La Marche Manufacturing Company | www.lamarchemfg.com

MODBUS SCADA Interface for A12B and A46 Chargers with Option 21Q

Setup Instructions

This manual is only valid for A12B and A46 Chargers equipped with the following:

S2A-525C card with software version P525DS1001

Default Settings

The LaMarche Communications Card is shipped with the following default settings;

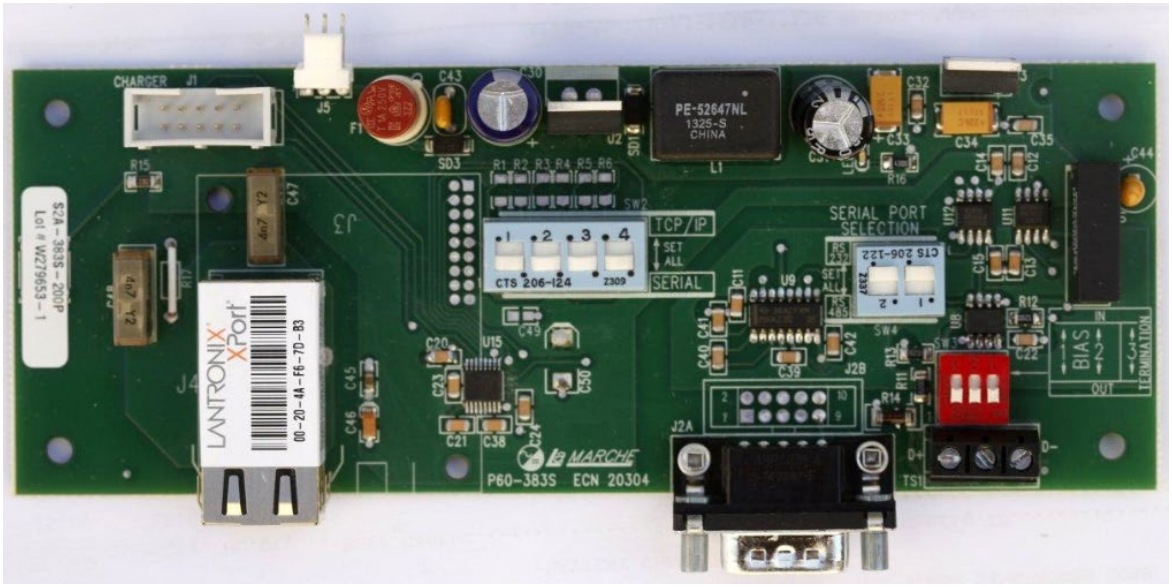
Port: RS485
Baud Rate: 9600
Data Bits: 8
Stop Bits: 1
Parity: None

Board Configuration

The communications card may be configured for RS232, RS485 or TCP communications.

SW2 configures the board for either Serial or TCP/IP communications.
SW4 configures the board for either RS232 or RS485 communications.
SW3 configures the BIAS and Termination Resistor(s) when using RS485.

The photo below shows the location of the dipswitches of the communications board.



Setting the Modbus Address, Baud Rate & Parity

To change the settings use the **Menu** button to access the menus. From the **Settings Menu** scroll to the **Advanced Settings** menu. From the **Advanced Settings** menu scroll to the **Communications** menu. From the **Communications** menu select the **Comm. Settings** menu. It is important to note that when using the TCP/IP port it is necessary to set the Address = 1, Baud Rate = 9600 and Parity = NONE. For RS232 and RS485 applications these can be set as required.

RS232 & RS485 Serial Applications

To configure the card for Serial applications you need to configure the board's dipswitches and set the Address, Baud Rate and Parity as required in the customer calibration mode.

TCP/IP Applications

To configure the card for TCP/IP applications you need to configure the boards dipswitches and confirm the Address = 1, Baud Rate = 9600 and Parity = NONE in the customer calibration mode.

You will also likely want to change the IP, Subnet and Gateway. To accomplish this please refer to the next section.

Changing the TCPIP Settings

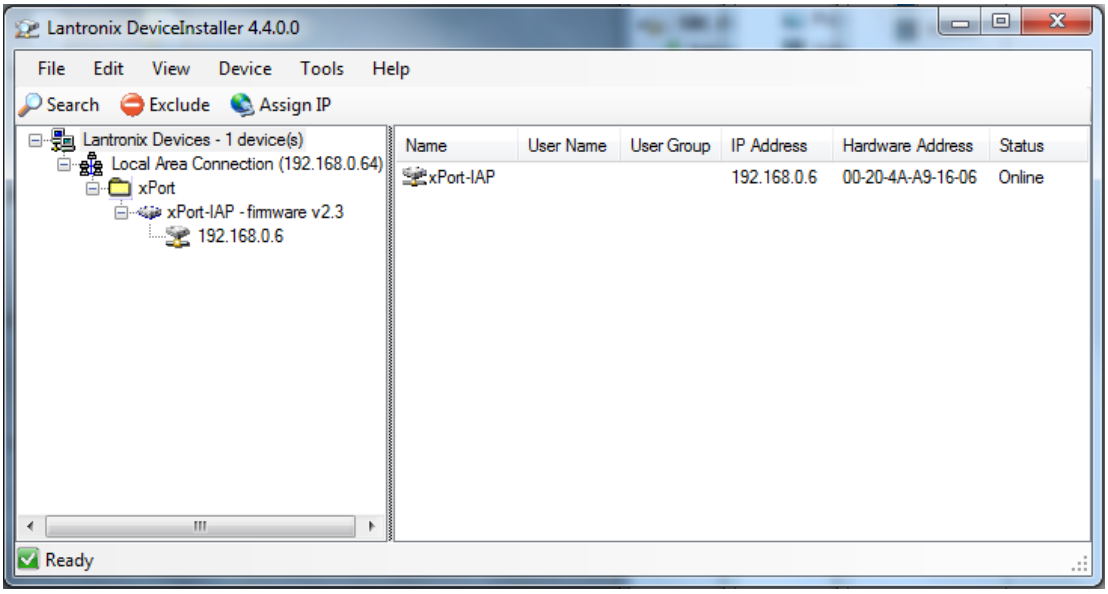
The RTU to TCP/IP module is set at the factory as follows:

IP Address: 192.168.0.6
Netmask: 255.255.255.0
Gateway: 192.168.0.1
TCP Port Number: 502

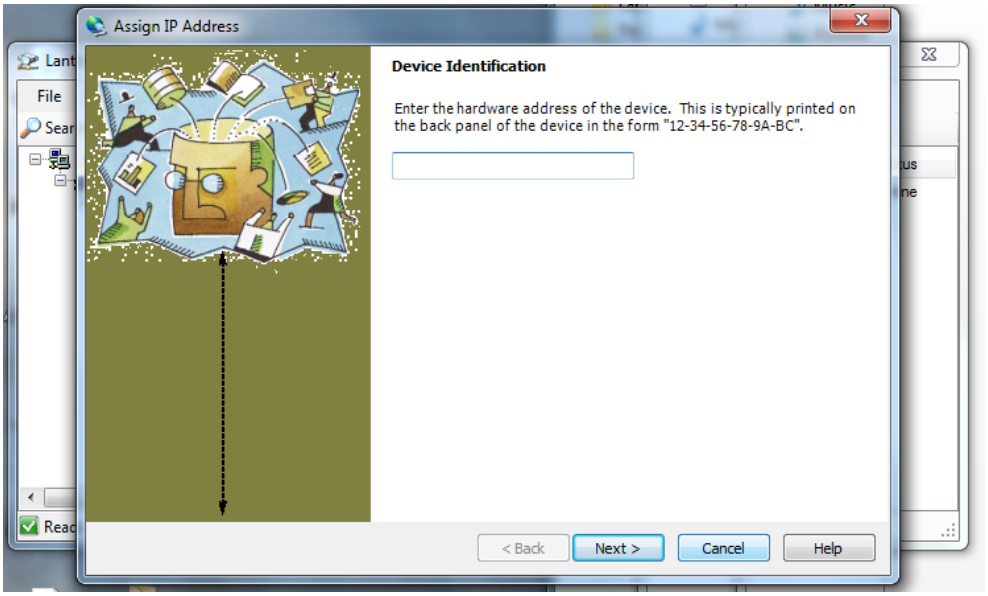
To change the TCPIP settings it is necessary to load and install the DeviceInstaller Software provided by Lantronix Inc. from the following URL:

http://www.lantronix.com/device-networking/utilities-tools/device-installer.html

Once this software is installed you should reconfigure your Network Adaptor to the same subnet (see default settings above) as the Lantronix device. Connect the device to your laptop/PC using a null-modem for a direct connection. Use a straight through if connecting through a switch or hub. If the device is powered when you run the DeviceInstaller it will automatically begin a search and find the device. If DeviceInstaller is running when the device is connected the Search command on the Toolbar Menu will locate the device. Once the device is located, the screen should appear as pictured below.

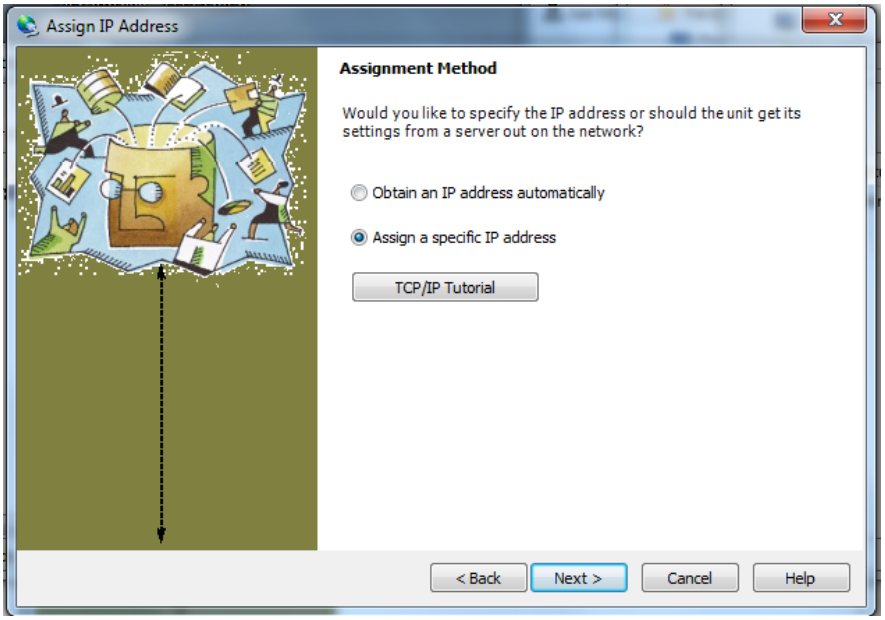


To assign the desire IP settings press the Assign IP button on the Toolbar. This will bring up the following screen:



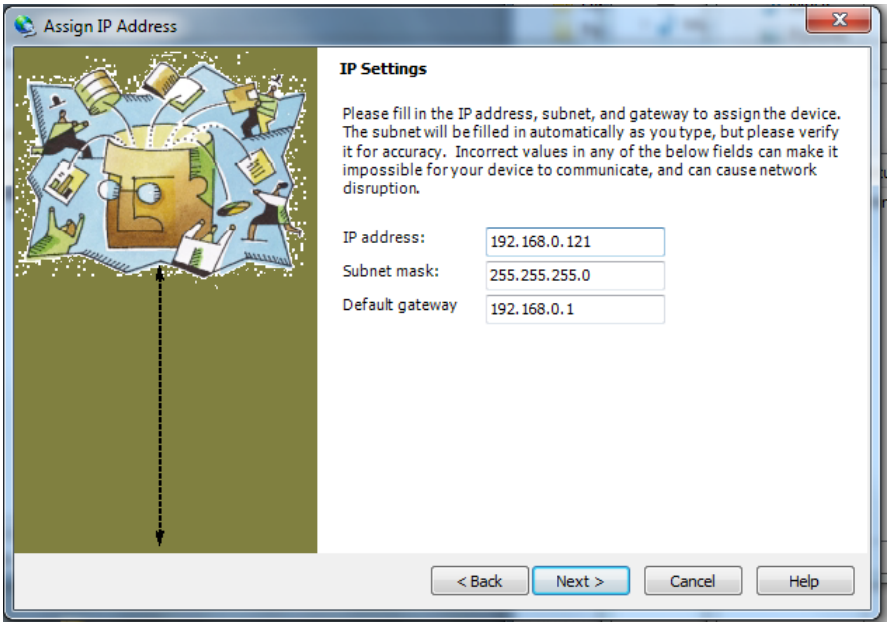
The Device Identification is located on the device itself as described in the dialog text above. An example of the Lantronix device is pictured below.

In the example above the Device Identification would be 00-20-4A-C4-DF-E8. Note this is unique to each device. After entering the ID press Next.

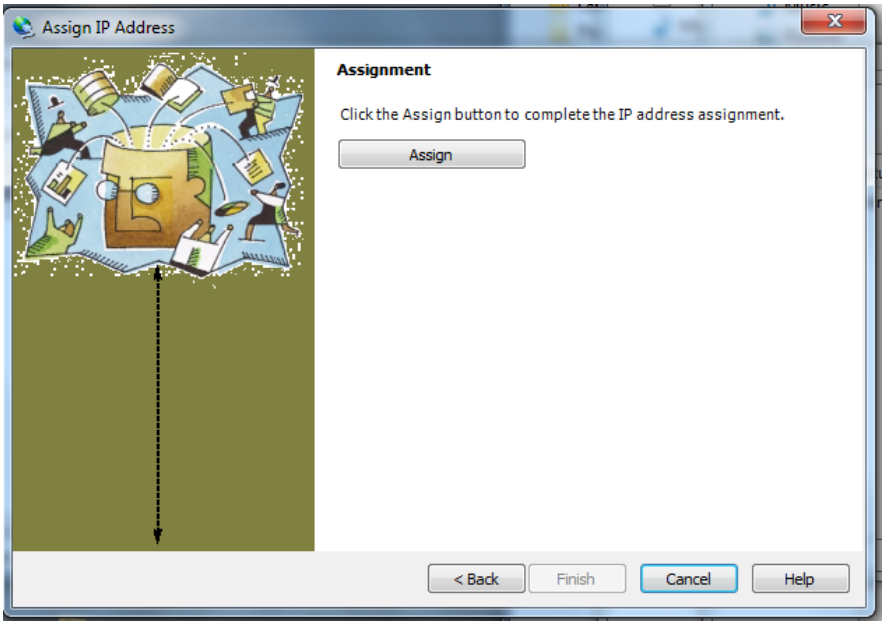


This dialog presents a choice between assigning an IP dynamically which would allow the device to operate on a network with a DHCP server however it is recommended that a specific IP address be assigned so it can be referenced directly on a SCADA Network.

Selecting "Assign a specific IP address" will bring up the following dialog:

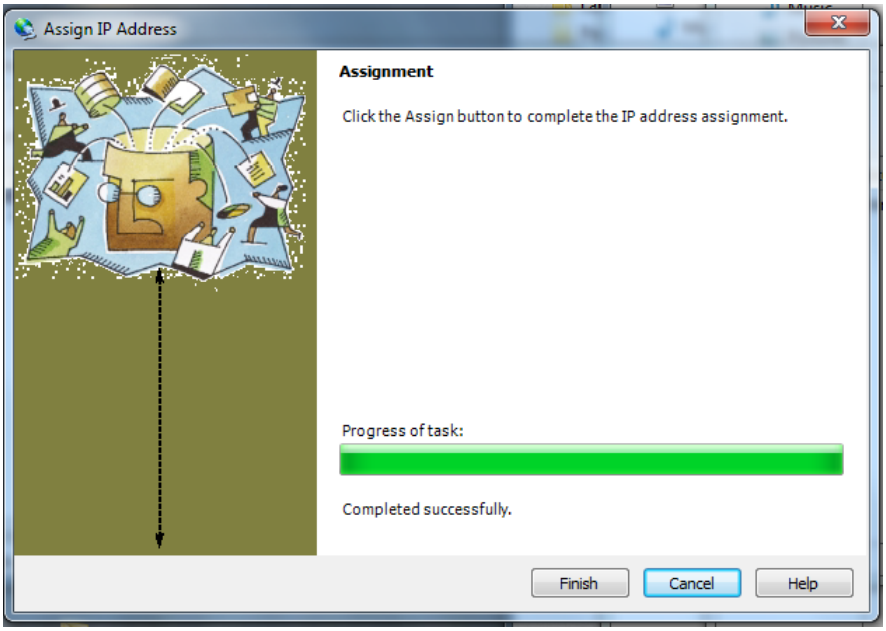


Enter your desired IP settings and press Next.



Pressing Assign will start the process of programming the device to the new IP Settings.

A progress bar and Status will appear indicating a successful operation as shown below:



Pressing Finish will complete the IP setting change process. The DeviceInstaller Application can now be closed.

LaMarche A12B / A46 Modbus Implementation

Default Communication Settings

Protocol: Modbus RTU
Comm Port: RS485
Baud Rate: 9600 (Selectable 1200, 2400, 4800, 9600, 14400, 19200, 38400)
Data Bits: Fixed at 8
Stop Bits: Fixed at 1
Parity: None (Selectable None, Even, Odd)
Flow Control: Fixed at None
Modbus Address: 1 (Selectable 1 to 247)

Supported Modbus Types

RTU
TCP

Supported Modbus Function Codes

01 – Read Coil Status (0X)
02 – Read Discrete Input Registers (1X)
03 – Read Holding Registers (4X)
04 – Read Input Registers (3X)
05 – Write Single Coil
06 – Write Single Register

Coils	
Address	**Name/Description**
00000	Float/Equalize Mode Indicator (FLOAT=0, EQUALIZE=1)

Discrete Inputs	
Address	**Name/Description**
10000	AC or Breaker Tripped Alarm Indicator (FAILURE=1)
10001	High Voltage Alarm Indicator (FAILURE=1)
10002	High Voltage Shutdown Alarm Indicator (FAILURE=1)
10003	Low Current Alarm Indicator (FAILURE=1)
10004	Ground Detection Enabled (ENABLED=1)
10005	Positive Ground Alarm Indicator (FAILURE=1). *Point will always read 0 when Ground Detection Enabled (Discrete Input Point 5) is 0.*
10006	Negative Ground Alarm Indicator (FAILURE=1). *Point will always read 0 when Ground Detection Enabled (Discrete Input Point 5) is 0.*
10007	Summary Alarm Indicator (FAILURE=1)
10008	End of Discharge Alarm Indicator (FAILURE=1)
10009	Overload Current Alarm Indicator (FAILURE=1)
10010	Charger Failure Alarm Indicator (FAILURE=1)
10011	P60-407S Board Failure Alarm (FAILURE=1) *Only applicable to chargers equipped with option.*
10012	Read Only Mode. When this point is read as 1 remote setting changes are not allowed.
10013	Fan Failure Alarm (FAILURE=1) *Only applicable to chargers equipped with option.*
10014	Battery Breaker Trip Alarm (FAILURE=1) *Only applicable to chargers equipped with option.*
10015	AC Low Alarm Indicator (FAILURE=1) *Only applicable to chargers equipped with the AC Sensing option.*
10016	AC High Alarm Indicator (FAILURE=1) *Only applicable to chargers equipped with the AC Sensing option.*
10017	Over Temperature Alarm (FAILURE=1)

Input Registers		
Address	**Description, Units**	**Scale Factor**
30000	Heartbeat *This register increases once per second and may be used as a diagnostic.*	None
30001	Board Number. Will read 525 for 525DS card.	None
30002	Software Version	None
30003	Voltage, Volts	0.1
30004	Current, Amps	0.1
30005	Equalize Cycle Time Hours Remaining, Hours, Minutes *Note: The last two digits are the minutes.*	None
30006	Auto Equalize Timer, Days	None
30007	Auto Equalize Timer, Hours, Minutes *Note: The last two digits are the minutes*.	None
30008	Low DC Current Alarm Low Limit, Amps. Setting the Low DC Current Alarm below this will result in disabling the Low DC Current Alarm Status Indicator.	0.1

Input Registers		
Address	**Description, Units**	**Scale Factor**
30009	Temperature Probe Reading, Degrees C *Note: Reading will always read 0 when charging system is not equipped with a 340S card. A shorted probe will give a reading of –273 and an open probe will give a reading of+273*	None
30010	Maximum allowable voltage setting (MAXV).	0.1
30011	Maximum allowable current setting (MAXI).	0.1
30012	Battery Voltage, Volts *Note: This is an optional reading and only valid when the charger is equipped with the P60-407S board.*	0.1
30013	Low Voltage Alarm Status (0=NO ALARM, 1=LOW VOLTAGE ALARM 2=LOW BATTERY VOLTAGE ALARM	None
30014	PHASE 1, ACV Note: This point should only be monitored when the charger is equipped with the optional AC Sensing Board. Point will read -1 when charger is not equipped with the option and -2 when the optional board is unable to provide the reading.	0.1
30015	PHASE 2, ACV Note: This point should only be monitored when the charger is equipped with the optional AC Sensing Board. Point will read -1 when charger is not equipped with the option and -2 when the optional board is unable to provide the reading.	0.1
30016	PHASE 3, ACV Note: This point should only be monitored when the charger is equipped with the optional AC Sensing Board. Point will read -1 when charger is not equipped with the option and -2 when the optional board is unable to provide the reading.	0.1
30017	PHASE 1, ACA Note: This point should only be monitored when the charger is equipped with the optional AC Sensing Board. Point will read -1 when charger is not equipped with the option and -2 when the optional board is unable to provide the reading.	0.1
30018	PHASE 2, ACA Note: This point should only be monitored when the charger is equipped with the optional AC Sensing Board. Point will read -1 when charger is not equipped with the option and -2 when the optional board is unable to provide the reading.	0.1
30019	PHASE 3, ACA Note: This point should only be monitored when the charger is equipped with the optional AC Sensing Board. Point will read -1 when charger is not equipped with the option and -2 when the optional board is unable to provide the reading.	0.1
30020	Over Temperature Probe, C	0.1
30021	Ground Detection Alarm Threshold, mA, (1.0 to 4.0) Note: This point should only be monitored when the charger is equipped with optional Adjustable Ground Detection. Point will read 9999 when charger is not equipped with the option.	0.1

Holding Registers		
Address	**Description, Units, Valid Settings/Range**	**Scale Factor**
40000	Equalize Timer Mode, 0,1 2,3,4	None
40001	Equalize Timer Setting, 0 to 144	None
40002	Low Voltage Alarm Threshold, Volts, 0 to MAXV	0.1
40003	High Voltage Alarm Threshold, Volts, 0 to MAXV	0.1
40004	High Voltage Shutdown Alarm Threshold, Volts, 0 to MAXV	0.1
40005	Low DC Current Alarm Threshold, Amps, 0 to MAXI	0.1
40006	End of Discharge Alarm Threshold, Volts, 0 to MAXV	0.1
40007	Overload Alarm Current, Amps, READ ONLY	0.1
40008	RTC Month, 1 to 12	None
40009	RTC Day, 1 to 31	None
40010	RTC Year, 0 to 4095	None
40011	RTC Hours, 0 to 23	None
40012	RTC Minutes, 0 to 59	None
40013	RTC Seconds, 0 to 59	None
40014	Logging Interval, Minutes, 0 to 60, 0=OFF	None
40015	AC Low Alarm Threshold, Volts, (83% of AC Voltage Rating to 1000.0) *Note: This point should only be monitored when the charger is equipped with the optional AC Sensing Board. Point will read 0 when charger is not equipped with the option.*	0.1
40016	AC High Alarm Threshold, Volts, (83% of AC Voltage Rating to 1000.0) *Note: This point should only be monitored when the charger is equipped with the optional AC Sensing Board. Point will read 0 when charger is not equipped with the option.*	0.1