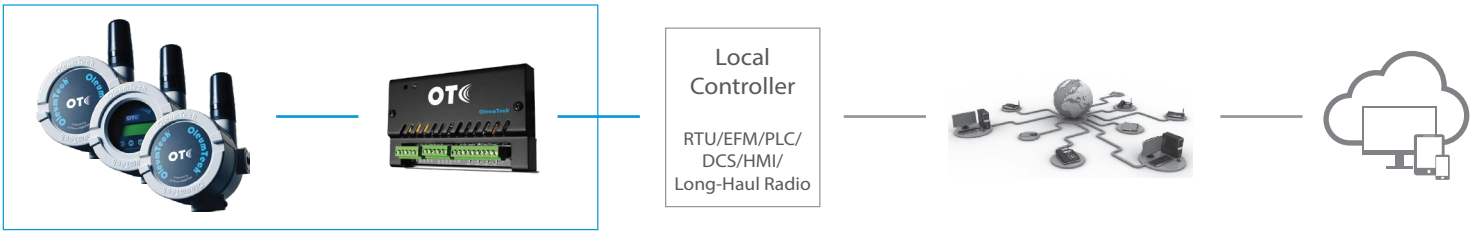
DATASHEET

DH1

Highlights

- Wirelessly gather/distribute sensor data
- Map I/O anywhere within the network
- Modbus Master/Slave functionality
- Supports local Over-the-Air (OTA) functionality for updating OleumTech wireless devices (OTA Link Adapter required)*
- 1 configurable Serial/RTU port (RS232/RS485)
- 1 dedicated RS485 port (RJ-45)
- 4 analog inputs (0-5 Vdc)
- 2 discrete inputs & 2 discrete outputs
- -40 ˚C to 80 ˚C (-40 ˚F to 176 ˚F)
- 900 MHz / 915 MHz / 2.4 GHz / 868 MHz
- Secure AES encryption
- Class I, Division 2 (Zone 2) certified

US Patent #6,967,589



OTC Transmitters | OTC Gateway | Network Infrastructure | Cloud (Analytics)

Serial Gateway with Onboard I/O

Primary Data Collection Point

The OleumTech® DH1 Wireless Gateway plays an integral role in the OTC Wireless Sensor and I/O Network. It possesses the ability to aggregate data from OTC wireless transmitters and I/O modules onto its 320-point register holding table. Third-party devices can access the data over the Modbus or LevelMaster ASCII protocol.

Serial Interfaces

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 another Serial device.

Advanced Peer-to-Peer Networking

Deploy multiple gateways to the OTC platform, creating a custom, highly scalable network. The gateways have the ability to communicate with one another. Leverage the peer-to-peer technology and funnel data to the primary gateway, optimizing network efficiency and/or designing an extremely flexible I/O mapping system across the entire wireless network.

Onboard I/O

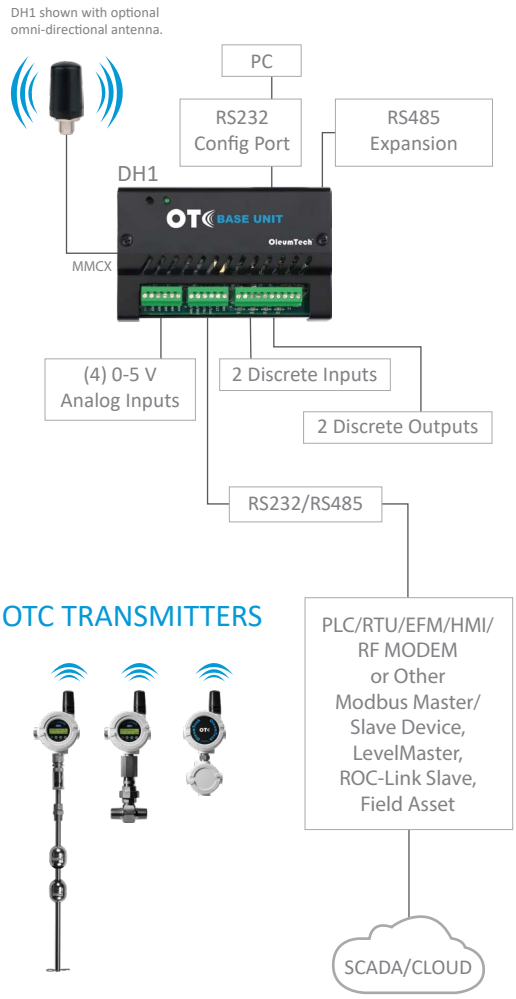
The DH1 is equipped with onboard I/O, comprised of 4 analog inputs (0-5 Vdc), 2 digital inputs, and 2 digital outputs. If additional I/O points are needed, integrate the OleumTech RS485 Modular I/O Expansion System with the DH1 or any other gateway for added versatility.

Technical Specifications

HARDWARE FEATURES	
Device Functionality	· Serial Wireless Gateway with Onboard I/O
Embedded Controller	· 32-bit Low Power ARM7 Microcontroller with Internal FLASH (Field Upgradeable)
Serial Interfaces	· RTU Port (RS232/RS485) Terminal Block · Modbus Master/Slave, LevelMaster ASCII Slave, ROC-Link Master (Supports Opcodes 17 and 10) · RS485 Expansion Port - Modbus Master or Slave (RJ-45)
I/O Interfaces	· 4 Analog Inputs (0-5 Vdc) with 12-bit ADC · 2 Discrete Inputs (0-24 Vdc) for Dry Contact Relay or Open-Drain Output Devices · 2 Open-Drain Outputs (Imax = 240 mA (Continuous Sink Current @ 80 °C), Vmax = 24 Vdc) Devices for Controlling External Devices (Valves, Relays, Etc.)
Configuration	· Config / Debug Port - RS232 Slave Only (RJ-45) / BreeZ® Software for PC
WIRELESS COMMUNICATIONS	
Radio Band	· ISM Band (License-Free)
900 MHz / 915 MHz	· FHSS, FSK, AES Encryption 256-bit (900 MHz), 128-bit (915 MHz)
2.4 GHz	· DSSS, AES Encryption 128-bit
868 MHz	· LBT-AFA, AES Encryption 128-bit
Bit Rate	· 900/915 MHz: 9600 bps / 115.2 kbps; 2.4 GHz: 250 kbps; 868 MHz: 80 kpbs
Output Power (Max)	· 900/915 MHz: 1000 mW; 2.4 GHz: 63 mW; 868 MHz: 25mW
Receiving Sensitivity	· 900/915 MHz: -110 dBm @ 9600 bps, -100 dBm @ 115.2 kbps · 2.4 GHz: -101 dBm @ 250 kbps; 868 MHz: -106 dBm @ 80 kbps
RF Range	· 900/915 MHz: Up to 40 Miles / 64 km with Clear Line of Sight[1] (Gateway to Gateway) · 900/915 MHz: Up to 7500 Feet / 1.4 Miles / 2.3 km with Clear Line of Sight[1] (Transmitter to Gateway) · 2.4 GHz: Up to 4.3 Miles / 7 km with Clear Line of Sight[1] (Gateway to Gateway) · 868 MHz: Up to 5.2 Miles / 8.4 km with Clear Line of Sight[1] (Gateway to Gateway)
CERTIFICATIONS & COMPLIANCE	
EMC/EMI	· FCC Part 15 (USA), IC ICES-003 (Canada), ACMA (Australia) · AS/NZS CISPR 32 (Australia), EN55032 & EN55024 (EU)
Safety	· Class I, Division 2, Groups A, B, C, D T4; Ex nA IIC T4 · Class I Zone 2 AEx nA IIC T4 · ATEX: Sira 14ATEX4143X; II 3 G Ex nA IIC T4 Gc · IECEx: SIR 13.0055X; Ex nA IIC T4 Gc
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	· 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	· 900/915 MHz @ 1000 mW: Receive Avg 63 mA, Transmit Avg 348 mA · 2.4 GHz @ 63 mW: Receive Avg 61 mA, Transmit Avg 112 mA · 868 MHz @ 25 mW: Receive Avg 58 mA, Transmit Avg 72 mA
Power Consumption @24 Vdc	· 900/915 MHz @ 1000 mW: Receive Avg 40 mA, Transmit Avg 174 mA · 2.4 GHz @ 63 mW: Receive Avg 38 mA, Transmit Avg 61 mA · 868 MHz @ 25 mW: Receive Avg 37 mA, Transmit Avg 45 mA
GENERAL SPECIFICATIONS	
Operating Conditions	· Temperature: Class I, Division 2 (Zone 2): -40 °C to 80 °C (-40 °F to 176 °F) · 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, OTC Configuration Cable Kit
OTA Link Adapter	· SXxxxx-OTA (xxxx = RF Type), SMA-Male, USB, Antenna Sold Separately

Networking Diagram

OTC GATEWAY - DH1



*OTA functionality does not support changing the radio settings or upgrading the device firmware.

[1]The maximum RF range data was collected under optimal test conditions, including a clear line of sight between antennas. Actual wireless RF range may vary depending on location, RF interference, weather, antenna type, cable type, and line of sight.

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