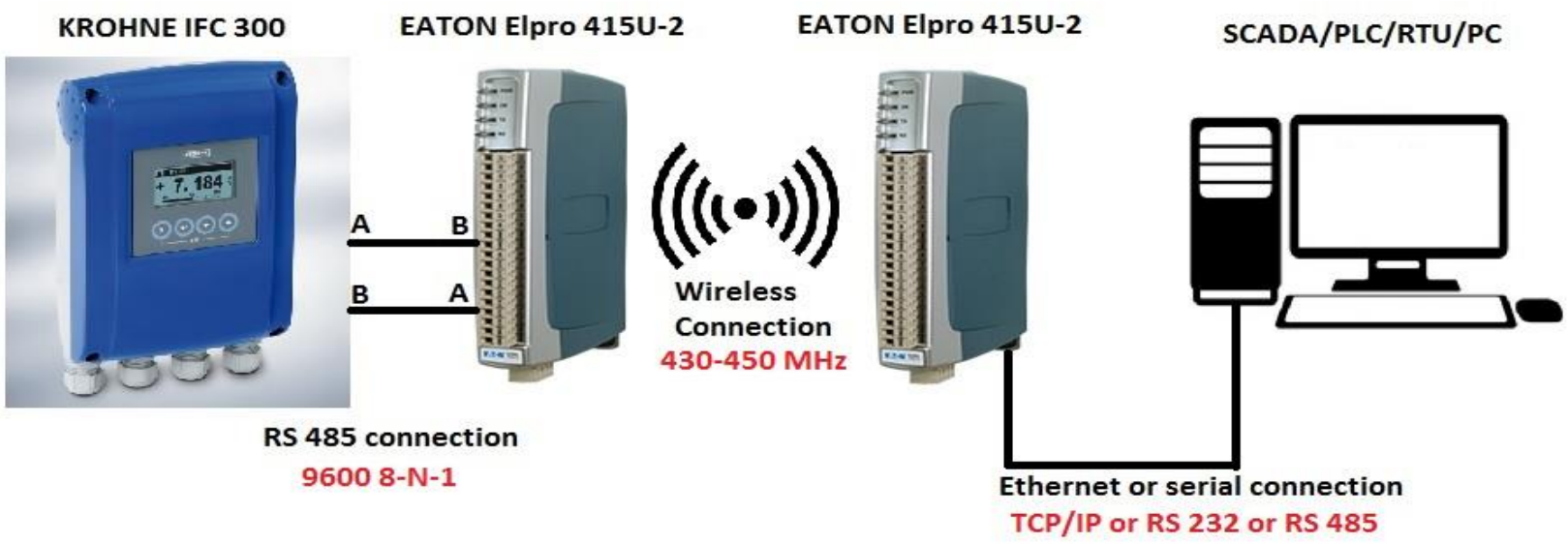
Interfacing the KROHNE Flow Meter IFC 300 with EATON Elpro 415U-2.



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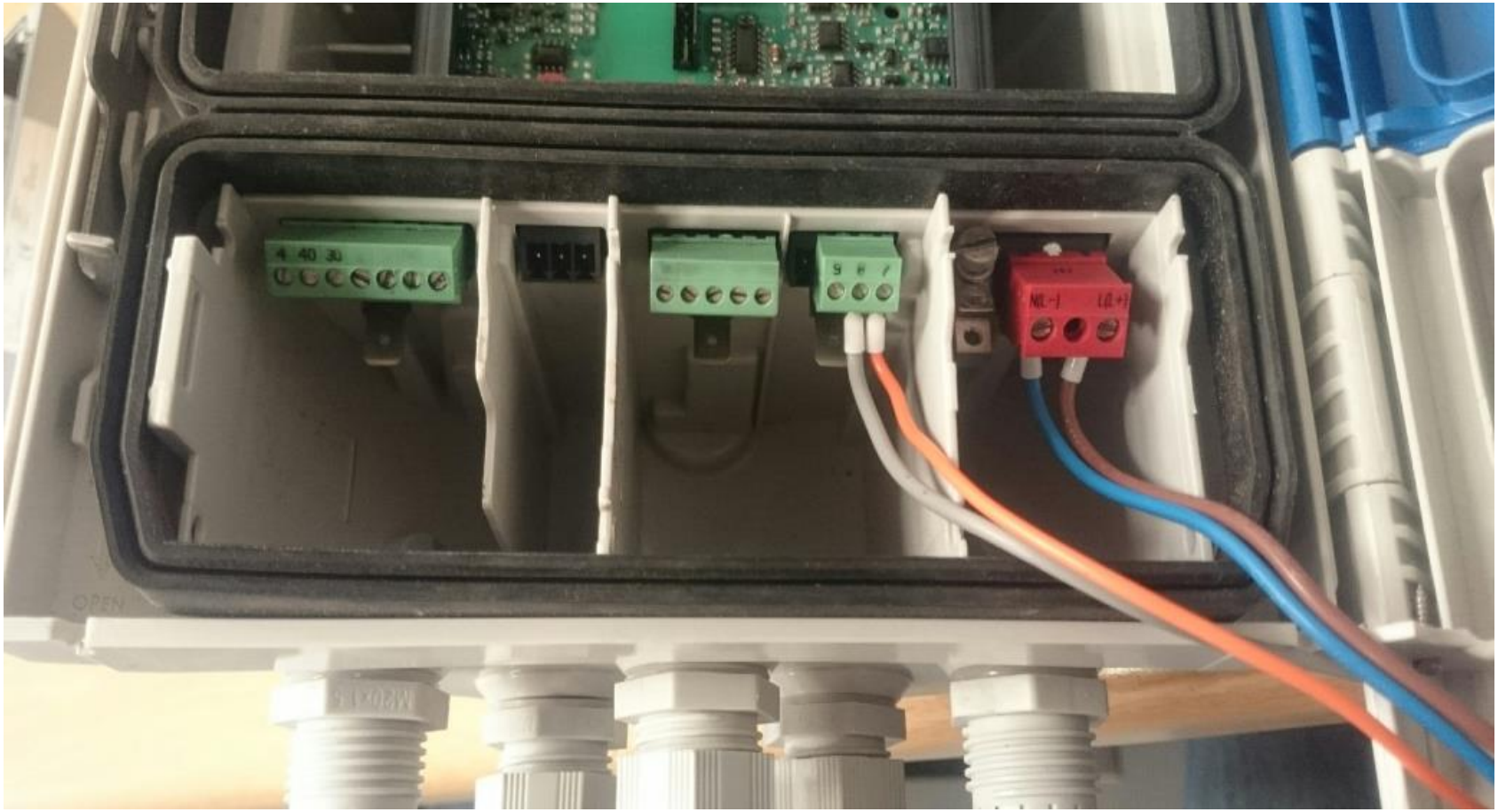
Outcome: Gain wireless access to the Modbus RTU registers of the KROHNE IFC 300.

Connections: (Please Note: This document refers to the Modbus connection of the devices. For power or I/O connections, refer to the respective manuals.)

The devices use the RS485 serial communications method which utilises a Sig+ line and a Sig- line labelled as “A” and “B”. This labelling is not consistent across different manufacturers, resulting in the “A” signal line of one device not always connecting to the “A” signal line of another device of a different brand and “B” to “B”

In the case of the EATON Elpro 415U-2 and the KROHNE IFC 300, their labelling methods differ and require that “A” (labelled as A on the 415U-2) be connected to “B” (labelled as D0/D- on the IFC 300) and that “B” (labelled as B on the 415U-2) be connected to “A” (labelled as D1/D on the IFC 300). See below for RS-485 wiring captures.


B
A
−
+
100M
LINK
EXPANSION
ETHERNET
USB
RS232



Setup: Both devices are capable of an array of serial speeds and settings and are capable of communicating with each other as long as the serial settings are matched. In this document, the standard serial settings of 9600bps, 8 data bits, no parity, 1 stop bit (9600 8-N-1) will be used.

To set this up on the 415U-2, connect to the devices web interface and select “Serial” from the menu on the right of the screen.

RS-485 Serial Port Configuration:

RS-485 Port Type	Modbus RTU Master
Data Rate	9600
Data Format	8N1

RS-485 Modbus Settings:

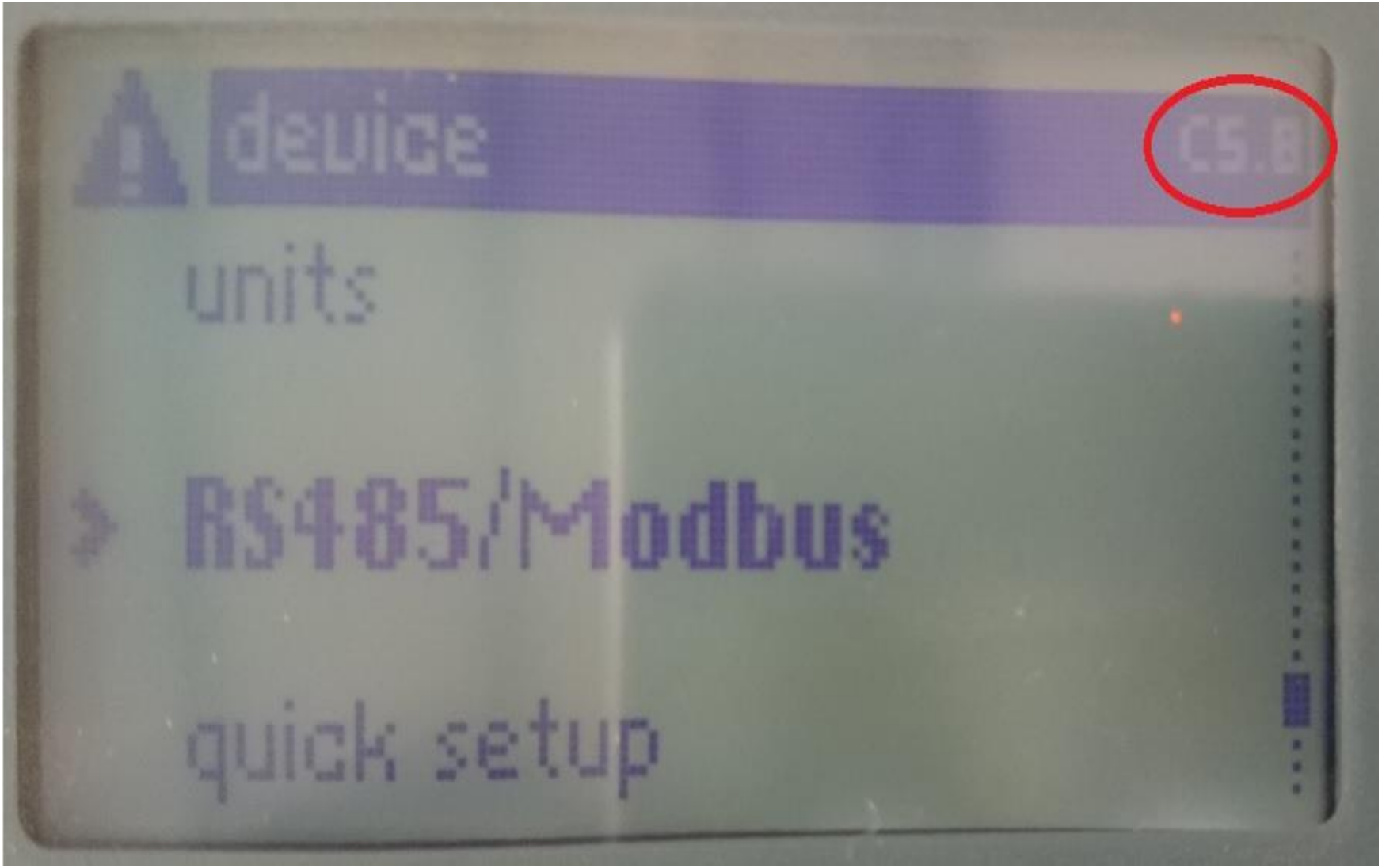
Scan Rate (msec)	1000
Response Timeout (msec)	1000

RS-485 Modbus Master Mappings:

Add Entry | Insert Entry | Delete Entry

#	Local Register	IO Count	Function Code	Destination Register	Device Id	Comm Fail Register
1	40001	36	04: Read Inputs	30001	1	0

In this example the 415U-2 is setup as a Modbus RTU Master. This will allow the device to call registers from the IFC 300 and store them locally.
For the data rate and data format, the standard settings are used, as mentioned above.
Unless specifically specified, the default rate at which the 415U-2 will pull and store the Modbus registers (scan rate) and the amount of time the that the 415U-2 allows for the IFC 300 to respond to requests before it cancels the request (response timeout) can be left at the default 1000 milliseconds.
This example pulls the 36 Input registers (30001-30036) of the IFC 300 and stores them locally in its own Holding registers (40001-40036). (see above illustration)
To setup the Modbus and serial settings on the IFC 300, navigate to the device's function number C5.8 in the integrated menu. (function number can be located in the top right of the integrated screen, see below)


device
units
RS485/Modbus
quick setup

Under function C5.8, the following items are available:

Converter Fct. No.	Display	Description and settings
C5.8.1	Slave Address	Selects the Modbus address of the device. Range: 1..247 (default = 1)
C5.8.2	Baud Rate	Selects the baud rate of the device. Options: 1200 / 2400 / 3600 / 4800 / 9600 / 19200 (default) / 38400 / 57600 / 115200
C5.8.3	Parity	Selects the parity. Options: Even (default) / Odd / No
C5.8.4	Data Format	Selects the data format. Options: Big Endian (default) / Little Endian
C5.8.5	Transmission Delay	Selects the delay between receiving the last byte of a request and sending the first byte of the response. Range: 0..40ms (default = 0ms)
C5.8.6	Stop Bits	Selects the number of stop bits. Options: 1 (default) / 2
C5.8.7	Information	Displays information about the device.

The details to match would be the baud rate (9600); parity (no); stop bits (1). For the example in this document, a slave address of 1 is used. Additional settings are left as default.

Result: This configuration results in a RS485 connection between the 415U-2 and IFC 300.

The 415U-2 polls the Input registers of ICF 300 every second and stores them locally for wireless distribution to any other 415U-2's that could be connected to a SCADA/PLC/RTU system.