DATASHEET

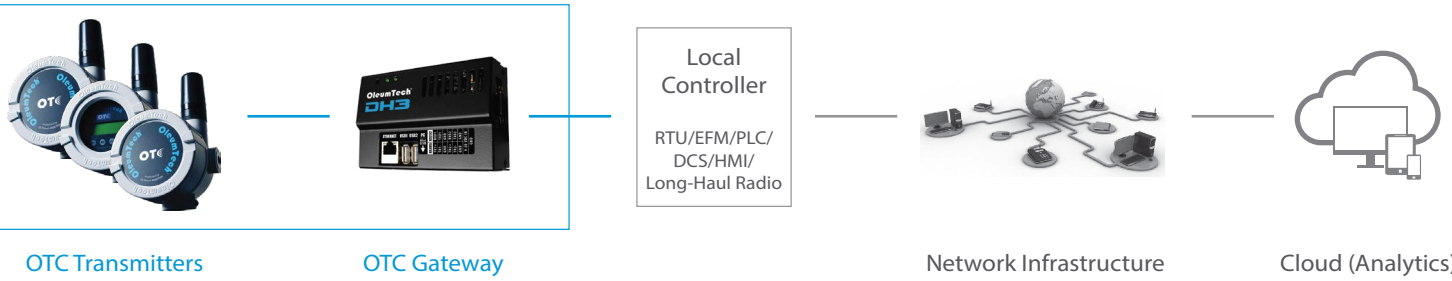
DH3

OTC

Highlights

- Wirelessly gather/distribute sensor data
- Map I/O points anywhere within the network
- Modbus Master/Slave functionality
- Ethernet connectivity facilitates IoT and IIoT implementations
- MQTT/Sparkplug B functionality[1]
- Supports remote and local Over-the-Air (OTA) functionality for updating OTC wireless devices[2]
- 2 configurable Serial/RTU ports (RS232/RS485)
- Data logging capabilities / integrated web server
- -40 ˚C to 70˚C (-40 ˚F to 158 ˚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)

Gateway with Ethernet and Serial Connectivity

Primary Data Collection Point

The OleumTech® DH3 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, I/O modules, and other gateways onto its 1920-point register holding table. Third-party devices can access the data over the Modbus, LevelMaster ASCII, and/or MQTT/Sparkplug B[1] protocols.

Data Logging Capabilities

The DH3 offers both event-based data logging and time-based trending/logging capabilities. The data can be stored onto its internal RAM (volatile) or onto an optional industrial-grade Micro SD card (non-volatile). Trend graphs are accessible via the DH3's secure web server.

Advanced Peer-to-Peer Networking

Multiple gateways can be deployed to the OTC platform for creating a custom, highly scalable network. The gateways have the power to communicate with each other. You can leverage the peer-to-peer technology for funneling data to the primary gateway for optimizing network efficiency and/or designing an extremely flexible I/O mapping system across the entire wireless network.

Ethernet + Serial + Local Display Option

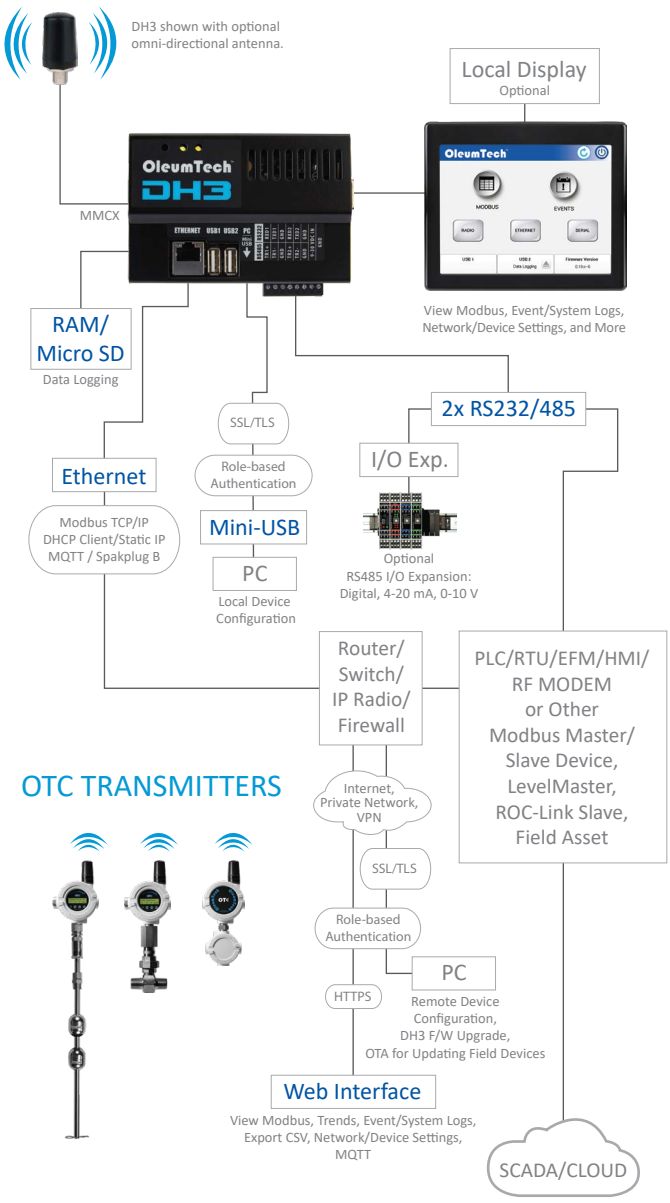
Equipped with both Ethernet and Serial ports, the DH3 is designed for interfacing multiple third-party devices. Having both Modbus Master and Slave functionalities, the DH3 provides endless possibilities for solving telemetry challenges. OleumTech offers a local I/O expansion solution for integrating analog and discrete I/O capabilities to the DH3. An optional touchscreen display is also available for added convenience.

Technical Specifications

HARDWARE FEATURES	
Device Functionality	· Wireless Gateway with Ethernet/Serial Connectivity and Data Logging Capabilities
Embedded Controller	· 32-Bit Power ARM Cortex - A9core Microprocessor, Up to 800 MHz CPU Speed
Memory	· Flash Memory: 4 GB / SD RAM Memory: 512 MB
Ethernet 10/100/1000BASE-T	· MQTT*, Modbus TCP/IP Master/Slave, DHCP Client/Static IP (Device Designed to Work Behind Firewall) · Supports Local/Remote Device Configuration and F/W Upgrade Using BreeZ® 5.0 or Higher · Supports Auto-MDIX/Auto-Crossover for ad-hoc networking (PC directly to DH3)
Serial Interfaces	· 2 RTU Ports (RS232/RS485 Software Configurable) · Modbus Master/Slave, LevelMaster ASCII Slave, ROC-Link Master (Supports Opcodes 17 and 10) ROC: Read up to 10 User Configurable (TLP) Points, INT16 (signed or unsigned) or FL(OAT)
2 USB 2.0 Host Ports	· Reserved for Future Use
Mini-USB (OTG)	· Supports Local Device Configuration and F/W Upgrade Using BreeZ® 5.0 or Higher
Micro SD Card Slot	· Only Use Industrial-Grade Micro SD Cards: Part # SX1000-SD2 (-40 °C to 70 °C)
Device Diagnostics	· Health Tag: Supply Voltage
DATA LOGGING	Records Data to Internal RAM, MicroSD Card Option for Data Persistence
Trending (RAM/Micro SD)	· 800,000 Pts Max Regardless of Memory Capacity; Supports Multiple Trends; Exportable to .CSV
Event Logging (RAM/Micro SD)	· 100,000 Pts Max Regardless of Memory Capacity · Event Types: Rising or Falling Edge Event Control: Deadband or On-Delay; Exportable to .CSV
System Logging (RAM/Micro SD)	· 100,000 Pts Max Regardless of Memory Capacity, Viewable on Web Server or Local Display
WEB SERVER	
Features	· View Modbus Data, Trends, Event and System Logs, Device/Network Settings, and More
Security/Privacy	· Role-based Authentication (Admin/User/Guest), HTTPS
BreeZ® SOFTWARE INTERFACE (PC APPLICATION)	
Version/PC Platform	· BreeZ® Version 5.0 or Later; PC with Windows® 7 or Later
Connectivity	· Configurable via Ethernet Port or Mini-USB Port
Security/Privacy	· Role-based Authentication (Admin/User), Remote Communication Secured via SSL/TLS v1.2
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[3] (Gateway to Gateway) · 900/915 MHz: Up to 7500 Feet / 1.4 Miles / 2.3 km with Clear Line of Sight[3] (Transmitter to Gateway) · 2.4 GHz: Up to 4.3 Miles / 7 km with Clear Line of Sight[3] (Gateway to Gateway) · 868 MHz: Up to 5.2 Miles / 8.4 km with Clear Line of Sight[3] (Gateway to Gateway)
CERTIFICATIONS	
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; AEx ec nC IIC T4 Gc · Class I, Zone 2; Groups A, B, C, D; Ex ec nC IIC T4 Gc · ATEX: ITS15ATEX48231X II 3 G Ex nA nC IIC T4 Gc · IECEx: ETL15.0039X; Ex nA nC IIC T4 Gc
MECHANICAL SPECIFICATIONS	
DH3 Dimensions	· 4.6" (W) x 3.0" (H) x 2.0" (D) / 117 mm (W) x 76 mm (H) x 50 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	· 1.3 lbs / 570 g
Mounting	· DIN Rail Clip (Spring-Loaded)
ELECTRICAL SPECIFICATIONS	
DC Power Input	· 9-30 Vdc
Average Power Input	· Local Display Off: 3 Watt; Local Display On: 5 Watt
Power Consumption @12 Vdc	· 900 / 915 MHz @ 1000 mW: Receive Avg 172 mA, Transmit Avg 401 mA · 2.4 GHz @ 63 mW: Receive Avg 154 mA, Transmit Avg 209 mA · 868 MHz @ 25 mW: Receive Avg 168 mA, Transmit Avg 231 mA
Power Consumption @24 Vdc	· 900 / 915 MHz @ 1000 mW: Receive Avg 113 mA, Transmit Avg 228 mA · 2.4 GHz @ 63 mW: Receive Avg 99 mA, Transmit Avg 139 mA · 868 MHz @ 25 mW: Receive Avg 99 mA, Transmit Avg 132 mA
GENERAL SPECIFICATIONS	
Operating Conditions	· Temperature: -40 °C to +70 °C (-40 °F to 158 °F) · Temperature with Optional LCD: -20 °C to +70 °C (-4 °F to 158 °F) · Humidity: 0 to 99 %, Non-Condensing
Warranty	· 2-Year Parts and Labor
Country of Origin	· USA

Networking Diagram

OTC GATEWAY - DH3



ORDERING INFORMATION	
Model Numbers	· WG-0900-DH3, WG-0915-DH3, WG-2400-DH3, WG-0868-DH3
Wirelessly Connects To	· OTC Wireless Devices (Gateways, Transmitters, I/O Modules)
Micro SD Card	· Only Use Industrial-Grade Micro SD Cards: Part # SX1000-SD2 (-40 °C to 70 °C)
Local Display	· 5.7" Local HMI Display WX-1000-LCD
Configuration Cable	· WX-1001-CA2, 15-ft USB to Mini-USB Cable or SX1000-CC2, OTC Configuration Cable Kit
OTA Link Adapter	· SXxxxx-OTA (xxxx = RF Type), SMA-Male, USB, Antenna Sold Separately

[1]OTA functionality does not support changing the radio settings or upgrading the device firmware.
[2]Requires firmware v2.0 or later on a DH3 for enabling MQTT functionality.
[3]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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MADE IN USA