YASKAWA	*Technical Note*	Technical note No	YIND-M-RC-TN-012
	Modbus communication with A1000	Date & Rev No	30.5.2014/A

This document refers the Basic testing of the Modbus communication of A1000 with MODSCAN 32 software.

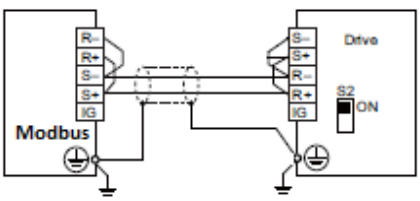
Required Modules:

- Drive – A1000 – CIMR-AD4A0005FMA
- PC with MODSCAN32 software
- RS232 to RS485 Converter
- USB to serial port RS232 converter

Test Setup :

Drive Hardware settings :

- Check all thecommunication cables are connected properly.
- Check the connections as below and make S2 connector ON at the drive side.



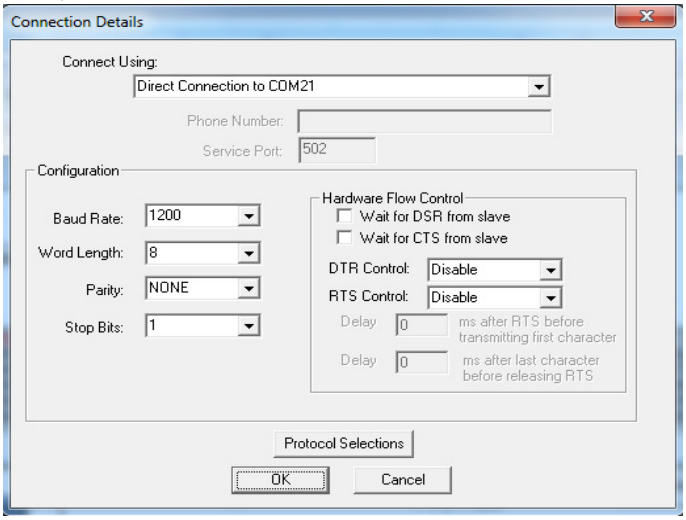
Drive Parameter settings :

Parameter	Description	Value	Comment
H5-01	Drive Node Address	1	only one drive is connected
H5-02	Communication Speed Selection	0	1200mbps
H5-03	Communication Parity Selection	0	No Parity
H5-04	Stopping Method After Communication Error (CE)	3	Alarm only
H5-05	Communication Fault Detection Selection	1	Enabled
H5-06	Drive Transmit Wait Time	5	msec
H5-07	RTS Control Selection	1	Enabled
H5-09	CE Detection Time	2.0	sec
H5-10	Unit Selection for MEMOBUS/Modbus Register 0025H	0	0.1V
H5-11	Communications ENTER Function Selection	1	Enter command Necessary
H5-12	Run Command Method Selection	0	FWD/stop,REV/Stop
b1-01	Frequency Reference Selection 1	2	via Modbus
b1-02	Run Command Selection 1	2	via Modbus

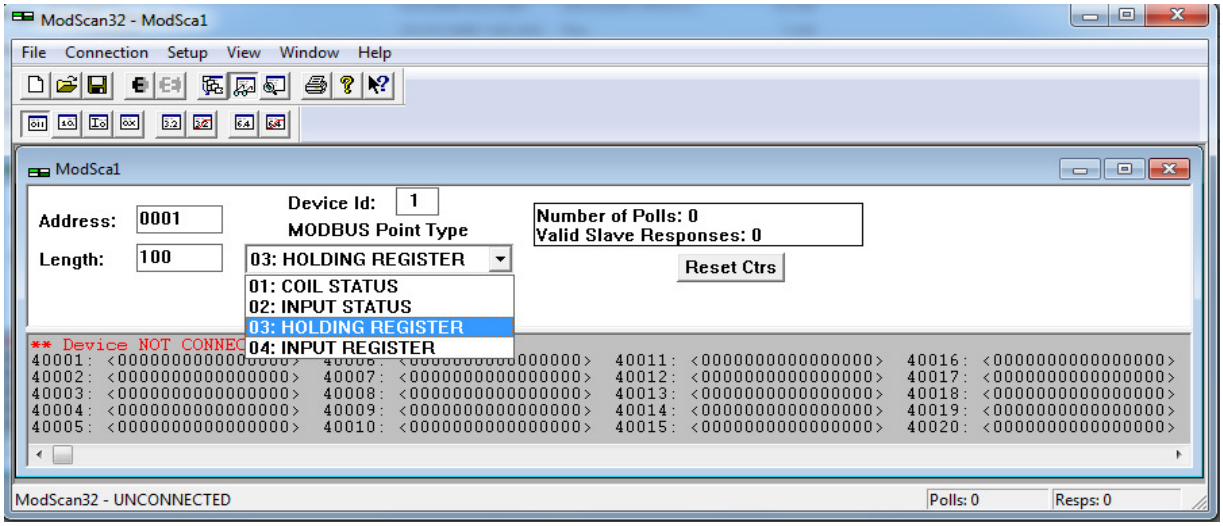
Note : Once the Drive Parameters are done then do power recycle.

Software Settings :

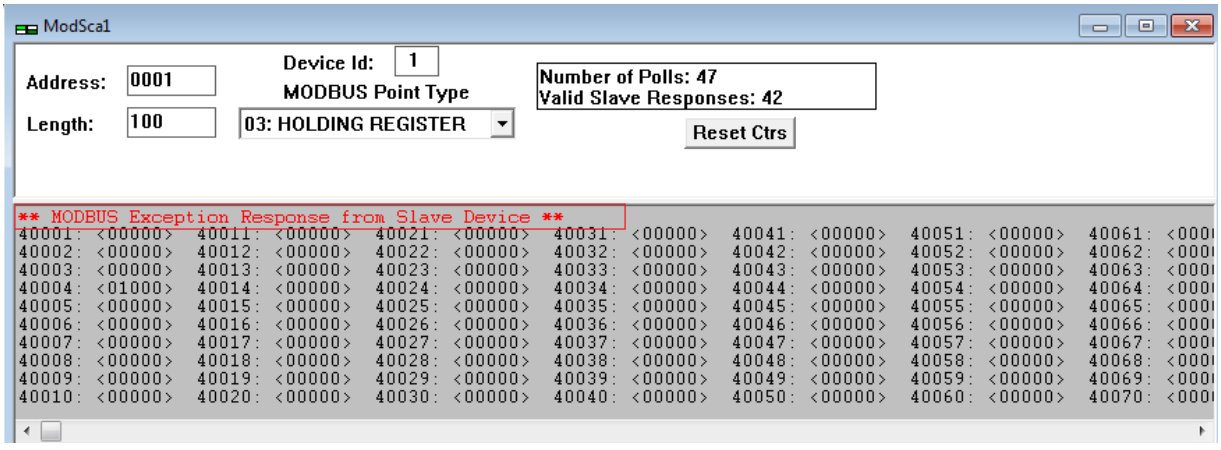
- Open the Modscan software license version (demo version will have time out for 3and half min – i.e drive will disconnect automatically).
- Go to menu/Connection/Connect
- Check the com port settings in the Device manager of thewindows and select the port settings in the Connect Using colomn.
- Set the values of Baud rate as the drive selected (H5-02).



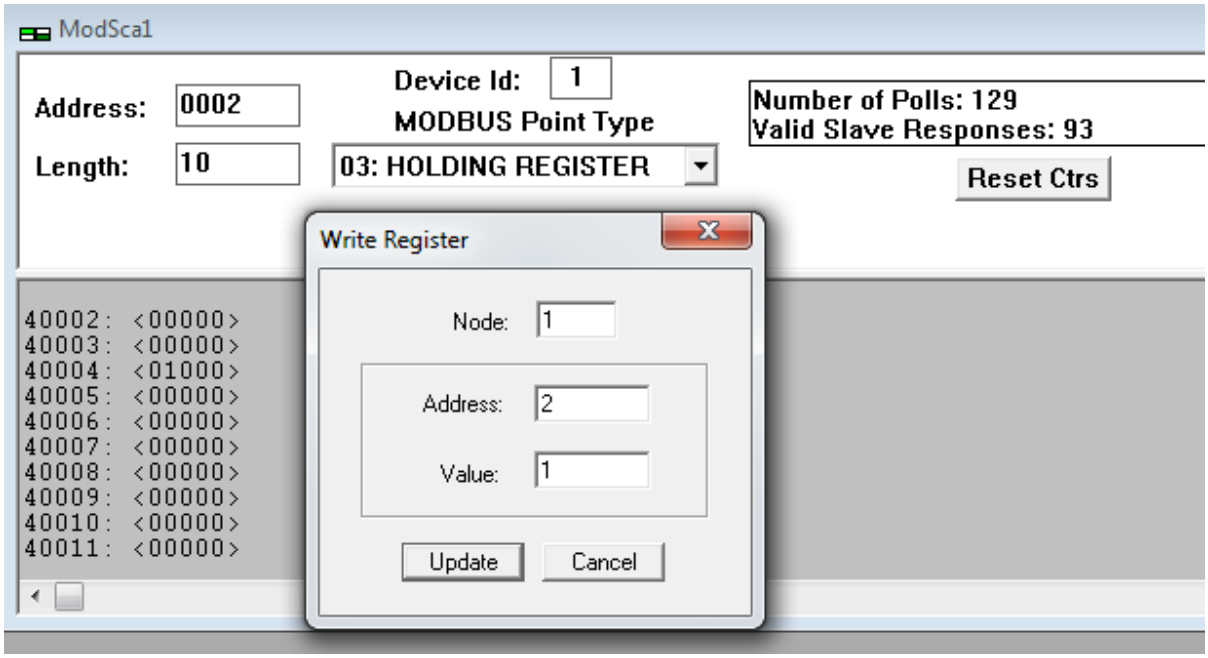
- Word length can be 8, Parity is None (H5-03) and stop bit can be 1.
- Once the above settings are done then click OK. Then MODSCAN(PC) is connected to the drive. Still the error display on the screen then recheck the hardware cables and settings.
- Select theMODBUS Point type is 03 : HOLDING REGISTER, These are the registers of the Master for the control command and monitor data addressing.



- Once the drive is connected then following screen will display.



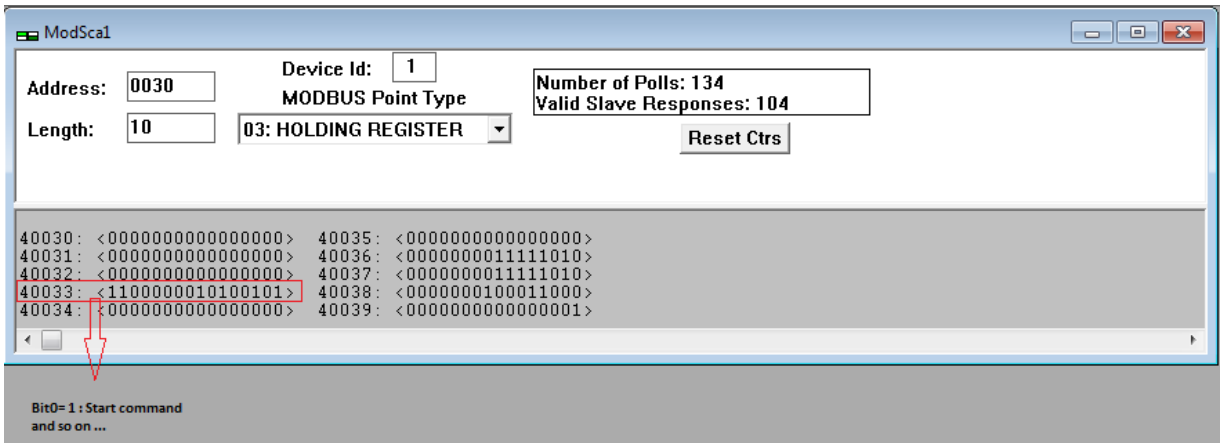
Start command : Enter the value 01 in 40002 for the start command to the drive (ex :shown in below screen). Here 40001 is 8bit Upper register and 40002 is the lower register and hence 16bit control word is both the addresses i.e 40001 and 40002. The Lower register 40002 is entered 01 i.e bit 0 =1.Then Drive will the start command and starts but with no frequency reference



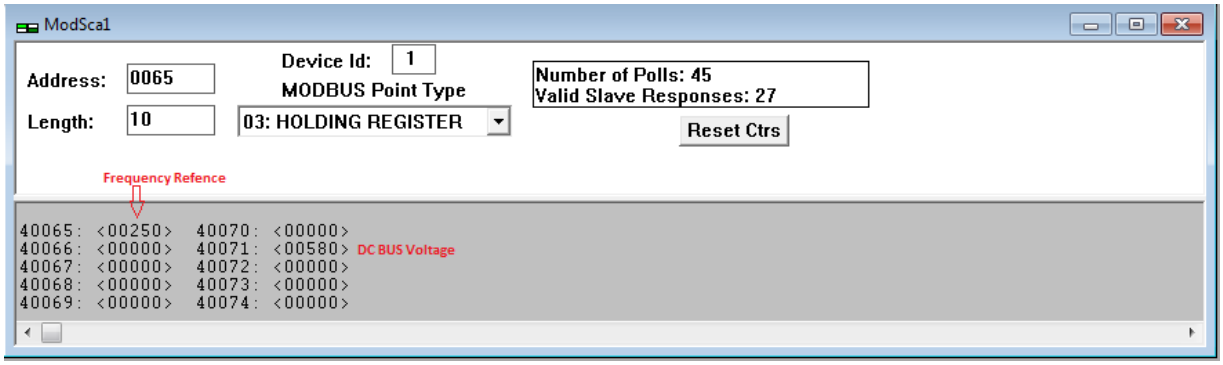
Frequency Reference :

Enter 40003 as the Frequency reference value and check the drive parameter U4-19 for the value gets appeared.

Monitor the Control word



Monitor the DC BUS voltage and Frequency Reference :



In the above screen shot we can see the Frequency Reference (250 = 2.5Hz) and DC bus voltage (580).

Control word Bit pattern:

bit no.	Description	Value
0	FWD Run /Stop	1
1	REV Run	0
2	External Fault	0
3	Fault Reset	0
4	Multifunction input 1	0
5	Multifunction input 2	0
6	Multifunction input 3	0
7	Multifunction input 4	0
8	Multifunction input 5	0
9	Multifunction input 6	0
A	Multifunction input 7	0
B	Multifunction input 8	0
C to F	Reserved	0

Value =1 in Hex.

Status Word:

Drive Status 1	
bit 0	During Run
bit 1	During Reverse
bit 2	Drive Ready
bit 3	Fault
bit 4	Data Setting Error
bit 5	Multi-Function Contact Output (terminal M1-M2)
bit 6	Multi-Function Photocoupler Output 1 (terminal P1 - PC)
bit 7	Multi-Function Photocoupler Output 2 (terminal P2 - PC)
bit 8 to bit D	Reserved
bit E	ComRef status
bit F	ComCtrl status

From the observations , the Modbus addresses are mentioned in the below sheet.

MODSCAN32	Drive address(H)	Description	Monitor
40033	20	Drive Status	
40034	21	Fault Status	
40065	23	Frequency Reference	U1-01
40066	24	Output Frequency	U1-02
40067	25	Output voltage reference	U1-06
40068	26	Current	U1-03
40069	27	Power	U1-08
40070	28	Torque ref	U1-09
40071	31	DC Bus Voltage	U1-07
40074	2B	Input terminal status	U1-10
40075	2D	Output terminal status	U1-11