Telebyte

"Results You Can Count On"

Model 700 Series

Multi-Standard/Multi-Channel Local Loop Simulators w/ Optional AWGN Generators

The Model 700-8-26 (shown above) is one of 30 models available.

Rev A
Date of Publication: 03/05/2019

Customer Care

Warranty

One-year Warranty

- Telebyte will furnish parts and labor for the repair or replacement of products found by Telebyte to be defective in material or workmanship during the warranty period.[1]

Extended Customer Care

Refer to the Customer Care section of the Telebyte web site for the most current information on extended warranty and calibration contracts [2,3,4]:

http://www.telebytebroadband.com/customercare.html

Disclaimer of Warranties and Other Terms and Conditions

[1] TELEBYTE, INC. warrants its broadband simulation equipment to be free from defects in material and workmanship, under normal and proper use and in its unmodified condition, for 12-months, starting on the date it is delivered for use. TELEBYTE'S sole obligation under this warranty shall be to furnish parts and labor for the repair or replacement of products found by TELEBYTE to be defective in material or workmanship during the warranty period. Warranty repairs will be performed at the point of manufacture. Equipment approved for return for warranty service shall be returned F.O.B. TELEBYTE factory and will be redelivered by TELEBYTE freight prepaid, except for non-continental U.S.A. locations. These deliveries will be sent COD freight and import/export charges.

[2] The customer is responsible for freight and customs charges when shipping products to and from Telebyte for calibration services.

[3] You must purchase the extended warranty at the time of purchase or during the initial warranty period.

[4] You must purchase the calibration contract at the time of purchase or during the initial warranty period. The above warranty is in lieu of all other warranties, expressed or implied, statutory or otherwise, including any implied warranty of merchantability or fitness for a particular purpose. TELEBYTE shall not be liable for any damages sustained by reseller or any other party arising from or relating to any equipment failure, including but not limited to consequential damages, nor shall TELEBYTE have any liability for delays in replacement or repair of equipment.

Customer Support

Thank you for your purchase of one of the models in the Telebyte Model 700 Series. These multi-standard/multi-channel local loop simulators are the ideal solution for ADSL, ADSL2, ADSL2+, and VDSL2 chip/modem/DSLAM testing. The highly accurate products are offered in several different configurations, including combinations of wire types, in 8, 12 or 16-channels.

The 700 Series offers fine granularity and long line lengths and may be ordered with or without the ability to inject variable AWGN on the CO and/or CPE side of each loop.

Contact Information:

Telephone		**E-mail/Internet**
General:	631-423-3232	support@telebytebroadband.com
Technical support:	800-835-3298	sales@telebytebroadband.com
Fax:	631-385-8184	www.telebytebroadband.com

Mail

Telebyte, Inc.
355 Marcus Blvd
Hauppauge, NY 11788

Warranty

Included With Your Purchase

One-year Warranty

- Telebyte will furnish parts and labor for the repair or replacement of products found by Telebyte to be defective in material or workmanship during the warranty period.[1]

One-year Calibration (where applicable)

- One N.I.S.T. traceable calibration on the first-year anniversary of the product ship date.[2]
- Calibration report to ensure traceability.

Extended Customer Care

There are two options available. Our three-year extended warranty extends the original warranty by an additional 36 months and the three-year calibration contract provides 36 additional months of calibration.

Three-Year Extended Warranty

You can extend the original one-year warranty that comes with your product by purchasing the **Three-Year Extended Warranty**.[3]

Features:

- Telebyte will furnish parts and labor for the repair or replacement of products found by Telebyte to be defective in material or workmanship during the warranty period.[1]

Three-Year Calibration Contract (where applicable)

Extended calibration is available through the **Three-Year Calibration Contract**.[4]

Features:

- Yearly N.I.S.T. traceable calibrations, each on the second, third and fourth anniversary of the ship date.[2]
- Report to ensure traceability.

Disclaimer of Warranties and Other Terms and Conditions

[1] TELEBYTE, INC. warrants its broadband simulation equipment to be free from defects in material and workmanship, under normal and proper use and in its unmodified condition, for 12-months, starting on the date it is delivered for use. TELEBYTE'S sole obligation under this warranty shall be to furnish parts and labor for the repair or replacement of products found by TELEBYTE to be defective in material or workmanship during the warranty period. Warranty repairs will be performed at the point of manufacture. Equipment approved for return for warranty service shall be returned F.O.B. TELEBYTE factory and will be redelivered by TELEBYTE freight prepaid, except for non-continental U.S.A. locations. These deliveries will be sent COD freight and import/export charges.

[2] The customer is responsible for freight and customs charges when shipping products to and from Telebyte for calibration services.

[3] You must purchase the extended warranty at the time of purchase or during the initial warranty period.

[4] You must purchase the calibration contract at the time of purchase or during the initial warranty period. The above warranty is in lieu of all other warranties, expressed or implied, statutory or otherwise, including any implied warranty of merchantability or fitness for a particular purpose. TELEBYTE shall not be liable for any damages sustained by reseller or any other party arising from or relating to any equipment failure, including but not limited to consequential damages, nor shall TELEBYTE have any liability for delays in replacement or repair of equipment.

Equipment Returns

Out of warranty equipment may be returned, prepaid, to the Hauppauge, N.Y. customer service facility. Return shipping charges will be billed to the customer. The repaired unit will have a 90-day warranty. In those cases where "no trouble" is found, a reduced charge will be billed to cover handling, testing, and packaging. Whether in or out of warranty, a Return Material Authorization number (RMA) is required and may be obtained by going to www.telebytebroadband.com and opening a technical support case.

Please be sure to reference the RMA number on the outside container.

Table of Contents

1.0 Introduction

All of the Model 700 Series products provide multiple channels of loop simulation in fine increments. The dense configurations available make it ideal for applications where 8 or more loops are needed while the lab-grade quality is suitable for applications such as bonding and rate/reach. Options include a choice of 8, 12 or 16 channels, multiple wire types and optional, variable AWGN on both the CO and CPE side of each loop.

These products have a fixed chassis and are controlled by buttons on the front of the unit, via remote commands or by using the 700 Control Center graphical user interface.

1.1 Models in the 700 Series

Without AWGN Option

Model Number	Simulation					
	#Chs	Wire Type	Line Length/Increment	#Chs	Wire Type	Line Length/Increment
700-8-26	8	26AWG	0 to 24,000 ft/25-ft	-	-	
700-12-26	12	26AWG	0 to 24,000 ft/25-ft	-	-	
700-16-26	16	26AWG	0 to 24,000 ft/25-ft	-	-	
700-8-04	8	0.4mm PE	0 to 9,000 m/10-m	-	-	
700-12-04	12	0.4mm PE	0 to 9,000 m/10-m	-	-	
700-16-04	16	0.4mm PE	0 to 9,000 m/10-m	-	-	
700-8-TP100*	8	TP100*	0 to 9,000 m/10-m	-	-	
700-12-TP100*	12	TP100*	0 to 9,000 m/10-m	-	-	
700-16-TP100*	16	TP100*	0 to 9,000 m/10-m	-	-	
700-4-26-4-04	4	26AWG	0 to 24,000 ft/25-ft	4	0.4mm PE	0 to 9,000 m/10-m
700-6-26-6-04	6	26AWG	0 to 24,000 ft/25-ft	6	0.4mm PE	0 to 9,000 m/10-m
700-8-26-8-04	8	26AWG	0 to 24,000 ft/25-ft	8	0.4mm PE	0 to 9,000 m/10-m
700-4-04-4-TP100*	4	0.4mm PE	0 to 9,000 m/10-m	4	TP100*	0 to 9,000 m/10-m
700-6-04-6-TP100*	6	0.4mm PE	0 to 9,000 m/10-m	6	TP100*	0 to 9,000 m/10-m
700-8-04-8-TP100*	8	0.4mm PE	0 to 9,000 m/10-m	8	TP100*	0 to 9,000 m/10-m

**TP100 wire is the same diameter as 0.5mm wire*

Models in the 700 Series (continued)

With AWGN Option (Variable AWGN on CO and CPE side of all loops)

Model Number	Simulation					
	#Chs	Wire Type	Line Length/Increment	#Chs	Wire Type	Line Length/Increment
700N-8-26	8	26AWG	0 to 24,000 ft/25-ft	-	-	
700N-12-26	12	26AWG	0 to 24,000 ft/25-ft	-	-	
700N-16-26	16	26AWG	0 to 24,000 ft/25-ft	-	-	
700N-8-04	8	0.4mm PE	0 to 9,000 m/10-m	-	-	
700N-12-04	12	0.4mm PE	0 to 9,000 m/10-m	-	-	
700N-16-04	16	0.4mm PE	0 to 9,000 m/10-m	-	-	
700N-8-TP100*	8	TP100*	0 to 9,000 m/10-m	-	-	
700N-12-TP100*	12	TP100*	0 to 9,000 m/10-m	-	-	
700N-16-TP100*	16	TP100*	0 to 9,000 m/10-m	-	-	
700N-4-26-4-04	4	26AWG	0 to 24,000 ft/25-ft	4	0.4mm PE	0 to 9,000 m/10-m
700N-6-26-6-04	6	26AWG	0 to 24,000 ft/25-ft	6	0.4mm PE	0 to 9,000 m/10-m
700N-8-26-8-04	8	26AWG	0 to 24,000 ft/25-ft	8	0.4mm PE	0 to 9,000 m/10-m
700N-4-04-4-TP100*	4	0.4mm PE	0 to 9,000 m/10-m	4	TP100*	0 to 9,000 m/10-m
700N-6-04-6-TP100*	6	0.4mm PE	0 to 9,000 m/10-m	6	TP100*	0 to 9,000 m/10-m
700N-8-04-8-TP100*	8	0.4mm PE	0 to 9,000 m/10-m	8	TP100*	0 to 9,000 m/10-m

**TP100 wire is the same diameter as 0.5mm wire*

2.0 Specifications

Product Specifications	

Simulation	• Accurately simulates attenuation and impedance
	• Full bidirectional operation at all specified frequencies
	• Wire Types Available
	  ○ 26 AWG PIC as specified in ANSI T1.417
	  ○ 0.4mm PE as specified in ETSI TS 101 388
	  ○ TP100 as specified in ETSI TS 101 270-1 & G.992.5 Annex M

Bandwidth	DC to 30 MHz
Attenuation Accuracy (when source and load impedances are 100 ohms)	MAE < 1 dB 20 kHz to 30 MHz
Maximum Attenuation	> 90 dB
Impedance Accuracy	Typically +/- 10% 20 kHz to 30 MHz
Maximum Voltage Tip – Ring	200 V
Maximum Current	130 mA
Connectors	Front: 16, 24 or 32 RJ-45's (2 for each loop, for CO/CPE connection) Back: RS-232: DB9 female (DCE); GPIB:IEEE488 24-pin connector. Ethernet: RJ-45
Optional White Noise (AWGN)	-90 dBm/Hz to -145 dBm/Hz in 0.25-dBm increments
Controls	Keypad for setting loop lengths and IEEE-488 address, RS-232, or Ethernet communication parameters.
Indicators	Backlit LCD display of line length and set up parameters.
Power	88 to 264 VAC, 50 or 60 Hz
Size	[7U] 19 in W x 22 in D x 12.22 in H (482.6 mm W x 558.8 mm D x 310.4 mm H)
Environmental	Operating: +32 F to +122 F (0 to +50 degrees C) Storage: 0 to 95% relative humidity (non-condensing)

Specifications are subject to change without notice. Made in USA.

➢ Refer to section Models in the 700 Series for all possible wire type combinations.

3.0 Control

The Model 700 Series products can be controlled in several ways: via RS-232 and IEEE488 Remote Commands, the 700 Control Center graphical user interface or the LCD display and push buttons on the front panel.

When configured for IEEE-488, the 700x can be operated from an IEEE Controller such as a PC equipped with an IEEE interface board. In RS-232 mode, the unit can be connected to any RS-232 device (e.g., a terminal or PC) that has a terminal emulation program such as Hyper Terminal installed. In Ethernet mode, RS-232 commands are sent over an Ethernet connection. This allows a remote PC connected to a LAN to communicate with the 700x.

- In order to send RS-232 commands over an Ethernet connection, this feature must be enabled. Refer to section Enabling Ethernet Connectivity for detailed instructions.

3.1 Remote Commands

3.1.1 RS-232 (Serial Port) Remote Commands

H = Channel number

LE = Loop length in increments specific to wire type

C = Connect mode

N = connect both CO and CPE ends.
P = connect CPE only CO open.
O = connect CO only CPE open.
Z = open both CO and CPE ends.

SET LENGTH COMMANDS – RS232 – Allowable Values by Model Number and Channel

MODELS	Command	Wire Type	Value allowed for H (Ch #)	Value allowed for LE (Length)	Wire Type	Value allowed for H (Ch #)	Value allowed for LE (Length)	Value allowed for C (Connect Mode)
700-8-26	SL	26AWG	1-8	0-24000 in 25-ft steps	-	-	-	N, P, O, Z
700N-8-26	SL	26AWG	1-8	0-24000 in 25-ft steps	-	-	-	N, P, O, Z
700-12-26	SL	26AWG	1-12	0-24000 in 25-ft steps	-	-	-	N, P, O, Z
700N-12-26	SL	26AWG	1-12	0-24000 in 25-ft steps	-	-	-	N, P, O, Z
700-16-26	SL	26AWG	1-16	0-24000 in 25-ft steps	-	-	-	N, P, O, Z
700N-16-26	SL	26AWG	1-16	0-24000 in 25-ft steps	-	-	-	N, P, O, Z
700-4-26-4-04	SL	26AWG	1-4	0-24000 in 25-ft steps	0.4 mm	5-8	0-9000 m in 10-m steps	N, P, O, Z
700N-4-26-4-04	SL	26AWG	1-4	0-24000 in 25-ft steps	0.4 mm	5-8	0-9000 m in 10-m steps	N, P, O, Z
700-6-26-6-04	SL	26AWG	1-6	0-24000 in 25-ft steps	0.4 mm	7-12	0-9000 m in 10-m steps	N, P, O, Z
700N-6-26-6-04	SL	26AWG	1-6	0-24000 in 25-ft steps	0.4 mm	7-12	0-9000 m in 10-m steps	N, P, O, Z
700-8-26-8-04	SL	26AWG	1-8	0-24000 in 25-ft steps	0.4 mm	9-16	0-9000 m in 10-m steps	N, P, O, Z
700N-8-26-8-04	SL	26AWG	1-8	0-24000 in 25-ft steps	0.4 mm	9-16	0-9000 m in 10-m steps	N, P, O, Z
700-8-04	SL	0.4 mm	1-8	0-9000 m in 10-m steps	-	-	-	N, P, O, Z
700N-8-04	SL	0.4 mm	1-8	0-9000 m in 10-m steps	-	-	-	N, P, O, Z
700-12-04	SL	0.4 mm	1-12	0-9000 m in 10-m steps	-	-	-	N, P, O, Z
700N-12-04	SL	0.4 mm	1-12	0-9000 m in 10-m steps	-	-	-	N, P, O, Z
700-16-04	SL	0.4 mm	1-16	0-9000 m in 10-m steps	-	-	-	N, P, O, Z
700N-16-04	SL	0.4 mm	1-16	0-9000 m in 10-m steps	-	-	-	N, P, O, Z
700-8-TP100	SL	TP100	1-8	0-9000 m in 10-m steps	-	-	-	N, P, O, Z
700N-8- TP100	SL	TP100	1-8	0-9000 m in 10-m steps	-	-	-	N, P, O, Z
700-12-TP100	SL	TP100	1-12	0-9000 m in 10-m steps	-	-	-	N, P, O, Z
700N-12-TP100	SL	TP100	1-12	0-9000 m in 10-m steps	-	-	-	N, P, O, Z
700-16-TP100	SL	TP100	1-16	0-9000 m in 10-m steps	-	-	-	N, P, O, Z
700N-16-TP100	SL	TP100	1-16	0-9000 m in 10-m steps	-	-	-	N, P, O, Z
700-4-04-4-TP100	SL	0.4 mm	1-4	0-9000 m in 10-m steps	TP100	5-8	0-9000 m in 10-m steps	N, P, O, Z
700N-4-04-4-TP100	SL	0.4 mm	1-4	0-9000 m in 10-m steps	TP100	5-8	0-9000 m in 10-m steps	N, P, O, Z
700-6-04-6-TP100	SL	0.4 mm	1-6	0-9000 m in 10-m steps	TP100	7-12	0-9000 m in 10-m steps	N, P, O, Z
700N-6-04-6-TP100	SL	0.4 mm	1-6	0-9000 m in 10-m steps	TP100	7-12	0-9000 m in 10-m steps	N, P, O, Z
700-8-04-8- TP100	SL	0.4 mm	1-8	0-9000 m in 10-m steps	TP100	9-16	0-9000 m in 10-m steps	N, P, O, Z
700N-8-04-8-TP100	SL	0.4 mm	1-8	0-9000 m in 10-m steps	TP100	9-16	0-9000 m in 10-m steps	N, P, O, Z
Example	**SL**		**2**	**24000**				**N**
SL:2:24000,N **(Set length of channel 2 to 24,000 feet with CO and CPE connected)**								

Read Length

RL:H

Example: RL:2 (read length of channel 2)

Set Noise Mode (Applies only to Models Purchased with AWGN feature)

V1,2 = OFF or -90.00 to -145.00 level in 0.25 dBm/Hz steps.

SL:H:NOISE:CPE:V1 or SL:H:NOISE:CO:V2

Examples

SL:2:NOISE:CPE:OFF	- Set CPE noise source to off on channel2
SL:2:NOISE:CO:OFF	- Set CO noise source to off on channel 2
SL:2:NOISE:CO:-95.00	- Set CO noise source to -95.00 dBm/hz on channel 2
SL:2:NOISE:CPE:-123.75	- Set CPE noise source -123.75 dBm/Hz on channel 2

Note: With both CPE and CO noise sources ON, the levels can be different or the same.

Read Noise Levels (Applies only to Models Purchased with AWGN feature)

RL:H:NOISE:CO or RL:H:NOISE:CPE

Example

RL:2:NOISE:CO (read noise level of channel 2, CO side)

3.1.2 IEEE 488 (GPIB) Remote Commands

H = Channel number

LE = Loop length in increments specific to wire type

C = Connect mode

N = connect both CO and CPE ends.
P = connect CPE only CO open.
O = connect CO only CPE open.
Z = open both CO and CPE ends.

SET LENGTH COMMANDS – 488 – Allowable Values by Model Number and Channel

MODELS	Command	Command	Wire Type	Value allowed for H (Ch #)	Value allowed for LE (Length)	Wire Type	Value allowed for H (Ch #)	Value allowed for LE (Length)	Value allowed for C (Connect Mode)
700-8-26	SETCARD	LENGTH	26AWG	1-8	0-24000 in 25-ft steps	-	-	-	N, P, O, Z
700N-8-26	SETCARD	LENGTH	26AWG	1-8	0-24000 in 25-ft steps	-	-	-	N, P, O, Z
700-12-26	SETCARD	LENGTH	26AWG	1-12	0-24000 in 25-ft steps	-	-	-	N, P, O, Z
700N-12-26	SETCARD	LENGTH	26AWG	1-12	0-24000 in 25-ft steps	-	-	-	N, P, O, Z
700-16-26	SETCARD	LENGTH	26AWG	1-16	0-24000 in 25-ft steps	-	-	-	N, P, O, Z
700N-16-26	SETCARD	LENGTH	26AWG	1-16	0-24000 in 25-ft steps	-	-	-	N, P, O, Z
700-4-26-4-04	SETCARD	LENGTH	26AWG	1-4	0-24000 in 25-ft steps	0.4 mm	5-8	0-9000 m in 10-m steps	N, P, O, Z
700N-4-26-4-04	SETCARD	LENGTH	26AWG	1-4	0-24000 in 25-ft steps	0.4 mm	5-8	0-9000 m in 10-m steps	N, P, O, Z
700-6-26-6-04	SETCARD	LENGTH	26AWG	1-6	0-24000 in 25-ft steps	0.4 mm	7-12	0-9000 m in 10-m steps	N, P, O, Z
700N-6-26-6-04	SETCARD	LENGTH	26AWG	1-6	0-24000 in 25-ft steps	0.4 mm	7-12	0-9000 m in 10-m steps	N, P, O, Z
700-8-26-8-04	SETCARD	LENGTH	26AWG	1-8	0-24000 in 25-ft steps	0.4 mm	9-16	0-9000 m in 10-m steps	N, P, O, Z
700N-8-26-8-04	SETCARD	LENGTH	26AWG	1-8	0-24000 in 25-ft steps	0.4 mm	9-16	0-9000 m in 10-m steps	N, P, O, Z
700-8-04	SETCARD	LENGTH	0.4 mm	1-8	0-9000 m in 10-m steps	-	-	-	N, P, O, Z
700N-8-04	SETCARD	LENGTH	0.4 mm	1-8	0-9000 m in 10-m steps	-	-	-	N, P, O, Z
700-12-04	SETCARD	LENGTH	0.4 mm	1-12	0-9000 m in 10-m steps	-	-	-	N, P, O, Z
700N-12-04	SETCARD	LENGTH	0.4 mm	1-12	0-9000 m in 10-m steps	-	-	-	N, P, O, Z
700-16-04	SETCARD	LENGTH	0.4 mm	1-16	0-9000 m in 10-m steps	-	-	-	N, P, O, Z
700N-16-04	SETCARD	LENGTH	0.4 mm	1-16	0-9000 m in 10-m steps	-	-	-	N, P, O, Z
700-8-TP100	SETCARD	LENGTH	TP100	1-8	0-9000 m in 10-m steps	-	-	-	N, P, O, Z
700N-8- TP100	SETCARD	LENGTH	TP100	1-8	0-9000 m in 10-m steps	-	-	-	N, P, O, Z
700-12-TP100	SETCARD	LENGTH	TP100	1-12	0-9000 m in 10-m steps	-	-	-	N, P, O, Z
700N-12-TP100	SETCARD	LENGTH	TP100	1-12	0-9000 m in 10-m steps	-	-	-	N, P, O, Z
700-16-TP100	SETCARD	LENGTH	TP100	1-16	0-9000 m in 10-m steps	-	-	-	N, P, O, Z
700N-16-TP100	SETCARD	LENGTH	TP100	1-16	0-9000 m in 10-m steps	-	-	-	N, P, O, Z
700-4-04-4-TP100	SETCARD	LENGTH	0.4 mm	1-4	0-9000 m in 10-m steps	TP100	5-8	0-9000 m in 10-m steps	N, P, O, Z
700N-4-04-4-TP100	SETCARD	LENGTH	0.4 mm	1-4	0-9000 m in 10-m steps	TP100	5-8	0-9000 m in 10-m steps	N, P, O, Z
700-6-04-6-TP100	SETCARD	LENGTH	0.4 mm	1-6	0-9000 m in 10-m steps	TP100	7-12	0-9000 m in 10-m steps	N, P, O, Z
700N-6-04-6-TP100	SETCARD	LENGTH	0.4 mm	1-6	0-9000 m in 10-m steps	TP100	7-12	0-9000 m in 10-m steps	N, P, O, Z
700-8-04-8- TP100	SETCARD	LENGTH	0.4 mm	1-8	0-9000 m in 10-m steps	TP100	9-16	0-9000 m in 10-m steps	N, P, O, Z
700N-8-04-8-TP100	SETCARD	LENGTH	0.4 mm	1-8	0-9000 m in 10-m steps	TP100	9-16	0-9000 m in 10-m steps	N, P, O, Z
	SETCARD	**LENGTH**		**2**	**24000**				**N**
SL:2:24000,N (Set length of channel 2 to 24,000 feet with CO and CPE connected)									

Read Length Command

READCARD:LENGTH:H

Example: READCARD:LENGTH:2 (read length of channel 2)

Set Noise Command (Applies only to Models Purchased with AWGN feature)

V1,2 = OFF or -90.00 to -145.00 level in 0.25 dBm/Hz steps.

SETCARD:LENGTH:H:NOISE:CO:V1,2

Examples

SETCARD:LENGTH:2:NOISE:CPE:OFF - Set CPE noise source to off on channel 2
SETCARD:LENGTH:2:NOISE:CO:OFF - Set CO noise source to off on channel 2
SETCARD:LENGTH:2:NOISE:CO:-95.00 - Set CO noise source to -95.00 dBm/hz on channel 2
SETCARD:LENGTH:2:NOISE:CPE:-123.75 - Set CPE noise source -123.75 dBm/Hz on channel 2

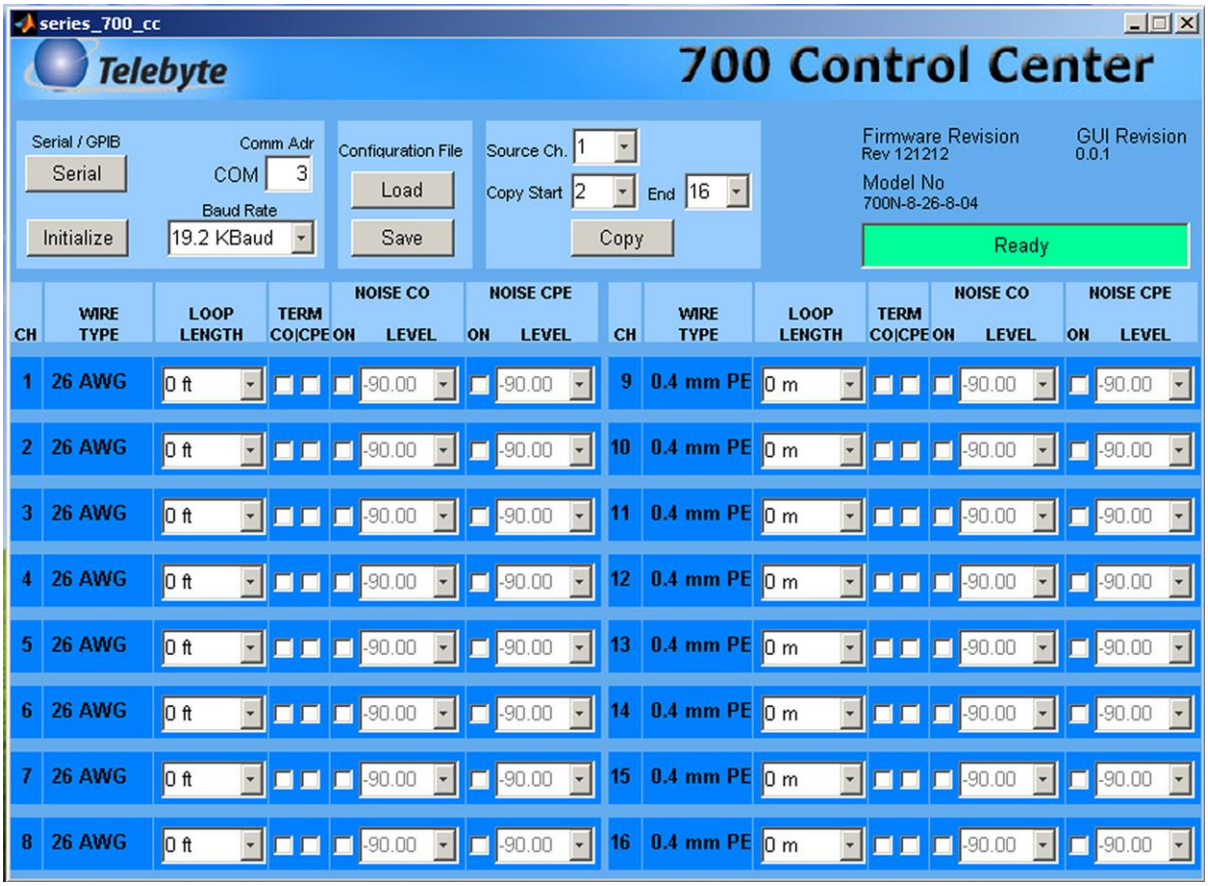
Note: With both CPE and CO noise sources ON, the levels can be different or the same.

Read Noise Command (Applies only to Models Purchased with AWGN feature)

READCARD:LENGTH:H:NOISE:CO or READCARD:LENGTH:H:NOISE:CPE

Example: READCARD:LENGTH:2:NOISE:CO (read the level of noise on the CO side of channel 2)

3.2 700 Control Center



The 700 Control Center interface populates the screen with the configuration applicable to the particular 700 Series model being used.

The sample screen shows the Model 700N-8-26-8-04 which has 8 channels of 26 AWG and 8 channels of 0.4 mm PE wire. In addition, this model features variable AWGN on the CO and/or CPE side of all loops.

- Before launching the 700 Control Center, set the connection method using the keypad on the front of the unit. See "*Control via Keypad*" section later in this chapter.

3.3 Control via Keypad

Set Channel and Line Length (all models)

- Select the channel using the UP or DOWN arrow buttons.
- Select the length for the current channel using LEFT or RIGHT arrow buttons. The length will increment in the applicable steps.

Set AWGN Level and Location (700N-x models with AWGN only)

- Use Up arrow button to select the CO or CPE noise.
- Adjust the noise level using LEFT and RIGHT arrow buttons.

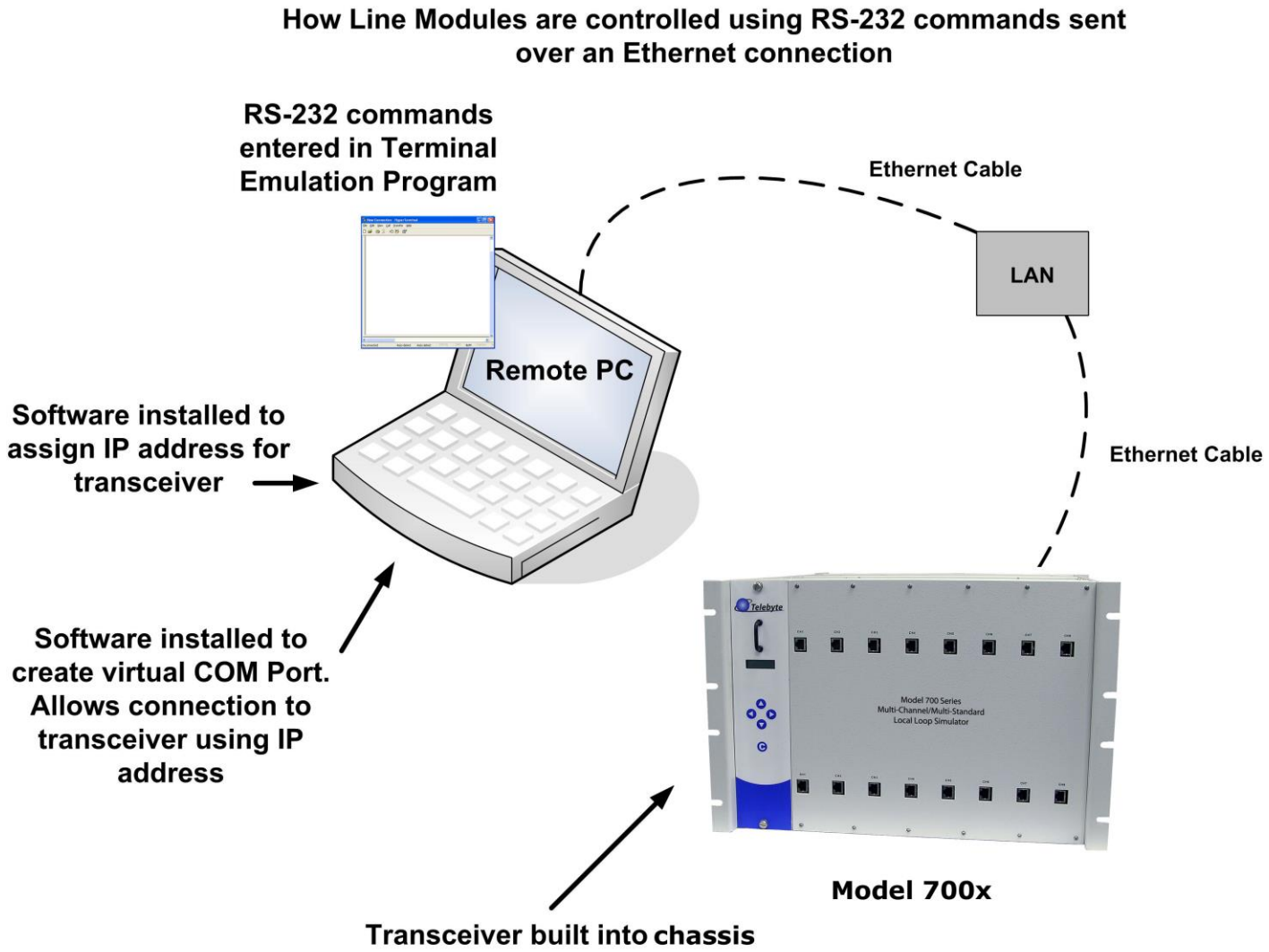
Set Communication Method (all models)

- Press the “C” configuration button immediately followed by the UP and/or DOWN arrow buttons, until the LCD displays the desired connection method. Match the connection method with your selections in the 700 Control Center.

4.0 Ethernet Connections & Commands

Enabling Ethernet Connectivity

RS-232 commands may be sent over an Ethernet connection to control the Model 700x. This is made possible by a Lantronix XPort transceiver installed in the unit. A one-time set up must be performed to assign an IP address to the transceiver and configure a virtual COM port. This is all done using a remote PC. It requires one software installation to assign an IP address to the transceiver and a second one to configure the virtual COM port.



Before You Begin
Connect the 700x and a remote PC to the LAN using Ethernet cables. Please note, when connecting the Model 700x directly to a PC a crossover Ethernet cable is used for communication; when connecting to a network (through a switch or router) a straight-through Ethernet cable is used.

ⓘ Administrator access to the remote PC is required.

Installing IP Address Assignment Software
The IP address assignment software (Lantronix Device Installer) is obtained from the CD supplied with your unit or downloaded from **www.telebytebroadband.com** (select Support/Software option). It is then copied to the remote PC and expanded. After installation, it is used to assign an IP address to the XPort.

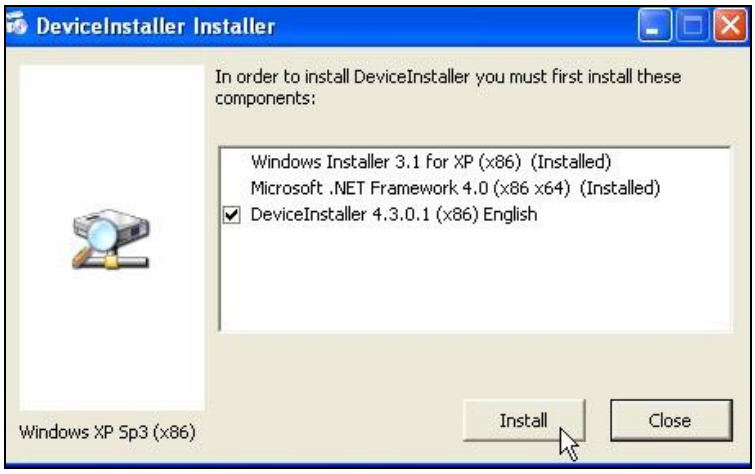
Obtain the IP address and subnet mask for the XPort from your network administrator as it is needed during the assignment process. In addition, note the MAC address of the XPort which is located on the back of the 700x. This address allows the assignment software to locate the XPort.

ⓘ In some cases, firewall protection on the PC may interfere with the installation or assignment process. If this occurs, contact your network administrator.

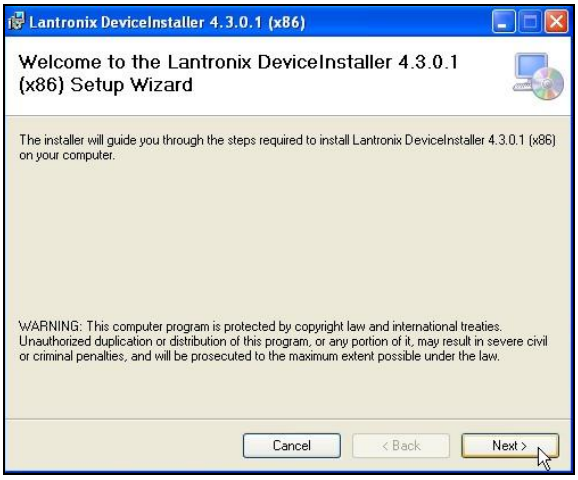
Install Software

1. Save the **700-Ethernet-Install.zip** file to the desktop.
2. Extract the files and then navigate to the folder on the desktop.
3. Double-click on the setup_di_x86x64cd_4.3.0.1.exe program file.

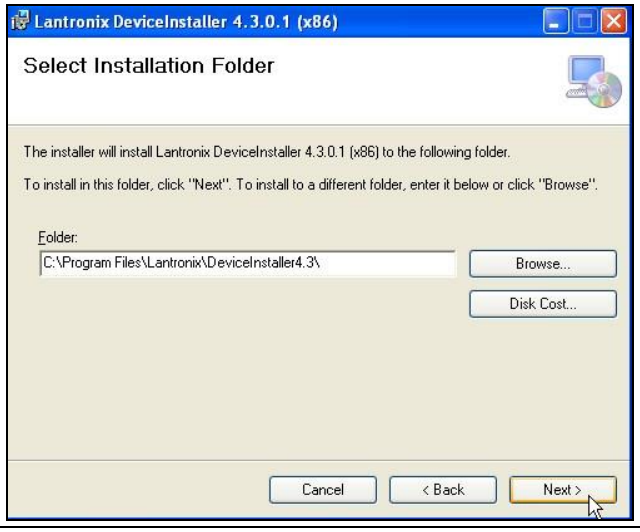
4. Select the language.



5. Click **Install**.



6. Click **Next**. The Select Installation Folder screen is shown.



7. Use the default folder information or click **Browse** to find and select a new location. The Confirm Installation screen is displayed.

8. Click **Next** to begin installation. The progress screen is shown, followed by the Installation Complete screen.

9. Click **Close** to complete the installation.

Assign IP Address to XPort

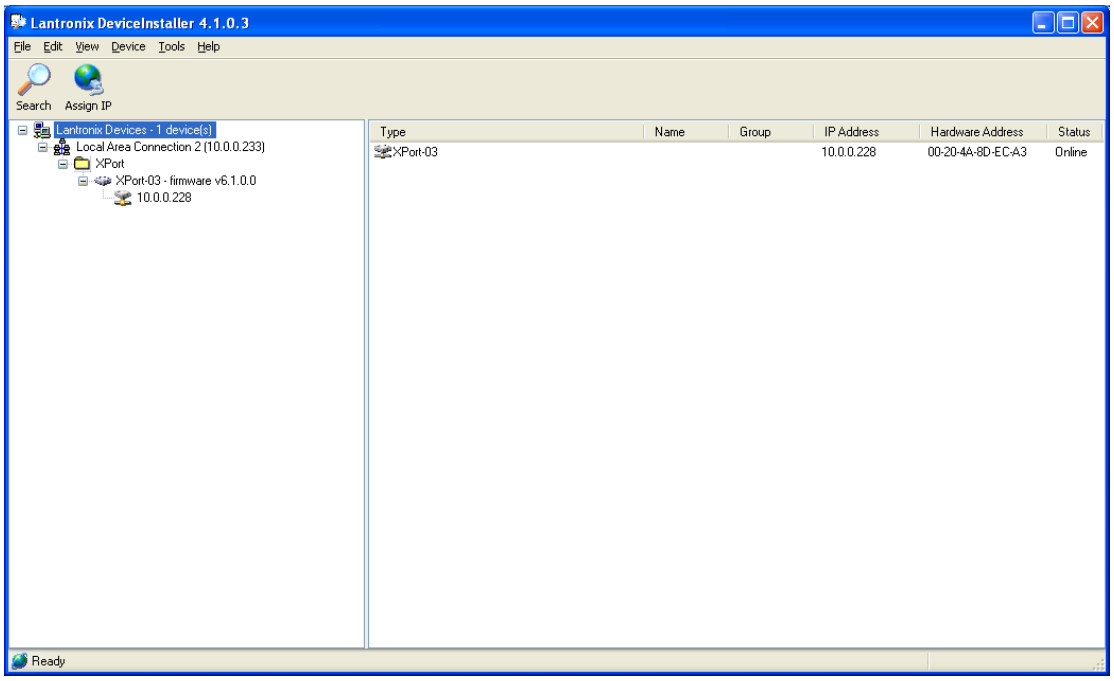
1. Launch the Lantronix Device Installer program:

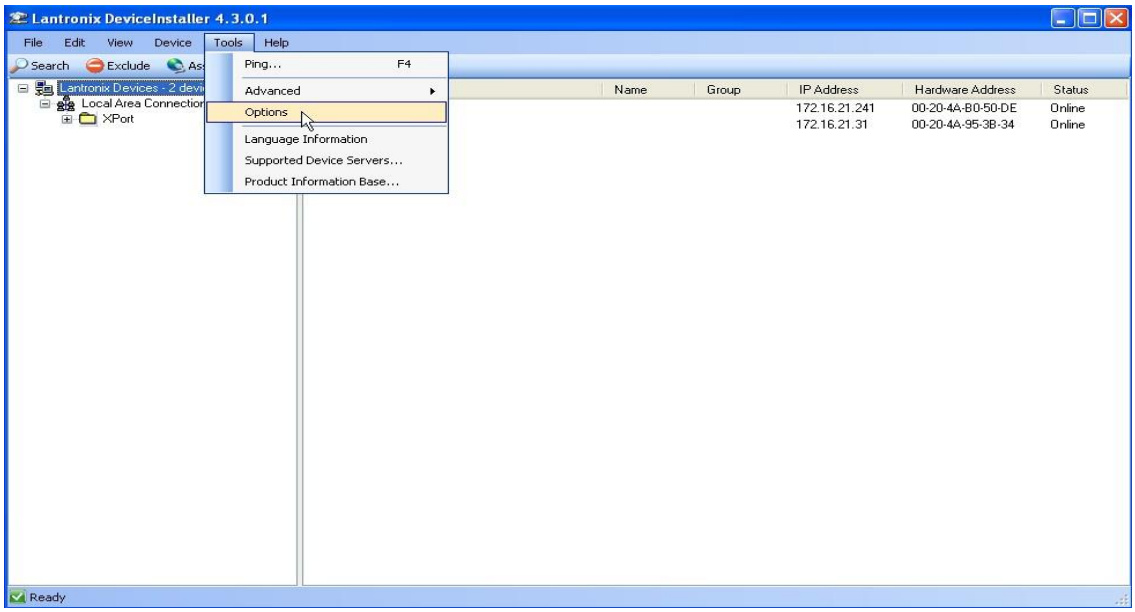
   a. For Windows 95, 98, ME, NT, 2000: Click **Start/Programs/Lantronix/DeviceInstaller/ DeviceInstaller**.

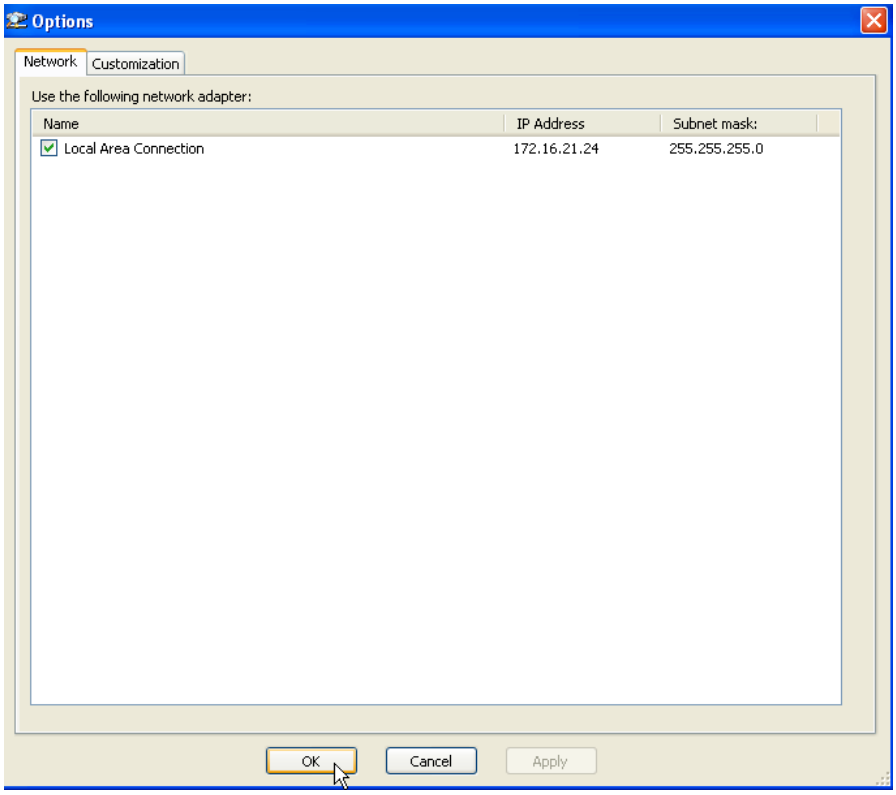
   b. For Windows XP: Click **Start/All Programs/Lantronix/DeviceInstaller/ DeviceInstaller**

   ⓘ If the remote PC has more than one network adapter, a prompt appears. Select the adapter representing the network card connected to the same LAN as the XPort and click **OK**.

2. The DeviceInstaller control screen is shown, displaying a default IP address.

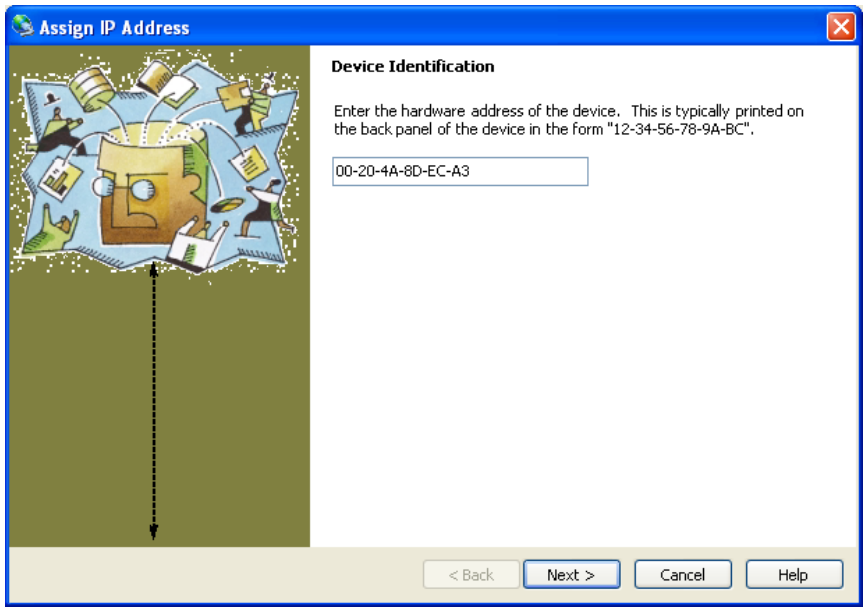




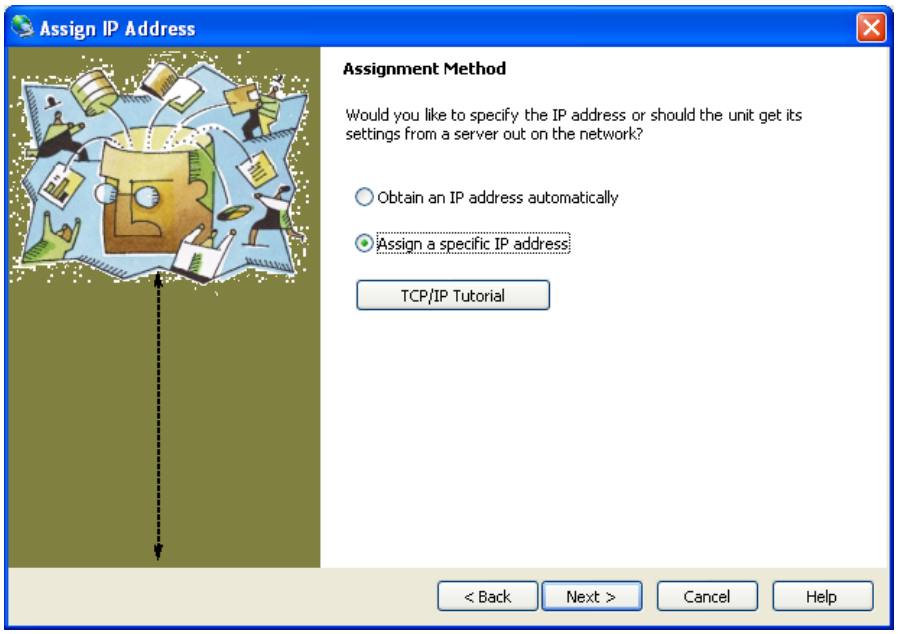


3. If the Local Area Connection is not displayed in the left panel, the Xport device associated with the 700x may not be displayed in the right panel. If that is the case, click **Tools => Options**. Local Area Connection should checked. Uncheck any additional adapters such as wireless network adapters. Then click **OK** at the bottom of the window.

4. If the default IP address is not correct, click the **Assign IP** icon on the top-left of the DeviceInstaller control screen.



5. If the Device Identification screen is displayed. Enter the MAC address of the XPort device and click **Next**. Otherwise, skip to step 6.



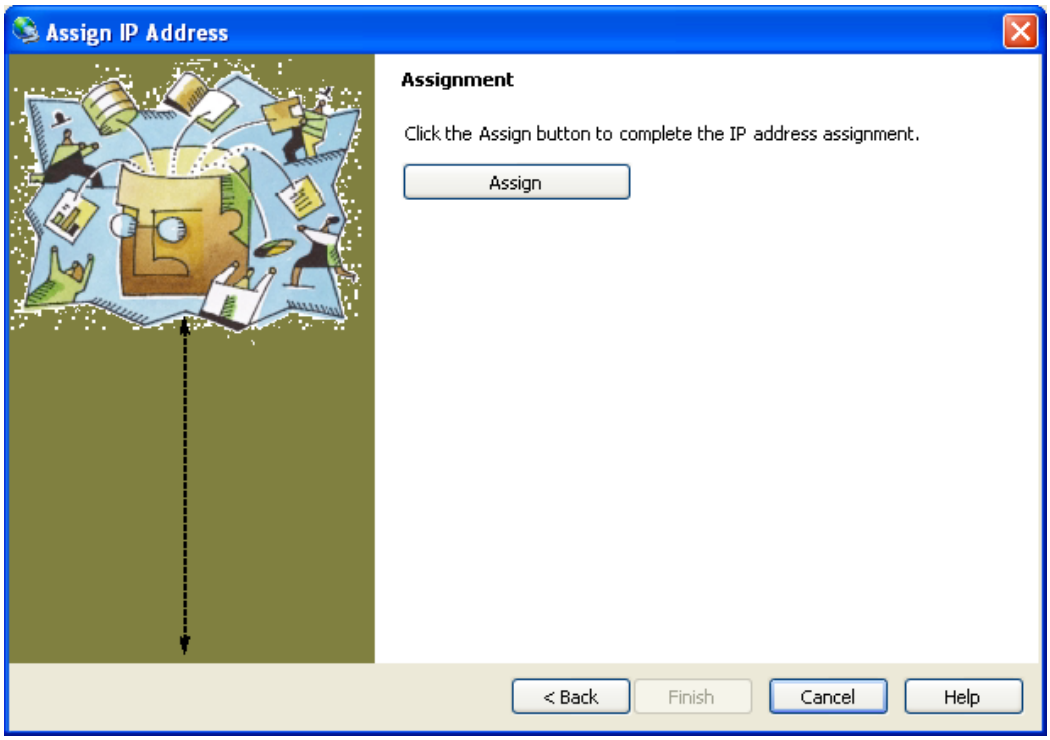
6. The Assign Method screen is displayed. Select the **Assign a specific IP address** option and click **Next**. The IP Settings screen is displayed.

7. Enter the IP address in the **IP address** field.

8. Enter the subnet mask for the network in the **Subnet mask** field.

9. If the remote PC and 700x reside on separate subnets, enter the IP address of the subnet's router into the **Default gateway** field.

10. Click **Next**. The Assignment screen is shown.



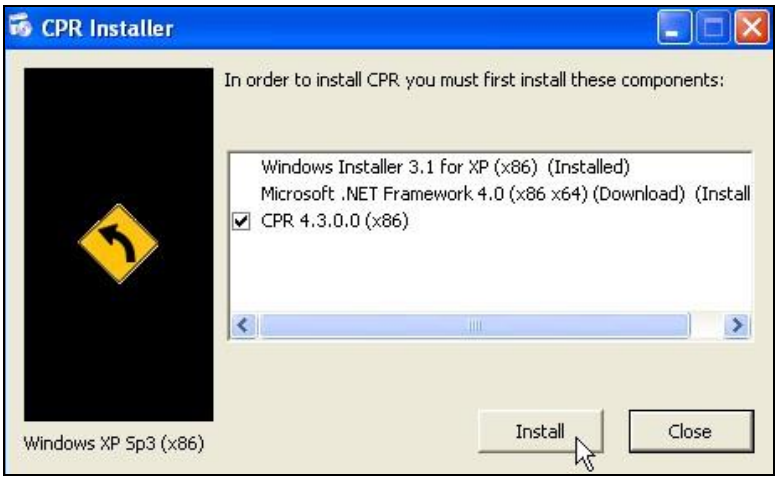
11. Click **Assign** to assign the IP address to the XPort. The progress of the task is shown, followed by the message "***Completed Successfully***." Click **Finish**. Note the Device Installer control window now reflects the new IP address.

Configure Virtual Com Port on Remote PC

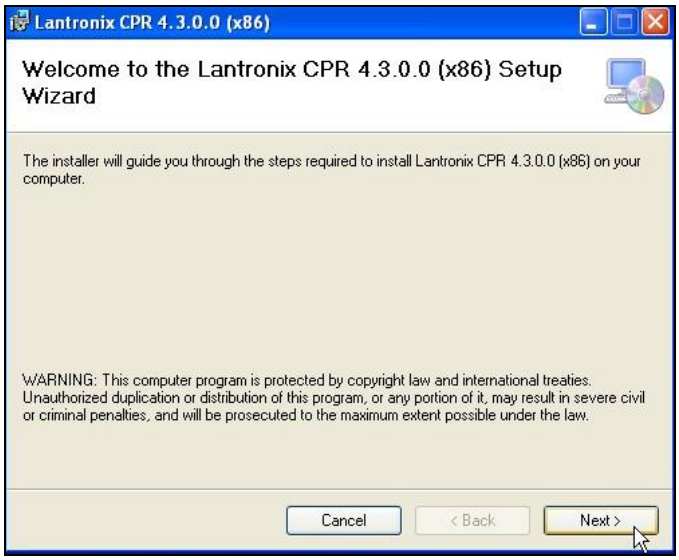
The virtual COM port software (Lantronix Com Port Redirector) is obtained from the CD supplied with your unit or downloaded from www.telebytebroadband.com (select Support/Software option) and copied to a remote PC prior to beginning installation. After installation, it is used to create/configure a virtual COM port on the remote PC for communication with the 700x.

Install Software

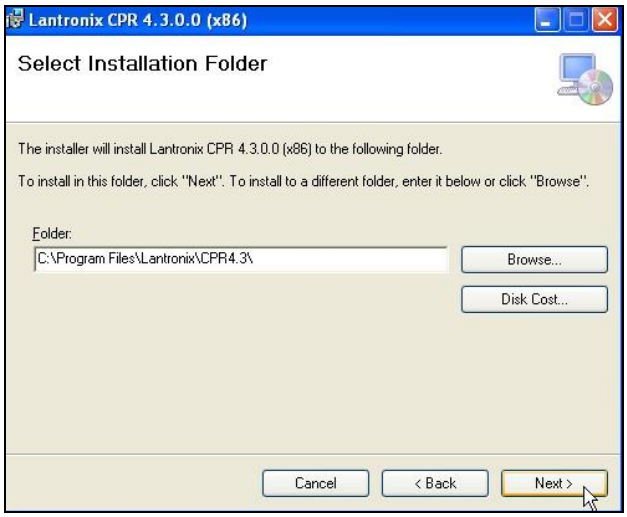
1. From the **C:\Temp** location, double click the **setup_cpr_4.3.0.0.exe** file to begin installation.



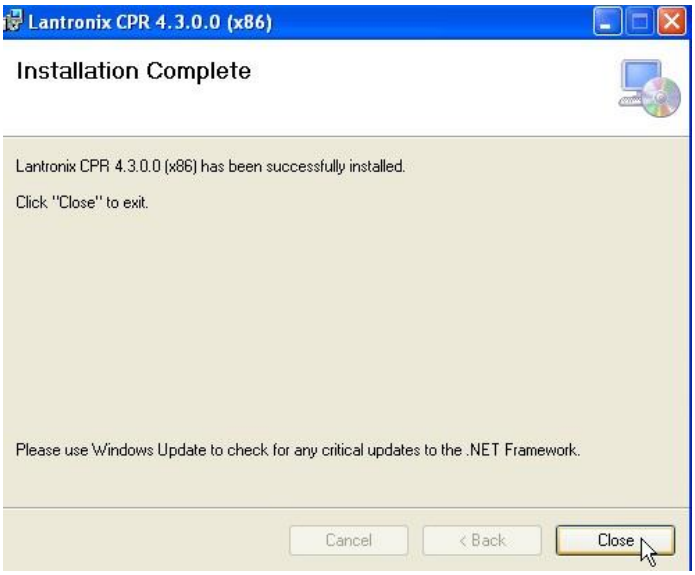
2. Click **Install**. The Welcome screen is displayed.



3. Click **Next**. The installation progress is shown and you are returned to the Welcome screen again. Click **Next**. The Choose Destination Location screen is displayed.



4. Click **Next** to accept the default location and install the files or click **Browse** to navigate to the desired location. A Setup Status screen is displayed, indicating the progress of the installation. When complete, the InstallShield Wizard Complete screen is shown.

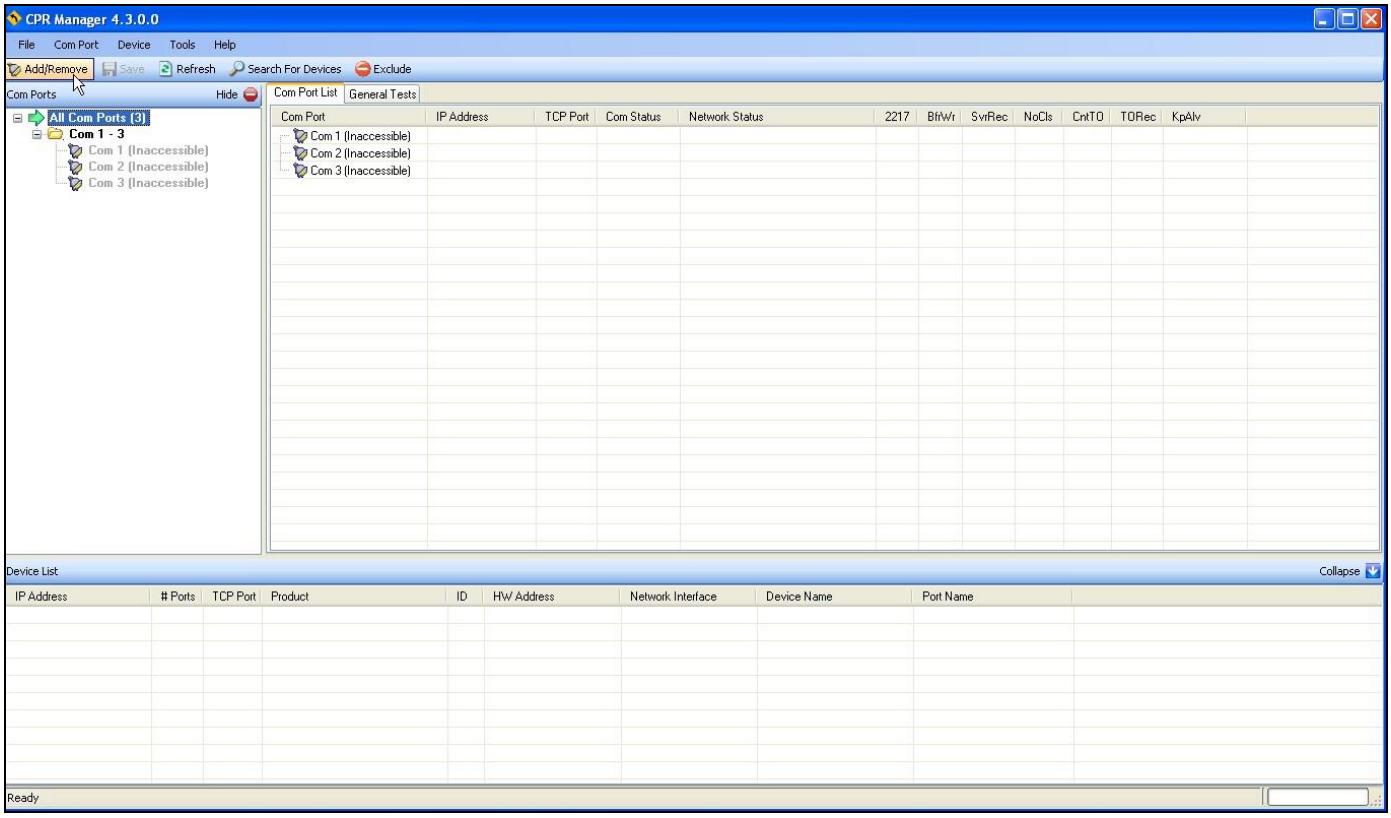


5. Click **Close** and then **OK** on CPR successfully installed message.

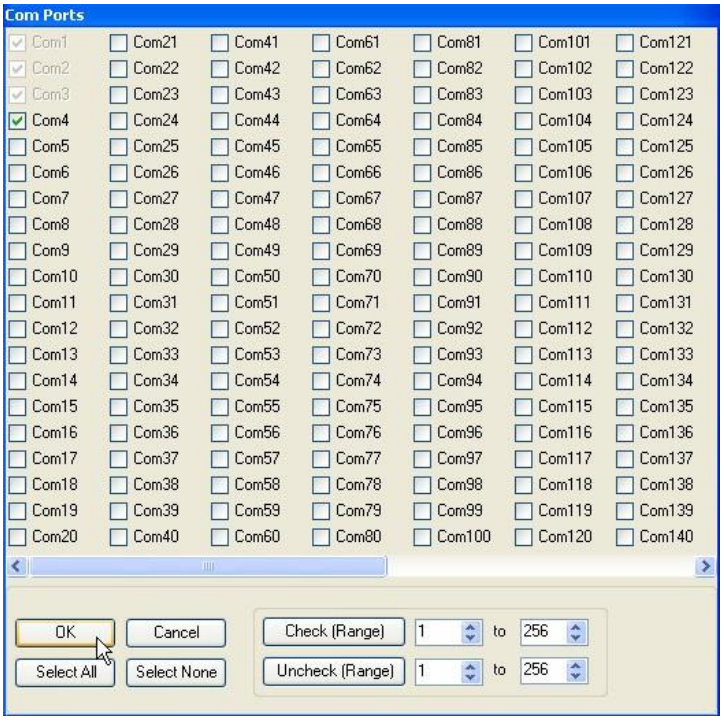
Create Virtual COM Port

1. Launch the Lantronix Redirector program. **Start/All Programs/Lantronix/ CPR 4.3/CPR Manager**

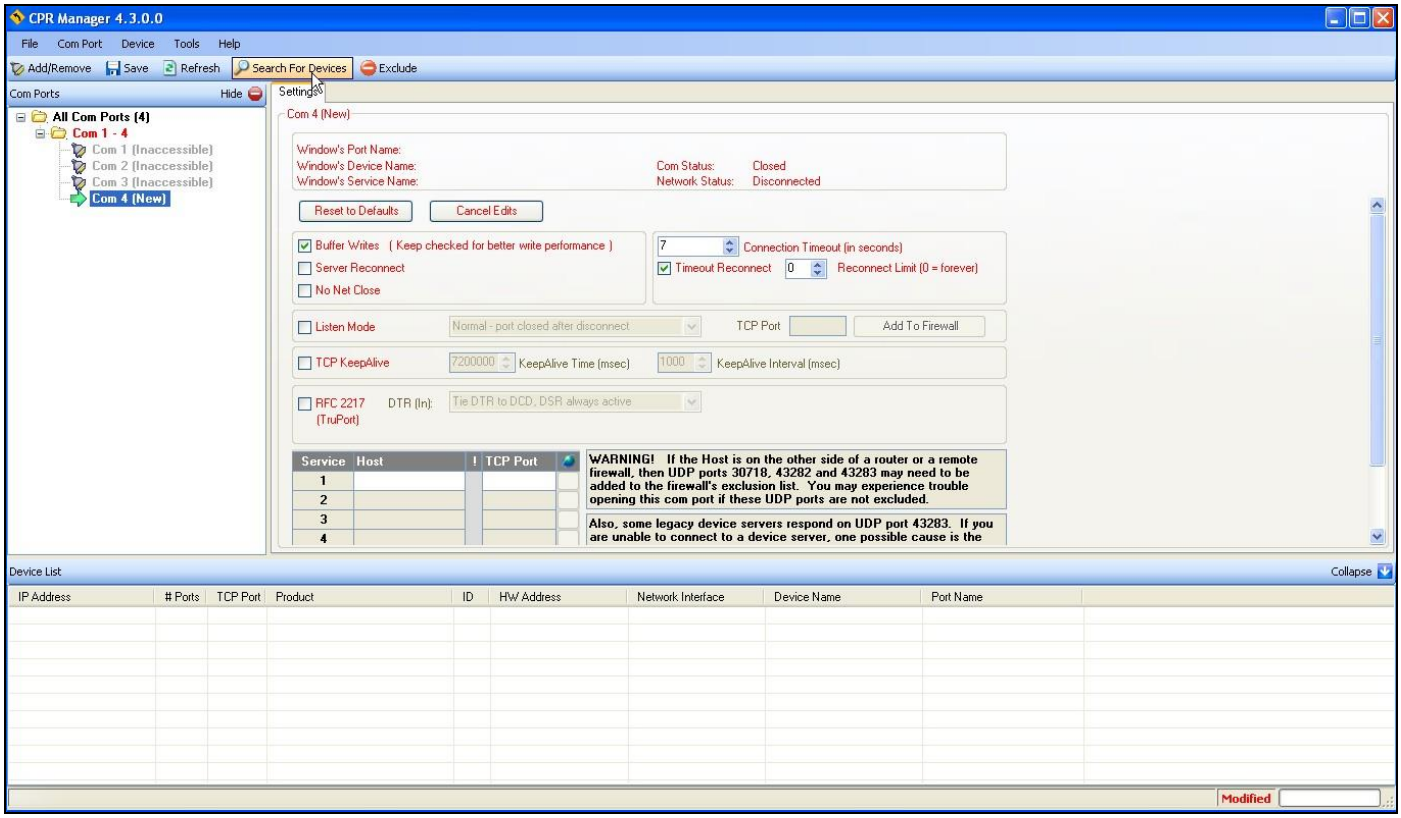
2. The CPR Manager window is shown.



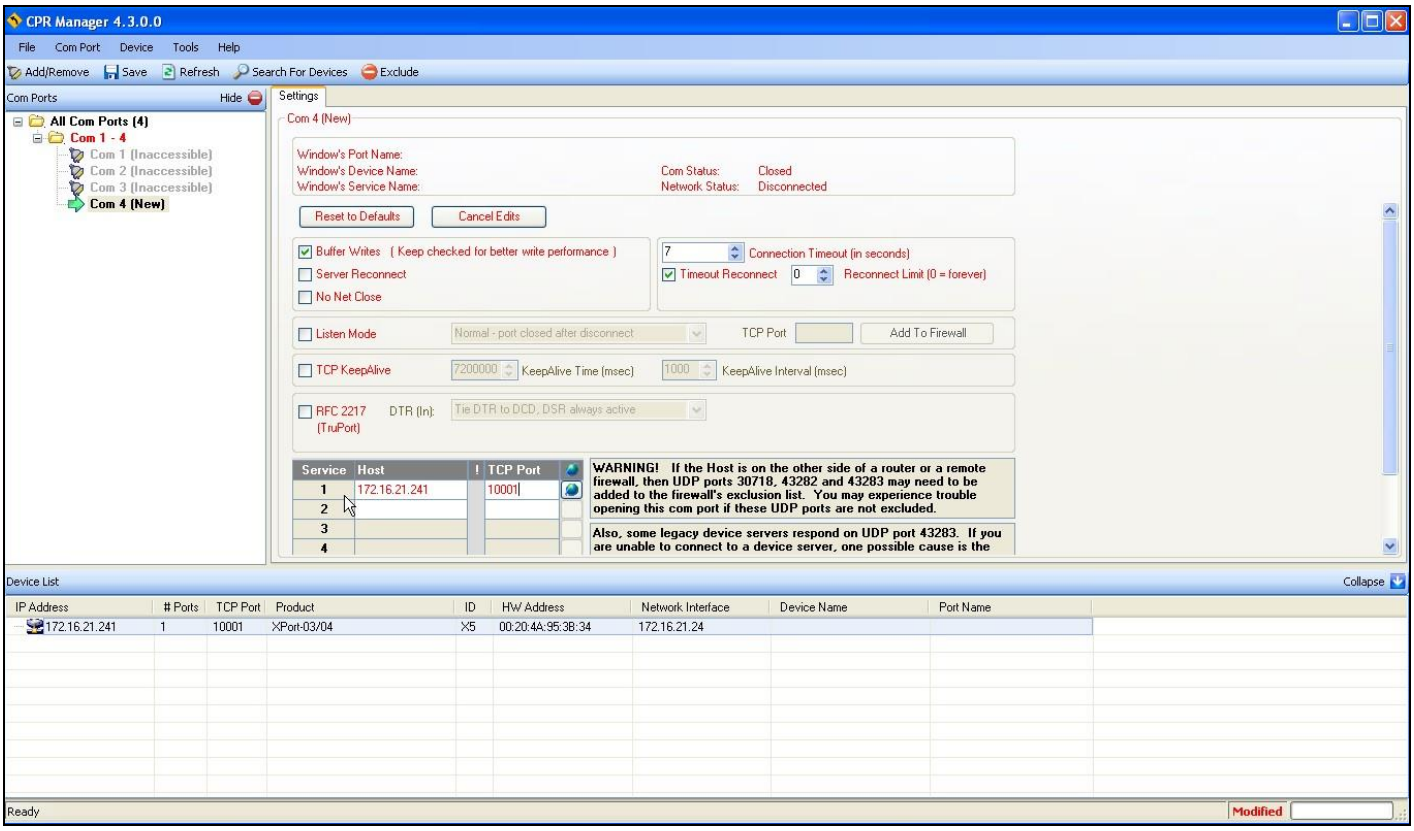
3. Click **Add/Remove** on the upper left of the screen. The Com Setup screen is displayed.



4. Select an available COM port. Select addition Com ports for each 700x on the local area network. These COM ports can be used with a terminal emulation program. Click **OK** to return to the CPR Manager window.

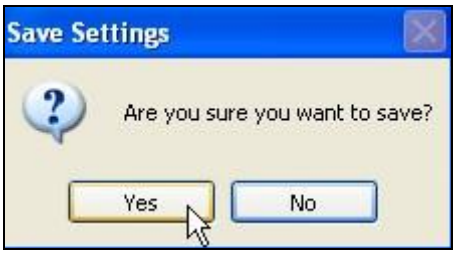


5. In the Com Ports panel on the left, click on the New com port to highlight it. Select **Search For Devices**.



6. Any Lantronix device configured with an IP will be displayed in the **Device List** panel along the bottom. Double click on the device in order to assign it to the highlighted com port. The Host IP address and TCP Port will automatically be populated in the Settings panel. Do the same for each additional Com port and device if necessary.

7. Click on the **Save** icon on the upper left.



8. Select **Yes** when asked to save.

9. There will be two Hardware installation warning windows. These warnings are due to the new virtual com ports added. Click **Continue Anyway** in both prompts to complete the installation.

Connecting to the Model 700x via Ethernet Connector

Using the 700x front panel buttons, press the "C" button immediately followed by the up and/or down arrows, until the LCD displays "ENET:9600."

To communicate with the 700x, launch a terminal emulator program such as Hyper Terminal. Configure the connection within that program to use the COM port selected in the Redirector program. Use the following standard settings:

Baud Rate: 9600bps
Data Bits: 8
Parity: None
Stop Bits: 1
Flow Control: None

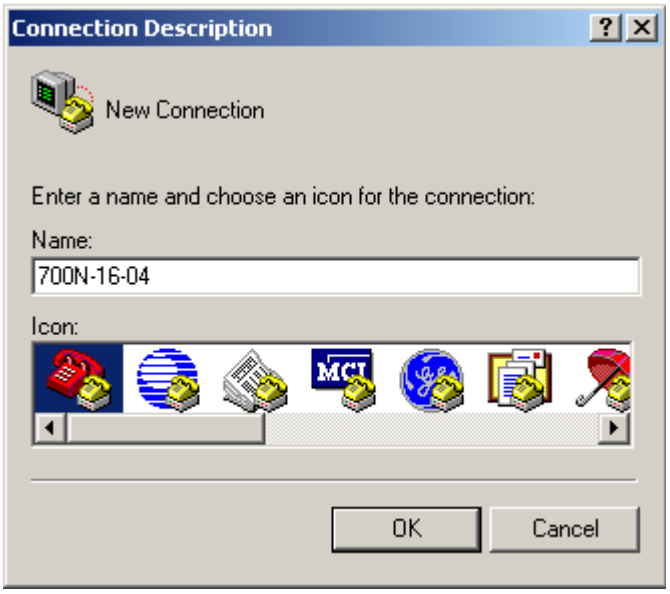
Refer to section *"RS-232/Ethernet Controls"* for a list of the RS-232 commands available to control the Model 700x.

ⓘ Only one connection at a time is allowed. If you receive a message in the terminal emulator program that the COM port is not available, it may be the result of another user accessing the unit. In addition, the user should ensure that the local port setting for the transceiver is the same as the one entered during set of the virtual COM port. Refer to the *Local Port Setting* section later in this chapter.

Communicating with a 700x using Remote terminal software

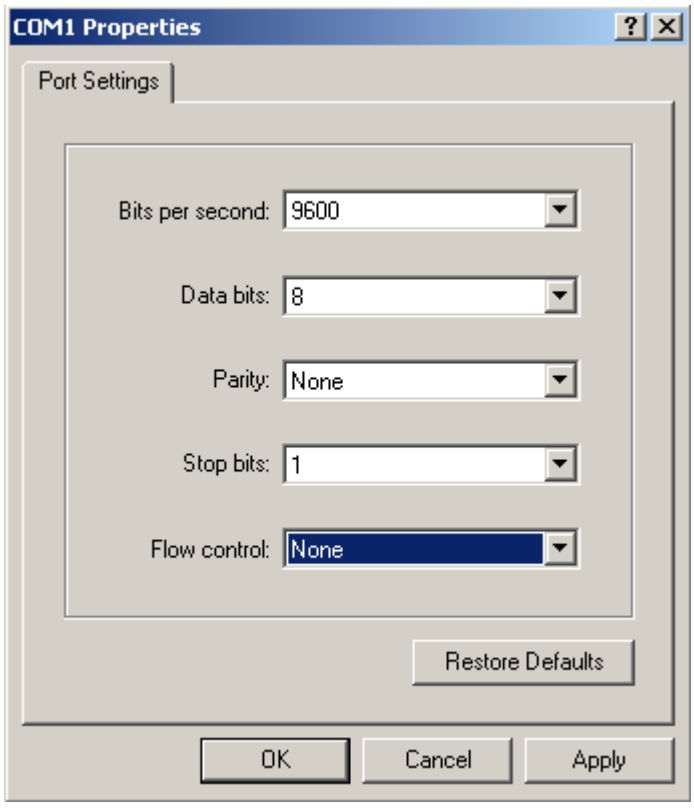
1. Open a program such as HyperTerminal. **Start/All Programs/Accessories/Communication/HyperTerminal**

2. If the program was launched for the first time an area code should be entered to proceed.



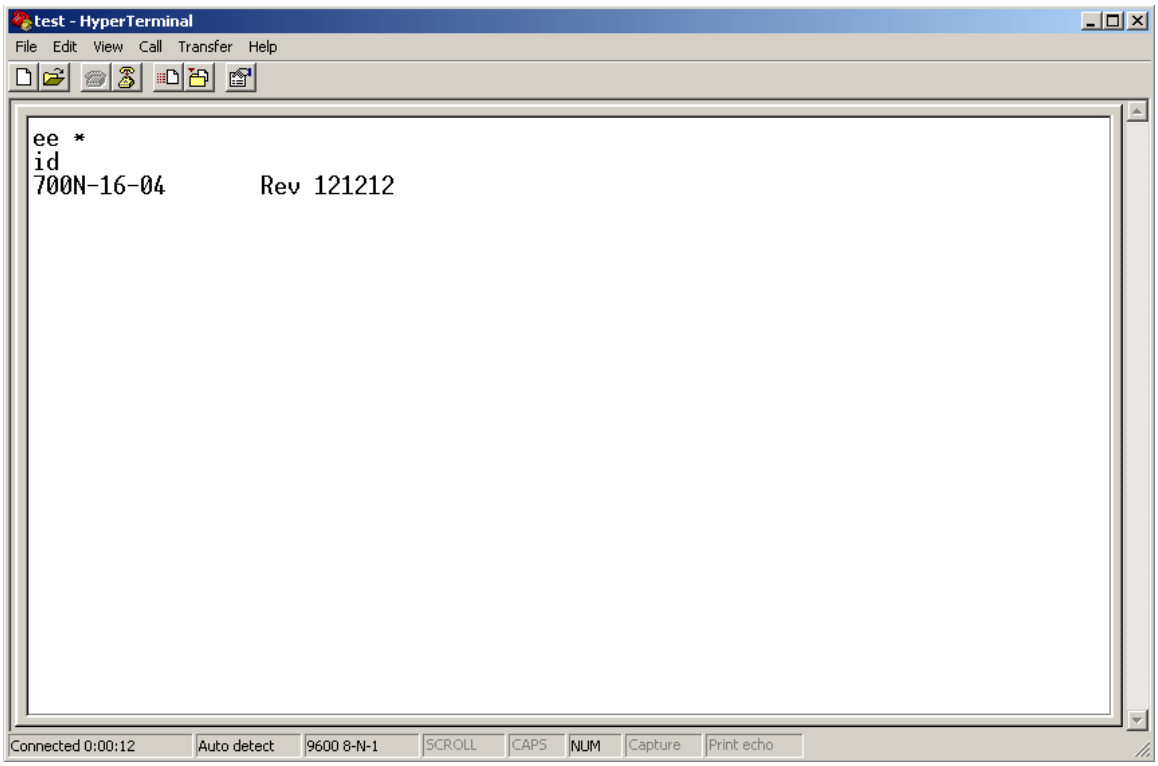
3. In the Connection Description field, enter a name for the connection. Click **OK**.

4. In the Connect using filed, select the virtual Com port which was created and configured. Then click **OK**.



5. The Port Settings should be:
   - Bits per second: 9600
   - Data bits: 8
   - Parity: None
   - Stop bits: 1
   - Flow control: None

   Click OK to establish the connection.



6. In order to verify communication enter the command “id” and press the enter key. If data is received back, then communication is successfully established.

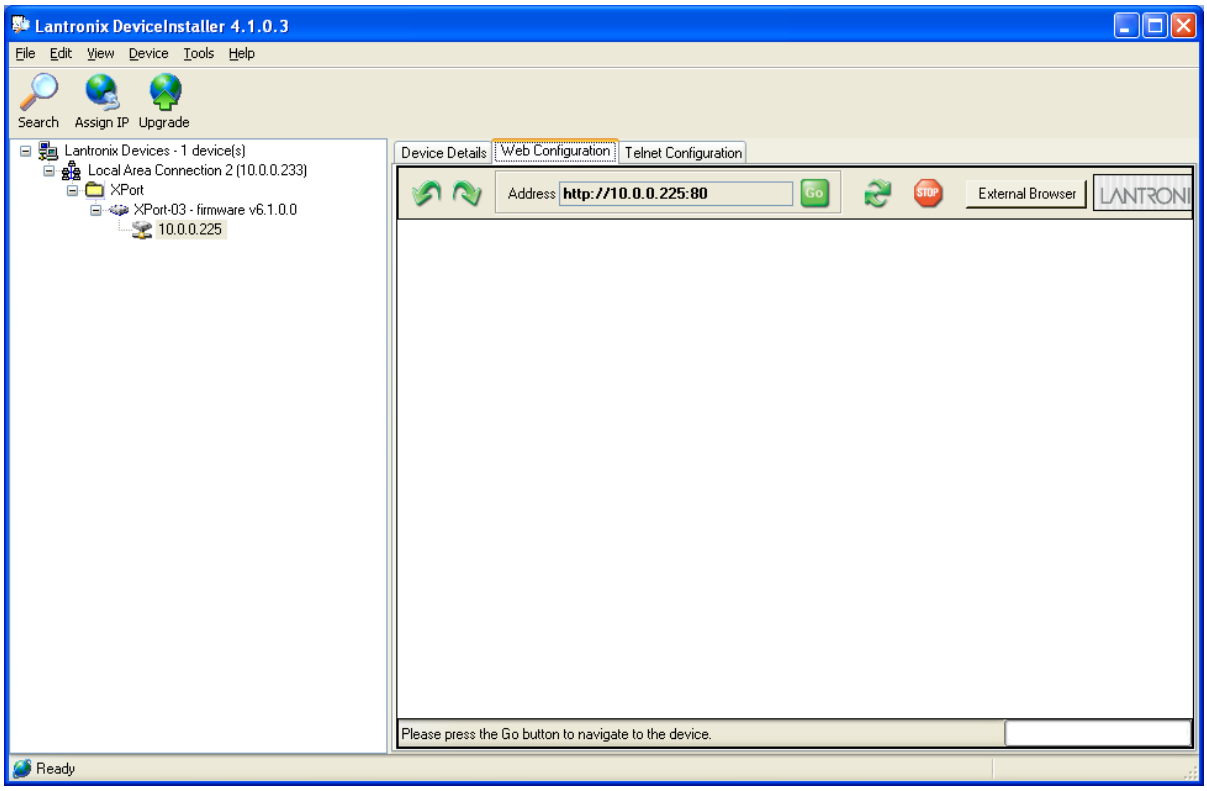
NOTE: The text “id” may not be displayed as seen in the above image if character echo is not enabled on the 700x. Enter the command “ee” (echo enable). For a short list of commands, type the command “h” for help. For model specific commands, refer to the line module documentation.

NOTE: If multiple 700x’s are on the local area network, a virtual Com port should be configured and assigned to each device as described above. These devices can then be controlled through HyperTerminal (or equivalent software) independently.

Using the Web Interface to Change Settings

The DeviceInstaller application provides a Web interface to select or change settings for the XPort. To access the Web interface, do the following:

1. Launch the DeviceInstaller program. The DeviceInstaller control screen is displayed. Expand the XPort device on the left side of the screen and click on the IP address for the device. The right side of the screen changes to an interface with three tabs: Device Details, Web Configuration and Telnet Configuration. Select the **Web Configuration** tab.



2. Click the **Go** button to the right of the **Address** field. (Please note the address in this field may be entered directly into a Web browser for direct access without using the DeviceInstaller program).

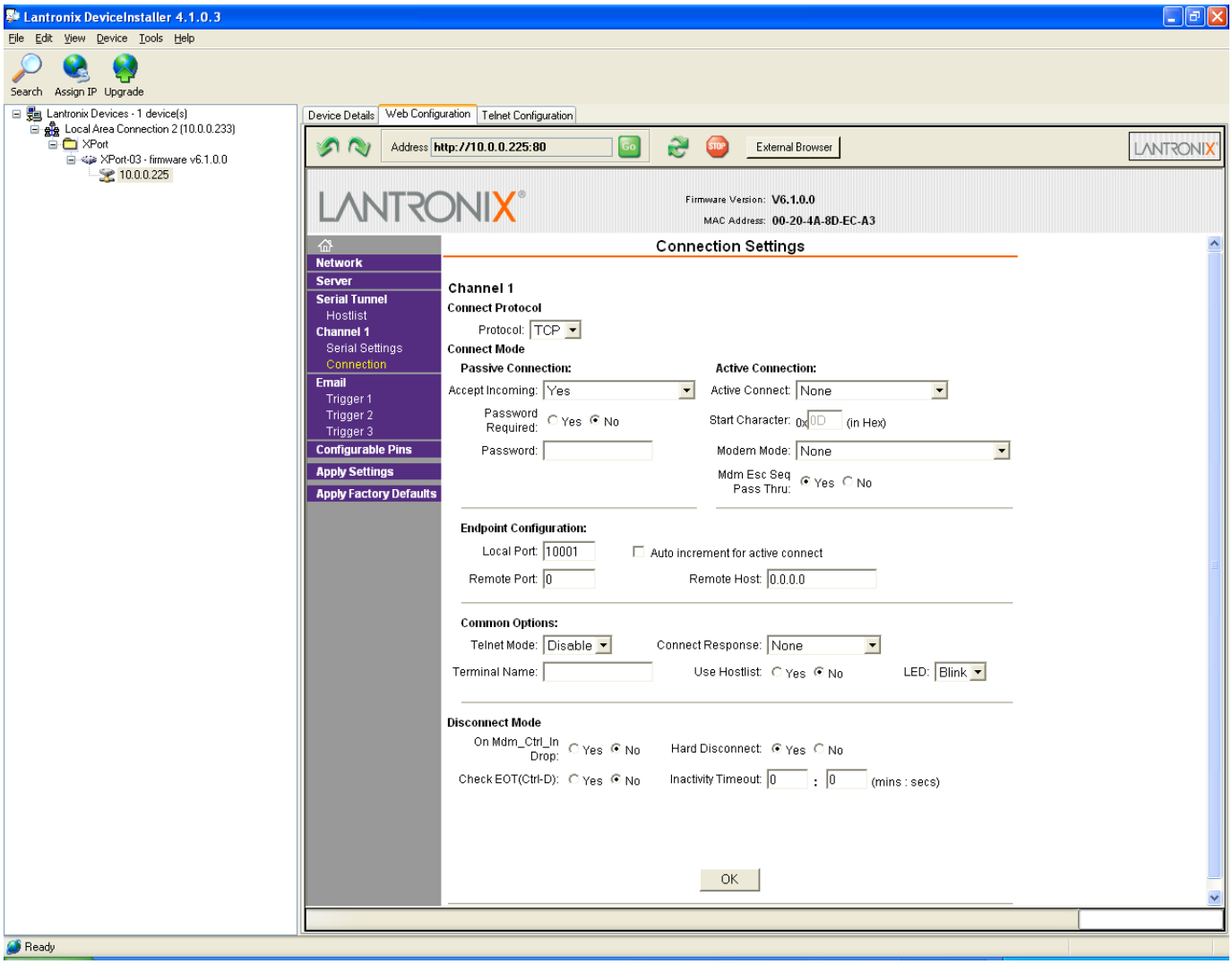
3. The Password screen is shown. If required, enter the Username and Password required. Click **OK**. The Device Server Configuration Manager screen is displayed.

Use the menu on the left side of the screen to navigate.

Local Port Setting

To ensure the local port setting matches the one entered when configuring the virtual COM port, do the following:

1. Click on **Connection** under the Channel 1 section. The Connection Settings screen appears.



2. In the Endpoint Configuration section, enter **10001** in the **Local Port** field. Click **OK**.

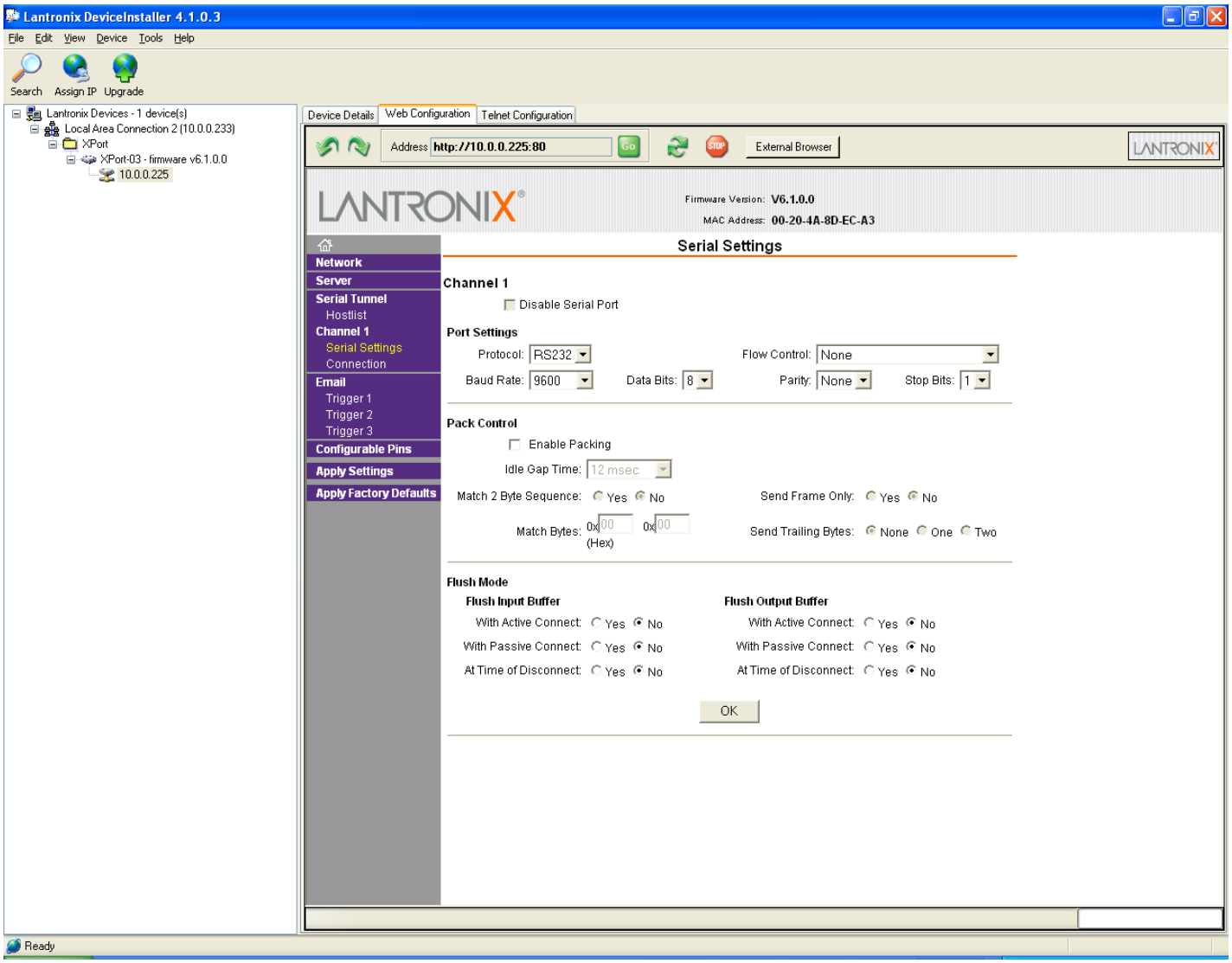
3. The message "***Done!***" is displayed to the right of the OK button at the bottom of the screen. When this message disappears, click **Apply Settings** on the left-side menu bar. A message appears indicating the settings are being saved and a progress bar is shown. When the update to the transceiver is complete, the Device Server Configuration Manager screen is displayed.

Selecting/Setting Baud Rate

The Baud Rate settings used with the terminal emulator program must match the settings in the 700x and the transceiver. Set the Baud Rate on the 700x using the keypad controls (refer to "*Keypad Controls*"). Set the Baud Rate for the transceiver using the DeviceInstaller program or a Telnet Connection. Both methods are explained in this section.

Set Baud Rate for Transceiver Using the DeviceInstaller

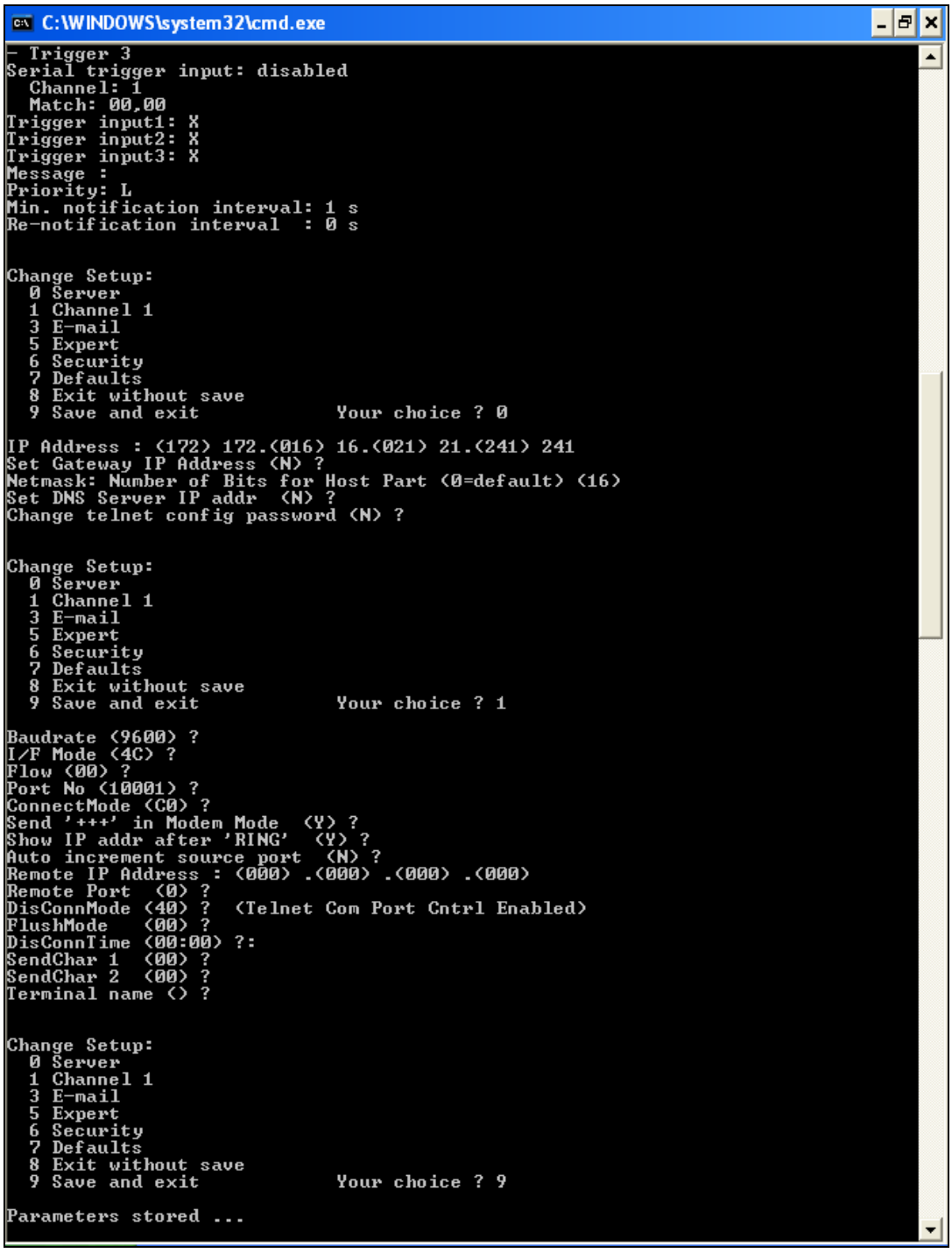
1. Select the **Serial Settings** option on the left side of the screen under Channel 1. The Serial Settings screen appears.



2. Select the desired Baud Rate from the Port Settings section. Click **OK**. The message "***Done!***" is displayed to the right of the OK button at the bottom of the screen. When this message disappears, click **Apply Settings** on the left-side menu bar. A message appears indicating the settings are being saved and a progress bar is shown. When the update to the transceiver is complete, the Device Server Configuration Manager screen is displayed.

Configuring and Controlling the Transceiver Using a Telnet Connection

1. Select **Windows/Start/Run**. The Run window is shown.
2. Enter **arp –s <IP address> <MAC address>**. Example: arp –s 172.16.21.241 00-20-4A-95-B0-E6
3. Enter **telnet <IP address> 1**. Example: telnet 172.16.21.241 1
4. Enter **telnet <IP address> 9999**. Example: telnet 172.16.21.241 9999
5. There will be a 5 second window to Press the Enter key. If the connection is lost repeat step 4.
6. The **Change Setup** menu will be displayed.



Note: Values shown in brackets are the current values for the setting.

7. In the **Change Setup** menu, type **0** to configure the server. Press Enter key.

8. Enter the IP address in the standard format (e.g. 172.16.21.241). The remaining settings can be left at their default values.

9. When returned to the **Change Setup** menu, type option **1** to configure Channel 1.

Note: There are several Channel 1 options that can be configured. The ones to make note of are the following:

a. **Baudrate:** This will be important to know for settings up serial communication in remote terminal software.
b. **Port No:** This is the TPC port number to be used over a telnet connection. The default is **10001**.
c. **DisConnMode:** The default value for this is **00**. Entering the value **40** for this parameter will allow controlling the unit remotely via telnet. This is indicated as **<Telnet Com Port Cntrl Enabled>**

Note: When the **DisConnMode** is set to **40**, there may be odd characters displayed if using remote terminal software such as HyperTerminal. It is recommended to only enable this feature if controlling it via telnet.

10. At the **Change Setup** menu, enter **9** to Save and exit.

The message "***Parameters stored. Connection to Host lost***" is shown. The Telnet window closes automatically and the update is now complete.

11. If telnet com port control has been enabled, it can be tested right from the command prompt.

12. Enter **telnet <IP address> <TCP port>**. Example: telnet 172.16.21.241 10001.

13. Enter **h** for help to display the list of commands for the 7. This will verify communication.