



**8030E & 8050E
User's Manual**

Revision 7.21



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1.0 Smart antennas and the 8050E

The Smart antenna is a fully functional RFID reader writer enclosed in what previously constituted an antenna enclosure. This eliminates the need for antenna cables and the tuning associated with them. Another advantage is the ability to communicate with several antennas through a single interface box.

1.1 Hardware

Communications: CAN (controller area network) at 125 KBS
Power: +24VDC linear regulated 200mA max
Interconnections: 5 pin M12 male

1.2 ASCII Data

All tags store 16 ASCII characters (limited to capital letters, numbers and some symbols)
The Smart Antenna can read and write tags

2.0 8050E Serial Port

2.1 Hardware and dipswitches

The serial port can be configured to operate as:
RS232 full duplex, RS422 full duplex (5 wire), RS422 half duplex (3 wire)

Switch 7	Switch 8 (MSB)	Serial hardware type
OFF	OFF	RS232 full duplex
ON	OFF	RS422 half duplex
OFF	ON	RS422 full duplex

Table 3 SW2 and Serial Port hardware select

Switch 4	Switch 5	Switch 6	Serial Baud Rate
OFF	OFF	OFF	1200
ON	OFF	OFF	2400
OFF	ON	OFF	4800
ON	ON	OFF	9600
OFF	OFF	ON	19200
ON	OFF	ON	38400
OFF	ON	ON	Do not use
ON	ON	ON	Do not use

Table 4 SW2 and Bit Rate selection

2.2 Start and End characters

The serial port software frames data from RFID readers based on its End and Start character settings. Start may be set to zero in which case any character is accepted as a start character. End must be set to a value other than zero to delimit incoming tag data.

The default settings are:

Start = 0x00

End = 0x0D (Carriage return)

2.3 Command characters [and]

These characters are used to frame an incoming command message. When the serial port software receives the [character it expects the rest of the message to be a command and the last character to be]

3.0 Serial Port Commands

3.1 To 8050E (Antenna controller)

3.1.1 [1CXX]

Format: 1 = Start or End Char Command, C = Defines Start or End character, XX = hex value

Valid values: C = 'S' or 'E', XX = a Hex value. Values outside of ASCII letters and numbers are recommended

Response: OK

Example 1: [1S0A] sets the start character as a Line Feed

Example 2: [1E0D] sets the end character as a Carriage Return

Example 3: [1S00] sets the start character to none

3.1.2 [2NNOO] – Change Reader Address

Format: 2 = Set Reader CAN address, NN = New CAN address, OO = Current (old) CAN address

Valid Addresses: 01 to 32

Response: OK, FAILED1, or FAILED2

Example: [23001] change Reader from address #01 to address #30

Example response 1: OK = #01 existed on the CAN bus and has been reset to #30

Example response 2: FAILED1 = #01 does not exist on the bus

Example response 3: FAILED2 = #30 is already in use

3.1.3 [3]

Format: 3 = Scan for present readers

Response: RDR1, RDR2, RDRn...

Example: [3] Request a scan of present readers

Example response 01 07 19 31

All commands are ignored while scanning for readers, when the scan is finished the interface will send a Carriage return to indicate so.

3.1.4 [4=IP address]**

Format: 4=NNN.NNN.NNN.NNN

Response: OK

Example: [4=10.0.1.42] Set new IP address

3.1.5 [5=Mask]**

Format: 5=NNN.NNN.NNN.NNN

Response: OK

Example: [5=255.255.255.0] Set new subnet mask

3.1.6 [6=Gateway]**

Format: 6=NNN.NNN.NNN.NNN

Response: OK

Example: [6=10.0.1.1] Set new gateway

**NOTE: Not applicable to interfaces using XPORT

3.1.7 [7]**

Format: 7 = Get IP settings

Response:

IP=10.0.1.42

Mask=255.255.255.0

Gateway=10.0.1.1

Example: [7] Request IP settings

**NOTE: Not applicable to interfaces using XPORT

3.1.8 [S]

This command changes the data output mode to SINGLE

Format: S = Single Mode

Response: OK

Example: [S]

3.1.9 [P]

This command changes the data output mode to POLLING

Format: P = Polling Mode

Response: OK

Example: [P]

3.2 To Readers

3.2.1 [MAAXX]

This command changes the write mode of the addressed reader

Format: AA = CAN address, M = mode, XX = value

Valid values: 00, 08, 10, 18

Response: If successful OK, if not ERROR

Example: [M1812] Write new WRITE MODE value to reader #12

Example response: 12 OK, 12 = reader #, OK = successful EEPROM write

3.2.2 [VAA]

This command reads the addressed reader's write mode

Format: AA = CAN address, V = view

Response: The value of addressed reader write mode

Example: [V07] Read WRITE MODE value of reader #07

Example response: 07 18, 07 = reader #, 18 = WRITE MODE

3.2.3 [TAA]

This command erases the readers tag buffer causing it to read the tag again if one is present. If the reader does not respond within 400mS, the master ends the command by sending a lower case e. if the antenna reads then the master outputs the tag data normally

Format: AA = CAN address, T = poll

Response: e = no tag in range, 16Char tag data = tag in range read

3.2.4 [IAA]

This command reads the firmware version of the addressed reader

Format: AA = CAN address, I = Firmware Version

Response: The current Firmware version AA.v.x.xx

Response format: AA = Reader address, v.x.xx = Firmware Version

Example: [I22] Read the Firmware Version of reader #22

Example response: 22.v.1.12, 22 = reader #, v.1.12 = firmware version



3.2.5 [WAADATA]

Writes 16 characters of data for tag on addressed reader

Format: W = Write command, AA = CAN address, DATA = 16 ASCII characters

Response: PROGRAMMED if successful, FAILED if not successful

Example: [W0155555553333333] Write 5555555533333333 to tag on reader 1

Example response successful: PROGRAMMED

Example response if failure: NO RESPONSE

4.0 Dipswitches SW1

Not used in with Model 8050E

5.0 Antenna Addressing

5.1 Description

Antennas retain their address in onboard EEPROM. To change the address of an antenna use the RS232 connection to issue the [2XXXX] command

If 2 or more antennas have the same address on the bus, the system will not know due to the anti-collision hardware. It is the responsibility of the user to manage antenna addresses. Always use permanent labels to mark your antenna addresses and try not to change them often.

5.2 New Antenna installation

New Smart Antennas come with the address 01; before they can be used, you need to assign them an operational address

1. Use the command [2xx01] to assign the new address
2. You should receive an OK, if so skip the rest you are done
3. If you receive a FAILED_X, refer to section 3.1.2 for details

(xx stands for the desired address)

5.3 Reassign antenna address

1. If you don't know its current address disconnect all other antennas from the network
2. Run a [3] scan command to find the antenna's current address
3. Use [2XXXX] to assign a new address
4. Reconnect the rest of your antennas and run [3] scan again
5. If the number of addresses on the scan matches the number of antennas installed you are done skip the rest
6. If you have duplicate addresses in the network. Remove one antenna at a time while running [3] scan each time.
7. After removing an antenna check that [3] returns one less antenna address than before.
8. If you remove an antenna and [3] returns the same number of addresses it did before you removed it you have found the duplicate. Follow steps 1 to 4 to assign it a new address.



6.0 The Ethernet port

The Ethernet port supports TCPIP sockets. The interface acts as a server, a connection to the interface can be established via port 2000. Once a connection is active any reads by a Smart Antenna will be served to that socket and to the serial port.

6.1 The XPORT

Interfacing the Reader to your PC – Ethernet

Note, our UHF Demo Program will not work with TCPIP. Seek to use HyperTerminal or Teraterm. This Reader is a standard TCP/IP Ethernet device employing a Lantronix XPort Ethernet modem. It will be necessary to load a program termed DeviceInstaller (included on CD ROM or ask for a link to download) in order to setup your preferred properties. You can also access the latest version here, http://itxfaq.custhelp.com/app/answers/detail/a_id/644?_qa=2.114723975.1668372991.1503356654-1842610056.1503356654

Specifications:

Protocol: TCP/IP
Connectors: RJ45
Serial Baud rate: 10 Base-T or 100 Base-TX (auto-sensing)
Maximum cable run: 2000'

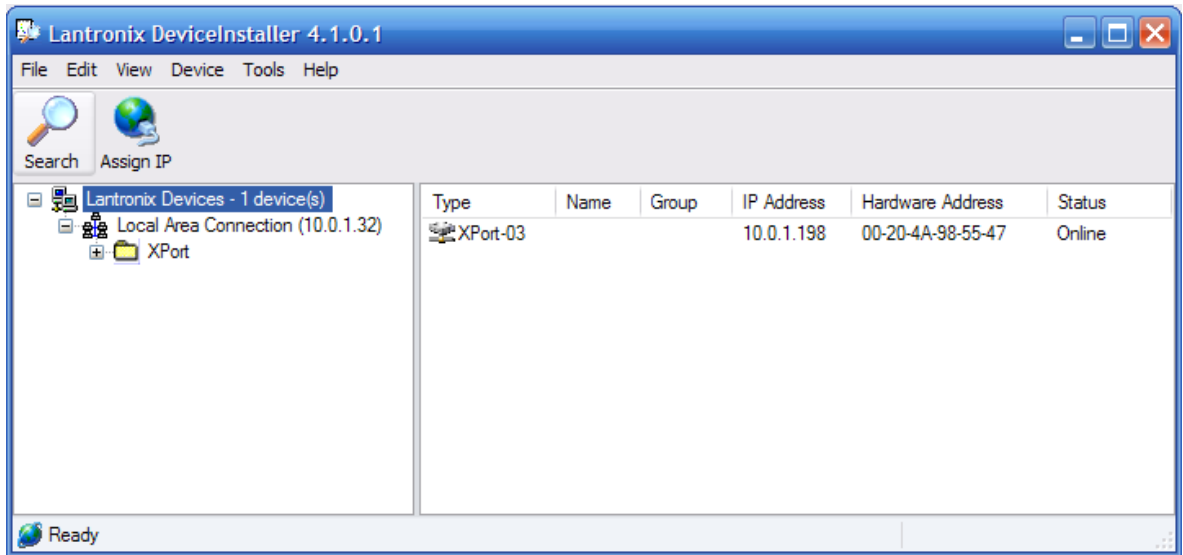
Configuring the XPORT with DeviceInstaller - Open the zip file named DeviceInstaller that should have been provided to you. This program will assist you in the setup of the Ethernet Interface. Unzip and extract the files contained to your PC. Go to the folder you extracted the files to and execute the setup.exe file. Note; if you receive the following message:

Windows Installer Loader

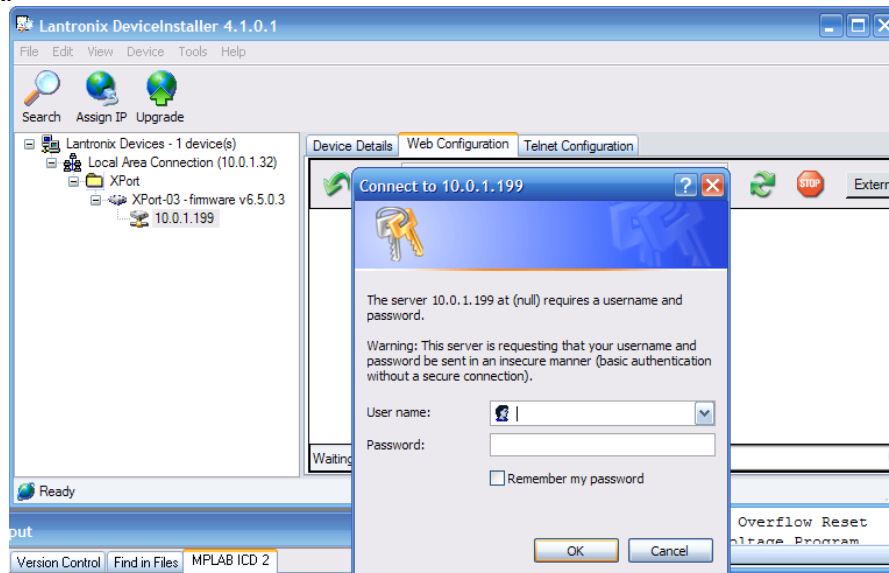
This setup requires the .NET Framework version 1.1.4322. Please install the .NET Framework and run this setup again. The .NET Framework can be obtained from the web. Once the download is found you will be prompted, "Would you like to do this now?"

Say yes and download the file to the same folder you chose for the DeviceInstaller then execute the .Net Framework setup.exe file you just downloaded and follow the prompts. Then go back to original setup.exe file for DeviceInstaller and follow the prompts to install the files in a Lantronix folder under Programs.

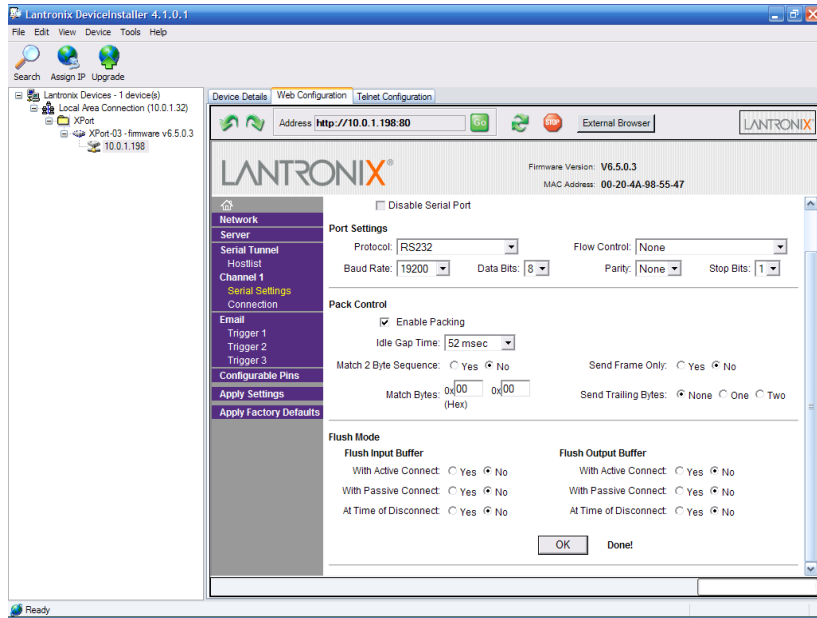
Connect the Reader to an Ethernet port, not your laptop or PC, but the same network your laptop or PC is connected, then power the Reader. Verify the light on the left of the Ethernet connector is either solid orange or solid green. Go to your Programs folder under Lantronix and execute the Application File "DeviceInstaller.exe." Then click the search button and wait for DeviceInstaller to find your device.



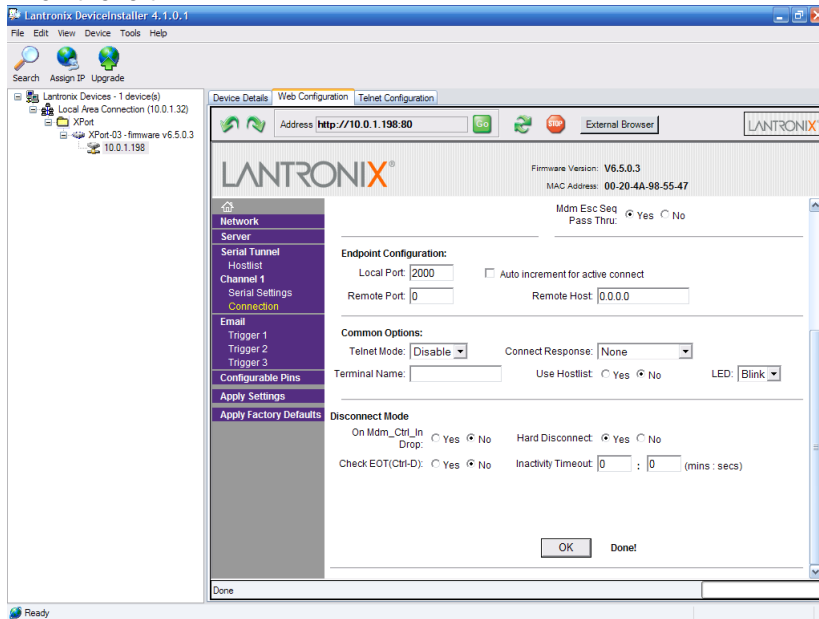
If your device is found, a folder named XPort will appear; expand it to expose the firmware version and expand it one more time to expose its IP address. Navigate to the IP ADDRESS, select it. 3 tabs will appear on the right. Device Details, Web Configuration, and Telnet Configuration; select Web Configuration and click the green button labeled GO. A password window will pop up. Leave it blank and click OK.



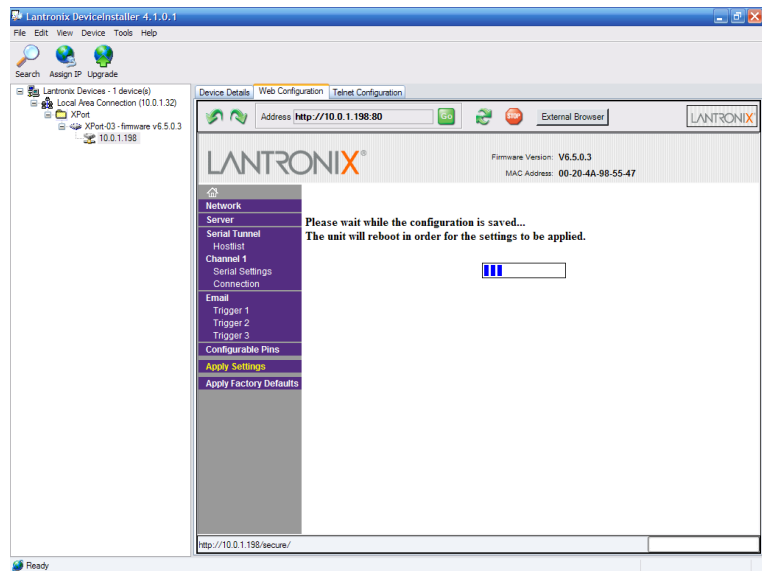
Select Serial Settings, change the baud rate to match that of the serial port (default 9600), check enable packing, select 12msec idle gap time. Upon completion the next screen should look like that below. Scroll down and click the OK button. While there is still a “Done!” label next to the OK button select Connection on the left to change pages.



Change local port to 2000 and click OK, while the “Done!” is still present by the OK button click on the Apply settings link on the left.



This is what it should look like while the settings are being applied.



Once the Reader is done updating the settings, turn the unit off for 5 seconds and then back on. Wait until the light on the left of the Ethernet connector is stable and solid and then go back to the DeviceInstaller program and click search. Follow the same steps you used to change Serial and Connection settings, however this time do not click OK. You are simply verifying the changes have taken effect. Setup is finished. If you like, you can use the supplied terminal program (or your own) to test communications with the Reader.

7.0 Power Requirements

7.1 Interface operating voltage

The interface unit requires 24VDC+ and 200mA max

7.2 Antenna operating voltage

Antennas operate at 24VDC+
Each antenna consumes 160mA max

8.0 Factory Switch settings

Switches 1, 2, and 3, are set at the factory for 16 characters read write Smart Antenna operation, **do not change this!**

- Switch 1 = OFF
- Switch 2 = ON
- Switch 3 = OFF