

# DIN RANGER

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

MODBUS TO CELLULAR WITH MQTT/SPARKPLUGB

LOW POWER REQUIREMENTS (2.5MA)

INTEGRATED ANALOG AND DISCRETE INPUTS

MQTT & SPARKPLUGB-READY

CLASS I DIVISION 2 (PENDING)



## 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/SparkPlugB 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/SparkPlugB 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/SparkPlugB 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

8-28 VDC

### 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/SparkPlugB.

### 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/SparkPlugB-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 I Division 2 Certified, Groups A, B, C, D (pending)

### Internal Diagnostics

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

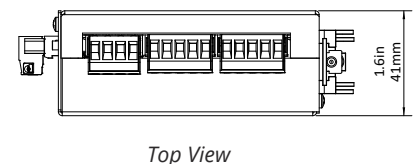
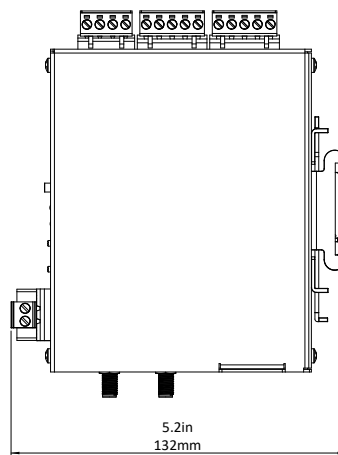
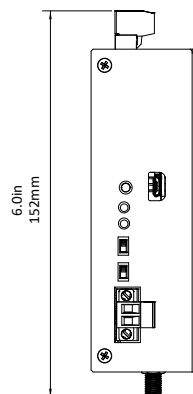
### Inputs & Outputs

- Three (3) digital inputs report state, total counts, frequency (2kHz max), volume total with K factor
- 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
- I/O Expansion using SignalFire output module (8 analog outputs / 2 relay outputs)

## DIMENSIONS

### Weight

2 lbs (0.8kg)



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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  
 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

**Customer Configuration\***  
N = None  
\*Consult factory to discuss if custom configuration is needed.

**Subscription Type**  
 N = No Subscription  
 MB32 = 32 Modbus values  
 MB96 = 96 Modbus values

**Report Interval**  
 N = n/a  
 STD = 60 seconds minimum  
 Fast = 15 seconds minimum  
 Ultra = 5 seconds minimum

## DIAGRAM

