

Title: **ATV212 Man/Auto reference selection through LI and Ethernet communication through TSXETG100**

Solution Number: 112

Distribution: All

Revision: 1.0

Author:

Name

Date:

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Description:

This document will provide you the necessary information about the hardware and software configuration to control the ATV212 drive in Manual mode (Terminal) and Auto mode (Communication) through Auto/Man selector switch and the communication establishment in Ethernet network by using TSXETG100 (or EGX100) gateway.

Hardware:

1. ATV212HU075N4 drive or any of ATV series drive with Modbus communication.
2. TSXETG100 (OR) Power Logic EGX100 gateway
3. Auto/Man Selector switch, Start/Stop push buttons as shown in diagram

Software:

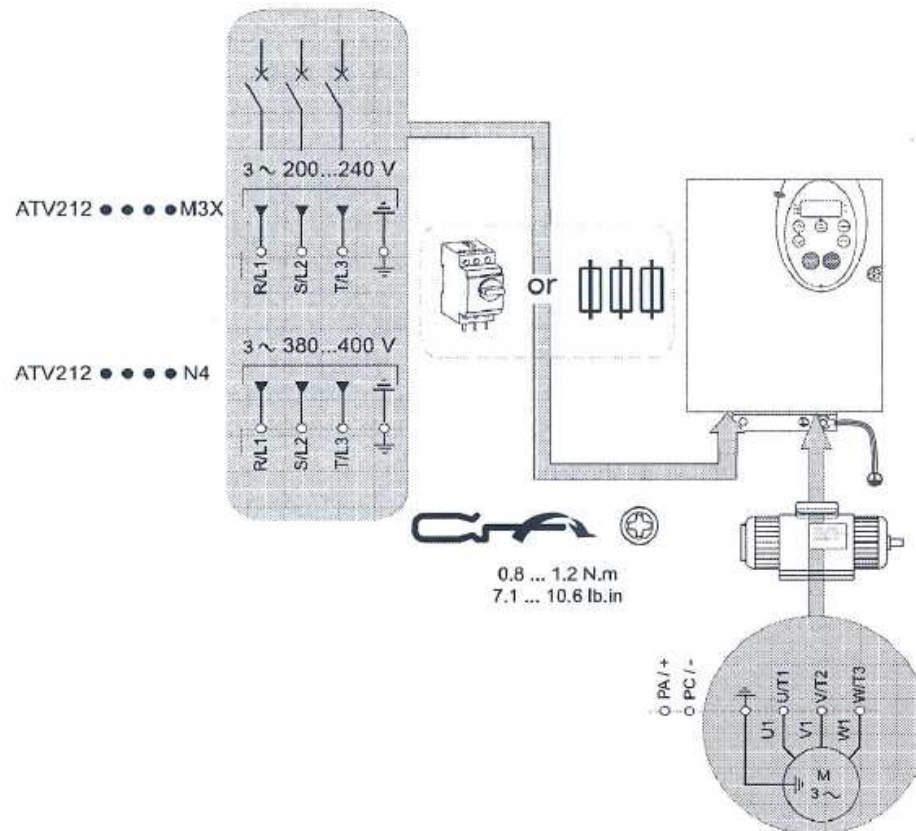
1. Somove Lite V 1.8.5.0 (or latest version available) for drive configuration – optional
2. Modscan software for check the communication
3. Internet Explorer for configuring TSXETG100

1. Tested configuration

1. The recommended hardware wiring diagram as below.

4 Connect the drive: Power

- Wire the drive to the ground.
- Check circuit breaker rating or fuse rating.
- Check that the motor voltage is compatible with the drive voltage.
Motor voltage _____ Volts.
- Wire the drive to the motor.
- Wire the drive to the line supply.



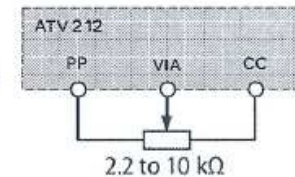
5 Connect the drive: Control choice

51 [REMOTE configuration] (Control by external reference)



- Wire the speed reference:

PP: Internal supply for analogue inputs
VIA: Analog/ logic input
CC: Common



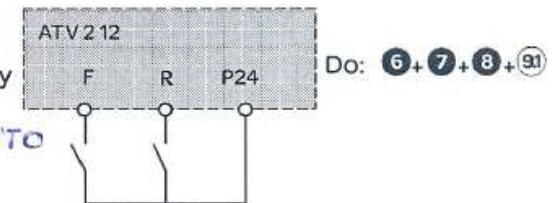
- Wire the command:

Control command 2-wire:

F: Run forward

P24: Internal supply for logic inputs

RES: MAN/AUTO



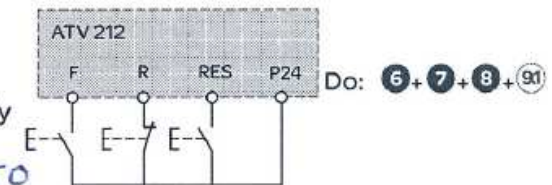
Control command 3-wire:

F: Run forward

R: Stop

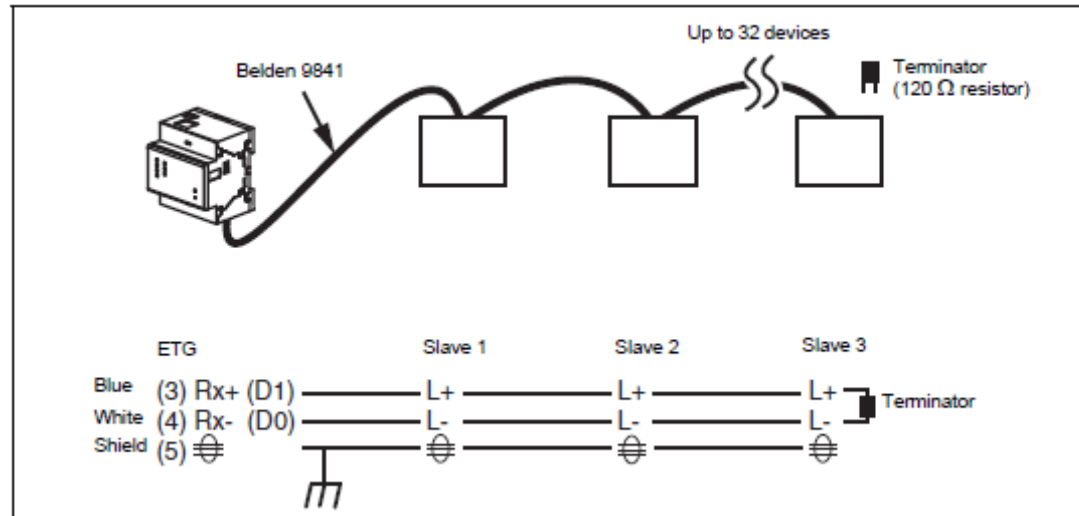
P24: internal supply for logic inputs

RES: MAN/AUTO



2. Connect the drive modbus D1 to RX+ & D0 to RX- in gateway TSXETG100

2-wire Devices

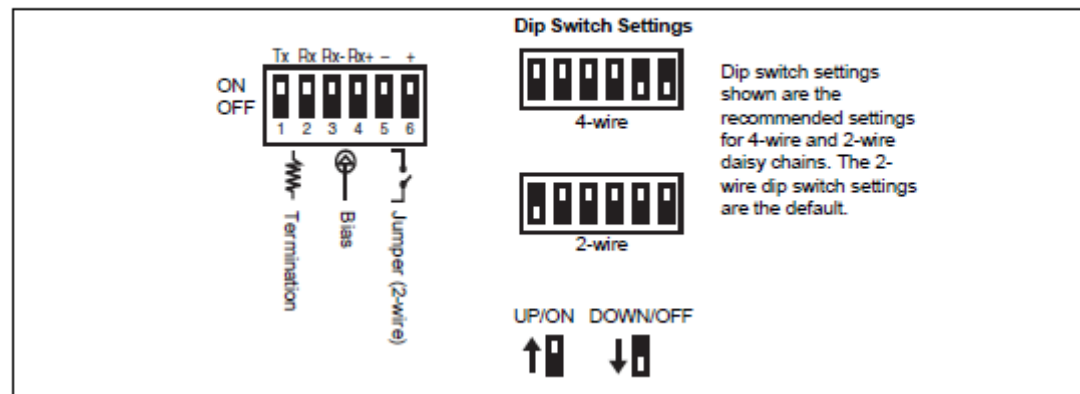


3. Please do the dip switch setting as shown in installation manual, the same is shown below for reference.

Switch 1 - OFF

Switch 2 to 6 – ON

RS485 Biasing and Termination



2. ATV212 Configuration using Somove Lite V1.8.5.0 Software (or) Key Pad:

1. Launch SoMove Lite software and connect the ATV212 drive through TCSMCNAM3M002P cable.
2. F200([Auto/man speed ref]) should be set to “0 -[Enable] ”

F 2 0 0	[Auto/man speed ref]	Auto/Manual Speed Reference Switching	0
0	[Enable]		
1	[Disable]		
Switching between two speed reference sources by means of a logic input is enabled if parameter F 2 0 0 is set to 0. To use this function, you need to assign a logic input to function 38, Auto/Man speed ref.			
When the assigned logic input is off, the drive will follow the speed reference source defined by parameter [Frequency mode sel] (F 0 0 0) (see page 77).			
When the assigned logic input is on, the drive will follow the speed reference source defined by parameter [Remote spd ref 2] (F 2 0 7) (see page 78).			
When parameter F 2 0 0 is set to 1, the drive will follow the F 0 0 0 speed reference source when it is operating above 1 Hz. Below 1 Hz, it will follow the F 2 0 7 speed reference source.			

3. FNOD **[Frequency mode sel]** parameter should be set to “1 - **[Ref source VIA]**: VIA” or any of the sources given below.

F 0 0 0	[Frequency mode sel]	Remote Mode Primary Speed Reference Source	-	1
1	[Ref source VIA]: VIA			
2	[Ref source VIB]: VIB			
3	[HMI reference]: Graphic display option			
4	[Serial com ref]: Serial communication			
5	[+/- Speed]: +/- Speed			
The setting of parameter F 0 0 0 determines the source of the drive's speed reference when the drive is in remote mode. The drive needs to be stopped to make changes to parameter F 0 0 0 . See diagram on page 46 and description page 50 for more information on the source of the drive's speed reference.				

4. F207(Remote Spd ref 2) should be set to “4 - Communication”

F 2 0 7	[Remote spd ref 2]	-	2
1	VIA		
2	VIB		
3	HMI		
4	Communication		
5	+/- Speed		
Parameter [Remote spd ref 2] (F 2 0 7) defines the remote mode secondary speed reference source. The setting of parameter [Auto/man speed ref] (F 2 0 0) (see page 108) determines whether this source is used for the speed reference. If F 2 0 0 is set to 0, a logic input terminal set to function 38 (see page 108) determines if [Remote spd ref 2] (F 2 0 7) identifies the speed reference source. If F 2 0 0 is set to 1, [Remote spd ref 2] (F 2 0 7) is the speed reference source when the drive's output frequency is 1 Hz or below. See diagram on page 46 for more detail.			

5. The parameter F113 should be set to “38 - **[Frequency source]** Frequency reference source switching”
6. The Man/Auto logic input from selector switch should be connected in LI RES terminal, since you programmed above F113 parameters.

F 1 1 2	[LI R selection]	R Logic Input Function	0 to 73	6
The setting of parameter F 1 1 2 determines the control function of logic input terminal R.				
F 1 1 3	[LI RES selection]	RES Logic Input Function	0 to 73	10
The setting of parameter F 1 1 3 determines the control function of logic input terminal RES.				
38	[Frequency source] Frequency reference source switching	OFF: drive follows speed reference set by parameter [Frequency mode sel] (F 0 0 d) ON: drive follows speed reference set by parameter [Remote spd ref 2] (F 2 0 1) > (if [Auto/man speed ref] (F 2 0 0) = 1)		

- After doing the above settings, if auto/Man selector switch in Man mode, it will take the input from terminal (VIA) and in Auto mode it will take the reference input from communication.
- Go to Communication Menu (COM) and change parameters as below

SoMove Lite 1.8.5.0 - Untitled Project.psx*

File View Communication Device Tools Help

data are synchronized

My Device Operate Parameters Errors Detection Monitoring

ATV212

- AUF: Quick Menu
- Programming Menu
 - F---: Extended Menu
 - IO: I/O Menu
 - COM: Communication Menu**
 - GRU: All Modified Parameters

In: All Search

Code	Long Label	Current Value	Default Value	Min Value	Max Value
F800	Mdb RJ45 baud	1 - 19200 bps	1 - 19200 bps		
F801	Mdb RJ45 parity	0 - No	1 - Even		
F802	Modbus address	10	1	0	247
F803	Com. time out	5 s	3 s	0 s	100 s
F807	Communication channel choice	1 - Open style	1 - Open style		
F820	Modbus network baud	1 - 19200 bps	1 - 19200 bps		
F821	Modbus network parity	0 - No	1 - Even		
F829	Network protocol	1 - Mdb RTU	1 - Mdb RTU		
F890	Network address	0	0	0	65535
F891	Network baud rate	0	0	0	65535
F892	Network time out	0	0	0	65535
F893	Instance number H	0	0	0	65535
F894	Instance number L	0	0	0	65535
F895	Max master	0	0	0	65535
F896	Max info frames	0	0	0	65535
F851	Communication fault setting	4 - Err5 or Err8	4 - Err5 or Err8		

Grid Menus

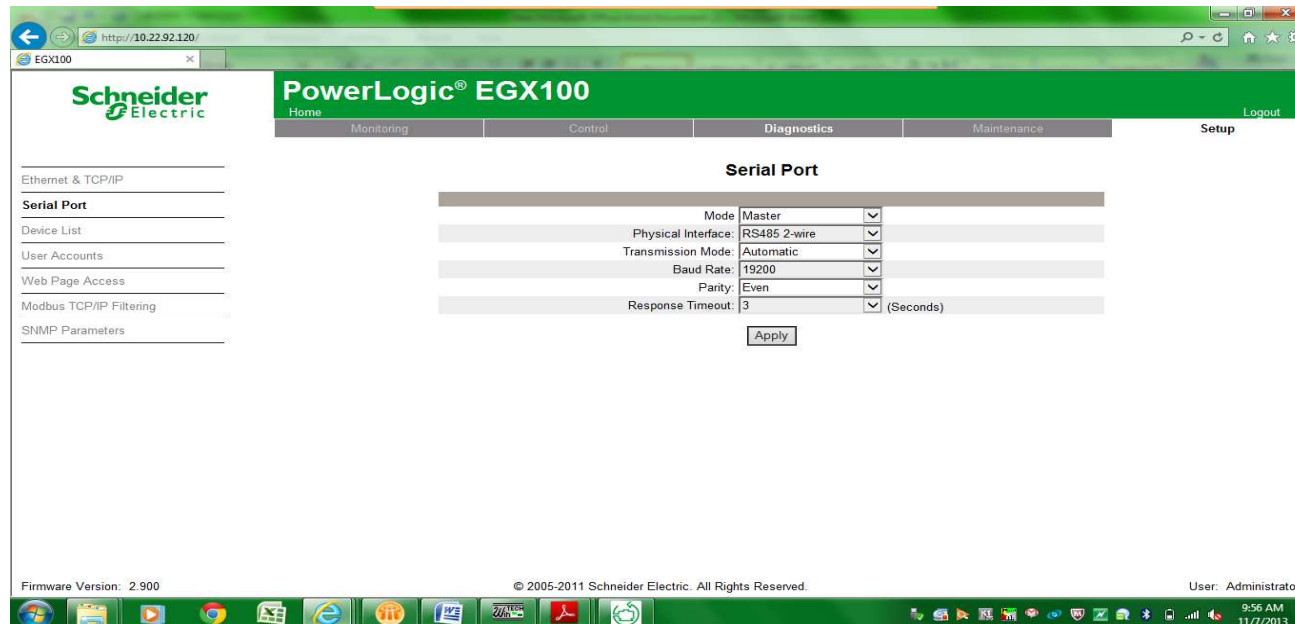
Device OK Project Loaded Online

9:37 AM 12/22/2013

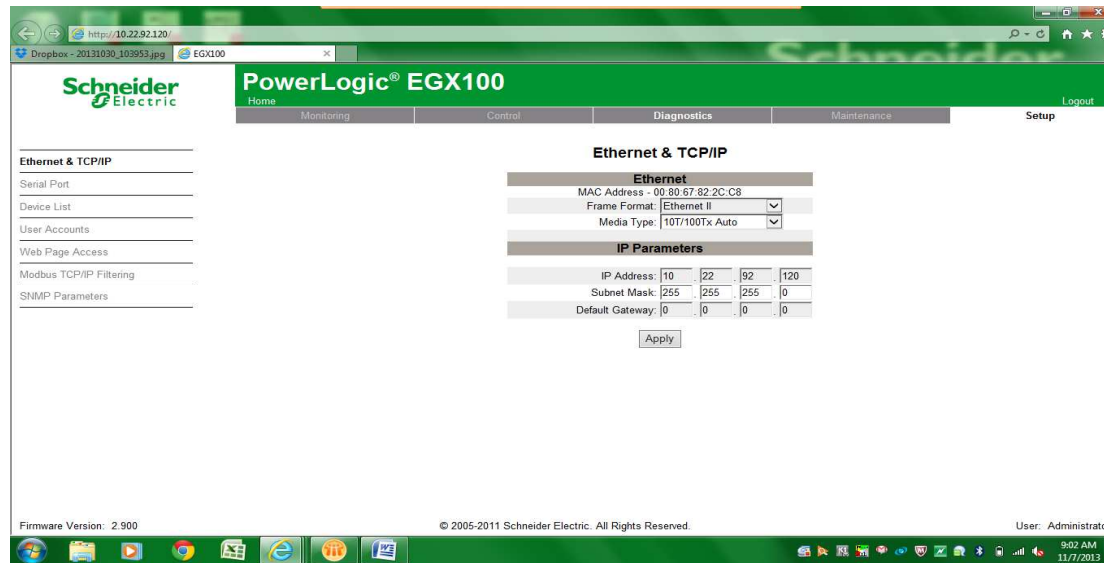
Communication configuration - Parameters decription

Parameter description	Range or listed values	default	Long name	Short name	@
Modbus Address <i>R d d</i>	1 to 247	1	[Modbus Address]	<i>R d d</i>	-
Modbus baud rate <i>k b r</i> Important: only 19.2 kbps baud rate allows to communicate with the remote display)	4.8 kbps 9.6 kbps 19.2 kbps	19.2 kbps	[Modbus baud rate]	<i>4. 8 9. 6 19. 2</i>	-
Modbus format <i>t F O</i>	8O1: 8 bits, odd parity, 1 stop bit. 8E1: 8 bits, even parity, 1 stop bit. 8N1: 8 bits, no parity, 1 stop bit 8N2: 8 bits, no parity, 2 stop bits.	8E1	[8 odd 1 stop] [8 even 1 stop] [8 no 1 stop] [8 no 2 stop]	<i>8 O 1 8 E 1 8 n 1 8 n 2</i>	-
Modbus time out <i>t t O</i>	Adjustable from 0.1 to 30s	10 s	[Modbus time out]	<i>t t O</i>	-

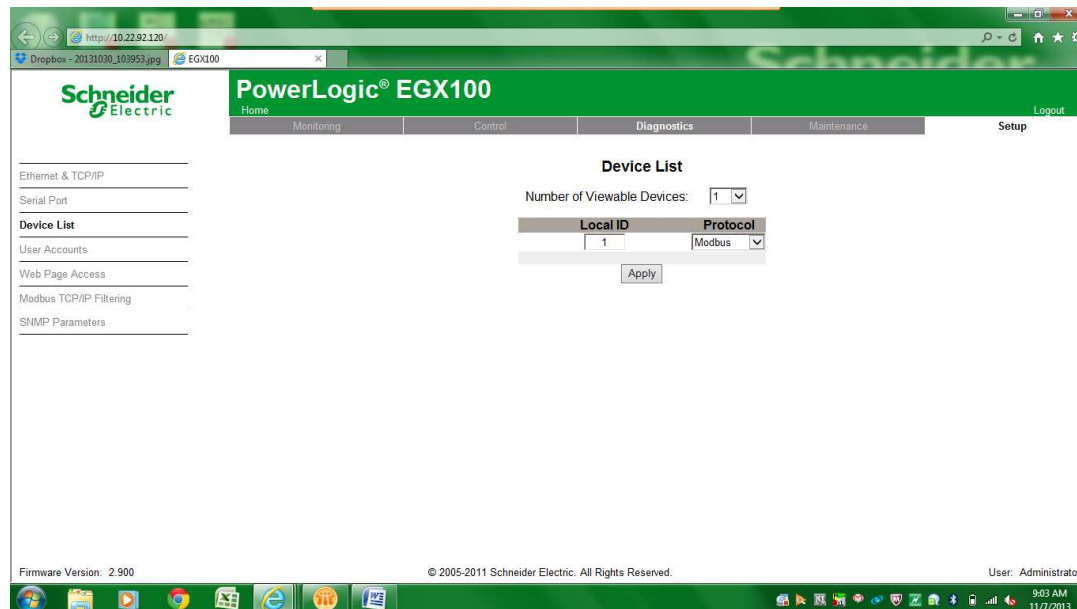
9. Open internet explorer and give the IP address in address bar, you will enter in to gateway configuration page.
10. The gatewayTSXETG100 serial port parameter setting must be same as setting done in drive. TSXETG100 Serial port set up done as below.



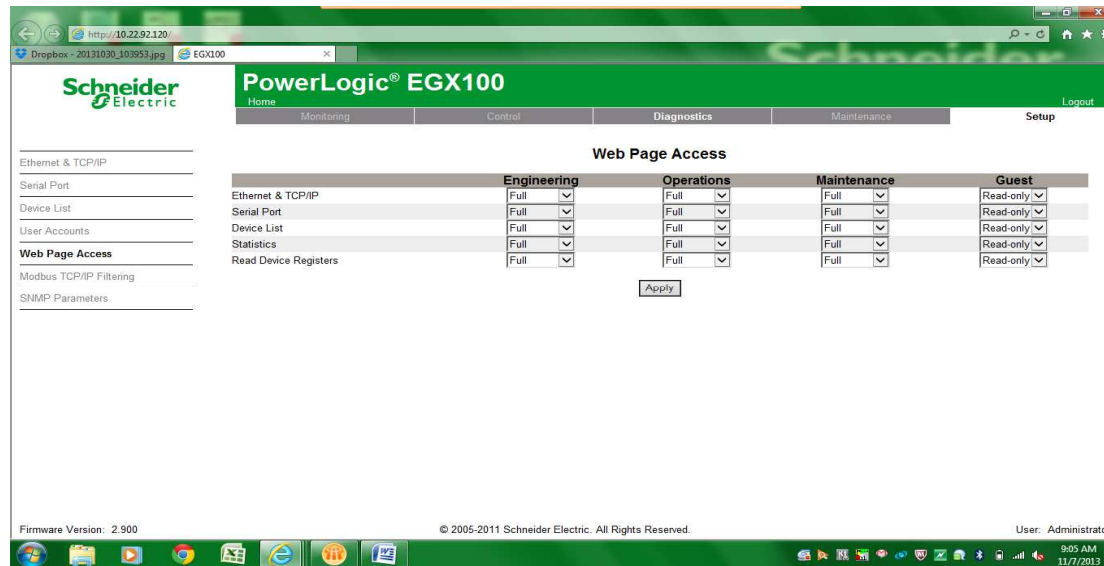
11. The Ethernet TCP/IP port setting to be done as below.



12. Device List setup in TSXETG100 to be done as below

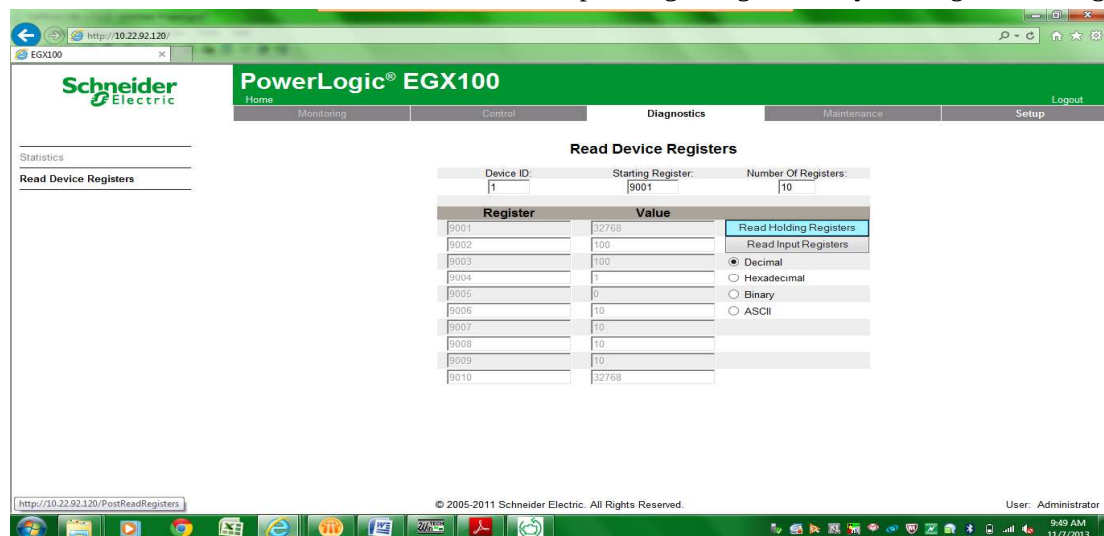


13. Web Page Access set up in TSXETG100 to be done as desired by you, sample as below.

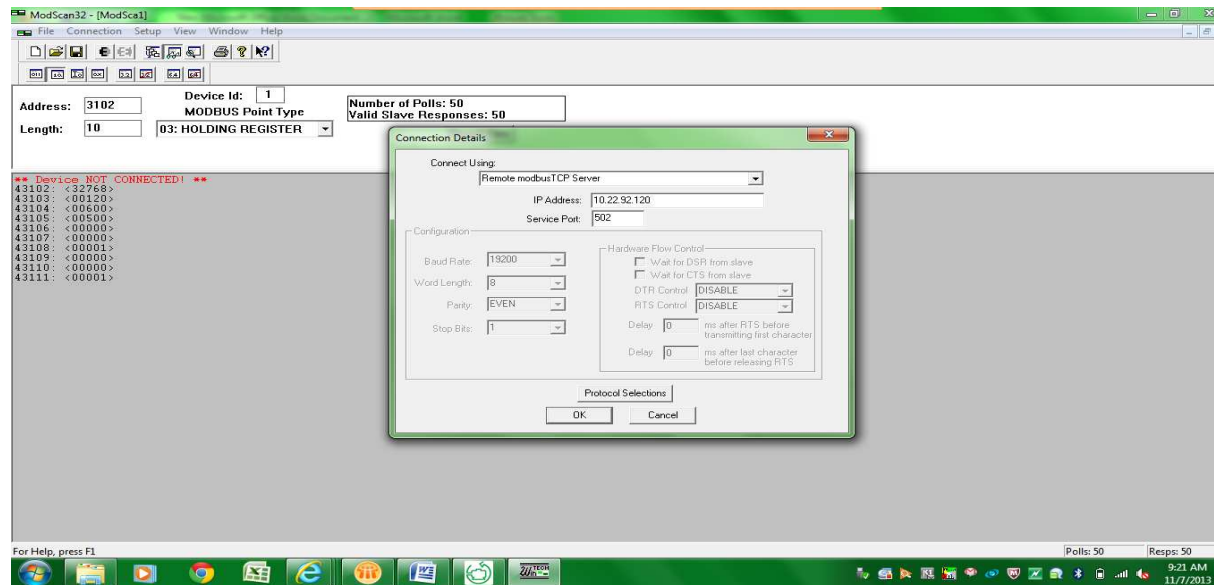


3. Test results:

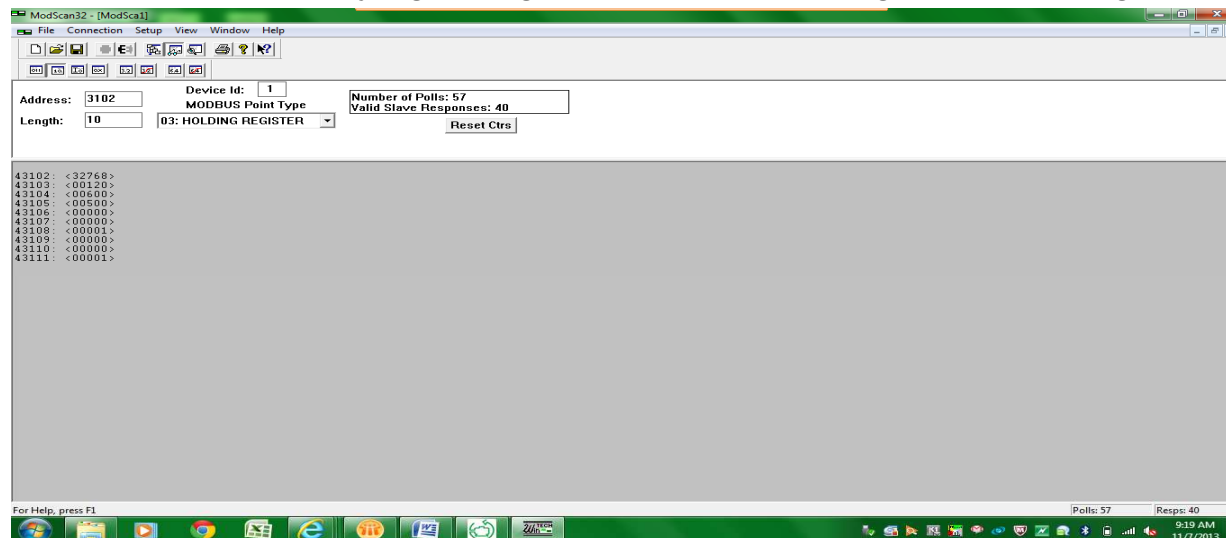
1. We can check the connections and setup through diagnostics by reading and writing the Device Registers in TSXETG100



2. The Modbus to Ethernet communication also can be checked through Modscan software as below. The Modbus and Ethernet connection settings should be as below.



3. The connection is ok, if you get the register values as below. If no, again check the wiring and configuration as above.



4. Conclusion:

The Man/Auto function is commonly used in industry for controlling the drive through terminal and communication (DCS or PLC). The above document will provide the necessary hardware wiring and programming details to establish the communication to achieve the Man/Auto function.

This document is available on <http://www.tscautomate.com>

All information provided in this document is correct to the best knowledge of the author. This approach was designed and tested in laboratory conditions. The environment influences behaviour of electronic devices and therefore the user takes full responsibility for applying presented solutions.