FREEWAVE

WaveContact Series

WC40i Modbus Wireless IO System

Rugged, Simple, Flexible

The WC40i-MB adds a wireless interface to remote Modbus devices for use in WaveContact systems.

Addition of an optional IO module enables interfacing with analog or discrete instruments and controls, while the Remote Shutdown Module allows for easy control of remote wellheads with failsafe control. The WC40i-COUNT is designed to interface with instruments and meters with discrete outputs and can count pulses up to 2 kHz.

Without making any sacrifices on ease of setup or installation, the WC40i is the most flexible endpoint in the WaveContact lineup. Combined with a WC45i Gateway, the WC40i can be used with any remote Modbus RTU device which supports RS485 communication. The optional IO module allows for continuous monitoring of 8 analog inputs, 6 discrete inputs, and control of 2 SPDT and 2 DPDT relays. The RSD module is purpose-built for control and monitoring of shutdown valves on wellheads, and in the event of an ESD situation or loss of communications can shut a well in if desired.

In any configuration, the WC40i can be used as a repeater node as part of the self-organizing, self-healing WaveContact system, and can help extend the reaches of a network in challenging RF environments.

Key Features

- Provides a wireless interface to remote Modbus devices
- Messaging forwarding capability
- Low power consumption
- Integrated high-gain omnidirectional antenna and gateway electronics
- Optional modules add remote IO and automatic shutdown capabilities
- Self-organizing, self-healing mesh network
- Simple to install and maintain
- Rugged design for demanding outdoor environments
- Up to 4.8 km (3 miles) range
- Class I, Division 2, intrinsically safe

Modbus IO Endpoints

WC40i-MB: Modbus Endpoint (RS485) provides a wireless interface to remote Modbus devices.

WC40i-COUNT: Modbus Counter Endpoint, 2DI, provides a wireless interface for remote devices with pulse outputs such as flow meters. Calculates total counts, both instantaneous and frequency since last read, and state.

Interface and Control Modules

WC40i-RSD: Modbus Stick with Remote Shutdown Module provides failsafe remote shutdown functionality at remote sites. A typical application is to shut off a well when one or more remote tanks are filled.

WC40i-MultiIO: Multi IO module provides an IO interface to 8 analog inputs, 6 digital inputs, 2 SPDT and 2 DPDT relays.

Designed, Manufactured, and Tested in Boulder, CO

Made in USA

Transmitter

Frequency Range	902 to 928 MHz, FHSS, license-free ISM Band Compliant with FCC Part 15
Range	Up to 4.8 km (3 miles) with clear line of sight
Data Update Rates	5 seconds to 1 hour, user-selectable
Over-the-Air Rate	10 kbps

Receiver

Sensitivity	-105 dBm
Antenna Gain	5 dB

Interfaces

Data Interface	Wireless, available as Modbus registers at the Gateway
Internal Diagnostics	**WC40i-COUNT:** Line voltage, signal strength, error conditions **WC40I-RSD:** Supply voltage, signal strength, error conditions

IO Module Specs

Analog Inputs	8 Analog inputs; 4 to 20 mA / 1 to 5 V switch selectable (16-bit) with units of measure scaling and threshold monitoring
Digital Inputs	6 Digital Inputs with report on state change and totalizing
Pole Relays	2 Single Pole and 2 Double Pole relays with direct and programmable pulse control

Power Requirements

Power	6 to 36 VDC
Radio Power	500 mW

General Information

Operating Temperature	-40°C to +70°C (-40°F to +158°F)
Humidity	0 to 100%, non-condensing
Antenna Type	Omni-directional
Enclosure	WC40i-COUNT: Weather tight, integrated electronics and antenna
Safety	Class I, Division 2, Groups C&D Temp Code T5 IO Module: Temp Code T4

RSD Module Specs

Relay Inputs	Dry contact or 30 volts maximum (push-pull)
Relay Outputs	2 A, 30 V, SPDT

Counter-specific Specs

Interfaces	2 Digital Interfaces, Dry contact, Open collector, and other interfaces
Calculates	Total Counts Instantaneous Frequency Frequency Since Last Read State
Measurement	Measures to 2 kHz

Accessories

WC-USB-DB9	USB to Serial Interface Cable DB9
WC-ANT-WHIP	Whip antenna for use in fiberglass or plastic enclosure with direct mount to a DIN mounted card
WC-ANT-PM	Panel mount antenna to mount outside an enclosure

Related Products

WC45i Gateway

WC20i Modular Endpoints

WC30i Wireless Sensors

Information to Order

Model Number	Description
WC40i-AN	Modbus IO module; Use with WC40i-MB
WC40i-MB	Modbus endpoint
WC40i-COUNT	Modbus endpoint with 2 DI counters
WC40i-RSD	Remote Shut Down Module for wellheads
WC45i-BB	Breakout board provides DB9 configuration interface for WC45i-GW

FREEWAVE

5395 Pearl Parkway
Boulder, CO 80301

TF: 1.866.923.6168
Tel: 303.381.9200

www.freewave.com

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