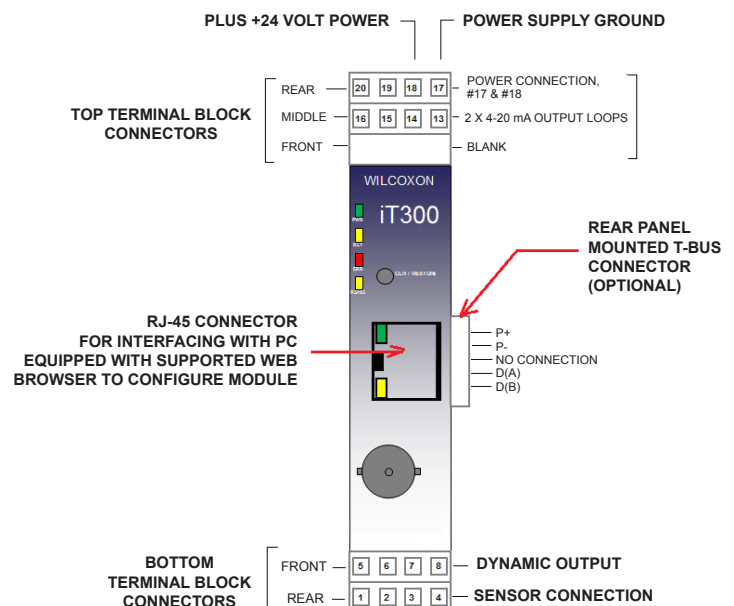
SPECIFICATIONS

INPUT		MAPPABLE OUTPUTS	
IEPE sensor type	Single-ended, DC coupled	4-20 mA output	2 user-configurable, based on (5) mappable options
Temperature sensor input	10 mV/°C	Max loop resistance	500 Ω
IEPE power source	+24 VDC, 4.5 mA	Output scaling ¹ :	
Sensitivity range:		acceleration	g (m/sec ²) - rms, peak, peak-peak
acceleration	9 - 11,000 mV/g	velocity	ips (mm/sec) - rms, peak, peak-peak
velocity	9 - 11,000 mV/ips	displacement	mils (mm) - rms, peak, peak-peak
Full scale input range	± 10 VDC	Output ranges ¹ :	
Frequency response	0.2 - 20 kHz (-3 dB, -0.1 dB)	acceleration	1 - 50 g (10 - 500 m/sec ²)
Fmax options	200, 500 Hz; 1, 2, 5, 10, 20 kHz	velocity	0.1-5 ips (2-100 mm/sec)
Accuracy	±0.2% of full scale, 100 Hz	displacement	10 - 200 mils (0.2 - 5.0 mm)
ADC sampling rate	48 kbps, 24 bits delta-sigma	ENVIRONMENTAL	
FFT resolution, windowing	1,600 lines, Hanning window	Temperature range	-40° to +70°C (storage: -40°C to +85°C)
Dynamic range	>90 dB	Power	11 - 32 VDC, 3.8 watts max (158 mA at 24 VDC)
CONFIGURABLE OPTIONS		Isolation	500 VAC
Frequency bands 1 and 2	Sensor unit ¹ or single integration ² Fstart ³ Fstop ³ Detection type: rms, peak, pk-pk	Connection type	screw terminal, 14 - 24 AWG
Fixed measurement bands	True peak, BOV, temperature ⁴	Mounting	35 mm DIN rail
		Dimensions	W x H x D: 22.5 x 99.2 x 114.5 mm

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.

System architecture

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)
Sensor dynamic output	6 - Temperature out (T) 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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Settings changes do not take effect until the "Save & Enable Changes" button is pressed

Save & Enable
Changes

Abandon
Changes

Login

Login required before any changes can be made

Machine Information

Location

Machine ID

Machine Name

Measurement Point

MACHINE INFORMATION

User entry of machine identity

Sensor Input

Sensor Type

IEPE Power

Sensitivity (mV/g)

Serial Number

Averaging Time

SENSOR INPUT

User entry of sensor parameters

Frequency Range

F max

F min

FREQUENCY RANGE

User selection of frequency
analysis range

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

SENSOR BAND CONFIGURATION

Analysis band type and
frequency limits

Measurement Results

Result Unit

Present
Level

Band 1

in/sec

1.000 in/sec

Band 2

g

1.000 g

True Peak

g

1.417 g

Temperature

Fahrenheit

32.0 °F

BOV

Volts

12.1 Volts

MEASUREMENT RESULTS

Results from each band in
selectable units

Current Loops

Loop Source

Full Scale

Level

Destination

Force Loop

Force Value (mA)

Loop A

Band 1

5

in/sec

7.20 mA

Loop A Dest

☐
☐

10

Loop B

Disabled

5

0.00 mA

Loop B Dest

☐
☐

10

CURRENT LOOPS

4-20 mA mapping

Network Configuration

IP Address

Subnet Mask

Default Gateway

MAC Address

NETWORK CONFIGURATION

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

Module Information

Model

Hardware Revision

Serial Number

Firmware Revision

Change
Password

Load Configuration
from File

Save Configuration
to File

Restore Factory
Defaults

Update
Firmware

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

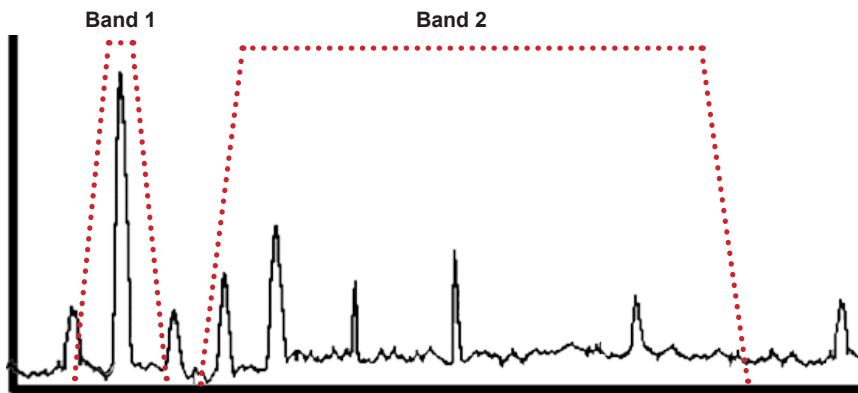
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User-configurable intelligent vibration transmitter

iT301



Wilcoxon's new intelligent vibration transmitters measure and process dynamic vibration signals. The iT301 is optimized for process control and monitoring, with a variety of options for input signals, a wide frequency response, selectable band filters and detector types, and flexible output mapping options. The transmitter is MODBUS/RS485 enabled and features a built-in web server interface for efficient user configuration in the field.



2 user-configurable independent processing bands

See page 3 for system architecture and page 4 for more details on the iT301's built-in web server.

Certifications



Key features

- Accepts input from accelerometers (single and dual output), piezovelocity sensors
- Input signal split into 2 independent processing bands
- Measures real-time sensor bands, BOV, signal true peak and temperature
- Built-in web browser allows custom configuration of bandwidth and detection type
- High/low alarms mappable to a single NC/NO relay
- Configurations can be stored for easy recall
- Selectable speed range
- Communicates using Modbus-TCP or RS485 protocol
- Manufactured in an approved ISO 9001 facility

Note: Due to continuous process improvement, specifications are subject to change without notice.
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Wilcoxon Sensing Technologies
An Amphenol Company

8435 Progress Drive
Frederick, MD 21701
USA

Tel: +1 (301) 330-8811
Fax: +1 (301) 330-8873
info@wilcoxon.com

buy.wilcoxon.com
www.wilcoxon.com

User-configurable intelligent vibration transmitter

iT301

SPECIFICATIONS

INPUT		
Sensor type	IEPE accelerometers (single and dual output), piezovelocity transducers	
IEPE power source	+24 VDC, 4.5 mA, enable/disable	
Sensitivity range:		
Acceleration	9 - 11,000 mV/g	
Velocity	9 - 11,000 mV/in/sec	
Temperature	10 mV/°C (optional 10 mV/°K)	
Maximum dynamic signal	±10 VAC	
Frequency response	0.2 Hz to 20 kHz (-3 dB, 0.1 dB)	
Units	English or metric	
ANALYSIS		
Fmax	200 to 20,000 Hz in 1, 2, 5 sequence	
FFT resolution	Fixed, 1600 lines, bandwidth changes with Fmax	
Windowing	Hanning	
Dynamic range	>90 dB	
BAND PROCESSING		
Vibration bands 1 and 2, independently configurable	Sensor units or single integration Low frequency* ≥ Fmin, based on user-selected Fmax High frequency* ≤ Fmax RMS, peak or peak-to-peak	(*Fmax ≥ Fmin)
MEASUREMENTS		
Bands 1 and 2	configured vibration results	
True peak band	True peak detector, 10 Hz to 25 kHz	
Bias output voltage (BOV)	Measures sensor BOV (VDC)	
Temperature	10 mV/°C, 2° to 120°C, sensor dependent	
ALARMS		
High / Low / Relay	All measurement parameters, user-configurable	
OUTPUTS		
Buffered dynamic:		
Vibration	DC coupled, BNC or terminal block; Raw sensor signal	
Temperature	DC coupled, terminal block	
Loop outputs:		
4-20 mA (two) (sourced)	Configurable from measurement results Full scale, user-configurable	
Max loop resistance	500 Ω	
RS485	Two-wire, half-duplex; 256 kbps max band rate; 120Ω termination network, switchable via DIP switch	
Alarm relay	1 x NC/NO	

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User-configurable intelligent vibration transmitter

iT301

SPECIFICATIONS

ACCESSIBILITY / NETWORK

Built-in web server	Password-protected configuration and firmware upgrades
Browser support	IE, Mozilla, Chrome
IP address	Default: 192.168.0.100
Subnet mask	Default: 255.255.255.0
Default gateway	Default: 192.168.0.1

ENVIRONMENTAL

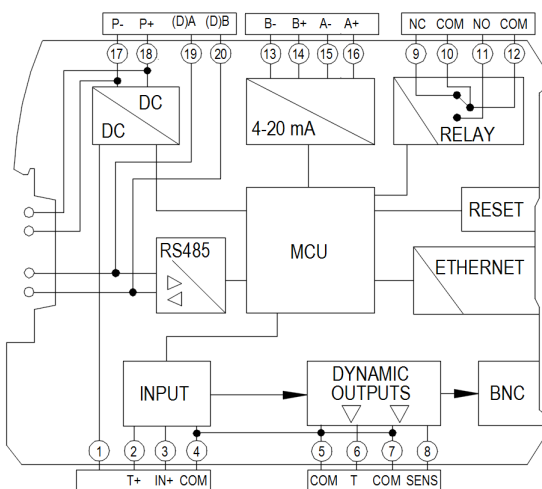
Power	11 - 32 VDC, 350 mA max
Temperature: Operating Storage	-40° to +70°C -40° to +85°C
Isolation	500 VAC, input to output
T-bus, rear backplane	Power and RS485 daisy chain

PHYSICAL

Mounting	35 mm DIN rail
Dimensions, case	22 mm width x 114 mm depth x 100 mm height (0.89 x 4.473 x 3.9 in.) BNC connector adds 10 mm to overall depth
Connections	Screw terminal

Indicators:

Green LED	Solid – normal, flashing – test, off – no power
Red LED	Solid – sensor fault, flashing – 4-20 mA fault, off – normal
Yellow LED (relay)	On – relay energized, off – relay de-energized
Yellow LED (RS485)	Flashing – RS485 active, off – RS485 idle/non-matching address



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)
Signal relay	9 – Normally closed (NC) 10 – Relay common (COM) 11 – Normally open (NO) 12 – Relay common (COM)
4-20 mA loop B (Secondary loop)	13 – B- 14 – B+
4-20 mA loop A (Primary loop)	15 – A- 16 – A+
Power input	17 – P- 18 – P+
RS485*	19 – (D)A 20 – (D)B

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Built-in web server

Machine Information

Location

Machine Location

Machine ID

Machine ID

Machine Name

Machine Name

Measurement Point

Measurement Point

Sensor Input

Sensor Type

Acceleration

IEPE Power

Enabled

Sensitivity (mV/g)

100

Serial Number

Sensor Serial Number

Averaging Time

1 sec

Frequency Range

F max

5 kHz

F min

5 Hz

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 and Alarms

	Result Unit	Present Level	Low Limit Enable	Low Limit Value	High Limit Enable	High Limit Value	Result Status	Alarm Status	Map to Relay
Band 1	in/sec	1.000 in/sec	<input type="checkbox"/>	0	<input type="checkbox"/>	500	Disabled	OK	<input type="checkbox"/>
Band 2	g	1.000 g	<input type="checkbox"/>	0	<input type="checkbox"/>	500	Disabled	OK	<input type="checkbox"/>
True Peak	g	1.417 g	<input type="checkbox"/>	0	<input type="checkbox"/>	500	Disabled	OK	<input type="checkbox"/>
Temperature	Fahrenheit	32.0 °F	<input type="checkbox"/>	32	<input type="checkbox"/>	248	Disabled	OK	<input type="checkbox"/>
BOV	Volts	12.0 Volts	<input checked="" type="checkbox"/>	5	<input checked="" type="checkbox"/>	16	OK	OK	<input type="checkbox"/>

Alarm Delay Time (sec)

10

Relay Status

Alarm Hold Time (sec)

10

Force Relay

Clear Alarms

Current Loops

	Loop Source	Full Scale	Level	Destination	Force Loop	Force Value (mA)
Loop A	Band 1	5	in/sec 7.20 mA	Loop A Dest	<input type="radio"/> <input type="checkbox"/>	10
Loop B	Disabled	5	0.00 mA	Loop B Dest	<input type="radio"/> <input type="checkbox"/>	10

Network Configuration

IP Address

192.168.0.100

Subnet Mask

255.255.255.0

Default Gateway

192.168.0.1

MAC Address

00:50:C2:19:BF:F6

Modbus/RS485

Slave Address

1

Format

RTU

Baud Rate

9,600

Parity

None

MACHINE INFORMATION

User entry of machine identity

SENSOR INPUT

User entry of sensor parameters

FREQUENCY RANGE

Easily select frequency range

SENSOR BAND CONFIGURATION

User-configurable analysis band type and frequency limits

MEASUREMENT RESULTS AND ALARMS

Measurement results from all bands, selectable alarm levels, and continuous monitoring of alarms

CURRENT LOOPS

4-20 mA mapping

NETWORK CONFIGURATION

MODBUS/RS485

Multiple communication methods:
Modbus TCP, Modbus Serial, RS485

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