WL40F Series
900 MHz ISM Band Wireless I/O System

Licence-free 900 MHz ISM band
FCC Part 15 compliant wireless module*
Modbus-RTU transparent gateway and I/O
Multi-hop technology solves various challenges of implementing a reliable wireless communication network.
Supporting of low-speed moving devices makes the WL40F Series ideal for data gathering for AGVs.

* This device is approved for use only in the US.

M-System WL40F Series Wireless I/O System employs a licence-free 900 MHz ISM band module. Compared with 2.4 GHz / 5 GHz wireless LANs and other wireless networks dedicated for instrumentation using higher frequency bands, the 900 MHz band ensures stable communication quality for a long distance transmission, suitable for telemetering, multiplex transmission systems and data logging applications with various sensors/devices including low-speed moving entities.

Modbus-RTU transparent devices can easily replace existing wired ones, and various industry standard sensors/devices can be added to the network.

MULTI-HOP TECHNOLOGY

Multi-hop wireless communication is a wireless network conveying data through a number of wireless communication devices in a “bucket-brigade” manner.

Relaying paths are automatically switched to an alternative one when one section of the connection is weak.

In the WL40F Series, up to 100 child stations connect to a single parent station. The communications distance between stations can be up to 0.62 miles (1 km), thus making it possible to construct a wireless network in a wide range.

SYSTEM CONFIGURATION EXAMPLE

MODEL | FUNCTION
--- | ---
Parent Device | WL40EW2F | Gateway
Child Device | WL40MW1F | Gateway
WL40W1F-DAC4A | I/O, Di x 2, Do x 2
WL40W1F-DS2 | I/O, 4-20 mA, active input x 2

Radio wave test Required before introducing the system.
**POWER & WIRELESS SPECIFICATIONS**

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power input</td>
<td>12 V or 24 V DC</td>
</tr>
<tr>
<td>Communication standard</td>
<td>IEEE 802.15.4g</td>
</tr>
<tr>
<td>Frequency</td>
<td>900 MHz band (902 to 928 MHz)</td>
</tr>
<tr>
<td>Max. transmission power</td>
<td>20 mW</td>
</tr>
<tr>
<td>Band width</td>
<td>400 KHz</td>
</tr>
<tr>
<td>Modulation</td>
<td>GFSK</td>
</tr>
<tr>
<td>Baud rate</td>
<td>Max. 100 kbps</td>
</tr>
<tr>
<td>Channels</td>
<td>1 to 43 ch</td>
</tr>
<tr>
<td>Security</td>
<td>128 bit AES</td>
</tr>
<tr>
<td>Indicator LEDs</td>
<td>920Run, 920Link, 920ERR (child devices)</td>
</tr>
<tr>
<td>Number of child devices</td>
<td>Max. 100</td>
</tr>
<tr>
<td>Protocol</td>
<td>Modbus-RTU</td>
</tr>
<tr>
<td>Communication module</td>
<td>Coordination module (parent) and router module (child) by Oki Electric Industry Co., Ltd.</td>
</tr>
<tr>
<td>Radio parameters setting</td>
<td>Web browser (parent) Configuration software (child)</td>
</tr>
<tr>
<td>Max. transmission distance</td>
<td>Approx. 0.62 miles (1 km</td>
</tr>
</tbody>
</table>

**Remote control of automated guided vehicles**

- Office
- DL8
- Parent
- Display and control signal
- Annunciator
- Child
- Start signal
- Stop signal
- Error signal
- Stop command
- Internet
- Tablet
- Smartphone
- Router
- Parent

**Remote monitoring and control of greenhouses**

- Office
- DL8
- Parent
- Inside temperature
- Outside temperature
- Humidity
- Child devices
- Indoor temperature
- Outside temperature
- Humidity

**Predictive maintenance of injection molding machines**

- DL8
- Mobile router
- Parent
- Injection molding machine A
  - Operating status
- Injection molding machine B
  - Operating status
- Injection molding machine N
  - Operating status

**Remote monitoring of food warehouses**

- Office
- DL8
- Parent
- Child devices
- Temperature
- Humidity
- Alarm