Serial Gateway with Onboard I/O

Primary Data Collection Point
The OleumTech® DH1 Wireless Gateway plays an integral role in the OTC Sensor & I/O Network by being able to wirelessly collect critical process data from OTC Wireless Transmitters, I/O Modules, and other Gateways. The data is stored in its 320-point Modbus register holding table.

Peer-to-Peer Advanced Networking
In the OTC Sensor Network, multiple Wireless Gateways can be placed into the same network to form a much larger sensor network. All Gateways can have their own set of Transmitters and they have the ability to communicate with other Gateways in the network. With this powerful advantage, you can setup sophisticated I/O distribution systems and migrate data with extreme flexibility, scalability and ease.

Serial Interface
With the provided RS232/RS485 configurable Serial port, the DH1 can virtually interface with any third-party Modbus device either as a master or slave device. The DH1 can also be configured as a LevelMaster ASCII slave or ROC Link master. Its dedicated RS485 port (RJ-45) can be utilized for connecting to other Serial devices.

Onboard I/O
Unlike other OTC Wireless Gateways, the DH1 is equipped with onboard I/O comprised of 4x analog inputs (0-5 Vdc), 2x digital inputs, and 2x digital outputs. If additional I/O points are needed, OleumTech offers a Modular I/O Expansion System via RS485 connection for use with the DH1 for added versatility.

Highlights
- Wirelessly gather/distribute sensor data
- Map I/O anywhere within the network
- Modbus master/slave functionality
- 1x configurable Serial port (RS232/RS485)
- 1x dedicated RS485 port (RJ-45)
- 4x analog inputs (0-5 Vdc)
- 2x discrete inputs & 2x discrete outputs
- -40 °C to 80 °C
- 900 MHz / 2.4 GHz / 868 MHz
- Secure AES encryption
- Class I, Division 2 (Zone 2) certified
HARDWARE FEATURES

Device Functionality
- Wireless Gateway with Onboard I/O and I/O Expansion Capabilities

Embedded Controller
- 32-bit Low Power ARM7 Microcontroller with Internal FLASH (Field Upgradeable)
- RTU Port (RS232/RS485) Terminal Block
- Modbus Master/Slave, LevelMaster ASCII Slave, ROC-Link Master (Supports Opcodes 17 and 18)
- RS485 Expansion Port - Modbus Master or Slave (RJ-45)

I/O Interfaces
- 4x Analog Inputs (0-5 Vdc) with 12-bit ADC
- 2x Discrete Inputs (0-24 Vdc) for Dry Contact Relay or Open-Drain Output Devices
- 2x Open-Drain Outputs (Imax = 240 mA (Continuous Sink Current @ 80 °C), Vmax = 24 Vdc)

Configuration
- Config / Debug Port - RS232 Slave Only (RJ-45)
- BreeZ® Software for PC

WIRELESS COMMUNICATIONS

Type: 900 MHz / 915 MHz
- 900 MHz: FHSS (Frequency Hopping), FSK, AES Encryption 256-bit (900 MHz), 128-bit (915 MHz)
- 2.4 GHz: DSSS (Direct-Sequence), AES Encryption 128-bit
- 868 MHz: LBT (Listen Before Talk), AFA (Adaptive Frequency Agility), AES Encryption 128-bit

Bit Rate
- 900 MHz: 9600 bps / 115.2 kbps
- 2.4 GHz: 250 kbps
- 868 MHz: 80 kbps

Output Power (Max)
- 900 MHz: 1000 mW
- 2.4 GHz: 63 mW
- 868 MHz: 25 mW

Receiving Sensitivity
- 900 MHz: Up to 40 Miles / 64 km with Clear Line of Sight
- 2.4 GHz: Up to 7500 Feet / 1.4 Miles / 2.3 km with Clear Line of Sight
- 868 MHz: Up to 5.2 Miles / 8.4 km with Clear Line of Sight

CERTIFICATIONS & COMPLIANCE

- FCC Part 15 (USA), IC ICES-003 (Canada), ACMA (Australia)
- AS/NZS CISPR 32 (Australia), EN55032 & EN55024 (EU)
- Class I, Division 2, Groups A, B, C, D T4; Ex nA IIC T4
- Class I, Zone 2 AEx nA IIC T4 / 9-30 Vdc
- ATEX: Sira 14ATEX4143X; Ex nA IIC T4 Gc
- IECEx: SIR 13.0055X; Ex nA IIC T4 Gc / 9-30 Vdc

MECHANICAL SPECIFICATIONS

Dimensions
- 4.9” (W) x 3” (H) x 1.4” (D) / 124.5 mm (W) x 76.2 mm (H) x 35.6 mm (D)

Package Dimensions
- Net: 8” (W) x 6” (H) x 2.5” (D) / 203 mm (W) x 152 mm (H) x 63 mm (D)

Package Weight
- ~1 lbs / 0.4 kg

Mounting
- DIN Rail Mountable with Height Adjustability

ELECTRICAL SPECIFICATIONS

DC Power Input
- 9-30 Vdc

Average Power Input
- 2 Watt

Power Consumption @ 12 Vdc
- Idle: 63 mA; Transmission: 348 mA @ 1 Watt

Power Consumption @ 24 Vdc
- Idle: 46 mA; Transmission: 174 mA @ 1 Watt

GENERAL SPECIFICATIONS

Operating Conditions
- Temperature: Class I, Div 2 (Zone 2): -40 °F to 176 °F (-40 °C to 80 °C)
- Humidity: 0 to 99 %, Non-Condensing

Warranty
- 2-Year Parts and Labor

Country of Origin
- USA

ORDERING INFORMATION

Model Numbers
- WG-0900-DH1, WG-0915-DH1, WG-2400-DH1, WG-0868-DH1

Wirelessly Connects To
- OTC Wireless Devices (Gateways, Transmitters, I/O Modules)

Configuration Cable
- SX1000-CC2, 20-ft All-in-One Configuration Cable

Networking Diagram

DH1 shown with optional omni-directional antenna.

OTC GATEWAY - DH1

PC

RS232/RS485

OTC TRANSMITTERS

PLC/RTU/EFM/HMI/RF MODEM

or Other Modbus Master/Slave Device, LevelMaster, ROC-Link Slave, Field Asset

SCADA/CLOUD

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