

# Wireless I/O for PLC's

## ELPRO 105U-C Modbus / DF1 Interface

The 105U-C provides a Modbus or Allen-Bradley DF1 interface between host devices such as PLC's or SCADA computers, and ELPRO 105U and 505U radio telemetry modules. The 105U-C enables 105U/505U modules to act as remote wireless I/O for Modbus or DF1 host devices.

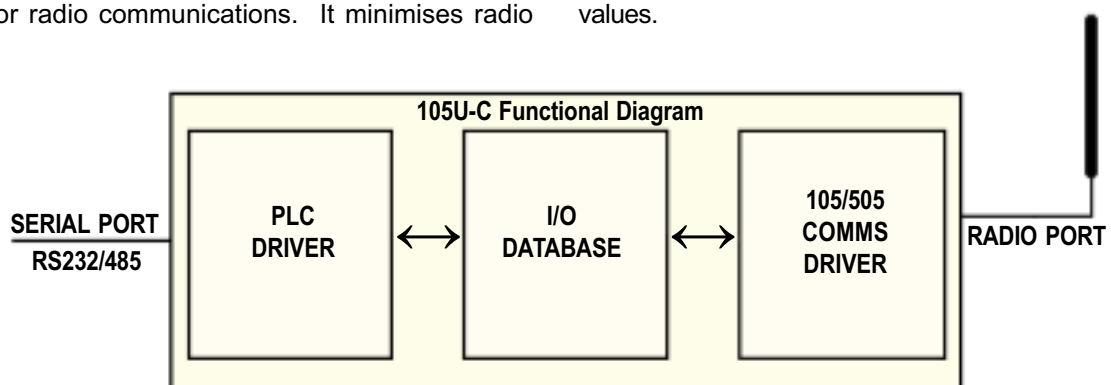


The 105U-C (or "105C") has two communications ports - a RS232/485 serial port and a radio port. The 105C will communicate with Modbus or DF1 devices on its serial port, and communicate with 105U/505U modules on the radio port. The 105C maintains an internal I/O database (or I/O image), which effectively isolates the Modbus/DF1 communications and the radio telemetry communications.

This provides a high level of system performance. The 105U/505U communications protocol is very efficient and reliable for radio communications. It minimises radio

channel usage by "change-of-state" reporting, and allows the use of intermediate repeater addresses. It also allows peer-to-peer (105U to 105U) and peer-to-master (105U to 105C) communications. The 105C retains the advantage of an efficient "real-time" radio protocol, whilst still providing an interface to a Modbus or DF1 host.

The internal radio transceiver allows two-way communications with telemetry modules, for both remote monitoring and control. The 105C can operate with 4800 remote I/O, which are 16 bit digital, analogue or pulse values.



# Specifications

## Power Supply

Normal supply 11-15 VDC Alternate supply 18-28 VDC.  
Normal current drain 12V 170mA; 24V 100mA

## General

Environmental -20 to 55 degC 0 - 99 %RH  
EMC Compliant EN55022, EN50082-1, FCC Part 15  
Housing - extruded aluminium case 130 x 185 x 60 mm  
DIN rail mounting, removable terminal blocks for ease of module replacement, terminals suitable for 2.5sqmm conductors  
LED indication for power supply, WDT, radio TX and RX, serial TX and RX, active status.

## Serial Port

Standard data rates 300, 1200, 2400, 4800, 9600 and 19200 baud.  
Modbus - RS232 or RS485 DF1 full duplex - RS232 only  
7/8 data bits, odd/even/no parity, 1 or 2 stop bits

## Radio Transceiver

Single channel, synthesised, direct frequency modulation, data rate 4800 baud.

Frequency 405 - 490 MHz, 12.5KHz channel, 10-500mW  
220 - 230 MHz, 25KHz channel, 5W  
869.4 MHz, 250KHz, 500mW

Conforms to EN 300 220, AS4268.2

Expected line-of-sight range with unity gain antenna  
2km(10mW), 5km(100mW), 10km(500mW), 30km(5W)

Range may be extended by up to four intermediate repeaters.

## Modbus Specification

Modbus RTU (binary) protocol.

105U-C-01 Modbus slave. Responds to standard Modbus commands from Modbus master host.

105U-C-03 Modbus master. Generates standard Modbus commands to Modbus slave host.

## DF1 Specification

Allen-Bradley DF1 full-duplex specification.

105U-C-DF1. Acts as both Command Initiator and Command Responder.

## Radio Transmission

Transmissions use the ELPRO 105U protocol, with system address, source/repeater/destination addresses, output channel, I/O value and 16 bit CRC error-checking. Transmissions from remote modules are acknowledged. Transmissions generated for output signals upon change-of-value, or pre-configured time period.

## I/O Database

Number of I/O registers 4800

Register size 16 bit

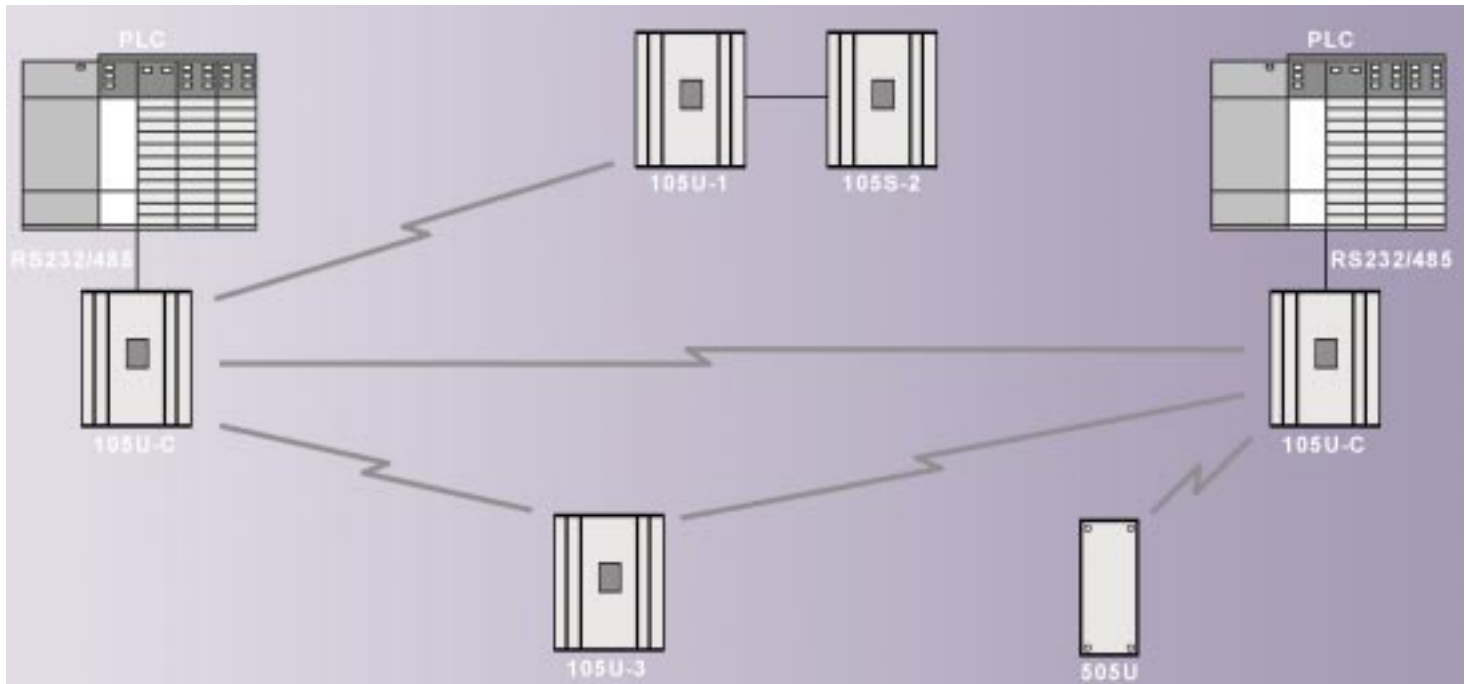
Status registers 4800

Status registers provide status information on each I/O point, including radio communications status.

## "Active" Output

"Active" output is FET 30VDC 500mA.

Active output is on (1) after the 105C module has started up and sent all start-up polls.



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Specifications subject to change without notice

Certified ISO 9001