

FloBoss™ 107 IEC 62591 Interface

The IEC 62591 Interface allows a FloBoss 107 Flow Manager (FB107) to communicate with any mix of up to 20 *WirelessHART™* field devices. The module supports monitoring of both the process information contained in the flow computer and the intelligent diagnostic information residing in the *WirelessHART* field devices. The module can also be used for discrete control applications.

The IEC 62591 Interface consists of two parts: the Emerson Wireless 781 Field Link that provides the radio link to the *WirelessHART* field devices, and the IEC 62591 Interface Module that installs into the FB107.



The IEC 62591 Interface module is a key component in the Smart Remote Automation extension of PlantWeb. The IEC 62591 Interface module provides the FB107 with Plantweb® Smart Remote

Automation functionality. This includes the ability to pass HART data bi-directionally through the network to AMST™ Device Manager software.

WirelessHART Networks

WirelessHART networks provide 99.9% network reliability—reliability that is unmatched by other wireless sensor networks. *WirelessHART* networks achieve this performance by being self-organizing and self-healing mesh networks. This means that each device on the *WirelessHART* network has multiple communication paths, and support automatic path configuration. If one path is obstructed, the network automatically re-organizes and transmits data along another

path to achieve a successful transmission. *WirelessHART* networks ensure that you always have access to the field information when you need it.

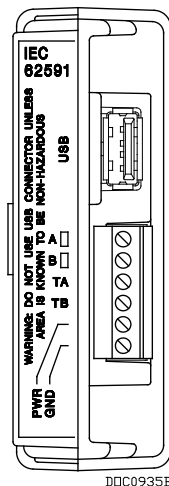
Information transmitted on the *WirelessHART* network is protected by 128-bit encryption, user-definable network key, and frequency-hopping spread spectrum radio signals.

Scalability

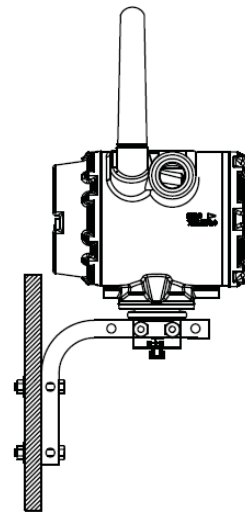
The IEC 62591 Interface is capable of supporting up to 20 wireless field devices. Once your initial network has been installed, it is quick and easy to add additional devices, allowing you to plan a large installation and add devices over time. Once a *WirelessHART* device is configured with the Network ID and Join Key, simply install the device in the field and it is automatically detected and reconciled through ROCLINK™ 800 Configuration Software.

WirelessHART Communication Statistics

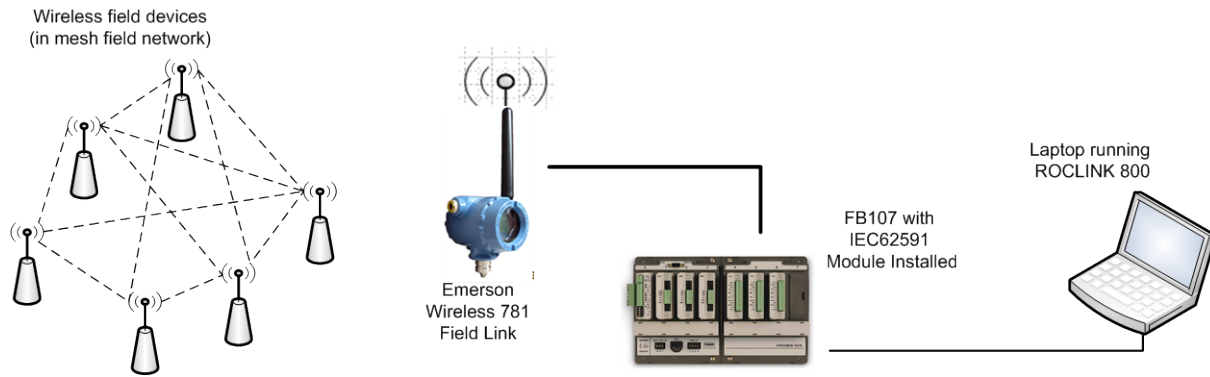
Detailed communication statistics are accumulated for the wireless network. Transmitted and receive data is accumulated for byte, message, session, tunnel, radio and other HART messages.



IEC 62591 Interface Module



Emerson Wireless 781 Field Link



IEC 62591 Interface Self-Organizing Network

WirelessHART Data Access

The IEC62591 Function Block is pre-configured to return the Universal and Common HART parameters including;

- Long Tag
- User Defined Message
- User Defined Descriptor
- Extended Device Type
- Device ID
- Manufacturer ID
- Device Serial Number
- Adapter Type – THUM’s Expanded Device Type
- Adapter ID – THUM’s Device ID
- PV, SV, TV and QV Variable Units
- Slot 0, 1, 2 and 3 Variable Units
- PV, SV, TV and QV Variable Value
- Slot 0, 1, 2 and 3 Variable Value
- Primary Variable Loop Current
- Device Status
- Battery Life

Note: Battery life is calculated by the transmitter. Refer to the transmitter’s manufacturer for details.

- PV Loop current
- Burst Rate
- Variable Status

Installation and Configuration

The IEC 62591 Interface module connects to the Emerson Wireless 781 Field Link through a four-wire connection. This allows the Wireless 781 Field Link to be strategically placed

away from the controller in the optimal location for best network performance. The module provides 12 to 30 Vdc loop-output to power the Wireless 781 Field Link.

After installing the IEC 62591 Interface module and the Wireless 781 Field Link, you configure the FB107 with ROCLINK 800 Configuration Software to act as a gateway device. The FB107 can then receive signals from and transmit signals to *WirelessHART* field devices.

ROCLINK 800 provides you with a list of wireless field devices with the correct Network ID and Join Key. You can choose which of those devices are enabled (commissioned) on the network. You can also configure the update rate for individual devices.

You can install one IEC 62591 Interface module in a FB107. IEC 62591 Interface modules can be installed in any slot.

IEC 62591 Interface modules are hot-swappable, meaning the module can be removed and another module of the same kind can be installed under power. IEC 62591 Interface modules are hot-pluggable, meaning they may be installed directly into unused module slots under power.

The module has a removable terminal block for convenient wiring and servicing. The terminal block can accommodate size 16 to 24 American Wire Gauge (AWG). A USB port is provided on the module to perform firmware updates and to provide debug information to support personnel.

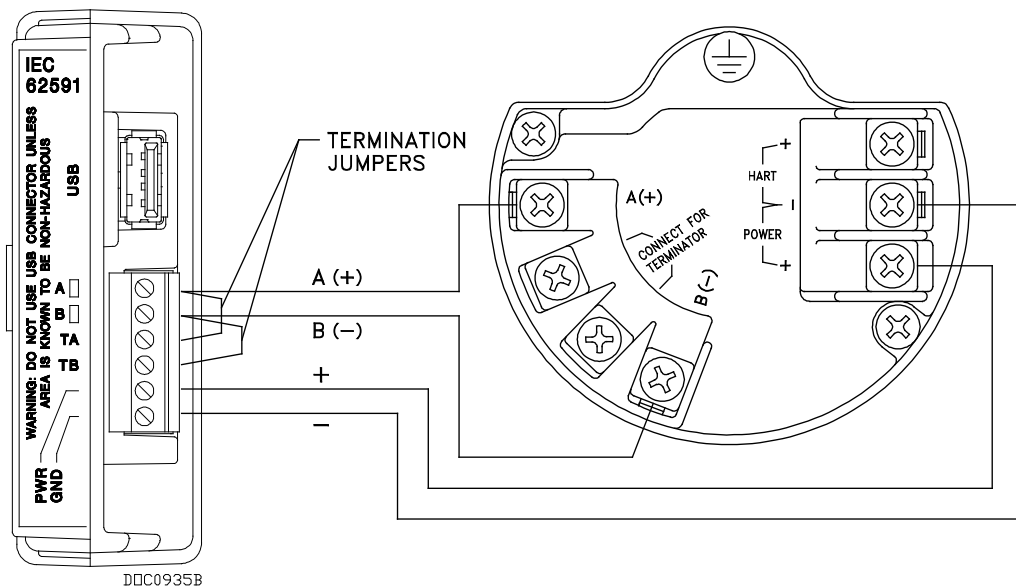
The module is compatible with FB107 with firmware version 1.70 (or higher) and ROCLINK 800 version 2.40 (or higher).

Tested *Wireless*HART Devices

Note: The IEC 62591 Wireless Interface Module is designed to return the process and dynamic variables (PV, SV, TV, QV, SLOT 0, 1, 2, 3) from any device which meets the IEC 62591 specification (HCF_SPEC-285, Revision 2.0). The following table lists the devices which Emerson has tested and supports with the interface. If you have a *Wireless*HART device which does not appear in the table consult with the manufacturer of the device to determine whether the process variable values you want to collect are available through the PV, SV, TV, QV, and SLOT 0, 1, 2, and 3. If the device meets the discrete control specification, it should work with the IEC 62591 Wireless Interface; alternatively, it may be treated like an analog wireless device. Always test any *Wireless*HART devices not listed in table to see whether they work with the IEC 62591 Wireless Interface before you install them in the field. Also, always check with Remote Automation Solutions Lifecycle Services to verify that the firmware version of your device is supported in the IEC 62591 Wireless Interface.

Manufacturer	Model	Manufacturer	Model
Rosemount	248 Wireless Temperature Transmitter	CSI	9420 Wireless Vibration Transmitter
Rosemount	648 Wireless Temperature Transmitter	Rosemount	2160 Wireless Vibrating Fluid Liquid Level Switch
Emerson	Wireless 775 THUM Adapter (tested with 3051)	Rosemount	3308 Wireless Guided Wave Radar Transmitter
Rosemount	3051 Wireless Pressure Transmitter	Rosemount	702 Wireless Discrete Transmitter
Rosemount	2051 Wireless Pressure Transmitter	TopWorx	4310 Wireless Valve Position Monitor (firmware revision 5.0 or greater)
Rosemount	708 Wireless Acoustic Transmitter	Fisher	4320 Wireless Valve Position Monitor (firmware revision 5.0 or greater)

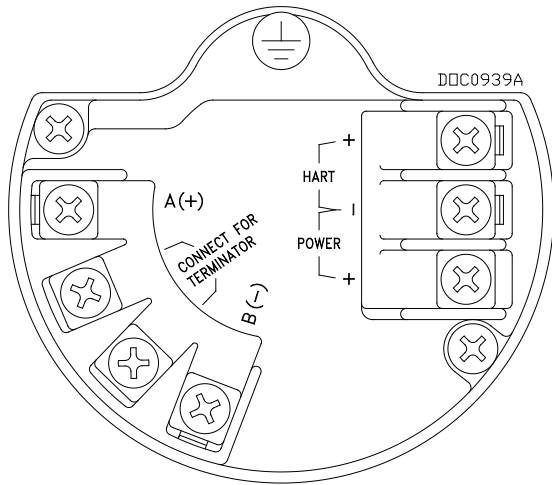
Note: Each THUM adapter supports **only one** wired HART device. The maximum number of THUM devices cannot exceed the maximum number of supported wireless devices. Refer to Emerson’s *Smart Wireless THUM™ Adapter Quick Start Guide*, 00825-0100-4075, for further information.



IEC 62591 Interface Wiring Diagram

Emerson Wireless 781 Field Link

Field Wiring Terminals



Terminal	Label	Definition
1	A (+)	RS-485 (+)
2	CONNECT	Termination
3	CONNECT	Termination
4	B (-)	RS-485 (-)
5	HART +	HART Configurator
6	HART/ POWER -	Input Power Negative
7	POWER +	Input Power Positive

Wireless Communications

Protocol	IEC 62591 (<i>WirelessHART</i> ®) 2.4–2.5 GHz DSSS	
Supported Device Update Rates	1 second to 60 minutes Active Advertising support enable for 30 minutes	
Range (Line of Sight)	Standard Antenna	225 m (750 ft)
	Extended Antenna	800 m (2600 ft)
Security	AES-128 encrypted <i>WirelessHART</i> , including individual session keys Unique join keys and device listing	
Output Power	10 dBm (10mW)	

Wired Communications

Type	4-wire connection to the IEC 62591 Interface module Less than 15 pF/ft capacitance	
Distance	200 m (656 ft) maximum	

Power

Input	Supplied by the 4- wire connection to the IEC 62591 Interface module (10.5 – 30 Vdc)	
Consumption	20 mA at 12 Vdc	

Physical

Dimensions	Wireless Fieldlink	140 mm H by 106.7 mm W by 133.4 mm D (5.51 in H by 4.20 in W by 5.21 in D)
	Standard Antenna	90.2 mm (3.55 in)
	Extended Range Antenna	175.8 mm (6.92 in)
Weight	Aluminum Housing	1.7 kg (3.7 lb)
	Stainless Steel Housing	2.9 kg (6.4 lb)

Wiring	14 – 24 AWG twisted shielded pair
Mounting	All SST, 2-inch pipe mounting and panel mount bracket
Environmental	
Operating Temperature	-40 to 85°C (-40 to 185°F)
Operating Humidity	0 to 90% relative humidity
EMC	Complies with EN613261:2006
Approvals	
Telecommunication Compliance	All wireless devices require certification to ensure that they adhere to regulations regarding the use of the RF spectrum. Nearly every country requires this type of product certification. Emerson is working with governmental agencies around the world to supply fully compliant products and remove the risk of violating country directives or laws governing wireless device usage.
FCC and IC	This device complies with Part 15 of the FCC Rules. Operation is subject to the following conditions: This device may not cause harmful interference. This device must accept any interference received, including interference that may cause undesired operation. This device must be installed to ensure a minimum antenna separation distance of 20 cm from all persons.
ETSI	With firmware of version 1.11 and higher, this device complies with ETSI EN 300 328 V1.8.1.
Ordinary Location Certification for FM	As standard, the Gateway has been examined and tested to determine that the design meets basic electrical, mechanical, and fire protection requirements by FM, a nationally recognized testing laboratory (NRTL) as accredited by the Federal Occupational Safety and Health Administration (OSHA).
North American Certifications	15 FM Intrinsically Safe, Non-Incendive, and Dust Ignition-proof Certificate Number: 3040398 Intrinsically Safe for Class I, II, III, Division 1, Groups A, B, C, D, E, F, and G. Zone Marking: Class I, Zone 0, AEx ia IIC Temperature Codes T4 (Tamb = -40 to 70 °C) Non-Incendive for Class I, Division 2, Groups A, B, C, and D. Dust Ignition-proof for Class II, III, Division 1, Groups E, F, and G. Ambient temperature limits: -40 to 70 °C Enclosure Type 4X, IP66/67
Certification Standards	When installed per Rosemount Drawing 00781-1010: 3600:1998, 3610:2010, 3611:2004, 3810:2005, ANSI/NEMA 250:2003, ANSI/IEC 60529:2004

Special Conditions of Certification	<ol style="list-style-type: none"> 1. The Wireless 781 Field Link housing contains aluminum and is considered a potential risk of ignition by impact or friction. Take care during installation and use to prevent impact and friction. 2. The surface resistivity of the unit is greater than one gigaohm (GΩ). To avoid electrostatic charge build-up, do not rub or clean the unit with solvents or a dry cloth. 3. The 781 Field Link will not pass the 500Vrms dielectric strength test and this must be taken into account during installation.
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CSA Intrinsically Safe	<p>Certificate Number: 2330424</p> <p>Intrinsically Safe for Class I, Division 1, Groups A, B, C, and D.</p> <p>Temp Code T3C</p> <p>Enclosure Type 4X, IP66/67</p> <p>When installed per Rosemount Drawing 00781-1010</p>
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European Union Directive Information	<p>The EC declaration of conformity for all applicable European directives for this product can be found on the Rosemount website at www.rosemount.com. A hard copy may be obtained by contacting your local sales representative.</p> <p>ATEX Directive (94/9/EC)</p> <p><i>Emerson Process Management complies with the ATEX Directive.</i></p> <p>Electro Magnetic Compatibility (EMC) (2004/108/EC)</p> <p><i>Emerson Process Management complies with the EMC Directive.</i></p> <p>Radio and Telecommunications Terminal Equipment Directive (R&TTE) (1999/5/EC)</p> <p><i>Emerson Process Management complies with the R&TTE Directive</i></p>
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European Certification	<p>I1 ATEX Intrinsic Safety</p> <p>Certificate Number: Baseefa11ATEX0059X</p> <p>II 1G Ex ia IIC T4 Ga (Tamb = -40 °C to 70 °C)</p> <p>Enclosure Type IP66/67</p> <p>When installed per Rosemount Drawing 00781-1024</p> <p>CE 1180</p>
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Input/Output Parameters	Input / Power	Input / RS485	Output / RS485
	Ui = 30 V	Ui = 11 V	UO = 7.14 V
	Ii = 200 mA	Ii = 300 mA	IO = 112 mA
	Pi = 1.0 W	Pi = 1.0 W	PO = 1.0 W
	Ci = 0	Ci = 5.1 nF	Ci = 0
	Li = 0	Li = 0	Li = 0
			CO = 13.9 μF
			LO = 0

European Certification (continued)	Special Conditions for Safe Use (X)	<ol style="list-style-type: none"> 1. The plastic antenna may present a potential electrostatic ignition hazard and must not be rubbed or cleaned with a dry cloth. 2. The Wireless 781 Field Link enclosure is made of aluminum alloy and is given a protective polyurethane paint finish; however, care should be taken to protect it from impact or abrasion if located in a zone 0 environment. 3. The device is not capable of withstanding the 500V isolation test required by EN60079-11:2007 Clause 6.3.12. This must be taken into account when installing the device.
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IECEX Intrinsic Safety	<p>Certificate Number: IECEx BAS 11.0028X</p> <p>Ex ia IIC T4 Ga (Tamb = -40 °C to 70 °C)</p> <p>Enclosure Type IP66/67</p> <p>When installed per Rosemount Drawing 00781-1024</p>		
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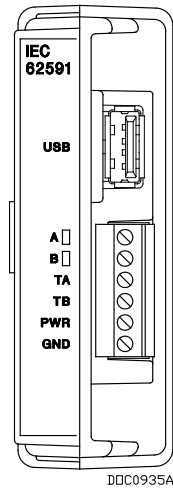
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Combination Certification	KL Combination of I5, I6, I1, and I7
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FloBoss 107 IEC 62591 Interface Module

Field Wiring Terminals



Terminal	Label	Definition
USB	USB	USB 2.0
1	A	RS-485 (+)
2	B	RS-485 (-)
3	TA	Termination A
4	TB	Termination B
5	PWR+	Output Power (+)
6	PWR-	Output Power (-)

Communications

Quantity	1
Type	4-wire connection to the Emerson Wireless 781 Field Link
Max. Number of Wireless Field Devices per Module	20
Max. Number of Modules per FB107	1

USB Port

Quantity	1
Type	USB 2.0 specification
Use	Firmware upgrades and troubleshooting report



Warning Do not use USB connector unless the area is known to be non-hazardous.

Power

Loop Output Power	12 to 30 Vdc		
Consumption	Main power supply loading at the Battery Terminals (at 12.0 Vdc)	Typical	79 mA at 12 Vdc
	Additional loading that may apply	USB Connection	25 mA at 12 Vdc

Physical

Dimensions	26 mm W by 75 mm H by 133 mm D (1.03 in. W by 2.96 in. H by 5.24 in. D)
Weight	113 g (4.0 oz)
Wiring	16 – 24 AWG twisted shielded pair
LEDs	RS-485 transmit and receive

Environmental

Same as the FB107 in which it is installed.

Approvals

Same as the FB107 in which it is installed (with the exception of ATEX certification).

For customer service and technical support, visit www.EmersonProcess.com/Remote/Support.

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