DIN RANGER

LTE-M/NB-IoT Cellular Hub with MQTT/Sparkplug

MODBUS TO CELLULAR WITH MQTT/SPARKPLUG

LOW POWER REQUIREMENTS (2.5MA)

INTEGRATED ANALOG AND DISCRETE INPUTS

MQTT & SPARKPLUG-READY

CLASS I DIVISION 2

DESCRIPTION

The DIN RANGER is part of SignalFire's sensor-to-cloud family of cellular transmitters. Its primary use is to integrate with Modbus RTU devices offering bi-directional connectivity over cell networks (LTE-M or NB-IoT). Modbus registers are converted into MQTT/SparkPlug messages allowing for plug-and-play use with the SignalFire Cloud web application or other hosts such as Inductive Automation Ignition, Wonderware, Microsoft Azure, Cygnet, OSI Soft PI, etc. The DIN form factor makes it convenient to be fitted inside of a panel and requires less than 2.5mA of external DC power. In addition to the RS485 Modbus port, the DIN RANGER also offers 3 digital inputs (dry contact or pulse measuring), 3 analog inputs, and 1 relay output.

FEATURES

- Modbus interface RS485 RTU
- Auto detection of cellular network (LTE-M or NB-IoT)
- Wired inputs/outputs: 3DI, 3AI, 1DO
- Plug-And-Play with SignalFire Cloud
- MQTT/SparkPlug communication
- Various options for high-gain cellular antenna
- GPS Radio for location management
- Configurable MQTT broker with fall back
- Monitoring & alarming services using SignalFire Cloud

RANGER FAMILY

RANGER Multi-Input Node

This version of the RANGER is perfect for those outdoor and remote applications where you need to power sensors and transmit the measurements securely to a cloud server. It offers connectivity for analog, discrete, pulse, HART, Modbus, SDI12 and a controllable relay.

DIN RANGER

This RANGER is great to be coupled with a Modbus signal inside of a cabinet where power is available. It will translate & transmit your Modbus registers into MQTT/SparkPlug over an LTE-M or NB-IoT network and comes with 3 analog inputs, 3 digital inputs, and 1 output provide for more greater measurement flexibility.

RANGER 900

This RANGER combines cellular and 900MHz technology into one user friendly package to measure and monitor several SignalFire 900MHz nodes using one cellular and cloud data plan.

Pressure RANGER

This RANGER integrates a pressure sensor offered with ranges from 2psi to 20,000 psi. The Pressure RANGER can report by exception and change its reporting cadence.

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TECHNICAL SPECIFICATIONS

Operating Temp
-40°F to 185°F (-40°C to 85°C)

Humidity
0% – 95% non-condensing

Power Requirements
8-28Vdc

Average Power Consumption
- 2.5mA average @ 12Vdc plus sensor current (250mA peak)
- 2mA @ 24Vdc plus sensor current (250mA peak)

Data Interface
- RS-485 Modbus RTU
- 32 registers or 96 registers assignable across 8 devices.
- Micro USB for local configuration.
- All readings are automatically converted to MQTT/SparkPlug.

Cellular Specification
- LTE Band support: Cat-M1 / NB-IoT: B1, B2, B3, B4, B5, B8, B12, B13, B14, B17, B20, B25, B26, B28, B66

- Supports 4FF SIM type
- Data secured by TLS
- PTCRB certified

Antenna Type
Directional or Omnidirectional (SMA Connector)

Cellular Radio Power
23 dBm

Configuration
- Local with micro-USB cable using RANGER Toolkit software
- Remote over-the-air using SignalFire Cloud or MQTT/SparkPlug-ready host

Estimated Monthly Data Usage
32 Registers + I/O
1 Min = 38Mb
5 Min = 7.6Mb
15 Min = 2.6Mb
60 Min = 0.7Mb

Enclosure
- Powder coated metal
- Metal DIN connector

Electrical Connections
Pluggable terminal block, 16-30 AWG screwed terminals

Safety Rating
Class 1 Division 2 Certified, Groups A, B,C, D. Temperature Code T5. Certified to CSA C22.2 No. 213:2017, Conforms to UL 121201:2017, CE Approved

Internal Diagnostics
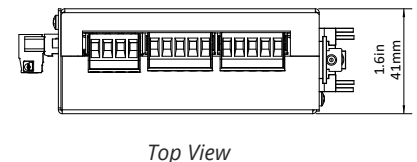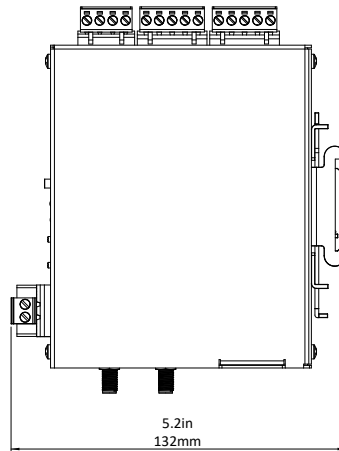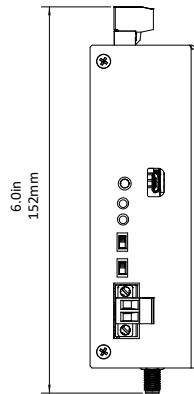Line voltage, signal strength, error conditions, internal event logging, Modbus communications

Inputs & Outputs
- Three (3) digital inputs report state, total counts, frequency (2kHz max), volume total with K factor, daily runtime operations in seconds
- One (1) latching relay output (2A @30Vdc, 0.3A @ 110Vac)
- Three Analog inputs. One 4-20mA, two selectable 4-20mA or 1-5V inputs. Passive or active. 13Vdc or 18Vdc available for loop-powered transmitters

DIMENSIONS

Weight
2 lbs (0.8kg)

6.0in
152mm

5.2in
132mm

1.6in
41mm

Top View

SIGNALFIRE
— WIRELESS TELEMETRY —

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HOW TO ORDER

RANGER – DIN – ☐ – ☐ – ☐ – ☐ – ☐ – ☐ – ☐

Power Source
DC = 10-30Vdc input ready

Antenna
Ext = External LTE & GPS SMA Connector

HW Option
StdIO/Modbus = 1 Modbus Serial input, 3 Analog Inputs,
3 Digital Inputs, 1 Relay Output

SIM Card
NoSIM = No SIM Card. No SignalFire Cloud. User
provides LTE CAT M1 SIM Card
VZSIM1 = VERIZON LTE CAT M1 SIM - 1 Year Data
Plan, SignalFire Cloud Connectivity
VZSIM3 = VERIZON LTE CAT M1 SIM - 3 Year
Data Plan, SignalFire Cloud Connectivity
ATTSIM1 = AT&T LTE CAT M1 SIM - 1 Year Data
Plan, SignalFire Cloud Connectivity
ATTSIM3 = AT&T LTE CAT M1 SIM - 3 Year Data
Plan, SignalFire Cloud Connectivity
BellSIM1 = Bell Canada LTE CAT M1 SIM - 1 Year
Data Plan, SignalFire Cloud Connectivity
BellSIM3 = Bell Canada LTE CAT M1 SIM - 3 Year
Data Plan, SignalFire Cloud Connectivity
SFCloud1 = No SIM Card. 1 year SignalFire Cloud.
User provides LTE CAT M1 SIM Card
SFCloud3 = No SIM Card. 3 year SignalFire Cloud.
User provides LTE CAT M1 SIM Card

Subscription Data Option
N = N/A
MB32 = 32 Modbus values
MB96 = 96 Modbus values
MB96/3 = 96 Modbus values, 3-yr plan

Report Interval
N = N/A
STD = 60 seconds minimum
Fast = 15 seconds minimum
Fast/3 = 15 seconds minimum, 3-yr plan
Ultra = 5 seconds minimum
Ultra/3 = 5 seconds minimum, 3-yr plan

Custom Configuration*
N = None

* Consult factory to discuss if
custom configuration is neeed.

DIAGRAM