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/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/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.
**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

**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)

**Enclosure**
- Powder coated metal
- Metal DIN connector

**DIMENSIONS**

**Weight**
2 lbs (0.8kg)
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 Outputs, 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

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

**Customer Configuration**
- N = None

* Consult factory to discuss if custom configuration is needed.

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

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**Diagram**

- [Diagram showing the components and connections of the DIN RANGER LTE-M/NB-IoT Cellular Hub with MQTT/SparkplugB]