# WMO-400S Series

## Industrial Wireless - High Performance Modem

- Provides wireless connectivity for serial devices
- User-configurable frequency and RF power
- Remote configuration and diagnostics
- Supports wide range of network topologies
- Distances of up to 100km (60 miles) achievable
- Link status indication available as an output
- Repeater capability

**Licensed and license-free radio channels**, 430 – 490MHz, 10mW – 5W, 12.5/20/25kHz

**Three serial ports** - two RS232 and one RS485 (two data ports and one configuration port).

**Connect** to two serial devices using Multiple Device Connectivity - two independent configurable serial ports.

**Diagnostics and Configuration** via dedicated RS232 port. **Remote configuration** and diagnostics to all units via the wireless channel.

**Wireless data rate** up to 19.2kb/s.

**Security encryption** - 128 bit AES.

**Repeater networking** – each unit can act as a repeater and connect to serial devices.

**On-line and remote** modem control via AT commands.
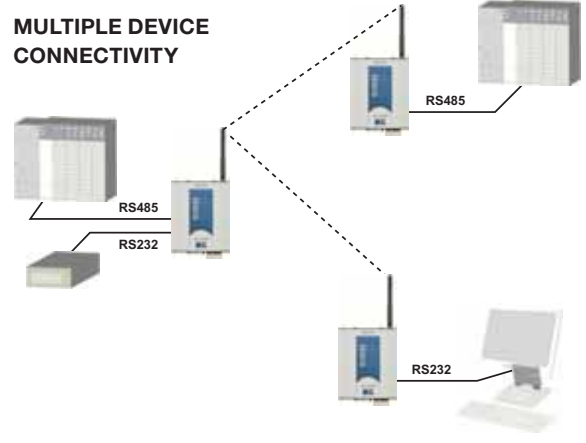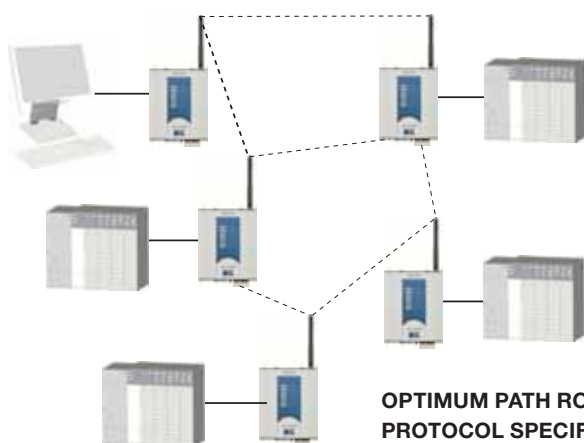
**Hot-redundant standby** functionality.

**Backup battery** charging functionality with smart power monitoring and low power sleep mode.

**Multiple operating modes**

*OPR Functionality* … Protocol sensitive mode with Optimum Path Routing for Modbus, DF1 and DNP3 networks - maximum network communications efficiency.

*Broadcast* "multidrop" mode.

*Addressed "dial-up"* or fixed connection mode.

**OPTIMUM PATH ROUTING PROTOCOL SPECIFIC NETWORK**

**MULTIPLE DEVICE CONNECTIVITY**

RS485

RS485
RS232

RS232

**COOPER** Crouse-Hinds

## SPECIFICATION

### SERIAL PORT

**Port types**
1 x RS485 (1.2 to 187.5 kb/s)
1 x RS232 (1.2 to 115.2 kb/s)
(plus second RS232 port for configuration/diagnostics)

**Data Configuration**
7/8 data bits, 1/2 stop bits, odd/even/no parity

### DIGITAL INPUT/OUTPUT

One I/O channel
**Input** voltage-free contact / **Output** FET 30V DC 500mA
DI can be transmitted to remote DO
Also used for alarm output, or powering up local devices, or hot redundant standby control.

### RADIO SPECIFICATIONS

**Frequency**
**430 - 490MHz** radio transceiver, half-duplex or simplex operation
Up to 9.6/19.2 kb/s wireless data (12.5/25 kHz channels)

**Frequency configurable**
5/6.25 kHz steps within ±10MHz band

**Frequency tolerance**
+/-1.5 ppm over temperature range

**Configurable transmitter power**
10 to 500mW, 0.5 to 5W

**Data modulation**
DFSK, GMSK, 4-level FSK

**Duty cycle**
50%, 30 second maximum transmission time, also limited by configurable timeout and internal thermal shutdown protection

**Receiver sensitivity**
–112dBm @ 10E-3 BER
–120dBm @ 12dB SINAD

**Lightning protection**
Internal gas discharge arrester

## OPERATING FUNCTIONS

**Configuration/Diagnostics**
Configuration via AT commands or dedicated Windows Configuration package.
Configuration and diagnostics access to remote units via wireless channel, both on-line and off-line.
Diagnostic information can be accessed by dedicated Windows package or on-line by a host serial device.
RSSI and noise signal measurement in dBm.
Supply voltage, battery voltage, internal temperature, antenna fault status.

**Multiple Device Connectivity (MDC)**
Two independent wireless links managed simultaneously - two serial devices can be connected to each unit (RS232 & RS485).

**Security**
128-bit AES encryption of wireless data can be enabled Uses a 16-byte encryption key combined with a random 16- byte initialization vector unique to each message.
Remote configuration/diagnostics password protected.

**Operating Modes**
Broadcast mode - wireless "multidrop"
Addressed mode - acknowledged or unacknowledged
Optimum Path Routing (OPR) mode - protocol specific modes for Modbus, DF1, DNP3 and Profibus - ensures optimum wireless message routing for fastest system response in busy networks.

**Store& forward Repeater**
Each unit can act as a repeater and modem.
Multiple repeater functionality can be configured in each operating mode using routing tables.

**Hot-redundant Standby**
Two units connected together in a hot-redundant standby configuration.
Changeover triggered by radio or serial communication delay timeout, CPU watchdog, low supply voltage, antenna fault.

## STANDARDS COMPLIANCE

EN 300113, EN 300220, EN 300086, EN 301489-5
FCC Part 90, Part 15, RSS-119, AS4295, AS4768.1

## GENERAL

**Environmental**
**Temperature Range**: -30°C to +60°C
**Humidity**: 0 to 99% non-condensing

**Input Power**
**Supply Voltage**: 11 to 30V DC
**Battery Charger**: Float charge voltage 13.8V DC with current limit set to 1.6A (minimum supply voltage 15V)
**Low power sleep mode**: configurable using DTR control

**Current @ 13.5V DC**
**Quiescent**: 110mA
**Transmit**: 450mA (<0.5W), 800mA (1W), 1.25A (2W), 2A (5W)

**Housing**
Powder-coated, extruded aluminium

**Dimensions**
140 x 114 x 30mm

**Mounting**
'T' section 35mm DIN rail to EN 50022

**Weight**
0.4 kg

## ORDERING INFORMATION

| | |
|---|---|
| **WMO-440S-LN** | 440MHz serial modem, 10-500mW, Narrow |
| **WMO-440S-LW** | 440MHz serial modem, 10-500mW, Wide |
| **WMO-440S-HN** | 440MHz serial modem, 500mW - 5W, Narrow |
| **WMO-440S-HW** | 440MHz serial modem, 500mW - 5W, Wide |
| **WMO-460S-LN** | 460MHz serial modem, 10-500mW, Narrow |
| **WMO-460S-LW** | 460MHz serial modem, 10-500mW, Wide |
| **WMO-460S-HN** | 460MHz serial modem, 500mW - 5W, Narrow |
| **WMO-460S-HW** | 460MHz serial modem, 500mW - 5W, Wide |
| **WMO-480S-LN** | 480MHz serial modem, 10-500mW, Narrow |
| **WMO-480S-LW** | 480MHz serial modem, 10-500mW, Wide |
| **WMO-480S-HN** | 480MHz serial modem, 500mW - 5W, Narrow |
| **WMO-480S-HW** | 480MHz serial modem, 500mW - 5W, Wide |

*Frequency configurable within ± 10MHz of stated centre frequency*