

SmartCap Base Unit Configuration Guide

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Base Unit Configuration Guide

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1 BASE UNIT SETUP VIA TELNET

Connect your computer to the base unit via Ethernet. Ensure the base unit is on (power LED is green) and establish a telnet connection to the base unit on port 9999.

IF YOU DON'T KNOW THE IP ADDRESS OF THE BASE UNIT, READ THE NEXT SECTION.

1.1 GET CONNECTED

To TELNET into the base unit from your PC the IP address of the Ethernet port on the PC needs to be on the same subnet as the current IP settings for the base unit.

In this example we use a base unit with IP address 192.168.1.100, which is the default IP address of the SmartCap Base Unit. This requires the IP address on the PC to be 192.168.1.X. Where X can be any number under 255, but it is best to avoid 0, 1, 10 and 100.

Therefore, set your computer's IP address to **192.168.1.200**,

1. Telnet to the base unit (192.168.1.100) on **port 9999**

Windows*: `telnet x.x.x.x 9999`

UNIX: `telnet x.x.x.x:9999`

- * If you get the message: "'telnet' is not recognized as an internal or ..." make sure telnet is enabled in Windows (see section 4.3).

2. The following information displays:

```
MAC address 00204A89E06A
Software version V6.7.0.0RC6 (100118)
AES library version 1.8.2.1
```

Press Enter for Setup Mode

3. To enter the Setup Mode, press **Enter** within 5 seconds.

Note: Connection fails if **Enter** is not pressed within 5 seconds.

The configuration settings display, followed by the setup menu options:

```
Change Setup:
0 Server
1 Channel 1
2 Channel 2
3 E-mail
4 WLAN
5 Expert
6 Security
7 Defaults
8 Exit without save
9 Save and exit          Your choice ?
```

Factory Defaults

Base Unit IP:	192.168.1.100
Gateway:	192.168.1.1
Netmask:	255.255.255.0
Server IP:	192.168.1.10
Comms Port:	10001
Telnet port:	9999

- Select an option from the menu by entering the number of the option using the keyboard and press **Enter**.

View the current configuration by pressing **Enter** from the Change Setup menu.

To enter a value for a parameter, type the value and press **Enter**. To confirm a current value, press **Enter** (without inputted parameters).

- When finished, save the new configurations (9 Save and exit). The unit reboots.

1.2 CHANGING THE CONFIG

You will be making changes on menu **Option 0 (Server)** and **Option 1 (Channel 1)**. Most settings are valid by default. To leave a setting unchanged, simply press enter.

The base unit details are set in menu **Option 0 (Server)**. The server details are set in menu **Option 1 (Ch 1)**.

Menu Item	Parameter	Value
Server (0)	Base Unit IP:	Default: 192.168.1.100
	Gateway:	Default: 192.168.0.1
	Netmask:	Default: 8 bits (255.255.255.0)
Channel 1 (1)	Server IP:	<i>Locally hosted Fatigue Manager: IP provided by customer</i> <i>Cloud hosted Fatigue Manager: provided by SmartCap</i>
	Comms Port:	<i>Locally hosted Fatigue Manager: 10001</i> <i>Cloud hosted Fatigue Manager: 20003</i>

In this example we use 192.168.1.10 as the Fatigue Manager IP address and port 10001 for transfer of SmartCap data.

The gateway address in the example is 192.168.1.1 and number of bits in the netmask is 8, resulting in subnet mask 255.255.255.0 (see table).

#Bits	Netmask
8	255.255.255.0
9	255.255.254.0
10	255.255.252.0
11	255.255.248.0
12	255.255.240.0
13	255.255.224.0
14	255.255.192.0
15	255.255.128.0
16	255.255.0.0

Follow the menu and ensure the following properties are set according to the requirements for use in the field.

0. Server: this is where you set the IP address of the base unit (NOT THE SERVER)

IP addr:	IP address of the base unit Default: 192.168.1.100
Gateway:	Answer Y or N, depending on IT requirements Default: 192.168.1.1
Netmask (# bits):	8 (255.255.255.0)
DNS:	N

1. Channel 1: this is where you set the IP address of the server

Baud:	115200
I/F:	4C
	02
Port	10001 for locally hosted Fatigue Manager 20003 for cloud hosted Fatigue Manager
Conn.mode	CC
Datagram type	01
Broadcast	N
Remote IP	Fatigue Manager server IP Default: 192.168.1.10
Port	10001 for locally hosted Fatigue Manager 20003 for cloud hosted Fatigue Manager
Pack cntrl	00
Send Char 1	00
Send Char 2	00

9. Save & Exit

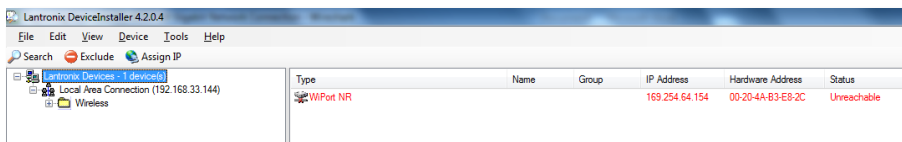
2 WHAT IF BASE UNIT IP UNKNOWN?

There are a number of ways to obtain the base unit IP address if it is unknown. Two options have been detailed in the sections below.

- 2.1: Lantronix DeviceInstaller (Windows only)
- 2.2: Packet Capture (ARP)

2.1 LANTRONIX DEVICEINSTALLER

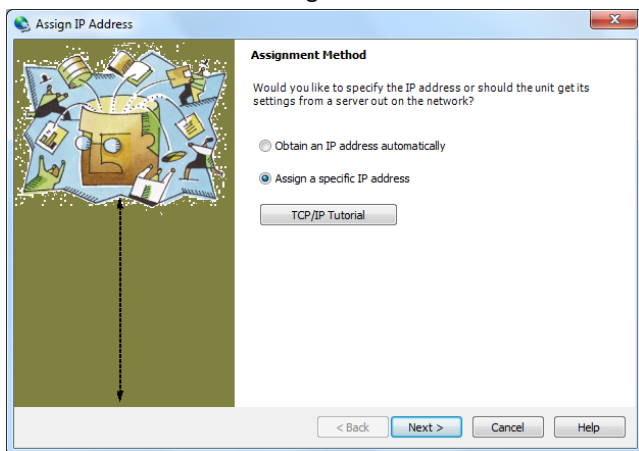
1. Download and install Lantronix DeviceInstaller
2. Open DeviceInstaller and Search for device: click “Search”



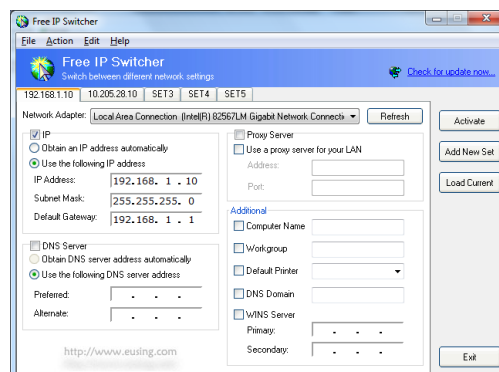
NO DEVICES FOUND? Check that there’s a link when the LAN cable is connected

Windows will show the LAN is connected when there’s power to the WiPort on the base unit. Possible reasons when this isn’t the case: faulty network cable, no power to base unit, no power to WiPort, faulty WiPort.

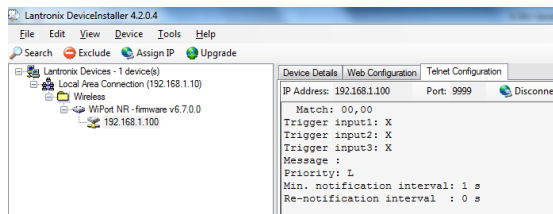
3. If device shows up in black letters, skip this step and go straight to **step 5**. Select device and click “Assign IP”



4. Type in new base unit. Default parameters shown below:
 IP address: **192.168.1.100**
 Subnet mask: **255.255.255.0**
 Default gateway: **192.168.1.1**
- 5- Make sure the computer is on the same subnet as the base unit IP.
 Use a program like “Free IP Switcher” to quickly switch network adapter configurations in case you expect to do this frequently
6. Now that the base unit IP address is known follow the instructions in **SECTION 1: BASE UNIT SETUP VIA TELNET**, or use DeviceInstaller:



7. Search for devices in DeviceInstaller:
 - a. Double-click on the WiPort found during search.
 - b. Telnet into the WiPort on port 9999:
 1. Go to telnet tab
 2. Click 'connect'
 3. Hit 'Enter' on the keyboard within a few seconds



2.2 PACKET CAPTURE (ARP)

If the base unit IP address is unknown, connect it to a computer running a packet capture tool, such as Wireshark.

1. Turn on the base unit. A lot of data will show up

No.	Time	Source	Destination	Protocol	Length	Info
1	0.000000000	192.168.1.10	239.255.255.250	SSDP	175	M-SEARCH * HTTP/1.1
2	1.439308000	192.168.1.10	255.255.255.255	DB-LSP-D:	157	Dropbox LAN sync Discovery Protocol
3	1.450443000	192.168.1.10	255.255.255.255	DB-LSP-D:	157	Dropbox LAN sync Discovery Protocol
4	1.450675000	192.168.1.10	192.168.1.255	DB-LSP-D:	157	Dropbox LAN sync Discovery Protocol
5	1.450834000	192.168.1.10	192.168.1.255	DB-LSP-D:	157	Dropbox LAN sync Discovery Protocol
6	3.000863000	192.168.1.10	239.255.255.250	SSDP	175	M-SEARCH * HTTP/1.1
7	5.792318000	192.168.1.10	224.0.0.251	MDNS	112	Standard query 0x0000 PTR _sleep-proxy._udp.local
8	6.011318000	192.168.1.10	239.255.255.250	SSDP	175	M-SEARCH * HTTP/1.1
9	11.209163000	Pronet_ed:b1:9d	Broadcast	ARP	60	who has 192.168.1.1? Tell 0.168.1.100
10	15.411961000	192.168.1.10	192.168.1.255	NBNS	92	Name query NB WPAD<00>
11	15.413254000	192.168.1.10	224.0.0.252	LLMNR	64	Standard query 0x84d1 A wpad
12	15.761924000	Pegatron_27:2c:72	Broadcast	ARP	42	who has 192.168.1.1? Tell 192.168.1.10
13	15.824748000	192.168.1.10	224.0.0.252	LLMNR	64	Standard query 0x84d1 A wpad
14	16.167718000	192.168.1.10	192.168.1.255	NBNS	92	Name query NB WPAD<00>
15	16.760413000	Pegatron_27:2c:72	Broadcast	ARP	42	who has 192.168.1.1? Tell 192.168.1.10
16	16.932473000	192.168.1.10	192.168.1.255	NBNS	92	Name query NB WPAD<00>
17	17.758825000	Pegatron_27:2c:72	Broadcast	ARP	42	who has 192.168.1.1? Tell 192.168.1.10

2. Filter on "ARP" packets: type arp in filter and press enter or click apply

No.	Time	Source	Destination	Protocol	Length	Info
9	11.209163000	Pronet_ed:b1:9d	Broadcast	ARP	60	who has 192.168.1.1? Tell 0.168.1.100
12	15.761924000	Pegatron_27:2c:72	Broadcast	ARP	42	who has 192.168.1.1? Tell 192.168.1.10
15	16.760413000	Pegatron_27:2c:72	Broadcast	ARP	42	who has 192.168.1.1? Tell 192.168.1.10
17	17.758825000	Pegatron_27:2c:72	Broadcast	ARP	42	who has 192.168.1.1? Tell 192.168.1.10
27	71.207941000	Pronet_ed:b1:9d	Broadcast	ARP	60	who has 192.168.1.1? Tell 0.168.1.100
34	78.763687000	Pegatron_27:2c:72	Broadcast	ARP	42	who has 192.168.1.1? Tell 192.168.1.10
35	79.762270000	Pegatron_27:2c:72	Broadcast	ARP	42	who has 192.168.1.1? Tell 192.168.1.10
36	80.760533000	Pegatron_27:2c:72	Broadcast	ARP	42	who has 192.168.1.1? Tell 192.168.1.10
48	110.830982000	Pronet_ed:b1:9d	Broadcast	ARP	60	gratuitous ARP for 0.168.1.100 (Request)

3. Look for packets from "Pronet_ed..."

27	71.207941000	Pronet_ed:b1:9d	Broadcast	ARP	60	who has 192.168.1.1? Tell 0.168.1.100
34	78.763687000	Pegatron_27:2c:72	Broadcast	ARP	42	who has 192.168.1.1? Tell 192.168.1.10

4. In the info column it shows the IP address of the base unit.
Look for the "Tell xxx.xxx.xxx.xxx" address.

3 WHAT IF THE BASE UNIT IP IS INVALID?

It is possible to set the base unit IP address to an invalid number, e.g. 0.268.1.100. If that's the case you can use the ARP command to rectify this.

In the Command Prompt window, enter the command:

```
arp -s nnn.nnn.nnn.nnn xx-xx-xx-xx-xx-xx
```

In the above command, substitute the IP address you wish to assign for the n's and the MAC address of the WiPort for the x's. It adds a static entry to the arp table.

Enter the command:

```
arp -a          ...displays the arp table
```

...to check your entry. The first line should start with "Interface" and show the IP address of the PC. Under that should be the IP address and MAC address you just entered.

Next, enter the command:

```
telnet nnn.nnn.nnn.nnn 9999
```

Again, the n's represent the IP address you are assigning. This connection should fail immediately. Make sure telnet is enabled when running the command (see section below)

If successful, the first thing you will see after entering the command will be a message to press enter to go into setup mode. Do this right away or the WiPort will disconnect you.

Once you in, select option 0 to permanently configure the IP information.

4 TOOLS AND COMMANDS

4.1 LANTRONIX DEVICEINSTALLER

Download and install the [Lantronix DeviceInstaller](#). DeviceInstaller is a software tool developed by the manufacturer of the Ethernet module.

4.2 ARP COMMAND

ARP is a built-in command in the operating system. It displays and modifies the IP-to-Physical address translation tables used by address resolution protocol (ARP).

```
ARP -s inet_addr eth_addr [if_addr]
```

```
ARP -d inet_addr [if_addr]
```

```
ARP -a [inet_addr] [-N if_addr] [-v]
```

```
-a          Displays current ARP entries by interrogating the current
           protocol data.  If inet_addr is specified, the IP and Physical
           addresses for only the specified computer are displayed.  If
```

more than one network interface uses ARP, entries for each ARP table are displayed.

- g Same as -a.
- v Displays current ARP entries in verbose mode. All invalid entries and entries on the loop-back interface will be shown.
- inet_addr Specifies an internet address.
- N if_addr Displays the ARP entries for the network interface specified by if_addr.
- d Deletes the host specified by inet_addr. inet_addr may be wildcarded with * to delete all hosts.
- s Adds the host and associates the Internet address inet_addr with the Physical address eth_addr. The Physical address is given as 6 hexadecimal bytes separated by hyphens. The entry is permanent.
- eth_addr Specifies a physical address.
- if_addr If present, this specifies the Internet address of the interface whose address translation table should be modified. If not present, the first applicable interface will be used.

Example:

```
> arp -s 157.55.85.212 00-aa-00-62-c6-09 .... Adds a static entry.
> arp -a .... Displays the arp table.
```

4.3 TELNET COMMAND

To enable Telnet command line utilities in Windows follow the steps below:

Click Start > Control Panel

Click Programs and Features

Click Turn Windows features on or off

In the Windows Features dialog box, check the Telnet Client check box.

Click OK. The system installs the appropriate files. This will take a few seconds to a minute.