

APPLICATION NOTE

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Product Family: GS Drives and Entivity Software Products

Number: AN-GS-007 Date: 6/19/03

Subject: Direct connection to GS-EDRV and GS series of AC drive with Entivity's Modbus TCP/IP drivers.

Revision: Original

Specifications:

Drive network:

PC's: Software: 1 x GS2-XXXX 1 x GS-EDRV Standard network PC Entivity Studio 7.2 or Think n Do Live 5.5



Entivity software has the ability to connect directly to the GS-EDRV card via Ethernet. It utilizes the new Driver Modbus TCP/IP recently added to both Entivity Studio 7.2 and Think N Do Live 5.5.

This application will allow the user to interface the GS series of drives over Ethernet to any type of application or project where a traditional discrete and analog control scheme would have normally been deployed.

The benefits are ease of set-up, more data available for the user from the drive, fast control, and state of the art technology.

Basic Drive Communication parameter setting:

GS2-43P0	DEFAULT	NEW	COMMENTS
P3.00	0	3	RS485 operation control enabled
P4.00	0	5	RS485 speed reference control
P9.00	1	X(1)	Communication address
P9.01	1	1	9600 Baud rate
P9.02	0	5	MODBUS RTU 8 data bits, odd parity, 1 stop bit



Configuration View Drivers Devices Tools Window Help	
	1. Start out by manually adding the I/O driver. Select Modbus TCP/IP. Note – This set-up will be done manually. If Auto-detect is used, a different drive card will come up as a direct map to the GS-EDRV. This mapping will not work.
Board Info Board Status Mapping Module Info Module Status Mapping I/O Mapping For Help, press F1 For Help, press F1 Status Mapping Module Status Mapping Most ND. BMP - PAINT Strant Image: Status Mapping Image: Status Mapping Image: Status Mapping Module Status Mapping For Help, press F1 Image: Status Mapping Image: Status Mapping Image: Status Mapping Image: Status Mapping Image: Status Mapping Image: Status Mapping Image: Status Mapping Image: Status Mapping Image: Status Mapping Image: Status Mapping Image: Status Mapping Image: Status Mapping Image: Status Mapping Image: Status Mapping Image: Status Mapping Image: Status Mapping Image: Status Mapping Image: Status Mapping Image: Status Mapping Image: Status Mapping Image: Status Mapping Image: Status Mapping Image: Status Mapping Image: Status Mapping Image: Status Status Mapping Image: Status Mapping Image: Status Mapping Image: Status Mapping Image: Status Mapping Image: Status Status Mapping Image: Status Mapping <tr< th=""><th></th></tr<>	
UPDATE CONFIDURATION Modbus TCP Ethernet Total Nodes=0 2. Add driver	
Betresh Grid Attributes Value Type Modbus TCP I/O BOOTP Server Click Here Boord Info Board Status Mapping Module Info Board Info Board Status Mapping Module Info Add a new I/O device to active configuration.	
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	WINDOW HELP	_ <u>-</u>
Modbus TCP Ethernet Total Nodes=0	ADD MODBUS TCP NODE X Modbus TCP Communication Adapter Unique Shott Name : [ADD1 U/P Address : 10 . 1 . 10 . 12 Set IP Addr. PING Node Number : [1 ¥] Description : [GS EDRV [G9 EDRV [optional] Control of the set of	 3. Enter the IP address of the GS- EDRV. The user can obtain this from the NetEdit utility from Host Engineering. Set the following – Num Base = Decimal and Origin = 1 based.
For Help, press F1	Module Statu: Mapping ///0 Mapping /	
	WINDOW HELP	_ (#) × _ (#) ×
Modbus TCP Ethernet Total Nodes=0	ADD MODBUS TCP NODE Modbus TCP Communication Adapter Unique Short Name : ADD1 I/P Address : 10 - 1 - 10 - 12 Set IP Addr. PINB I/P Address : 10.1 - 10. 12 Set IP Addr. PINB	4. Ping to verify IP address.
Modbus TCP Ethernet Total Nodes=0 Befresh Grid Type Modbus TCF B001P Server	ADD MODBUS TCP NODE	



Configuration View Drivers Devices Tools Window Help	X X
INFERT REPLACE LEAD CONFIGURATION UPDATE CONFIGURATION TOWNER Ethernet Port / Hub / Switch	
Modbus TCP Ethernet Total Nodes=1 Modbus Nodes-1 Modbus Node-1 (SEDRV	5. Add Device again. This will allow you to set the Module addressing and types.
Coll Coll Unput Biscretes 1xxxxxx Input Registers 3xxxxxx Holding Registers 3xxxxxx Holding Registers 4xxxxxx	
Befresh Grid Attributes Value Type Modbus TCP I/0 BOOTP Server Click Here 4	 ,▼
Board Info _ Board Status Mapping / Module Info / Module Status Mapping / 1/0 Mapping / Add a new I/O device to active configuration.	NUM
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Hodbus TCP Between to the procession of the procession	 ▲ 6. Writes – For a basic control test – set-up 42331 and 42332 for speed reference and run control
Node Addr: 1 New Node. Starting Data Item (Decimal, 1-based): 4[233] Number of Data Item zable © 0xxxx (Input Discretes) Sxxxx (Input Discretes) Sxxxx (Input Registers) © 4xxxx (Input Registers)	
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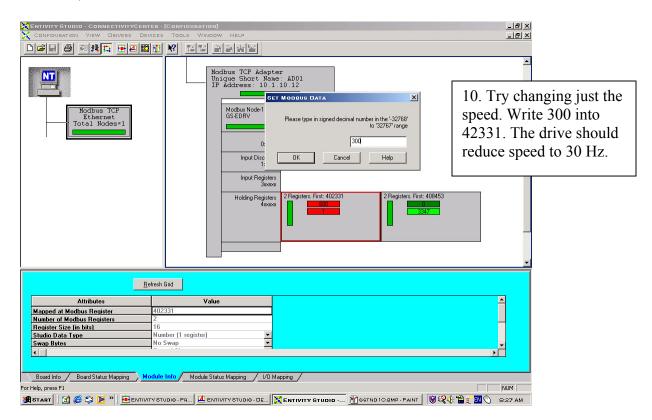
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Modbus TCP Ethernet	GS-EDRV Colls 0xxxxx Input Discretes	
Total Nodes=1	1xxxxx Input Registers	7. Enable the write only function.
	sh Grid	Note – When setting up reads and writes, always remember to restrict it to the "write only" or "read only" selection under the Module info tab.
Attributes	Value	
Mapped at Modbus Register 41 Number of Modbus Registers 2	02331	
Register Size (in bits)	6	
	umber (1 register)	
	o Swap 🔽	
	xtend Sign	
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Edit Module	Click Here	
Board Info / Board Status Mapping \ Modu	le Info 🖉 Module Status Mapping 🖌 1/0 Mapping 🖊	
	I <mark>le Info /</mark> Module Status Mapping / I/O Mapping /	
For Help, press F1		
	STUDIO - PR 🛛 🛃 ENTIVITY STUDIO - DE 🔀 ENTIVI	
	ES TOOLS WINDOW HELP	8. Reads – 48453 and

		48454 for output current
	Modbus TCP Adapter Unique Short Name: AD01 EDUT MODBUS TCP MODULE	and dc bus voltage.
Modbus TCP Ethernet Total Nodes=1	Modbus TCP Communication Adapter Unique Short Name : AD01 I/P Address : 10 . 1 . 10 . 12 Set IP Addr. PING	Note – remember to make this read only under the module info tab.
Befresh	Node Addr: Image: New Node Stating Data Item (Decimal, T-based): 4 08453 Number of Data Items: 2 Data Item Table Image: Oxeax (Coils) C 0xxxx (Coils) 1 xxxx (Input Discretes) Grid 6 4xxxx (Holding Registers)	2 Registers. First: 408453
Attributes Mapped at Modbus Register 4084 Number of Modbus Registers 2 Register Size (in bits) 16 Studio Data Type Num	N453 OK Cancel Help	
Swap Bytes No S	Swap	
Board Info Board Status Mapping Module	LINIO / Module Status Mapping / 1/0 Mapping /	



Configuration View Drivers D		
Note – Make sure that you have the drive powered up and connected to the GS- EDRV with the following parameters set. 3.00 - 3 4.00 - 5 9.00 - 1 9.01 - 1 9.02 - 5	IF Address: 10.1.10.12 Modbus Node-1 GS-CDRV	\$
These parameters can be found in the beginning of chapter 5 of the GS1 or GS2 manual.	S wap Swap Module Status Mapping / 1/0 Mapping /	
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	EVICES TOOLS WINDOW HELP	
Modbus TCP Ethernet Total Nodes=1	Modbus TCP Adapter Unique Short Name: AD01 IP Address: 10.1.10.12 Modbus Node:1 GSEDRV Cols Unput Discretes Input Discretes Inswex	332. The
	Input Registers Society Holding Registers 4xxxxxx 1 1 1 1 1 1 1 1 1 1 1 1 1	
	Refresh Gird	
Attributes Mapped at Modbus Register Number of Modbus Registers Register Size (in bits) Studio Data Type Swap Bytes 4	Value 402331 2 16 Number (1 register) No Swap	
For Help, press F1	Module Info / Module Status Mapping / 1/0 Mapping /	NUM





Modbus Addresses:

Read/Write	Hex	Modbus
Speed Reference	091AH	42331
Run Command	091BH	42332
Direction	091CH	42333
External Fault	091DH	42334
Fault reset	091EH	42335
Jog	091FH	42336
Status 1	2100H	48449
Status 2	2101H	48450
Frequency command	2102H	48451
Output frequency	2103H	48452
Output current	2104H	48453
DC-bus voltage	2105H	48454
Output voltage	2106H	48455
Motor RPM	2107H	48456
Scale frequency (low)	2108H	48457
Scale frequency (high)	2109H	48458
% Load	210BH	48460
Firmware Version	2110H	48465

Technical

Assistance: If you have questions regarding this Application Note, please contact us at 770-844-4200 for further assistance.