

## 415U-1 to 415U-2-C/415U-E-C Quick Connect Setup

Below is a QuickStart guide for connecting a 415U-1 Lower Power I/O radio to a 415U-2-C Condor Radio.

```

Date & Time: 06-Nov-2013 18:05:48
Firmware: v1.5 Hardware: Rev2A.B

Main Menu:

a) Unit Config
b) I/O Setup
c) Set Accumulators
d) Unit Diagnostic
e) Change Password
f) Set Date & Time
g) Show/Save Configuration
h) Logout

Selection:
  
```

```

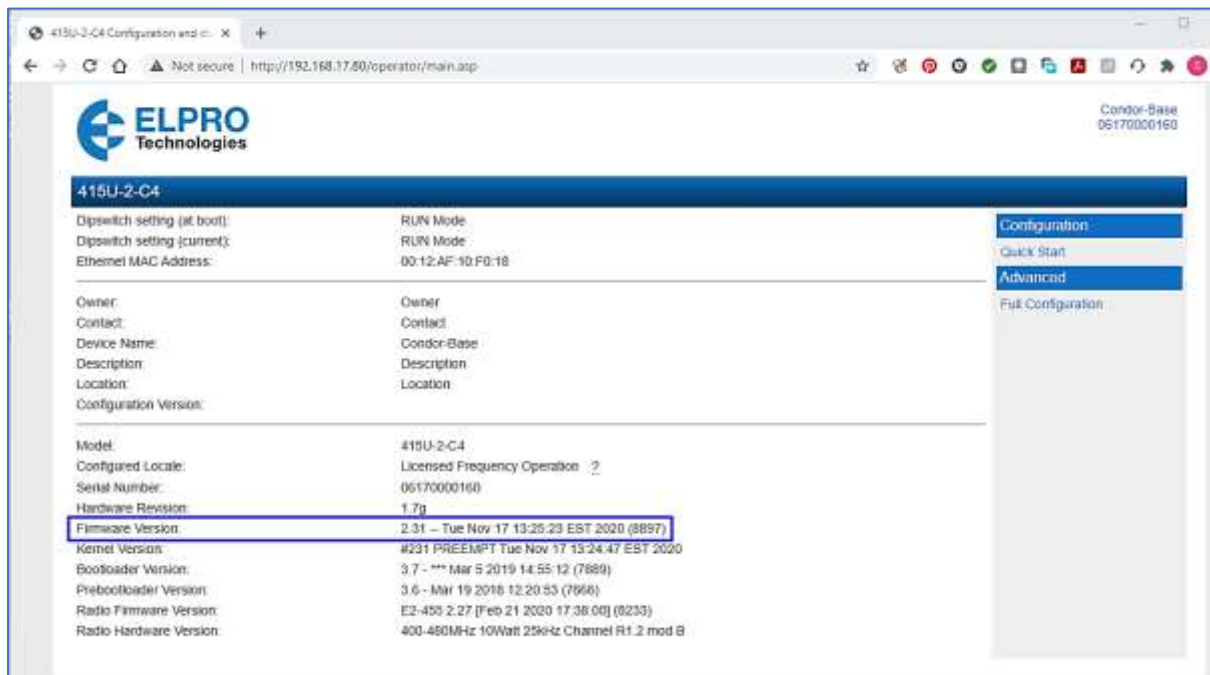
Unit Config Menu:

a) Network
b) Radio
c) I/O Quick Setup
d) Update Time
e) Paralysis Time
f) Restore Default Configuration
g) Disable Front Panel LEDs
h) Return to Main menu

Select:
  
```

First ensure the 415U-X-C firmware version is a least V2.31 or higher.

Check version by connecting to the Main webpage IP address using a browser.



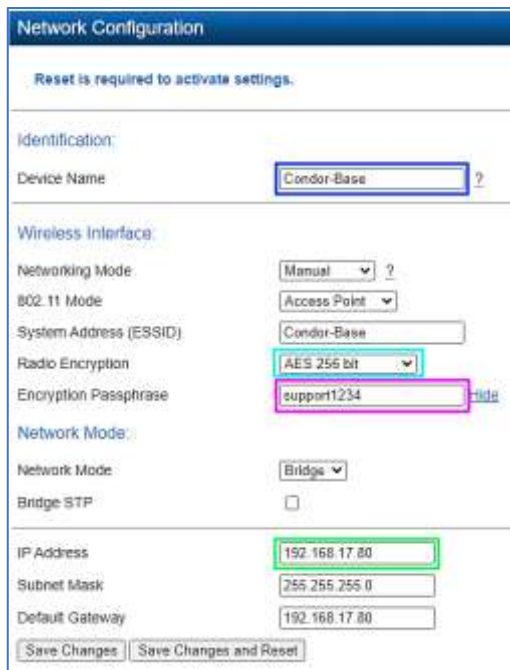
## 415U-X-C Condor & 415U-1 Network/Radio Configuration

Connect to the 415U-1 using a Terminal package (TerraTerm, RealTerm, Procomm, Etc) at 9600, 8, N,1.

Select "a) Engineer" and use Password "Elproeng" to get into the menu system.

Go through the Network and Radio config selections (shown below), and match the parameters between the 415U-X-C Access Point and the 415U-1 Low Power I/O.

The below screenshots show the relevant Networking parameters that you will need to configure.



**Network Configuration**

Reset is required to activate settings.

Identification:

Device Name: Condor-Base

Wireless Interface:

Networking Mode: Manual

802.11 Mode: Access Point

System Address (ESSID): Condor-Base

Radio Encryption: AES 256 bit

Encryption Passphrase: support1234

Network Mode:

Network Mode: Bridge

Bridge STP: ☐

IP Address: 192.168.17.80

Subnet Mask: 255.255.255.0

Default Gateway: 192.168.17.80

Buttons: Save Changes, Save Changes and Reset

**Network Menu:**

- a) Station Name : 415U-1\_Support
- b) Station IP Address : 192.168.17.84
- c) Access Point IP Address : 192.168.17.80
- d) Access Point MAC Address : [Auto]
- e) System Address (ESSID) : Condor-Base
- f) Radio Encryption : AES 256 bit
- g) Encryption Passphrase : support1234
- h) Return to previous menu

Select: |



**415U-2-C4**

Dipswitch setting (at boot): RUN Mode

Dipswitch setting (current): RUN Mode

Ethernet MAC Address: 00:12:AF:10:F0:18

Configure AP MAC Address for "Auto" however if you have trouble connecting try configure to AP MAC which you can find on the Main Web

**Note:** The 415U-1 can connect to a 415U-X-C in any of the configured Networking Modes, i.e. Promesh, Fixed Links or Manual AP. Just need to make sure the ESSID matches the "Device Name" name.

Radio Configuration parameters also need to be matched, see below screenshots.



**Radio Setup**

Reset is required to activate settings.

Basic Radio Setup:

Modulation: High Speed Mode (QAM)

Bandwidth: 25 MHz

Transmit Data Rate: Auto

Base Data Rate: 32

Transmit Power Level: 37 dBm (Average: 4.0W, Peak: 13.5W)

Transmit Frequency: 444.425000 MHz

Receive Frequency: 444.425000 MHz

System Size: 10 clients

**Radio Menu:**

- a) Modulation : QAM
- b) Bandwidth (kHz) : 25.000
- c) Data Rate : 32 kbps
- d) Base Rate : 32 kbps
- e) Tx Power (dBm) : 37
- f) Tx Frequency (Mhz) : 444.425000
- g) Rx Frequency (Mhz) : 444.425000
- h) Return to previous menu

Select: |

When all parameters have been setup, save the 415U-1 configuration by selecting "Save Config" from the previous menu options or by going back to the main menu and selecting option "g)" "Show/save configuration" and confirming "Y" when it asks to "Save Current Config? (y/n):"

Then go to the "d) Unit diagnostics" menu and select "Test Mode Send Message" This will force the 415U-1 to send a transmission to the AP.

## Check Communications

To check the communication status on the 415U-1, select “Show last connection/status” under the “Diagnostic” menu structure to show the connection status and details of the connection, i.e. Device Name, IP Address, signal level, background noise level and connection time.

<b>Device Name: Condor-Base</b>			
<b>IP Address</b>	<b>RSSI</b>	<b>BGND</b>	<b>Last Connected</b>
192.168.17.80	-62 dbm	-53 dbm	0000:00:03:26

Or on to check the connection status on the 415U-X-C Access Point, check the “Connectivity” web page under “Network Diagnostics” to see what remote units are connecting.

You should be able to see the 415U-1 in the connectivity list and it will show some useful information including RSSI, connection time and Link count.

Connectivity							
Connected Wireless Devices:							
Current Frequency: Tx 444.425000MHz, Rx 444.425000MHz; Current Bandwidth: 25.000kHz							
Device Name	IP Address	Interface	Tx Rate	RSSI	Compress	Link Uptime	Link Count
415U-1_Support	192.168.17.84	radio0	32k	-57dbm	No	0000:00:00:00	1
Condor-Repeater	192.168.17.85	radio0	96k	-77dbm	Yes	0004:03:17:17	1

## Configure I/O

Sensor input configuration is best completed after you have configured the Unit Config, Network & Communications from the 415U-1 main menu.

It is recommended to use the I/O Quick Setup in the Unit Config menu as it is a very fast way to setup the basic IO configuration.

To perform an “I/O Quick Setup”, select

- “a) Unit Config” from the main menu and then select
- “c) I/O Quick Setup”.

It will give a warning that it resets all I/O to the default values, Press “Y”

It will ask for a register multiplier, this is the offset that will be applied to all registers, so you can setup multiple remotes easily with different I/O offsets. (Offset = 10 x multiplier + Base Address)

The Default I/O configurations are shown below, with some examples of multiplier locations.

Configuration Values				Example Units (Multiplier)		
Input Name	Input Type	Base Register	Register Type	1	3	10
Discrete I/P 1	Pulsed	37011	Unsigned 32 Bit	37011	37031	37101
Discrete I/P 2	Pulsed	37013	Unsigned 32 Bit	37013	37033	37103
Discrete I/P 3	ON/OFF	15010	Unsigned 16 Bit	15010	15030	15100
Discrete I/P 4	ON/OFF	15011	Unsigned 16 Bit	15011	15031	15101
Analog I/P 1	4-20mA	35010	Unsigned 16 Bit	35010	35030	35100
Analog I/P 2	4-20mA	35011	Unsigned 16 Bit	35011	35031	35101
Battery	Vdc	39011	Float	39011	39031	39101
Sup/Sol	Vdc	39015	Float	39015	39035	39105
RSSI	dBm	39017	Float	39017	39037	39107
Status	Bit Field	35012	Unsigned 16 Bit	35012	35032	35102
Batt Alarm	Bit Field	15012	ON / OFF Bit	15012	15012	15012

It will next ask for an “Analog Sensitivity”, this is the number of bits the analog needs to change before triggering a COS message to be sent, next it will ask for an “Analog Sample Time” and an “Analog Warmup Time” The default values are 1000 for “Sensitivity”, 15 minutes for “Analog Sample” and 10 seconds for “Analog Warmup” and these are best left at the defaults for the moment, they can be fine-tuned later once connection and values coming in have been established.

The default values are chosen for best overall current consumption, radio traffic and getting accurate and timely values.

After performing an “I/O Quick Setup” if you need to adjust or edit the register locations you can do so by selecting the “I/O setup” menu then editing the appropriate I/O settings manually.

From here you can edit the specific Input configuration parameters such as the Sensor Register, Zero/Span, Display scaling and units as well as Report Sensitivity.

When complete make sure to go back to the main menu and select “Show/Save configuration” just make sure it has saved any previously unsaved configuration changes.

You should now select “Test Mode Send Message” from the “Diagnostic” menu which will force the 415U-1 to send all I/O transmission to the Access Point.

Now you should be able to check the “Unit Diagnostic” page on the 415U-X-C’s main menu to compare values between the Input registers on the 415U-1 and the output registers on the 415U-X-C.

External Inputs:						
	DI1	DI2	DI3	DI4	AI1	AI2
Mode	Pulse	Pulse	On/Off	On/Off	4-20mA	4-20mA
REG	37011	37013	15010	15011	35010	35011
Format	U-4	U-4	ELPRO	ELPRO	ELPRO	ELPRO
Range	1	1	1	1	32768	32768
Offset	0	0	0	0	16384	16384
Sens	10	10	1	1	1000	1000
Raw	0	0	On	Off	-0.06 mA	0.25 mA
Value	0	0	65535	0	8075	8699

Internal Status:				
	Battery	sup/sol	RSSI	Status
REG	39011	39013	39015	35012
Format	F-4	F-4	F-4	ELPRO
Sens	5	5	127	1
Value	12.76 V	0 V	-56dBm	All OK

### IO Diagnostics

Register

Count

Value

15010:

1

0