415U-2-Cx wireless mesh networking I/O and gateway installation guide

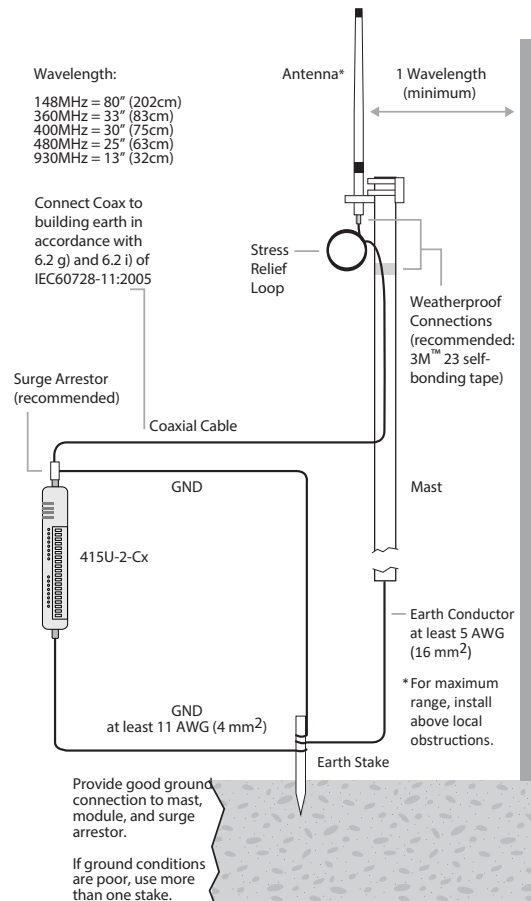## Antenna installation

When selecting an antenna, consider radio proximity.
Use Figure 1 as a guide for installing an antenna and attaching it to the 415U-2-Cx.

Figure 1. Antenna installation

Wavelength:

148MHz = 80" (202cm)
360MHz = 33" (83cm)
400MHz = 30" (75cm)
480MHz = 25" (63cm)
930MHz = 13" (32cm)

Connect Coax to building earth in accordance with 6.2 g) and 6.2 i) of IEC60728-11:2005

Surge Arrestor (recommended)

Coaxial Cable

GND

415U-2-Cx

GND
at least 11 AWG (4 mm^2)

Provide good ground connection to mast, module, and surge arrestor.

If ground conditions are poor, use more than one stake.

Antenna*   1 Wavelength (minimum)

Stress Relief Loop

Weatherproof Connections (recommended: 3M™ 23 self-bonding tape)

Mast

Earth Conductor at least 5 AWG (16 mm^2)

*For maximum range, install above local obstructions.

Earth Stake

Models

415U-2-C1 – 148 to 174MHz
415U-2-C3 – 360 to 400MHz
415U-2-C4 – 480 to 480MHz
415U-2-C5 – 470 to 520MHz
415U-2-C9 – 928 to 960MHz

Connecting to the module for configuration

• Download and install configuration application "CConfig" from ELPRO website www.elprotech.com
• Connect to PC using supplied USB cable
• Connect to the device at 192.168.111.1
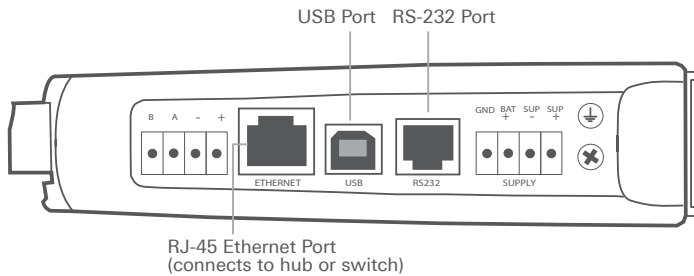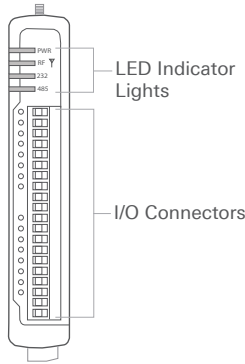• The PC will be automatically assigned an IP address via DHCP

Username: user
Password: user

ELPRO Technologies

NOTE

All connections must be SELV <50 Vac and <60 Vdc.

The following illustrations show the ports on the 415U 2-Cx.

LED Indicator Lights

I/O Connectors

USB Port   RS-232 Port

RJ-45 Ethernet Port
(connects to hub or switch)

Power supply wiring

The ground (GND) and "SUP –" terminals are connected internally to the ground terminal and to the module enclosure.

Connect the screw terminal on the end plate to ground for surge protection.

Refer to user manual for RF duty cycle derating when powering the module from SUP+ and SUP- terminals.

Optional 10.8–15 Vdc Lead Acid Battery

3A Fuse

15-30 Vdc Supply
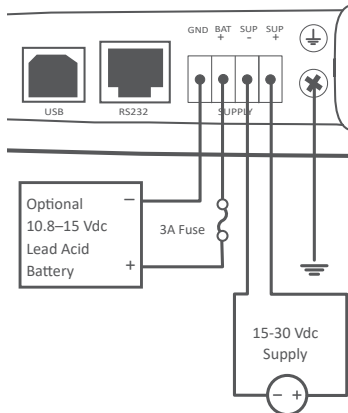
Expansion I/O power and RS-485 serial connection
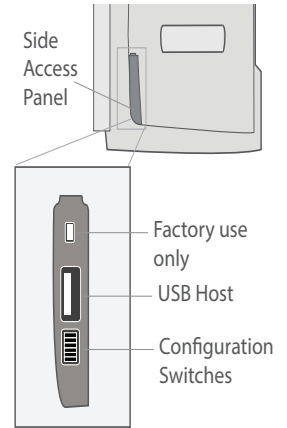
An on-board RS-485 terminating resistor provides line termination for long runs.

Enable terminating resistors at far end of the RS-485 cable.

115S-xx   115S-xx
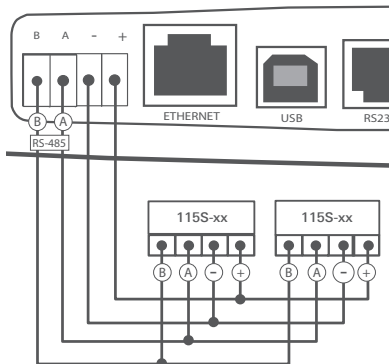
Configuration switches

Use the DIP switches in the side access panel to select analog input voltage and current, external boot, and default configuration settings.
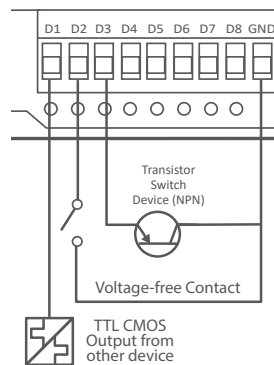
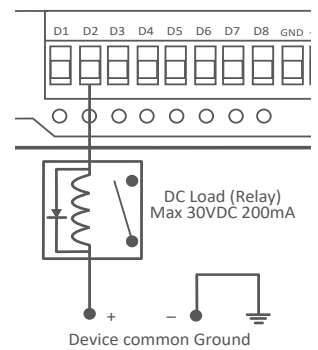| DIP	DESCRIPTION
1	AI3 current/voltage
2	AI3 current/voltage
3	AI4 current/voltage
4	AI4 current/voltage
5	Unused
6	Enables default configuration

Side Access Panel

Factory use only
USB Host
Configuration Switches

Input and output connections

The digital input/output channels can be wired as inputs or outputs.

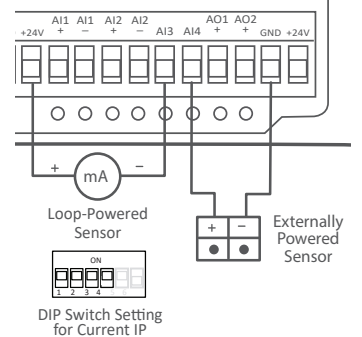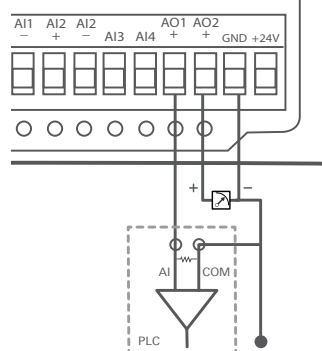### D1-8 - Digital input

D1 D2 D3 D4 D5 D6 D7 D8 GND

Transistor Switch Device (NPN)

Voltage-free Contact

TTL CMOS Output from other device

D1-8 - Digital output

D1 D2 D3 D4 D5 D6 D7 D8 GND

DC Load (Relay) Max 30VDC 200mA

Device common Ground

AI1, AI2 - Differential & Single Ended I/P

GND +24V AI1+ AI1– AI2+ AI2– AI3 AI4 AO1+ AO2+ GND +24V

Exernally Powered Sensor
AI1 Differential

Loop-Powered Sensor
AI2 Single Ended
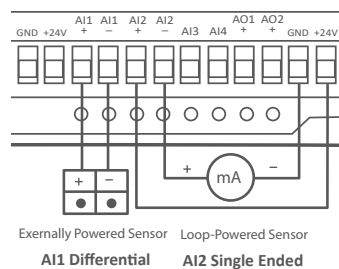
AI3, AI4 - Single-ended current input

+24V AI1+ AI1– AI2+ AI2– AI3 AI4 AO1+ AO2+ GND +24V

Loop-Powered Sensor

Externally Powered Sensor

ON
1 2 3 4

DIP Switch Setting for Current IP

AO1, AO2 - Analog outputs

AI1– AI2+ AI2– AI3 AI4 AO1+ AO2+ GND +24V

AI   COM

PLC

A13, AI4 - Single-ended voltage input

AI1V AI1+ AI1– AI2+ AI2– AI3 AI4 AO1+ AO2+ GND +24V

0–5 Vdc Sensor

0–25V Sensor

ON
1 2 3 4

DIP Switch Setting for Voltage IP