Product Data Sheet
00813-0600-4410, Rev AJ
June 2025

Emerson Wireless 1410S Gateway with 781S Smart Antenna

- Gateway connects the *Wireless*HART® self-organizing networks with any host system.
- Easy configuration and management of self-organizing networks.
- Easy integration into control systems and data applications through serial and Ethernet connections.
- Greater than 99 percent data reliability with industry proven security.
- Ability to leverage sensor data from critical assets to eliminate blind spots and improve productivity and safety of operations.

ROSEMOUNT™

EMERSON™

Emerson wireless solution

IEC62591 (*Wireless*HART®)...the industry standard

Self-organizing, adaptive mesh routing

- No wireless expertise required; network automatically establishes the best communication paths.
- The self-organizing, self-healing network manages multiple communication paths for any given device. If an obstruction is introduced into the network, then data will continue to flow because the device already has other established paths. The network will then lay in more communication paths as needed for that device.

Reliable wireless architecture

- Standard IEEE 802.15.4 radios.
- 2.4 GHz ISM band sliced into 15 radio channels.
- Time-synchronized channel hopping for increased reliability and avoidance of interference from other radios, Wi-Fi®, and electromagnetic compatibility (EMC) sources.
- Direct sequence spread spectrum (DSSS) technology delivers high reliability in challenging radio environment.

Emerson wireless

Seamless integration via local area network (LAN) or serial communications to other existing host systems

- Native integration into Ovation™ and DeltaV™(1) is transparent and seamless.
- Gateways interface with existing host systems via LAN or serial communications using industry standard protocols including OPC DA, OPC UA®, Modbus® Transmission Control Protocol/Internet Protocol (TCP/IP), Ethernet/IP & HART®-IP, and Modbus remote terminal unit (RTU).

Layered security keeps your network safe

- All wireless data is 128 bit AES encrypted so your data is kept safe.
- All wireless devices are authenticated so you know exactly what is on your network.
- Complete control of your network using the gateway secure web interface.

SmartPower™ solutions

- Optimized Emerson instrumentation, both hardware and software, to extend power module life.
- SmartPower technologies enable predictable power life.

Contents

(1) DeltaV currently has limitations with the Emerson 1410S Gateway hardware. DeltaV does not support gateway redundancy and only supports a capacity of up to 100 *Wireless*HART® devices. Potential alternatives to bring data from 200 units to DeltaV can be performed through Modbus RTU or OPC DA.

Features and benefits

Gain real-time process information with greater than 99 percent wireless data reliability

The Emerson Wireless 1410S Gateway with 781S Smart Antenna automatically manages wireless communications in constantly changing environments. With the flexibility of installation, optimal network design and best practices can be easily implemented to achieve maximum data reliability. Connect to data historians, legacy host systems, and other applications via Ethernet using Modbus® Transmitter Control Protocol (TCP), OPC, EtherNet/IP™, HART-IP™ protocols, or serial Modbus remote terminal unit RTU (RS-485).

Simultaneous operation of two protocols on one gateway with leading wireless standards

- One wireless gateway with the capabilities of two smart antenna connections for optimal network design and flexibility.
- *Wireless*HART® gives users the ability to form large networks that self-form a wireless mesh giving the user an easy path to build and grow networks.
- To support the transition from legacy protocols to *Wireless*HART, a separate 781S Smart Antenna can be used to connect to IEC 62734 instrumentation.
- Configure the Gateway to connect up to 25, 200, or 500 *Wireless*HART devices to a single point of communication with the Emerson 781S Smart Antenna allowing scalable capacity to meet your site or application needs.

Complete wireless network configuration tools provided with each Gateway

- The integrated web interface allows easy configuration of the wireless network and data integration without the need to install additional software.
- Complimentary AMS Wireless Configurator software provides Emerson Device dashboards to configure *Wireless*HART devices and view diagnostic data.
- Drag and drop device provisioning enables a secure method to add new wireless devices to the wireless field network.

Access information when you need it with asset tags

Newly shipped devices include a unique QR code asset tag that enables you to access serialized information directly from the device. With this capability, you can:

- Access device drawings, diagrams, technical documentation, and troubleshooting information in your MyEmerson account
- Improve mean time to repair and maintain efficiency
- Ensure confidence that you have located the correct device
- Eliminate the time-consuming process of locating and transcribing nameplates to view asset information

Emerson Wireless 1410S Gateway ordering information

VIEW PRODUCT >

Online product configurator

Many products are configurable online using our product configurator.

Select the **Configure** button or visit Emerson.com/global to start. With this tool's built-in logic and continuous validation, you can configure your products more quickly and accurately.

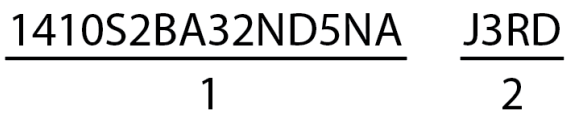
Specifications and options

The purchaser of the equipment must specify and select the product materials, options, and components.

Model code

Model codes contain the details related to each product. Exact model codes will vary; an example of a typical model code is shown in Figure 1.

Figure 1: Model Code Example



1. Required model components (choices available on most)
2. Additional options (variety of features and functions that may be added to products)

Optimizing lead time

The starred offerings (★) represent the most common options and should be selected for the fastest delivery. The non-starred offerings are subject to additional delivery lead time.

Required model components

Model

Code	Description	
1410S	Wireless Gateway, 2.4 GHz direct sequence spread spectrum (DSSS), web server, AMS ready, HART-IP® protocol	★

Installation area

Code	Description	
1	Indoor rated housing (engineered polymer/DIN-rail mountable)	★
2	Outdoor rated housing (aluminum)	★

Intrinsically safe outputs

Code	Description	
A(1)	Zone 0/Div 1: Emerson 781S Smart Antenna may be installed in Zone 0/1/2 & Class I Div 1/2	★
B	Zone 2/Div 2: 781S Smart Antenna may be installed in Zone 2 & Class I Div 2	★
N	No approval outputs: 781S Smart Antenna installation in safe area	

(1) *Option A cannot be selected with Wireless configuration option A6 or A7 for dual protocol support on Emerson 1410S model strings specified with Installation area "2", outdoor rated housing (aluminum).*

Wireless configuration

Code	Description	
A3(1)	*Wireless*HART® protocol	★
A6(1)(2)	*Wireless*HART (IEC 62591) and IEC 62734 protocols	★
A7(3)	Dual *Wireless*HART protocol	★

(1) *Must order the Emerson 781SA WirelessHART Smart Antenna.*
(2) *Must order the 781SC Smart Antenna.*
(3) *Must order two 781SA WirelessHART Smart Antennas.*

Refer to the 781 field link ordering information in Emerson™ Wireless 1410D Gateway with 781 Field Link Product Data Sheet.

Ethernet communications – physical connection

Code	Description	
1	Single Ethernet connection	★
2	Dual Ethernet connection	★

Serial communication

Code	Description	
N	None	★
A	Modbus® remote terminal unit (RTU) via RS-485	★

Ethernet communications – data protocols

Code	Description	
D1	Modbus® Transmission Control Protocol/Internet Protocol (TCP/IP)	★
D2(1)	OPC DA (OPC UA® available)	★
D3	EtherNet/IP™	★
D4	Modbus TCP/IP, OPC DA	★

Code	Description	
D5	EtherNet/IP, Modbus TCP/IP	★
D6	EtherNet/IP, OPC DA	★
E1(2)	DeltaV™ ready (limited to 100 devices)	★
E2	Ovation™ ready	★
E3	Web server ready	★

(1) *OPC UA Ethernet communication can be enabled by selecting **OPC UA** in the **Features** page of the Gateway Web Interface. D2 option only provides OPC DA capabilities from the factory.*

(2) *The E1 (DeltaV ready) option has some initial limitations due to the DeltaV system's 100 device capacity limit. The Emerson 1410S and 781S can connect to 200 WirelessHART® devices , but the system is limited to 100 devices when used with a DeltaV system.*

Product certifications

Code	Description	
N5	USA Division 2 Non-Incendive & Zone 2 Type ec	★
N6	Canada Division 2 Non-Incendive & Zone 2 Type ec	★
N1	ATEX Type ec	★
N7	IECEx Type ec	★
ND	ATEX Dust	★
NF	IECEx Dust	★
N2	INMETRO Type ec	★
N3	China Zone 2	★
N4	Japan Zone 2	★
NM	Technical Regulations Customs Union (EAC) Zone 2	★
NP	Korea Zone 2	★
NA	No approvals	★

Additional options

Conduit adapters

Code	Description	
J1	CM 20 conduit adapters	★
J2	PG 13.5 conduit adapters	★
J3	¾ NPT conduit adapters	★
J5	CM 20, PG 13.5, & ¾ NPT conduit adapters	★

Gateway redundancy options

Gateway redundancy is not available with wireless configuration option - A6.

Code	Description	
RD(1)	Gateway redundancy	★

(1) *Option RD cannot be selected with communication protocol options D5 or D6 for EtherNet/IP™, or option E1 for DeltaV™ ready.*

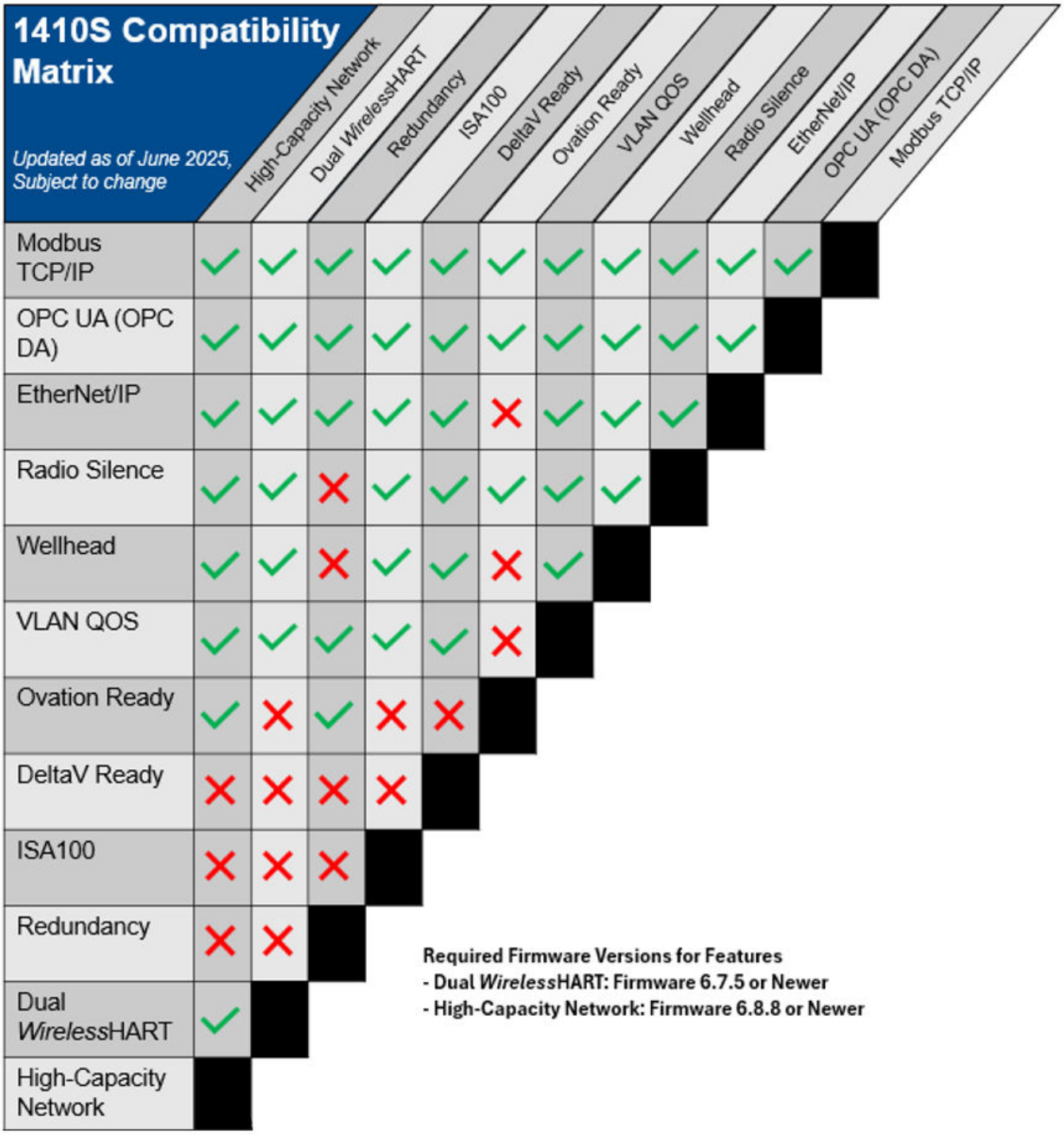
1410S Upgrade Option Files

Part number	Description
01410-1305-0001	1410S *Wireless*HART® & ISA100 firmware upgrade
01410-1305-0002	1410S Dual *Wireless*HART firmware upgrade
01410-1305-0003	1410S High-Capacity Network (500-device) firmware upgrade

Note

When upgrading an existing 1410S with an option file, ensure that the supported firmware version is on the 1410S before installing the option file. Option file requirements can be found on the 1410S Reference Manual or by talking with your local Emerson representative

1410S Configurable Options Matrix



The compatibility matrix above provides a quick look at what options are available with each other. This can assist in determining if your correct 1410S is compatible with new options as well as can provide you with assistance in configuring your 1410S and wireless network.

Emerson Wireless 781S Smart Antenna ordering information

VIEW PRODUCT >

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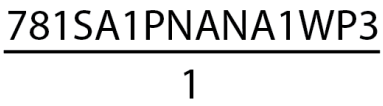
Specifications and options

The purchaser of the equipment must specify and select the product materials, options, and components.

Model code

Model codes contain the details related to each product. Exact model codes will vary; an example of a typical model code is shown in Figure 2.

Figure 2: Model Code Example



1. Required model components (choices available on most)

Optimizing lead time

The starred offerings (★) represent the most common options and should be selected for the fastest delivery. The non-starred offerings are subject to additional delivery lead time.

Required model components

Model

Code	Description	
781S	Wireless Smart Antenna	

Wireless protocol and operating frequency

Code	Description	
A	*Wireless*HART®, user configurable transmit rate, 2.4 GHz direct sequence spread spectrum (DSSS), IEC 62591	★

Code	Description	
C	ISA100, user configurable transmit rate, 2.4 GHz DSSS, IEC 62734	

Communication

Code	Description	
1	Legacy RS-485 communication	★

Housing style

Code	Description	
P	Engineered polymer with terminal block and 30-ft. (9 m) cable	★
T(1)	Engineered polymer with terminal block only	★

(1) *Currently unavailable with Product certification options I2 and I4.*

Product certifications

Code	Description	
I5	USA Intrinsically Safe	★
I6	Canada Intrinsically Safe	★
I1	ATEX Intrinsic Safety	★
I7	IECEx Intrinsic Safety	★
I2(1)	INMETRO Intrinsic Safety	★
I3	China (NEPSI) Intrinsic Safety	★
I4(1)	Japan Intrinsic Safety	★
IM	Technical Regulation Customs Union (EAC) Intrinsic Safety	★
IP	Korea Type n	★
KD	USA & Canada Intrinsically Safe, ATEX Intrinsic Safety	★
KL	USA & Canada Intrinsically Safe, ATEX & IECEx Intrinsic Safety	★
NA	No approvals	★

(1) *I2 and I4 options may have legacy design depending on time of ordering. Please reach out to your local Emerson representative with any questions.*

Wireless network capacity

Code	Description	
NA1	200 device *Wireless*HART® network	★
NA5	25 device *Wireless*HART network	★
NC1	99 device ISA network	★

Wireless antenna options

Code	Description	
WP3	Internal antenna	★

Code	Description	
WE3	Remote antenna kit with extended range, high-gain, omni, antenna (6 dB)	
WN3	Remote antenna kit with extended range, high-gain, omni, antenna (8 dB)	

For additional remote antenna options, please reach out to your local Emerson representative.

Remote antenna adapter material options

Code	Description	
M1	Remote antenna adapter, aluminum	
M2	Remote antenna adapter, stainless steel	

Specifications

Emerson Wireless 1410S Gateway

Functional specifications

Power	10.5 - 30 Vdc When using line power, 1410S2 hardware revision 1.0.0 configured with intrinsically safe outputs option *A* can only be powered by 24 Vdc power source. Check label on 1410S2 Gateway to verify hardware revision. Powered via Power over Ethernet (PoE) : 44 - 57 Vdc For best results, use a high quality industrial galvanically isolated power supply rated for at least 15 W to account for initial inrush current during gateway start-up. Overvoltage Category I
Power consumption: intrinsically safe output option *A*	Steady state operating power consumption is 7.5 W when one Emerson 781S Smart Antenna is connected to the gateway and 8 W when two 781S Smart Antennas are connected.(2)
Power consumption: intrinsically safe output option *B* or *N*	Steady state operating power consumption is 6.5 W when one 781S Smart Antenna is connected to the Gateway and 7W when two 781S Smart Antennas are connected.
PoE	Gateway supports IEEE 802.3af PoE as a powered device (PD) on either port.
Environmental	1410S1 operating temperature range: -40 to +158 °F (-40 to +70 °C) 1410S2 operating temperature range: -40 to +149 °F (-40 to +65 °C) 1410S2 hardware revision 1.0.0 operating temperature range limited to -40 to +149 °F (-40 to +65 °C). Check label on 1410S2 Gateway to verify hardware revision. Pollution: Degree 4 Maximum altitude: 5,000 m
Operating humidity range	0 to 99 percent relative non condensing humidity
Antenna options	See Wireless antenna options.

Performance specifications

EMC performance	Meets all industrial environmental requirements of EN61326.
Vibration effect	No effect when tested per the requirements of IEC60770-1 (1999): High vibration level - Field or pipeline (10 to 60 Hz 0.21 mm displacement peak amplitude/60 to 2000Hz 2g)

Physical specifications

1410S1 Indoor Rated Housing

Weight	1.30 lbs. (0.59 kg)
Housing size	5.19 in. x 6.77 in. x 1.83 in. (13.2 cm x 17.2 cm x 4.6 cm)

(2) When operating at ambient conditions below -4 °F (-20 °C), steady state operating power consumption of up to 12 W may be observed for intrinsically safe output option A gateways.

Housing	Engineered polymer
Enclosure rating	See Product Certification section in Emerson Wireless 1410S Quick Start Guide for Ingress Protection requirements.
Mounting style	DIN-rail

1410S2 Outdoor Rated Housing

Weight	2.76 lb. (1.25 kg)
Housing size	6.25-in. x 8.8-in. x 2.5-in. (15.9 cm x 22.4 cm x 6.4 cm)
Housing	Low-copper aluminum
Paint	Polyurethane
Enclosure rating	IP66
Mounting style	Pole mount

Note
For more information on 1410S1 and 1410S2, see Dimensional drawings.

Network specifications

Self-organizing IEC 62591(*Wireless*HART®)	2.4 to 2.5 GHz DSSS
Maximum size for each *Wireless*HART network	Up to 200 devices, increased up to 500 devices with High Capacity option per 781S
Capacity load	Up to 500 wireless devices at 60 seconds Up to 400 wireless devices at 32 seconds Up to 200 wireless devices at 16 seconds Up to 100 wireless devices at 8 seconds Up to 50 wireless devices at 4 seconds Up to 25 wireless devices at 2 seconds Up to 12 wireless devices at 1 second
Supported device update rates	1, 2, 4, 8, 16, 32 seconds or 1 to 60 minutes
Data reliability	Greater than 99 percent
Self-organizing IEC 62734	2.4 to 2.5 GHz DSSS
Maximum size for each IEC 62734 network	Up to 99 devices

System security specifications

EtherNet	Transport Layer Security (TLS) enabled (default) TCP/IP communications
Emerson Wireless Gateway access	Customizable Role-Based Access Control including Administrator, Maintenance, Operator, and Executive. Administrator has complete control of the Gateway and connections to host systems and the self-organizing network.
Internal port and protocol firewall	User configurable TCP ports for communications protocols, including Enable/Disable and user specified port numbers.

Emerson Wireless 781S Smart Antenna

Functional specifications

Wireless output	IEC 62591 (*Wireless*HART®), 2.4 GHz DSSS IEC 62743 (ISA100), 2.4 GHz DSSS
Environmental	0 to 99 percent non-condensing relative humidity 781S Operating Temperature Range: -40 to +149 °F (-40 to +70 °C)
Radio Frequency power output from antenna	Internal antenna (WP3 option): maximum of 40 mW (16 dBm) EIRP 6 dB antenna kit (WE3 option): maximum of 58 mW (17.6 dBm) EIRP 8 dB antenna kit (WN3 option): maximum of 98 mW (19.9 dBm) EIRP
Smart Antenna wiring distance	Wiring distance between Emerson 781S Smart Antenna and 1410S Gateway: Up to 1,312 ft. (400 m) using industrial grade single twisted shielded pair. Use industrial grade cable suitable for hazardous environments with electrical specifications equivalent to Belden 3084A.
Remote antenna wiring distance	Wiring distance between 781S Remote Antenna Adapter and remote antenna: for Emerson-provided remote antenna kits, please make use of all the cable provided.

NOTICE

Do not shorten the cable as this could interfere with country regulations or laws.

Physical specifications

Material selection

Emerson provides a variety of products with various product options and configurations including materials of construction that can be expected to perform well in a wide range of applications. The Rosemount product information presented is intended as a guide for the purchaser to make an appropriate selection for the application. It is the purchaser's sole responsibility to make a careful analysis of all process parameters (such as all chemical components, temperature, pressure, flow rate, abrasives, contaminants, etc.), when specifying product, materials, options and components for the particular application.

Emerson is not in a position to evaluate or guarantee the compatibility of the process fluid or other process parameters with the product, options, configuration or materials of construction selected.

Materials of construction

Enclosure housing	Engineered polymer
Remote antenna adapter (optional)	Aluminum or stainless steel
Mounting	Mounting brackets also permit remote mounting
Size	Diameter 3.7-in. (9.4 cm)
Weight	2.4 lb. (1.1 kg)
Enclosure ratings (Emerson 781S)	Type 4X and IP66/67 rated

Performance specifications

EMC performance Meets industrial environmental requirements of EN61326 and NAMUR NE-21. Temporary self-recovering disruptions may occur under conditions of extreme electrical noise. Employ good shielding and grounding practices to avoid these potential disruptions.

Vibration effect No effect when tested per the requirements of IEC60770-1 (1999):

High vibration level - field or pipeline (10 to 60 Hz 0.21 mm displacement peak amplitude/60 to 2000Hz 2g)

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For more information: **Emerson.com/global**

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