Air Quality Solutions

Modbus RTU Applications Protocol

Model: TDFi-FA

Thermal Dispersion Airflow and Temperature Measurement Station for Fan Array Applications

Contents

Modbus RTU - Network Registers and Object Lists

Supported Modbus RTU Application:

Modbus Application Protocol V1 1b3

Reference Guide: PI-MBUS-300 Rev. J

Supported Modbus RTU Function Codes:

Modbus Standard				
Functions	**Object type**	**Access**	**Size**	**Address Space**
1, 5, 15	Coil	Read-write	1 bit	00001 - 09999
4	Input register	Read-only	16 bits	30001 - 39999
3, 6, 16	Holding register	Read-write	16 bits	40001 - 49999

NOTE: Ruskin's Modbus RTU is designed for product and customer security. Write Configuration changes to the Coil (00002-00008) and Holding Registers (40001-40074) require a Map Access Key.

Supported Modbus RTU Format:

Baud Rate: 9600, 19200, 38400 (default), 57600, 76800, 115200

Parity: ODD, EVEN (default), NONE1 (one stop bit), NONE2 (two stop bits)

Address Range: 1-247 (99; default)

NOTE: If site settings differ from Ruskin's default values. Modbus RTU Format configuration changes are required at the device level and cannot be made through Modbus RTU.

Map Access Key:

The map access key is a six-digit alpha numeric character combination. Within the device serial number, the map access key is the customers unique sales order or factory order number. The map access key starts with the second digit through the seventh digit of the Primary or Host device's serial number.

Serial Number Example: JC4194900300400

Map Access Key: C41949

Write Configuration Steps:

The Ruskin device requires the below EXACT sequence of operation from the Server prior to applying Server write configurations to memory.

Server Required Steps:

1. Send a Device 'Reset Command' to Register 00001

IMPORTANT: To access the 'Write' functionality a valid 'Map Access Key' is required to be sent within 2 minutes of sending the 'Reset Command'

2. Send the Device 'Map Access Key' to Register 40001-40003

IMPORTANT: If an invalid 'Map Access Key' is entered the device will NOT allow write access to the 'Coil' or 'Holding Registers'.

3. Send the desired 'Device Configurations' to Register 00002-00008 and 40004-40075
4. Send a second Device 'Reset Command' to Register 00001

IMPORTANT: If 30 minutes has elapsed or a second Device 'Reset Command' has not been received within 30 minutes from a Valid 'Map Access Key'. The device settings will Revert to the previously saved device settings in memory.

Write Unit Requirements:

The Ruskin device requires the below EXACT write format units from the Server when configuration setting changes are made through the Holding Registers.

1. Flow units must be written in FPM

IMPORTANT: If the current device setting for flow is not in FPM units. The server must convert the device setting value to FPM units when applying a flow configuration change.

2. Temperature units must be written in °F

IMPORTANT: If the current device setting for temperature is not in °F units. The server must convert the Ruskin device setting value to °F units when applying a temperature configuration change.

3. Area units must be written in SqFt

IMPORTANT: If the current device setting for area is not in SqFt units. The server must convert the Ruskin device setting value to SqFt units when applying an area configuration change.

Ruskin's Modbus RTU – Data Map

Register	Register Count	Function	Type	Name	Product Line	Description	Range
SYSTEM CONFIGURATION							
Holding Registers							
40001	3	3, 16	string	Map Access Key	ALL	Write Parameter Access Key	Key = Unique Primary/Host Device Access Key
40004	9	3, 16	string	Device Name	ALL	Custom Line 2 Text	16 Character Maximum, null padded and terminated; 17 byte max; User Custom Name
40013	1	3, 6, 16	uint16	Unit Standard	ALL	Systems of Measurements	0 = SI, 1 = Imperial (Default)
40014	1	3, 6, 16	uint16	Volumetric Flow Type	ALL	Unit of Measurement - Airflow	0 = Actual Flow Per Second (LPS / CFS) 1 = Actual Flow Per Minute (LPM / CFM) (Default) 2 = Actual Flow Per Hour (CMH / CFH) 3 = Standard Flow Per Second (LPS / CFS) 4 = Standard Flow Per Minute (LPM / CFM) 5 = Standard Flow Per Hour (CMH / CFH)
40015	1	3, 6, 16	uint16	Airflow Type	ALL	Airflow Measurement Type	0 = Velocity, 1 = Volume (Default)
40020	2	3, 16	float	Elevation	ALL	Site Elevation above Sea Level in Ft	0 to 15,000 ft (0 ft; Default)
40022	1	3, 6, 16	uint16	Relative Humidity	ALL	RH Percentage in %	0 to 100% (50%; Default)
40023	2	3, 16	float	Low Flow Alarm	ALL	Low Flow Alarm - Setpoint - Fan Summary	0 to 10,000 FPM (0 ft/min; Default)
40025	2	3, 16	float	High Flow Alarm	ALL	High Flow Alarm - Setpoint - Fan Summary	0 to 10,000 FPM (10,000 ft/min; Default)
40027	2	3, 16	float	Alarm Deadband - Flow	ALL	Alarm Deadband - Flow - Fan Summary	0 to 500 FPM (0 ft/min; Default)
40029	2	3, 16	float	Alarm Delay - Flow	ALL	Alarm Delay - Flow - Fan Summary	0 to 10 Minutes (0 min; Default)
40031	2	3, 16	float	Low Temp Alarm	ALL	Low Temperature Alarm - Setpoint - Fan Summary	-29.2°F to 129.2°F (-20.2°F; Default)
40033	2	3, 16	float	High Temp Alarm	ALL	High Temperature Alarm - Setpoint - Fan Summary	-29.2°F to 129.2°F (120.2°F; Default)
40035	2	3, 16	float	Alarm Deadband - Temp	ALL	Alarm Deadband - Temp - Fan Summary	0 to 18°F (0°F; Default)
40037	2	3, 16	float	Alarm Delay - Temp	ALL	Alarm Delay - Temp - Fan Summary	0 to 5 Minutes (0 ft/min; Default)

Ruskin's Modbus RTU – Data Map (Continued)

Register	Register Count	Function	Type	Name	Product Line	Description	Range
SYSTEM CONFIGURATION							
Holding Registers							
40041	2	3, 16	float	Fan 'ARRAY' Area - SqFt	Fans	Fan area size in ft² - Fan Summary	0.20 to 39.41 ft² (3.12 ft²; Default) - Sets all fans to the same area - Reading this value is identical to reading register 40043
40043	2	3, 16	float	Fan 1 Area - SqFt	Fans	Fan area size in ft² | Fan 1	0.20 to 39.41 ft² (3.12 ft²; Default)
40045	2	3, 16	float	Fan 2 Area - SqFt	Fans	Fan area size in ft² | Fan 2	0.20 to 39.41 ft² (3.12 ft²; Default)
40047	2	3, 16	float	Fan 3 Area - SqFt	Fans	Fan area size in ft² | Fan 3	0.20 to 39.41 ft² (3.12 ft²; Default)
40049	2	3, 16	float	Fan 4 Area - SqFt	Fans	Fan area size in ft² | Fan 4	0.20 to 39.41 ft² (3.12 ft²; Default)
40051	2	3, 16	float	Fan 5 Area - SqFt	Fans	Fan area size in ft² | Fan 5	0.20 to 39.41 ft² (3.12 ft²; Default)
40053	2	3, 16	float	Fan 6 Area - SqFt	Fans	Fan area size in ft² | Fan 6	0.20 to 39.41 ft² (3.12 ft²; Default)
40055	2	3, 16	float	Fan 7 Area - SqFt	Fans	Fan area size in ft² | Fan 7	0.20 to 39.41 ft² (3.12 ft²; Default)
40057	2	3, 16	float	Fan 8 Area - SqFt	Fans	Fan area size in ft² | Fan 8	0.20 to 39.41 ft² (3.12 ft²; Default)
40059	2	3, 16	float	Fan 9 Area - SqFt	Fans	Fan area size in ft² | Fan 9	0.20 to 39.41 ft² (3.12 ft²; Default)
40061	2	3, 16	float	Fan 10 Area - SqFt	Fans	Fan area size in ft² | Fan 10	0.20 to 39.41 ft² (3.12 ft²; Default)
40063	2	3, 16	float	Fan 11 Area - SqFt	Fans	Fan area size in ft² | Fan 11	0.20 to 39.41 ft² (3.12 ft²; Default)
40065	2	3, 16	float	Fan 12 Area - SqFt	Fans	Fan area size in ft² | Fan 12	0.20 to 39.41 ft² (3.12 ft²; Default)
40067	2	3, 16	float	Fan 13 Area - SqFt	Fans	Fan area size in ft² | Fan 13	0.20 to 39.41 ft² (3.12 ft²; Default)
40069	2	3, 16	float	Fan 14 Area - SqFt	Fans	Fan area size in ft² | Fan 14	0.20 to 39.41 ft² (3.12 ft²; Default)
40071	2	3, 16	float	Fan 15 Area - SqFt	Fans	Fan area size in ft² | Fan 15	0.20 to 39.41 ft² (3.12 ft²; Default)
40073	2	3, 16	float	Fan 16 Area - SqFt	Fans	Fan area size in ft² | Fan 16	0.20 to 39.41 ft² (3.12 ft²; Default)
40079	2	3, 16	float	Fan 1 | Low Flow Alarm	Fans	Low Flow Alarm - Setpoint | Fan 1	0 to 10,000 FPM (0 ft/min; Default)
40081	2	3, 16	float	Fan 1 | High Flow Alarm	Fans	High Flow Alarm - Setpoint | Fan 1	0 to 10,000 FPM (10,000 ft/min; Default)
40083	2	3, 16	float	Fan 1 | Alarm Deadband - Flow	Fans	Alarm Deadband - Flow | Fan 1	0 to 500 FPM (0 ft/min; Default)
40085	2	3, 16	float	Fan 1 | Alarm Delay - Flow	Fans	Alarm Delay - Flow | Fan 1	0 to 5 Minutes (0 min; Default)
40087	2	3, 16	float	Fan 1 | Low Temp Alarm	Fans	Low Temperature Alarm - Setpoint | Fan 1	-29.2°F to 129.2°F (-20.2°F; Default)
40089	2	3, 16	float	Fan 1 | High Temp Alarm	Fans	High Temperature Alarm - Setpoint | Fan 1	-29.2°F to 129.2°F (120.2°F; Default)
40091	2	3, 16	float	Fan 1 | Alarm Deadband - Temp	Fans	Alarm Deadband - Temp | Fan 1	0 to 18°F (0°F; Default)
40093	2	3, 16	float	Fan 1 | Alarm Delay - Temp	Fans	Alarm Delay - Temp | Fan 1	0 to 5 Minutes (0 ft/min; Default)
40095	2	3, 16	float	Fan 2 | Low Flow Alarm	Fans	Low Flow Alarm - Setpoint | Fan 2	0 to 10,000 FPM (0 ft/min; Default)
40097	2	3, 16	float	Fan 2 | High Flow Alarm	Fans	High Flow Alarm - Setpoint | Fan 2	0 to 10,000 FPM (10,000 ft/min; Default)
40099	2	3, 16	float	Fan 2 | Alarm Deadband - Flow	Fans	Alarm Deadband - Flow | Fan 2	0 to 500 FPM (0 ft/min; Default)

Ruskin's Modbus RTU – Data Map (Continued)

Register	Register Count	Function	Type	Name	Product Line	Description	Range
SYSTEM CONFIGURATION							
Holding Registers							
40101	2	3, 16	float	Fan 2 | Alarm Delay - Flow	Fans	Alarm Delay - Flow | Fan 2	0 to 5 Minutes (0 min; Default)
40103	2	3, 16	float	Fan 2 | Low Temp Alarm	Fans	Low Temperature Alarm - Setpoint | Fan 2	-29.2°F to 129.2°F (-20.2°F; Default)
40105	2	3, 16	float	Fan 2 | High Temp Alarm	Fans	High Temperature Alarm - Setpoint | Fan 2	-29.2°F to 129.2°F (120.2°F; Default)
40107	2	3, 16	float	Fan 2 | Alarm Deadband - Temp	Fans	Alarm Deadband - Temp | Fan 2	0 to 18°F (0°F; Default)
40109	2	3, 16	float	Fan 2 | Alarm Delay - Temp	Fans	Alarm Delay - Temp | Fan 2	0 to 5 Minutes (0 ft/min; Default)
40111	2	3, 16	float	Fan 3 | Low Flow Alarm	Fans	Low Flow Alarm - Setpoint | Fan 3	0 to 10,000 FPM (0 ft/min; Default)
40113	2	3, 16	float	Fan 3 | High Flow Alarm	Fans	High Flow Alarm - Setpoint | Fan 3	0 to 10,000 FPM (10,000 ft/min; Default)
40115	2	3, 16	float	Fan 3 | Alarm Deadband - Flow	Fans	Alarm Deadband - Flow | Fan 3	0 to 500 FPM (0 ft/min; Default)
40117	2	3, 16	float	Fan 3 | Alarm Delay - Flow	Fans	Alarm Delay - Flow | Fan 3	0 to 5 Minutes (0 min; Default)
40119	2	3, 16	float	Fan 3 | Low Temp Alarm	Fans	Low Temperature Alarm - Setpoint | Fan 3	-29.2°F to 129.2°F (-20.2°F; Default)
40121	2	3, 16	float	Fan 3 | High Temp Alarm	Fans	High Temperature Alarm - Setpoint | Fan 3	-29.2°F to 129.2°F (120.2°F; Default)
40123	2	3, 16	float	Fan 3 | Alarm Deadband - Temp	Fans	Alarm Deadband - Temp | Fan 3	0 to 18°F (0°F; Default)
40125	2	3, 16	float	Fan 3 | Alarm Delay - Temp	Fans	Alarm Delay - Temp | Fan 3	0 to 5 Minutes (0 ft/min; Default)
40127	2	3, 16	float	Fan 4 | Low Flow Alarm	Fans	Low Flow Alarm - Setpoint | Fan 4	0 to 10,000 FPM (0 ft/min; Default)
40129	2	3, 16	float	Fan 4 | High Flow Alarm	Fans	High Flow Alarm - Setpoint | Fan 4	0 to 10,000 FPM (10,000 ft/min; Default)
40131	2	3, 16	float	Fan 4 | Alarm Deadband - Flow	Fans	Alarm Deadband - Flow | Fan 4	0 to 500 FPM (0 ft/min; Default)
40133	2	3, 16	float	Fan 4 | Alarm Delay - Flow	Fans	Alarm Delay - Flow | Fan 4	0 to 5 Minutes (0 min; Default)
40135	2	3, 16	float	Fan 4 | Low Temp Alarm	Fans	Low Temperature Alarm - Setpoint | Fan 4	-29.2°F to 129.2°F (-20.2°F; Default)
40137	2	3, 16	float	Fan 4 | High Temp Alarm	Fans	High Temperature Alarm - Setpoint | Fan 4	-29.2°F to 129.2°F (120.2°F; Default)
40139	2	3, 16	float	Fan 4 | Alarm Deadband - Temp	Fans	Alarm Deadband - Temp | Fan 4	0 to 18°F (0°F; Default)
40141	2	3, 16	float	Fan 4 | Alarm Delay - Temp	Fans	Alarm Delay - Temp | Fan 4	0 to 5 Minutes (0 ft/min; Default)
40143	2	3, 16	float	Fan 5 | Low Flow Alarm	Fans	Low Flow Alarm - Setpoint | Fan 5	0 to 10,000 FPM (0 ft/min; Default)
40145	2	3, 16	float	Fan 5 | High Flow Alarm	Fans	High Flow Alarm - Setpoint | Fan 5	0 to 10,000 FPM (10,000 ft/min; Default)
40147	2	3, 16	float	Fan 5 | Alarm Deadband - Flow	Fans	Alarm Deadband - Flow | Fan 5	0 to 500 FPM (0 ft/min; Default)
40149	2	3, 16	float	Fan 5 | Alarm Delay - Flow	Fans	Alarm Delay - Flow | Fan 5	0 to 5 Minutes (0 min; Default)
40151	2	3, 16	float	Fan 5 | Low Temp Alarm	Fans	Low Temperature Alarm - Setpoint | Fan 5	-29.2°F to 129.2°F (-20.2°F; Default)
40153	2	3, 16	float	Fan 5 | High Temp Alarm	Fans	High Temperature Alarm - Setpoint | Fan 5	-29.2°F to 129.2°F (120.2°F; Default)

Ruskin's Modbus RTU – Data Map (Continued)

Register	Register Count	Function	Type	Name	Product Line	Description	Range
SYSTEM CONFIGURATION							
Holding Registers							
40155	2	3, 16	float	Fan 5 | Alarm Deadband - Temp	Fans	Alarm Deadband - Temp | Fan 5	0 to 18°F (0°F; Default)
40157	2	3, 16	float	Fan 5 | Alarm Delay - Temp	Fans	Alarm Delay - Temp | Fan 5	0 to 5 Minutes (0 ft/min; Default)
40159	2	3, 16	float	Fan 6 | Low Flow Alarm	Fans	Low Flow Alarm - Setpoint | Fan 6	0 to 10,000 FPM (0 ft/min; Default)
40161	2	3, 16	float	Fan 6 | High Flow Alarm	Fans	High Flow Alarm - Setpoint | Fan 6	0 to 10,000 FPM (10,000 ft/min; Default)
40163	2	3, 16	float	Fan 6 | Alarm Deadband - Flow	Fans	Alarm Deadband - Flow | Fan 6	0 to 500 FPM (0 ft/min; Default)
40165	2	3, 16	float	Fan 6 | Alarm Delay - Flow	Fans	Alarm Delay - Flow | Fan 6	0 to 5 Minutes (0 min; Default)
40167	2	3, 16	float	Fan 6 | Low Temp Alarm	Fans	Low Temperature Alarm - Setpoint | Fan 6	-29.2°F to 129.2°F (-20.2°F; Default)
40169	2	3, 16	float	Fan 6 | High Temp Alarm	Fans	High Temperature Alarm - Setpoint | Fan 6	-29.2°F to 129.2°F (120.2°F; Default)
40171	2	3, 16	float	Fan 6 | Alarm Deadband - Temp	Fans	Alarm Deadband - Temp | Fan 6	0 to 18°F (0°F; Default)
40173	2	3, 16	float	Fan 6 | Alarm Delay - Temp	Fans	Alarm Delay - Temp | Fan 6	0 to 5 Minutes (0 ft/min; Default)
40175	2	3, 16	float	Fan 7 | Low Flow Alarm	Fans	Low Flow Alarm - Setpoint | Fan 7	0 to 10,000 FPM (0 ft/min; Default)
40177	2	3, 16	float	Fan 7 | High Flow Alarm	Fans	High Flow Alarm - Setpoint | Fan 7	0 to 10,000 FPM (10,000 ft/min; Default)
40179	2	3, 16	float	Fan 7 | Alarm Deadband - Flow	Fans	Alarm Deadband - Flow | Fan 7	0 to 500 FPM (0 ft/min; Default)
40181	2	3, 16	float	Fan 7 | Alarm Delay - Flow	Fans	Alarm Delay - Flow | Fan 7	0 to 5 Minutes (0 min; Default)
40183	2	3, 16	float	Fan 7 | Low Temp Alarm	Fans	Low Temperature Alarm - Setpoint | Fan 7	-29.2°F to 129.2°F (-20.2°F; Default)
40185	2	3, 16	float	Fan 7 | High Temp Alarm	Fans	High Temperature Alarm - Setpoint | Fan 7	-29.2°F to 129.2°F (120.2°F; Default)
40187	2	3, 16	float	Fan 7 | Alarm Deadband - Temp	Fans	Alarm Deadband - Temp | Fan 7	0 to 18°F (0°F; Default)
40189	2	3, 16	float	Fan 7 | Alarm Delay - Temp	Fans	Alarm Delay - Temp | Fan 7	0 to 5 Minutes (0 ft/min; Default)
40191	2	3, 16	float	Fan 8 | Low Flow Alarm	Fans	Low Flow Alarm - Setpoint | Fan 8	0 to 10,000 FPM (0 ft/min; Default)
40193	2	3, 16	float	Fan 8 | High Flow Alarm	Fans	High Flow Alarm - Setpoint | Fan 8	0 to 10,000 FPM (10,000 ft/min; Default)
40195	2	3, 16	float	Fan 8 | Alarm Deadband - Flow	Fans	Alarm Deadband - Flow | Fan 8	0 to 500 FPM (0 ft/min; Default)
40197	2	3, 16	float	Fan 8 | Alarm Delay - Flow	Fans	Alarm Delay - Flow | Fan 8	0 to 5 Minutes (0 min; Default)
40199	2	3, 16	float	Fan 8 | Low Temp Alarm	Fans	Low Temperature Alarm - Setpoint | Fan 8	-29.2°F to 129.2°F (-20.2°F; Default)
40201	2	3, 16	float	Fan 8 | High Temp Alarm	Fans	High Temperature Alarm - Setpoint | Fan 8	-29.2°F to 129.2°F (120.2°F; Default)
40203	2	3, 16	float	Fan 8 | Alarm Deadband - Temp	Fans	Alarm Deadband - Temp | Fan 8	0 to 18°F (0°F; Default)
40205	2	3, 16	float	Fan 8 | Alarm Delay - Temp	Fans	Alarm Delay - Temp | Fan 8	0 to 5 Minutes (0 ft/min; Default)
40207	2	3, 16	float	Fan 9 | Low Flow Alarm	Fans	Low Flow Alarm - Setpoint | Fan 9	0 to 10,000 FPM (0 ft/min; Default)

Ruskin's Modbus RTU – Data Map (Continued)

Register	Register Count	Function	Type	Name	Product Line	Description	Range
SYSTEM CONFIGURATION							
Holding Registers							
40209	2	3, 16	float	Fan 9 | High Flow Alarm	Fans	High Flow Alarm - Setpoint | Fan 9	0 to 10,000 FPM (10,000 ft/min; Default)
40211	2	3, 16	float	Fan 9 | Alarm Deadband - Flow	Fans	Alarm Deadband - Flow | Fan 9	0 to 500 FPM (0 ft/min; Default)
40213	2	3, 16	float	Fan 9 | Alarm Delay - Flow	Fans	Alarm Delay - Flow | Fan 9	0 to 5 Minutes (0 min; Default)
40215	2	3, 16	float	Fan 9 | Low Temp Alarm	Fans	Low Temperature Alarm - Setpoint | Fan 9	-29.2°F to 129.2°F (-20.2°F; Default)
40217	2	3, 16	float	Fan 9 | High Temp Alarm	Fans	High Temperature Alarm - Setpoint | Fan 9	-29.2°F to 129.2°F (120.2°F; Default)
40219	2	3, 16	float	Fan 9 | Alarm Deadband - Temp	Fans	Alarm Deadband - Temp | Fan 9	0 to 18°F (0°F; Default)
40221	2	3, 16	float	Fan 9 | Alarm Delay - Temp	Fans	Alarm Delay - Temp | Fan 9	0 to 5 Minutes (0 ft/min; Default)
40223	2	3, 16	float	Fan 10 | Low Flow Alarm	Fans	Low Flow Alarm - Setpoint | Fan 10	0 to 10,000 FPM (0 ft/min; Default)
40225	2	3, 16	float	Fan 10 | High Flow Alarm	Fans	High Flow Alarm - Setpoint | Fan 10	0 to 10,000 FPM (10,000 ft/min; Default)
40227	2	3, 16	float	Fan 10 | Alarm Deadband - Flow	Fans	Alarm Deadband - Flow | Fan 10	0 to 500 FPM (0 ft/min; Default)
40229	2	3, 16	float	Fan 10 | Alarm Delay - Flow	Fans	Alarm Delay - Flow | Fan 10	0 to 5 Minutes (0 min; Default)
40231	2	3, 16	float	Fan 10 | Low Temp Alarm	Fans	Low Temperature Alarm - Setpoint | Fan 10	-29.2°F to 129.2°F (-20.2°F; Default)
40233	2	3, 16	float	Fan 10 | High Temp Alarm	Fans	High Temperature Alarm - Setpoint | Fan 10	-29.2°F to 129.2°F (120.2°F; Default)
40235	2	3, 16	float	Fan 10 | Alarm Deadband - Temp	Fans	Alarm Deadband - Temp | Fan 10	0 to 18°F (0°F; Default)
40237	2	3, 16	float	Fan 10 | Alarm Delay - Temp	Fans	Alarm Delay - Temp | Fan 10	0 to 5 Minutes (0 ft/min; Default)
40239	2	3, 16	float	Fan 11 | Low Flow Alarm	Fans	Low Flow Alarm - Setpoint | Fan 11	0 to 10,000 FPM (0 ft/min; Default)
40241	2	3, 16	float	Fan 11 | High Flow Alarm	Fans	High Flow Alarm - Setpoint | Fan 11	0 to 10,000 FPM (10,000 ft/min; Default)
40243	2	3, 16	float	Fan 11 | Alarm Deadband - Flow	Fans	Alarm Deadband - Flow | Fan 11	0 to 500 FPM (0 ft/min; Default)
40245	2	3, 16	float	Fan 11 | Alarm Delay - Flow	Fans	Alarm Delay - Flow | Fan 11	0 to 5 Minutes (0 min; Default)
40247	2	3, 16	float	Fan 11 | Low Temp Alarm	Fans	Low Temperature Alarm - Setpoint | Fan 11	-29.2°F to 129.2°F (-20.2°F; Default)
40249	2	3, 16	float	Fan 11 | High Temp Alarm	Fans	High Temperature Alarm - Setpoint | Fan 11	-29.2°F to 129.2°F (120.2°F; Default)
40251	2	3, 16	float	Fan 11 | Alarm Deadband - Temp	Fans	Alarm Deadband - Temp | Fan 11	0 to 18°F (0°F; Default)
40253	2	3, 16	float	Fan 11 | Alarm Delay - Temp	Fans	Alarm Delay - Temp | Fan 11	0 to 5 Minutes (0 ft/min; Default)
40255	2	3, 16	float	Fan 12 | Low Flow Alarm	Fans	Low Flow Alarm - Setpoint | Fan 12	0 to 10,000 FPM (0 ft/min; Default)
40257	2	3, 16	float	Fan 12 | High Flow Alarm	Fans	High Flow Alarm - Setpoint | Fan 12	0 to 10,000 FPM (10,000 ft/min; Default)
40259	2	3, 16	float	Fan 12 | Alarm Deadband - Flow	Fans	Alarm Deadband - Flow | Fan 12	0 to 500 FPM (0 ft/min; Default)
40261	2	3, 16	float	Fan 12 | Alarm Delay - Flow	Fans	Alarm Delay - Flow | Fan 12	0 to 5 Minutes (0 min; Default)

Ruskin's Modbus RTU – Data Map (Continued)

Register	Register Count	Function	Type	Name	Product Line	Description	Range
SYSTEM CONFIGURATION							
Holding Registers							
40263	2	3, 16	float	Fan 12 | Low Temp Alarm	Fans	Low Temperature Alarm - Setpoint | Fan 12	-29.2°F to 129.2°F (-20.2°F; Default)
40265	2	3, 16	float	Fan 12 | High Temp Alarm	Fans	High Temperature Alarm - Setpoint | Fan 12	-29.2°F to 129.2°F (120.2°F; Default)
40267	2	3, 16	float	Fan 12 | Alarm Deadband - Temp	Fans	Alarm Deadband - Temp | Fan 12	0 to 18°F (0°F; Default)
40269	2	3, 16	float	Fan 12 | Alarm Delay - Temp	Fans	Alarm Delay - Temp | Fan 12	0 to 5 Minutes (0 ft/min; Default)
40271	2	3, 16	float	Fan 13 | Low Flow Alarm	Fans	Low Flow Alarm - Setpoint | Fan 13	0 to 10,000 FPM (0 ft/min; Default)
40273	2	3, 16	float	Fan 13 | High Flow Alarm	Fans	High Flow Alarm - Setpoint | Fan 13	0 to 10,000 FPM (10,000 ft/min; Default)
40275	2	3, 16	float	Fan 13 | Alarm Deadband - Flow	Fans	Alarm Deadband - Flow | Fan 13	0 to 500 FPM (0 ft/min; Default)
40277	2	3, 16	float	Fan 13 | Alarm Delay - Flow	Fans	Alarm Delay - Flow | Fan 13	0 to 5 Minutes (0 min; Default)
40279	2	3, 16	float	Fan 13 | Low Temp Alarm	Fans	Low Temperature Alarm - Setpoint | Fan 13	-29.2°F to 129.2°F (-20.2°F; Default)
40281	2	3, 16	float	Fan 13 | High Temp Alarm	Fans	High Temperature Alarm - Setpoint | Fan 13	-29.2°F to 129.2°F (120.2°F; Default)
40283	2	3, 16	float	Fan 13 | Alarm Deadband - Temp	Fans	Alarm Deadband - Temp | Fan 13	0 to 18°F (0°F; Default)
40285	2	3, 16	float	Fan 13 | Alarm Delay - Temp	Fans	Alarm Delay - Temp | Fan 13	0 to 5 Minutes (0 ft/min; Default)
40287	2	3, 16	float	Fan 14 | Low Flow Alarm	Fans	Low Flow Alarm - Setpoint | Fan 14	0 to 10,000 FPM (0 ft/min; Default)
40289	2	3, 16	float	Fan 14 | High Flow Alarm	Fans	High Flow Alarm - Setpoint | Fan 14	0 to 10,000 FPM (10,000 ft/min; Default)
40291	2	3, 16	float	Fan 14 | Alarm Deadband - Flow	Fans	Alarm Deadband - Flow | Fan 14	0 to 500 FPM (0 ft/min; Default)
40293	2	3, 16	float	Fan 14 | Alarm Delay - Flow	Fans	Alarm Delay - Flow | Fan 14	0 to 5 Minutes (0 min; Default)
40295	2	3, 16	float	Fan 14 | Low Temp Alarm	Fans	Low Temperature Alarm - Setpoint | Fan 14	-29.2°F to 129.2°F (-20.2°F; Default)
40297	2	3, 16	float	Fan 14 | High Temp Alarm	Fans	High Temperature Alarm - Setpoint | Fan 14	-29.2°F to 129.2°F (120.2°F; Default)
40299	2	3, 16	float	Fan 14 | Alarm Deadband - Temp	Fans	Alarm Deadband - Temp | Fan 14	0 to 18°F (0°F; Default)
40301	2	3, 16	float	Fan 14 | Alarm Delay - Temp	Fans	Alarm Delay - Temp | Fan 14	0 to 5 Minutes (0 ft/min; Default)
40303	2	3, 16	float	Fan 15 | Low Flow Alarm	Fans	Low Flow Alarm - Setpoint | Fan 15	0 to 10,000 FPM (0 ft/min; Default)
40305	2	3, 16	float	Fan 15 | High Flow Alarm	Fans	High Flow Alarm - Setpoint | Fan 15	0 to 10,000 FPM (10,000 ft/min; Default)
40307	2	3, 16	float	Fan 15 | Alarm Deadband - Flow	Fans	Alarm Deadband - Flow | Fan 15	0 to 500 FPM (0 ft/min; Default)
40309	2	3, 16	float	Fan 15 | Alarm Delay - Flow	Fans	Alarm Delay - Flow | Fan 15	0 to 5 Minutes (0 min; Default)
40311	2	3, 16	float	Fan 15 | Low Temp Alarm	Fans	Low Temperature Alarm - Setpoint | Fan 15	-29.2°F to 129.2°F (-20.2°F; Default)
40313	2	3, 16	float	Fan 15 | High Temp Alarm	Fans	High Temperature Alarm - Setpoint | Fan 15	-29.2°F to 129.2°F (120.2°F; Default)
40315	2	3, 16	float	Fan 15 | Alarm Deadband - Temp	Fans	Alarm Deadband - Temp | Fan 15	0 to 18°F (0°F; Default)

Ruskin's Modbus RTU – Data Map (Continued)

Register	Register Count	Function	Type	Name	Product Line	Description	Range
SYSTEM CONFIGURATION							
Holding Registers							
40317	2	3, 16	float	Fan 15 | Alarm Delay - Temp	Fans	Alarm Delay - Temp | Fan 15	0 to 5 Minutes (0 ft/min; Default)
40319	2	3, 16	float	Fan 16 | Low Flow Alarm	Fans	Low Flow Alarm - Setpoint | Fan 16	0 to 10,000 FPM (0 ft/min; Default)
40321	2	3, 16	float	Fan 16 | High Flow Alarm	Fans	High Flow Alarm - Setpoint | Fan 16	0 to 10,000 FPM (10,000 ft/min; Default)
40323	2	3, 16	float	Fan 16 | Alarm Deadband - Flow	Fans	Alarm Deadband - Flow | Fan 16	0 to 500 FPM (0 ft/min; Default)
40325	2	3, 16	float	Fan 16 | Alarm Delay - Flow	Fans	Alarm Delay - Flow | Fan 16	0 to 5 Minutes (0 min; Default)
40327	2	3, 16	float	Fan 16 | Low Temp Alarm	Fans	Low Temperature Alarm - Setpoint | Fan 16	-29.2°F to 129.2°F (-20.2°F; Default)
40329	2	3, 16	float	Fan 16 | High Temp Alarm	Fans	High Temperature Alarm - Setpoint | Fan 16	-29.2°F to 129.2°F (120.2°F; Default)
40331	2	3, 16	float	Fan 16 | Alarm Deadband - Temp	Fans	Alarm Deadband - Temp | Fan 16	0 to 18°F (0°F; Default)
40333	2	3, 16	float	Fan 16 | Alarm Delay - Temp	Fans	Alarm Delay - Temp | Fan 16	0 to 5 Minutes (0 ft/min; Default)
Coils							
00001	1	1, 5, 15	bool	System Reset	ALL	Device Reset	1 = RESET
00003	1	1, 5, 15	bool	Low Flow Alarm - On/Off	ALL	Low Flow Alarm - Enable - Fan Summary	1 = ON, 0 = OFF (Default)
00004	1	1, 5, 15	bool	High Flow Alarm - On/Off	ALL	High Flow Alarm - Enable - Fan Summary	1 = ON, 0 = OFF (Default)
00005	1	1, 5, 15	bool	Low Temp Alarm - On/Off	ALL	Low Temperature Alarm - Fan Summary	1 = ON, 0 = OFF (Default)
00006	1	1, 5, 15	bool	High Temp Alarm - On/Off	ALL	High Temperature Alarm - Fan Summary	1 = ON, 0 = OFF (Default)
00007	1	1, 5, 15	bool	Float Word Order	ALL	Swap Between Big- and Little-Endian Word Order for Floats	1 = Big Endian, 0 = Little Endian (Default)
00008	1	1, 5, 15	bool	String Order	ALL	Sets the string byte ordering used in read and write processing	1 = Swapped, 0 = Normal (Default)
00009	1	1, 5, 15	bool	Fan 1 | Low Flow Alarm - On/Off	Fans	Low Flow Alarm - Enable | Fan 1	1 = ON, 0 = OFF (Default)
00010	1	1, 5, 15	bool	Fan 1 | High Flow Alarm - On/Off	Fans	High Flow Alarm - Enable |Fan 1	1 = ON, 0 = OFF (Default)
00011	1	1, 5, 15	bool	Fan 1 | Low Temp Alarm - On/Off	Fans	Low Temperature Alarm - Enable | Fan 1	1 = ON, 0 = OFF (Default)
00012	1	1, 5, 15	bool	Fan 1 | High Temp Alarm - On/Off	Fans	High Temperature Alarm - Enable | Fan 1	1 = ON, 0 = OFF (Default)
00013	1	1, 5, 15	bool	Fan 2 | Low Flow Alarm - On/Off	Fans	Low Flow Alarm - Enable | Fan 2	1 = ON, 0 = OFF (Default)
00014	1	1, 5, 15	bool	Fan 2 | High Flow Alarm - On/Off	Fans	High Flow Alarm - Enable |Fan 2	1 = ON, 0 = OFF (Default)
00015	1	1, 5, 15	bool	Fan 2 | Low Temp Alarm - On/Off	Fans	Low Temperature Alarm - Enable | Fan 2	1 = ON, 0 = OFF (Default)

Ruskin's Modbus RTU – Data Map (Continued)

Register	Register Count	Function	Type	Name	Product Line	Description	Range
SYSTEM CONFIGURATION							
Coils							
00016	1	1, 5, 15	bool	Fan 2 | High Temp Alarm - On/Off	Fans	High Temperature Alarm - Enable | Fan 2	1 = ON, 0 = OFF (Default)
00017	1	1, 5, 15	bool	Fan 3 | Low Flow Alarm - On/Off	Fans	Low Flow Alarm - Enable | Fan 3	1 = ON, 0 = OFF (Default)
00018	1	1, 5, 15	bool	Fan 3 | High Flow Alarm - On/Off	Fans	High Flow Alarm - Enable | Fan 3	1 = ON, 0 = OFF (Default)
00019	1	1, 5, 15	bool	Fan 3 | Low Temp Alarm - On/Off	Fans	Low Temperature Alarm - Enable | Fan 3	1 = ON, 0 = OFF (Default)
00020	1	1, 5, 15	bool	Fan 3 | High Temp Alarm - On/Off	Fans	High Temperature Alarm - Enable | Fan 3	1 = ON, 0 = OFF (Default)
00021	1	1, 5, 15	bool	Fan 4 | Low Flow Alarm - On/Off	Fans	Low Flow Alarm - Enable | Fan 4	1 = ON, 0 = OFF (Default)
00022	1	1, 5, 15	bool	Fan 4 | High Flow Alarm - On/Off	Fans	High Flow Alarm - Enable | Fan 4	1 = ON, 0 = OFF (Default)
00023	1	1, 5, 15	bool	Fan 4 | Low Temp Alarm - On/Off	Fans	Low Temperature Alarm - Enable | Fan 4	1 = ON, 0 = OFF (Default)
00024	1	1, 5, 15	bool	Fan 4 | High Temp Alarm - On/Off	Fans	High Temperature Alarm - Enable | Fan 4	1 = ON, 0 = OFF (Default)
00025	1	1, 5, 15	bool	Fan 5 | Low Flow Alarm - On/Off	Fans	Low Flow Alarm - Enable | Fan 5	1 = ON, 0 = OFF (Default)
00026	1	1, 5, 15	bool	Fan 5 | High Flow Alarm - On/Off	Fans	High Flow Alarm - Enable |Fan 5	1 = ON, 0 = OFF (Default)
00027	1	1, 5, 15	bool	Fan 5 | Low Temp Alarm - On/Off	Fans	Low Temperature Alarm - Enable | Fan 5	1 = ON, 0 = OFF (Default)
00028	1	1, 5, 15	bool	Fan 5 | High Temp Alarm - On/Off	Fans	High Temperature Alarm - Enable | Fan 5	1 = ON, 0 = OFF (Default)
00029	1	1, 5, 15	bool	Fan 6 | Low Flow Alarm - On/Off	Fans	Low Flow Alarm - Enable | Fan 6	1 = ON, 0 = OFF (Default)
00030	1	1, 5, 15	bool	Fan 6 | High Flow Alarm - On/Off	Fans	High Flow Alarm - Enable | Fan 6	1 = ON, 0 = OFF (Default)
00031	1	1, 5, 15	bool	Fan 6 | Low Temp Alarm - On/Off	Fans	Low Temperature Alarm - Enable | Fan 6	1 = ON, 0 = OFF (Default)
00032	1	1, 5, 15	bool	Fan 6 | High Temp Alarm - On/Off	Fans	High Temperature Alarm - Enable | Fan 6	1 = ON, 0 = OFF (Default)
00033	1	1, 5, 15	bool	Fan 7 | Low Flow Alarm - On/Off	Fans	Low Flow Alarm - Enable | Fan 7	1 = ON, 0 = OFF (Default)
00034	1	1, 5, 15	bool	Fan 7 | High Flow Alarm - On/Off	Fans	High Flow Alarm - Enable | Fan 7	1 = ON, 0 = OFF (Default)
00035	1	1, 5, 15	bool	Fan 7 | Low Temp Alarm - On/Off	Fans	Low Temperature Alarm - Enable | Fan 7	1 = ON, 0 = OFF (Default)
00036	1	1, 5, 15	bool	Fan 7 | High Temp Alarm - On/Off	Fans	High Temperature Alarm - Enable | Fan 7	1 = ON, 0 = OFF (Default)

Ruskin's Modbus RTU – Data Map (Continued)

Register	Register Count	Function	Type	Name	Product Line	Description	Range
SYSTEM CONFIGURATION							
Coils							
00037	1	1, 5, 15	bool	Fan 8 | Low Flow Alarm - On/Off	Fans	Low Flow Alarm - Enable | Fan 8	1 = ON, 0 = OFF (Default)
00038	1	1, 5, 15	bool	Fan 8 | High Flow Alarm - On/Off	Fans	High Flow Alarm - Enable |Fan 8	1 = ON, 0 = OFF (Default)
00039	1	1, 5, 15	bool	Fan 8 | Low Temp Alarm - On/Off	Fans	Low Temperature Alarm - Enable | Fan 8	1 = ON, 0 = OFF (Default)
00040	1	1, 5, 15	bool	Fan 8 | High Temp Alarm - On/Off	Fans	High Temperature Alarm - Enable | Fan 8	1 = ON, 0 = OFF (Default)
00041	1	1, 5, 15	bool	Fan 9 | Low Flow Alarm - On/Off	Fans	Low Flow Alarm - Enable | Fan 9	1 = ON, 0 = OFF (Default)
00042	1	1, 5, 15	bool	Fan 9 | High Flow Alarm - On/Off	Fans	High Flow Alarm - Enable |Fan 9	1 = ON, 0 = OFF (Default)
00043	1	1, 5, 15	bool	Fan 9 | Low Temp Alarm - On/Off	Fans	Low Temperature Alarm - Enable | Fan 9	1 = ON, 0 = OFF (Default)
00044	1	1, 5, 15	bool	Fan 9 | High Temp Alarm - On/Off	Fans	High Temperature Alarm - Enable | Fan 9	1 = ON, 0 = OFF (Default)
00045	1	1, 5, 15	bool	Fan 10 | Low Flow Alarm - On/Off	Fans	Low Flow Alarm - Enable | Fan 10	1 = ON, 0 = OFF (Default)
00046	1	1, 5, 15	bool	Fan 10 | High Flow Alarm - On/Off	Fans	High Flow Alarm - Enable |Fan 10	1 = ON, 0 = OFF (Default)
00047	1	1, 5, 15	bool	Fan 10 | Low Temp Alarm - On/Off	Fans	Low Temperature Alarm - Enable | Fan 10	1 = ON, 0 = OFF (Default)
00048	1	1, 5, 15	bool	Fan 10 | High Temp Alarm - On/Off	Fans	High Temperature Alarm - Enable | Fan 10	1 = ON, 0 = OFF (Default)
00049	1	1, 5, 15	bool	Fan 11 | Low Flow Alarm - On/Off	Fans	Low Flow Alarm - Enable | Fan 11	1 = ON, 0 = OFF (Default)
00050	1	1, 5, 15	bool	Fan 11 | High Flow Alarm - On/Off	Fans	High Flow Alarm - Enable |Fan 11	1 = ON, 0 = OFF (Default)
00051	1	1, 5, 15	bool	Fan 11 | Low Temp Alarm - On/Off	Fans	Low Temperature Alarm - Enable | Fan 11	1 = ON, 0 = OFF (Default)
00052	1	1, 5, 15	bool	Fan 11 | High Temp Alarm - On/Off	Fans	High Temperature Alarm - Enable | Fan 11	1 = ON, 0 = OFF (Default)
00053	1	1, 5, 15	bool	Fan 12 | Low Flow Alarm - On/Off	Fans	Low Flow Alarm - Enable | Fan 12	1 = ON, 0 = OFF (Default)
00054	1	1, 5, 15	bool	Fan 12 | High Flow Alarm - On/Off	Fans	High Flow Alarm - Enable | Fan 12	1 = ON, 0 = OFF (Default)
00055	1	1, 5, 15	bool	Fan 12 | Low Temp Alarm - On/Off	Fans	Low Temperature Alarm - Enable | Fan 12	1 = ON, 0 = OFF (Default)
00056	1	1, 5, 15	bool	Fan 12 | High Temp Alarm - On/Off	Fans	High Temperature Alarm - Enable | Fan 12	1 = ON, 0 = OFF (Default)
00057	1	1, 5, 15	bool	Fan 13 | Low Flow Alarm - On/Off	Fans	Low Flow Alarm - Enable | Fan 13	1 = ON, 0 = OFF (Default)

Ruskin's Modbus RTU – Data Map (Continued)

Register	Register Count	Function	Type	Name	Product Line	Description	Range
SYSTEM CONFIGURATION							
Coils							
00058	1	1, 5, 15	bool	Fan 13 | High Flow Alarm - On/Off	Fans	High Flow Alarm - Enable |Fan 13	1 = ON, 0 = OFF (Default)
00059	1	1, 5, 15	bool	Fan 13 | Low Temp Alarm - On/Off	Fans	Low Temperature Alarm - Enable | Fan 13	1 = ON, 0 = OFF (Default)
00060	1	1, 5, 15	bool	Fan 13 | High Temp Alarm - On/Off	Fans	High Temperature Alarm - Enable | Fan 13	1 = ON, 0 = OFF (Default)
00061	1	1, 5, 15	bool	Fan 14 | Low Flow Alarm - On/Off	Fans	Low Flow Alarm - Enable | Fan 14	1 = ON, 0 = OFF (Default)
00062	1	1, 5, 15	bool	Fan 14 | High Flow Alarm - On/Off	Fans	High Flow Alarm - Enable | Fan 14	1 = ON, 0 = OFF (Default)
00063	1	1, 5, 15	bool	Fan 14 | Low Temp Alarm - On/Off	Fans	Low Temperature Alarm - Enable | Fan 14	1 = ON, 0 = OFF (Default)
00064	1	1, 5, 15	bool	Fan 14 | High Temp Alarm - On/Off	Fans	High Temperature Alarm - Enable | Fan 14	1 = ON, 0 = OFF (Default)
00065	1	1, 5, 15	bool	Fan 15 | Low Flow Alarm - On/Off	Fans	Low Flow Alarm - Enable | Fan 15	1 = ON, 0 = OFF (Default)
00066	1	1, 5, 15	bool	Fan 15 | High Flow Alarm - On/Off	Fans	High Flow Alarm - Enable | Fan 15	1 = ON, 0 = OFF (Default)
00067	1	1, 5, 15	bool	Fan 15 | Low Temp Alarm - On/Off	Fans	Low Temperature Alarm - Enable | Fan 15	1 = ON, 0 = OFF (Default)
00068	1	1, 5, 15	bool	Fan 15 | High Temp Alarm - On/Off	Fans	High Temperature Alarm - Enable | Fan 15	1 = ON, 0 = OFF (Default)
00069	1	1, 5, 15	bool	Fan 16 | Low Flow Alarm - On/Off	Fans	Low Flow Alarm - Enable | Fan 16	1 = ON, 0 = OFF (Default)
00070	1	1, 5, 15	bool	Fan 16 | High Flow Alarm - On/Off	Fans	High Flow Alarm - Enable | Fan 16	1 = ON, 0 = OFF (Default)
00071	1	1, 5, 15	bool	Fan 16 | Low Temp Alarm - On/Off	Fans	Low Temperature Alarm - Enable | Fan 16	1 = ON, 0 = OFF (Default)
00072	1	1, 5, 15	bool	Fan 16 | High Temp Alarm - On/Off	Fans	High Temperature Alarm - Enable | Fan 16	1 = ON, 0 = OFF (Default)
SYSTEM CONFIGURATION							
SYSTEM STATUS							
30001	1	4	uint16	Device Type	ALL	Device Model Number	3 = TDFi-RT, 4 = RA-1270, 5 = TDFi-FA, 6 = RA-1470
30002	1	4	uint16	Airflow Type	ALL	Airflow Type	0 = Actual, 1 = Standard
30003	1	4	uint16	Airflow Unit	ALL	Airflow Unit	0 = FPM, 1 = MPS, 2 = CFS, 3 = CFM, 4 = CFH, 5 = LPS, 6 = LPM, 7 = CMH
30004	1	4	uint16	Temperature Unit	ALL	Temperature Unit	0 = °F, 1 = °C
30005	1	4	uint16	System Node Count	ALL	Total node count on the Ruskin network	1 - 17 Devices Connected (Host)| Monitors
30006	1	4	uint16	System Fan Count	Fans	Total fan count on the Ruskin network	1 - 16 Fans
30007	1	4	uint16	Device Version	ALL	Host - PCB Firmware	MSB = Major, LSB = Minor

Ruskin's Modbus RTU – Data Map (Continued)

Register	Register Count	Function	Type	Name	Product Line	Description	Range
SYSTEM CONFIGURATION							
SYSTEM STATUS							
30008	1	4	uint16	Device Version-2	ALL	Host - PCB Build	MSB = Patch, LSB = Build number
30009	1	4	uint16	Protocol Version	ALL	Host - Modbus RTU Firmware	MSB = Major, LSB = Minor
30010	1	4	uint16	Protocol Version-2	ALL	Host - Modbus RTU Build	MSB = Patch, LSB = Build number
30028	1	4	uint16	Bad Data HR Address	ALL	Set to the last holding register address that had out of range data written to it	Any Valid Holding Address or 0 if no bad write has taken place since last boot
30029	1	4	uint16	Status	ALL	Current System Status	0 = NORMAL, 1 = ALARM, 2 = FAULT, 3 = ALARM & FAULT
30030	1	4	uint16	Flow Alarm	ALL	Flow is Less or Greater than the Flow Limits	0 = NORMAL, 1 = LOW ALARM, 2 = HIGH ALARM
30031	1	4	uint16	Temp Alarm	ALL	Temperature is Less or Greater than the Temperature Limits	0 = NORMAL, 1 = LOW ALARM, 2 = HIGH ALARM
30032	2	4	float	Airflow	ALL	Average Airflow Velocity or Volume in SI or Imperial Units	0 to 10,000 FPM
30034	2	4	float	Temperature	ALL	Average Temperature in SI or Imperial Units	-20°F to 120°F (-29°C to 49°C)
30044	1	4	uint16	Fan 1 Flow Alarm	Fans	Flow is Less or Greater than the Flow Limit | Fan 1	0 = NORMAL, 1 = LOW ALARM, 2 = HIGH ALARM
30045	1	4	uint16	Fan 2 Flow Alarm	Fans	Flow is Less or Greater than the Flow Limit | Fan 2	0 = NORMAL, 1 = LOW ALARM, 2 = HIGH ALARM
30046	1	4	uint16	Fan 3 Flow Alarm	Fans	Flow is Less or Greater than the Flow Limit | Fan 3	0 = NORMAL, 1 = LOW ALARM, 2 = HIGH ALARM
30047	1	4	uint16	Fan 4 Flow Alarm	Fans	Flow is Less or Greater than the Flow Limit | Fan 4	0 = NORMAL, 1 = LOW ALARM, 2 = HIGH ALARM
30048	1	4	uint16	Fan 5 Flow Alarm	Fans	Flow is Less or Greater than the Flow Limit | Fan 5	0 = NORMAL, 1 = LOW ALARM, 2 = HIGH ALARM
30049	1	4	uint16	Fan 6 Flow Alarm	Fans	Flow is Less or Greater than the Flow Limit | Fan 6	0 = NORMAL, 1 = LOW ALARM, 2 = HIGH ALARM
30050	1	4	uint16	Fan 7 Flow Alarm	Fans	Flow is Less or Greater than the Flow Limit | Fan 7	0 = NORMAL, 1 = LOW ALARM, 2 = HIGH ALARM
30051	1	4	uint16	Fan 8 Flow Alarm	Fans	Flow is Less or Greater than the Flow Limit | Fan 8	0 = NORMAL, 1 = LOW ALARM, 2 = HIGH ALARM
30052	1	4	uint16	Fan 9 Flow Alarm	Fans	Flow is Less or Greater than the Flow Limit | Fan 9	0 = NORMAL, 1 = LOW ALARM, 2 = HIGH ALARM
30053	1	4	uint16	Fan 10 Flow Alarm	Fans	Flow is Less or Greater than the Flow Limit | Fan 10	0 = NORMAL, 1 = LOW ALARM, 2 = HIGH ALARM
30054	1	4	uint16	Fan 11 Flow Alarm	Fans	Flow is Less or Greater than the Flow Limit | Fan 11	0 = NORMAL, 1 = LOW ALARM, 2 = HIGH ALARM
30055	1	4	uint16	Fan 12 Flow Alarm	Fans	Flow is Less or Greater than the Flow Limit | Fan 12	0 = NORMAL, 1 = LOW ALARM, 2 = HIGH ALARM
30056	1	4	uint16	Fan 13 Flow Alarm	Fans	Flow is Less or Greater than the Flow Limit | Fan 13	0 = NORMAL, 1 = LOW ALARM, 2 = HIGH ALARM
30057	1	4	uint16	Fan 14 Flow Alarm	Fans	Flow is Less or Greater than the Flow Limit | Fan 14	0 = NORMAL, 1 = LOW ALARM, 2 = HIGH ALARM
30058	1	4	uint16	Fan 15 Flow Alarm	Fans	Flow is Less or Greater than the Flow Limit | Fan 15	0 = NORMAL, 1 = LOW ALARM, 2 = HIGH ALARM
30059	1	4	uint16	Fan 16 Flow Alarm	Fans	Flow is Less or Greater than the Flow Limit | Fan 16	0 = NORMAL, 1 = LOW ALARM, 2 = HIGH ALARM
30060	1	4	uint16	Fan 1 Temp Alarm	Fans	Temperature is Less or Greater than the Temperature Limit | Fan 1	0 = NORMAL, 1 = LOW ALARM, 2 = HIGH ALARM
30061	1	4	uint16	Fan 2 Temp Alarm	Fans	Temperature is Less or Greater than the Temperature Limit | Fan 2	0 = NORMAL, 1 = LOW ALARM, 2 = HIGH ALARM

Ruskin's Modbus RTU – Data Map (Continued)

Register	Register Count	Function	Type	Name	Product Line	Description	Range
SYSTEM STATUS							
30062	1	4	uint16	Fan 3 Temp Alarm	Fans	Temperature is Less or Greater than the Temperature Limit | Fan 3	0 = NORMAL, 1 = LOW ALARM, 2 = HIGH ALARM
30063	1	4	uint16	Fan 4 Temp Alarm	Fans	Temperature is Less or Greater than the Temperature Limit | Fan 4	0 = NORMAL, 1 = LOW ALARM, 2 = HIGH ALARM
30064	1	4	uint16	Fan 5 Temp Alarm	Fans	Temperature is Less or Greater than the Temperature Limit | Fan 5	0 = NORMAL, 1 = LOW ALARM, 2 = HIGH ALARM
30065	1	4	uint16	Fan 6 Temp Alarm	Fans	Temperature is Less or Greater than the Temperature Limit | Fan 6	0 = NORMAL, 1 = LOW ALARM, 2 = HIGH ALARM
30066	1	4	uint16	Fan 7 Temp Alarm	Fans	Temperature is Less or Greater than the Temperature Limit | Fan 7	0 = NORMAL, 1 = LOW ALARM, 2 = HIGH ALARM
30067	1	4	uint16	Fan 8 Temp Alarm	Fans	Temperature is Less or Greater than the Temperature Limit | Fan 8	0 = NORMAL, 1 = LOW ALARM, 2 = HIGH ALARM
30068	1	4	uint16	Fan 9 Temp Alarm	Fans	Temperature is Less or Greater than the Temperature Limit | Fan 9	0 = NORMAL, 1 = LOW ALARM, 2 = HIGH ALARM
30069	1	4	uint16	Fan 10 Temp Alarm	Fans	Temperature is Less or Greater than the Temperature Limit | Fan 10	0 = NORMAL, 1 = LOW ALARM, 2 = HIGH ALARM
30070	1	4	uint16	Fan 11 Temp Alarm	Fans	Temperature is Less or Greater than the Temperature Limit | Fan 11	0 = NORMAL, 1 = LOW ALARM, 2 = HIGH ALARM
30071	1	4	uint16	Fan 12 Temp Alarm	Fans	Temperature is Less or Greater than the Temperature Limit | Fan 12	0 = NORMAL, 1 = LOW ALARM, 2 = HIGH ALARM
30072	1	4	uint16	Fan 13 Temp Alarm	Fans	Temperature is Less or Greater than the Temperature Limit | Fan 13	0 = NORMAL, 1 = LOW ALARM, 2 = HIGH ALARM
30073	1	4	uint16	Fan 14 Temp Alarm	Fans	Temperature is Less or Greater than the Temperature Limit | Fan 14	0 = NORMAL, 1 = LOW ALARM, 2 = HIGH ALARM
30074	1	4	uint16	Fan 15 Temp Alarm	Fans	Temperature is Less or Greater than the Temperature Limit | Fan 15	0 = NORMAL, 1 = LOW ALARM, 2 = HIGH ALARM
30075	1	4	uint16	Fan 16 Temp Alarm	Fans	Temperature is Less or Greater than the Temperature Limit | Fan 16	0 = NORMAL, 1 = LOW ALARM, 2 = HIGH ALARM

Ruskin's Modbus RTU – Data Map (Continued)

Register	Register Count	Function	Type	Name	Product Line	Description	Range
RUSKIN NETWORK DEVICES							
Device - Serial Numbers							
30101	16	4	string	Host Serial Number	All	Primary / Host Device Serial Number	0 to 31 Characters, null padded, null terminated; 32 byte
30117	16	4	string	Device 1 Serial Number	All	OEM Device Serial Number | Fan 1	0 to 31 Characters, null padded, null terminated; 32 byte
30133	16	4	string	Device 2 Serial Number	All	OEM Device Serial Number | Fan 2	0 to 31 Characters, null padded, null terminated; 32 byte
30149	16	4	string	Device 3 Serial Number	All	OEM Device Serial Number | Fan 3	0 to 31 Characters, null padded, null terminated; 32 byte
30165	16	4	string	Device 4 Serial Number	All	OEM Device Serial Number | Fan 4	0 to 31 Characters, null padded, null terminated; 32 byte
30181	16	4	string	Device 5 Serial Number	All	OEM Device Serial Number | Fan 5	0 to 31 Characters, null padded, null terminated; 32 byte
30197	16	4	string	Device 6 Serial Number	All	OEM Device Serial Number | Fan 6	0 to 31 Characters, null padded, null terminated; 32 byte
30213	16	4	string	Device 7 Serial Number	All	OEM Device Serial Number | Fan 7	0 to 31 Characters, null padded, null terminated; 32 byte
30229	16	4	string	Device 8 Serial Number	All	OEM Device Serial Number | Fan 8	0 to 31 Characters, null padded, null terminated; 32 byte
30245	16	4	string	Device 9 Serial Number	All	OEM Device Serial Number | Fan 9	0 to 31 Characters, null padded, null terminated; 32 byte
30261	16	4	string	Device 10 Serial Number	All	OEM Device Serial Number | Fan 10	0 to 31 Characters, null padded, null terminated; 32 byte
30277	16	4	string	Device 11 Serial Number	All	OEM Device Serial Number | Fan 11	0 to 31 Characters, null padded, null terminated; 32 byte
30293	16	4	string	Device 12 Serial Number	All	OEM Device Serial Number | Fan 12	0 to 31 Characters, null padded, null terminated; 32 byte
30309	16	4	string	Device 13 Serial Number	All	OEM Device Serial Number | Fan 13	0 to 31 Characters, null padded, null terminated; 32 byte
30325	16	4	string	Device 14 Serial Number	All	OEM Device Serial Number | Fan 14	0 to 31 Characters, null padded, null terminated; 32 byte
30341	16	4	string	Device 15 Serial Number	All	OEM Device Serial Number | Fan 15	0 to 31 Characters, null padded, null terminated; 32 byte
30357	16	4	string	Device 16 Serial Number	All	OEM Device Serial Number | Fan 16	0 to 31 Characters, null padded, null terminated; 32 byte

Ruskin's Modbus RTU – Data Map (Continued)

Register	Register Count	Function	Type	Name	Product Line	Description	Range
RUSKIN NETWORK DEVICES							
Device - Airflows							
30373	2	4	float	Airflow Summary	All	Device Network - Airflow Velocity or Volume in SI or Imperial Units	Fans - 0 to 10,000 FPM
30375	2	4	float	Device 1 Airflow	All	Average Airflow Velocity or Volume in SI or Imperial Units | Fan 1	Fans - 0 to 10,000 FPM
30377	2	4	float	Device 2 Airflow	All	Average Airflow Velocity or Volume in SI or Imperial Units | Fan 2	Fans - 0 to 10,000 FPM
30379	2	4	float	Device 3 Airflow	All	Average Airflow Velocity or Volume in SI or Imperial Units | Fan 3	Fans - 0 to 10,000 FPM
30381	2	4	float	Device 4 Airflow	All	Average Airflow Velocity or Volume in SI or Imperial Units | Fan 4	Fans - 0 to 10,000 FPM
30383	2	4	float	Device 5 Airflow	All	Average Airflow Velocity or Volume in SI or Imperial Units | Fan 5	Fans - 0 to 10,000 FPM
30385	2	4	float	Device 6 Airflow	All	Average Airflow Velocity or Volume in SI or Imperial Units | Fan 6	Fans - 0 to 10,000 FPM
30387	2	4	float	Device 7 Airflow	All	Average Airflow Velocity or Volume in SI or Imperial Units | Fan 7	Fans - 0 to 10,000 FPM
30389	2	4	float	Device 8 Airflow	All	Average Airflow Velocity or Volume in SI or Imperial Units | Fan 8	Fans - 0 to 10,000 FPM
30391	2	4	float	Device 9 Airflow	All	Average Airflow Velocity or Volume in SI or Imperial Units | Fan 9	Fans - 0 to 10,000 FPM
30393	2	4	float	Device 10 Airflow	All	Average Airflow Velocity or Volume in SI or Imperial Units | Fan 10	Fans - 0 to 10,000 FPM
30395	2	4	float	Device 11 Airflow	All	Average Airflow Velocity or Volume in SI or Imperial Units | Fan 11	Fans - 0 to 10,000 FPM
30397	2	4	float	Device 12 Airflow	All	Average Airflow Velocity or Volume in SI or Imperial Units | Fan 12	Fans - 0 to 10,000 FPM
30399	2	4	float	Device 13 Airflow	All	Average Airflow Velocity or Volume in SI or Imperial Units | Fan 13	Fans - 0 to 10,000 FPM
30401	2	4	float	Device 14 Airflow	All	Average Airflow Velocity or Volume in SI or Imperial Units | Fan 14	Fans - 0 to 10,000 FPM
30403	2	4	float	Device 15 Airflow	All	Average Airflow Velocity or Volume in SI or Imperial Units | Fan 15	Fans - 0 to 10,000 FPM
30405	2	4	float	Device 16 Airflow	All	Average Airflow Velocity or Volume in SI or Imperial Units | Fan 16	Fans - 0 to 10,000 FPM

Ruskin's Modbus RTU – Data Map (Continued)

Register	Register Count	Function	Type	Name	Product Line	Description	Range
RUSKIN NETWORK DEVICES							
Device - Temperatures							
30407	2	4	float	Temperature Summary	All	Device Network – Temperature in SI or Imperial Units	-20°F to 120°F (-29°C to 49°C)
30409	2	4	float	Device 1 Temperature	All	Average Temperature in SI or Imperial Units | Fan 1	-20°F to 120°F (-29°C to 49°C)
30411	2	4	float	Device 2 Temperature	All	Average Temperature in SI or Imperial Units | Fan 2	-20°F to 120°F (-29°C to 49°C)
30413	2	4	float	Device 3 Temperature	All	Average Temperature in SI or Imperial Units | Fan 3	-20°F to 120°F (-29°C to 49°C)
30415	2	4	float	Device 4 Temperature	All	Average Temperature in SI or Imperial Units | Fan 4	-20°F to 120°F (-29°C to 49°C)
30417	2	4	float	Device 5 Temperature	All	Average Temperature in SI or Imperial Units | Fan 5	-20°F to 120°F (-29°C to 49°C)
30419	2	4	float	Device 6 Temperature	All	Average Temperature in SI or Imperial Units | Fan 6	-20°F to 120°F (-29°C to 49°C)
30421	2	4	float	Device 7 Temperature	All	Average Temperature in SI or Imperial Units | Fan 7	-20°F to 120°F (-29°C to 49°C)
30423	2	4	float	Device 8 Temperature	All	Average Temperature in SI or Imperial Units | Fan 8	-20°F to 120°F (-29°C to 49°C)
30425	2	4	float	Device 9 Temperature	All	Average Temperature in SI or Imperial Units | Fan 9	-20°F to 120°F (-29°C to 49°C)
30427	2	4	float	Device 10 Temperature	All	Average Temperature in SI or Imperial Units | Fan 10	-20°F to 120°F (-29°C to 49°C)
30429	2	4	float	Device 11 Temperature	All	Average Temperature in SI or Imperial Units | Fan 11	-20°F to 120°F (-29°C to 49°C)
30431	2	4	float	Device 12 Temperature	All	Average Temperature in SI or Imperial Units | Fan 12	-20°F to 120°F (-29°C to 49°C)
30433	2	4	float	Device 13 Temperature	All	Average Temperature in SI or Imperial Units | Fan 13	-20°F to 120°F (-29°C to 49°C)
30435	2	4	float	Device 14 Temperature	All	Average Temperature in SI or Imperial Units | Fan 14	-20°F to 120°F (-29°C to 49°C)
30437	2	4	float	Device 15 Temperature	All	Average Temperature in SI or Imperial Units | Fan 15	-20°F to 120°F (-29°C to 49°C)
30439	2	4	float	Device 16 Temperature	All	Average Temperature in SI or Imperial Units | Fan 16	-20°F to 120°F (-29°C to 49°C)

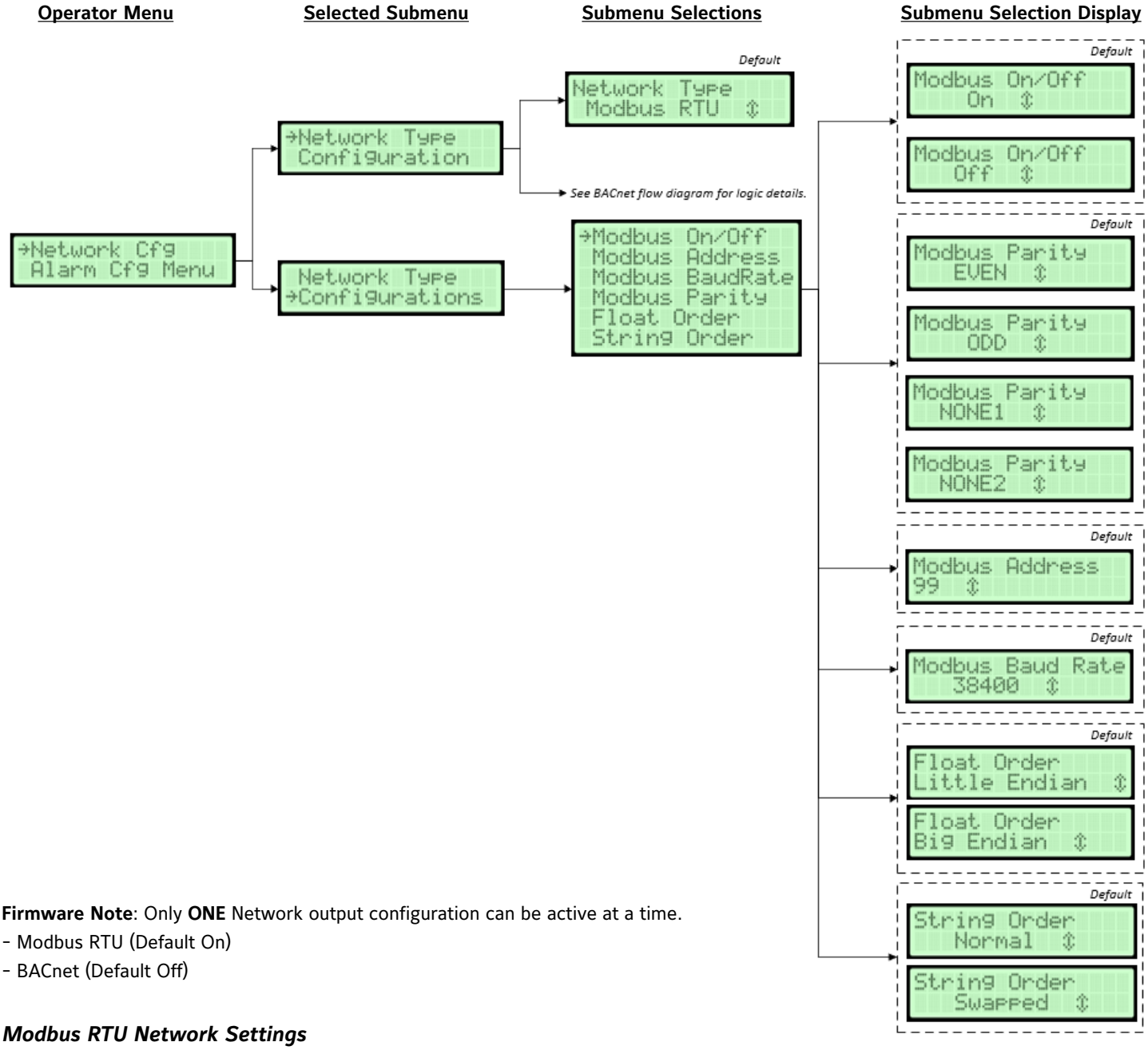
Ruskin's Modbus RTU – Ordering Definition

Big Endian Setting -Coil 00007				
Example = 0 x 12345678				
Application	0 x 78	0 x 56	0 x 34	0 x 12
Registers	0 x 12	0 x 34	0 x 56	0 x 78
	Register 1		Register 2	
Little Endian Setting - Coiling 00007				
Example = 0 x 12345678				
Application	0 x 78	0 x 56	0 x 34	0 x 12
Registers	0 x 56	0 x 78	0 x 12	0 x 34
	Register 1		Register 2	

All Setting		
Example = 0 x 1234		
Application	0 x 34	0 x 12
Registers	0 x 12	0 x 34
	Register 1	

String Order Normal - Coil 00008						
Example = "Hello"						
Application	H'	e'	l'	l'	o'	\0'
Registers	H'	e'	l'	l'	o'	\0'
	Register 1		Register 2		Register 3	
String Order Swapped - Coil 00008						
Example = "Hello"						
Application	H'	e'	l'	l'	o'	\0'
Registers	e'	H'	l'	l'	\0'	o'
	Register 1		Register 2		Register 3	

Ruskin's Modbus RTU – Device UI Flow



Firmware Note: Only **ONE** Network output configuration can be active at a time.
- Modbus RTU (Default On)
- BACnet (Default Off)

Modbus RTU Network Settings

The Modbus RTU submenu contains the following parameters:

- Modbus RTU On/Off
- Modbus RTU Network Address
- Modbus RTU Baud Rate
- Modbus RTU Parity
- Modbus RTU Float Order
- Modbus RTU String Order

RS-485 Network Selection

Network protocol of the RS-485 connection.

[Menu path: Operator Menu > Network Cfg > Network Type]

Default: Modbus RTU

Optional Settings: BACnet MSTP

Modbus RTU On/Off

[Menu path: Operator Menu > Network Cfg > Configuration > Modbus On/Off]

Default: On

Optional Settings: Off

Modbus RTU Network Address

Network address of the Primary

[Menu path: Operator Menu > Network Cfg > Configuration > Modbus Address]

Default: 99

Optional Settings: 1 to 247

Modbus RTU Baud Rates

The baud rate of the network

[Menu path: Operator Menu > Network Cfg > Configuration > Modbus Baud Rate]

Default: 38400

Optional Settings: 9600, 19200, 57600, 76800, 115200

Modbus RTU Parity

Sets the Parity bit for network data checking

[Menu path: Operator Menu > Network Cfg > Configuration > Modbus Parity]

Default: EVEN

Optional Settings: ODD, NONE1, NONE2

Modbus RTU Float Order

Swap between Big-Endian (most significant value in sequence is stored first) and Little-Endian (least significant value in sequence is stored first) word order for Floats

[Menu path: Operator Menu > Network Cfg > Configuration > Float Order]

Default: Little Endian

Optional Settings: Big Endian

Modbus RTU String Order

Sets the string byte ordering used in read and write processing

[Menu path: Operator Menu > Network Cfg > Configuration > String Order]

Default: Normal

Optional Settings: Swapped

Measuring stations are tested at an AMCA Registered Laboratory using instrumentation and procedures in accordance with AMCA Standard No. 610-93, Airflow Station Performance.

The performance specifications are nominal and conform to acceptable industry standards. For application at conditions beyond these specifications, consult the local Ruskin office. Ruskin shall not be liable for damages resulting from misapplication or misuse of its products.

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