

The Bullet™ WirelessHART™ Adapter For Use with Wired HART® Field Devices, Model 1101

WirelessHART



Overview

The Bullet™ enables existing wired HART field devices to communicate with host applications by means of WirelessHART™ technology. The Bullet is installed permanently by screwing it directly into an available spare port of HART field device, or using a short, right angle elbow conduit. Other installation options are possible anywhere on the loop using a junction box or T-fitting. A wired HART field device retrofitted with a Bullet communicates its PV over the existing wiring to DCS and simultaneously communicates diagnostic and alarm data over the WirelessHART network to process management, asset management and engineering applications. The Bullet has options for power scavenging or local/direct power. The Bullet when powered by the current loop saves users the long term cost of battery maintenance, replacement and disposal programs. The Bullet Local/Direct power option can be used when the field device is powered either by a power supply or an external battery/solar system. In the case of external battery power, the Bullet provides battery power management by cycling the field device power and taking periodic readings.

Typical Use Cases

- Upgrade legacy wired HART analog only field devices with WirelessHART communication capability to enable 24/7 monitoring of alarms and diagnostic information
- Low cost / low risk means to test and evaluate WirelessHART networks in a plant
- Substitute for multiplexers or legacy DCS upgrade to HART enabled IO.
- External Battery powered wireless remote I/O data collection

Features

- HART 7.1 Registered with HCF = fully HART compliant for communication reliability when the WirelessHART test suite is available
- Loop powered – no batteries or other power sources required
- Connects directly to HART field device and optionally anywhere on the 4-20 mA control loop
- MACTek patent pending StepVolt™ technology sets insertion voltage in steps from 1 to 2.5 volts to optimize trade off between available loop power and Wireless communication bandwidth
- Direct Power option when local DC power is available: system power, external battery/solar system
 - Internal 250 ohm loop current sense resistor provided, configurable by WirelessHART command.
 - In Direct Power mode, can switch field device on/off to take periodic readings to save power.
- Multidrop support for up to 8 devices (DIRECT POWER) and 6 devices (LOOP POWER)
- 200+ meters open air range
- Intrinsically Safe, Explosion - Flame Proof design suitable for use in hazardous areas.



MACTek Corporation
7380 Stoneham Road, Gates Mills, OH 44040 USA
+1 440 423-0955 (voice) +1 440 423-0967 (fax)
tholmes@mactekcorp.com

Technical Specifications

System	
Platform	WirelessHART capable network
Compliance	Fully compliant HART 7.1 device, complies with HART 7.1 Wireless Adapter device type. Backward compatible to HART 5 devices
HART Sub-Devices	Supports 6 to 8 Wired HART sub-devices with a single Bullet
RF	
Range	200 meters (outdoors, open air, nominal)
Operating Frequency	2.4GHz
RF Output Power	10dBm
Electrical	
Series Loop Voltage Drop	1.0VDC – 2.5VDC, user settable in 0.5VDC steps.
Series Loop Operating Current	3.2 ma to 25 mA DC operating; Protected against overvoltage, over-current, and reverse connections.
Ext Power Operating Voltage	+7VDC to +32VDC, Reverse voltage protection
Ext Power Operating Current	Typical < 1mA, Max: 20 mA
HART Output Level	Fully HART compliant trapezoidal wave @ 1200/2200 Hz
Multi-Drop (Direct Power)	32mA DC maximum, 8 devices at 4mA DC
Multi-Drop (Loop Power)	24mA DC maximum, 6 devices at 4mA DC
Loop Current Monitoring	3.2mA to 22mA DC
Environmental	
Operating Temperature	-40° to +80°C with T4 & T5: T6
Hazardous Location	
General Purpose	
Humidity: realtive	100%
Storage Temperature	-40° to +85°C
Physical Dimensions	
Dimensions	Height : 100 mm , Diameter : 60.8 mm , Weight : 0.46 kg
Enclosure	Housing: Metal, aluminum alloy, powder coated surface. Dome: propriety resin
Connection	One, Male ½" NPT with internal poured seal
Field Termination	5 lead wires x 600mm (24") long extend from male ½" NPT opening 5 leads: 4 signal and 1 internal earth grounding connection Enclosure: 1 external earth grounding screw
Certifications Sought	
US / CANADA DIVISIONS	Explosion Proof, Intrinsically Safe Class I, Division 1 GROUPS A, B, C & D, Class II & III, Division 1 GROUPS E, F & G Non-incendive Class1 - Division 2 GROUPS A,B,C,D
US ZONES	Class I Zone 0,1 AEx 1/2 G ia d IIC Class I Zone 2 AEx nL IIC Class I Zone 20/21 AEx iaD 20 tD 21
CANADA ZONES	Class I, Zone 0,1 Ex 1/2 G ia d IIC Class I, Zone 2 Ex nL IIC Class I Zone 20/21 Ex 12 iaD A20 tD 21
CENLEC	Ex 1/2 GD EEx ia d IIC , Ex 3G EEx nL IIC , EEx iaD A20 tD A21
IEC	Ex 1/2 GD Ex ia d IIC, Ex 3G Ex nL IIC , Ex iaD A20 tD A21
RADIO / EMC	FCC Part 15, IC, CE
Enclosure Ratings	IP68 , NEMA 4X

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