



APPLICATION NOTE

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Product Family: GS Drives

Number: AN-GS-006

Subject: An Automation Direct GS-EDRV (GS series AC drive Ethernet Interface) is to be used to gain access to drive parameters for monitoring and control via the Modbus TCP/IP protocol inside KepServerEx from <http://www.kepware.com/>

Date Issued: 6/18/03

Revision: Original

Specifications:

Drive network: 1 x GS2-XXXX
1 x GS-EDRV
PC's: standard network pc
Software: KepServerEx V4.0 from Kepware

KepServerEx V4.0 can be purchased directly from Kepware. This Server has the unique ability to communicate to the GS-EDRV card via Modbus TCP/IP. The user must purchase the Modbus driver from Kepware to enable this communication feature.

This application will allow the user to interface the GS series of drives over the Ethernet to any type of HMI or SCADA system that is OPC/DDE compliant. This is very important if the application has mixed plc's and controls from various manufacturers. Kepware has the majority of drivers that can work off a single server in addition to the Modbus required for the GS-EDRV's to accomplish your connectivity needs.

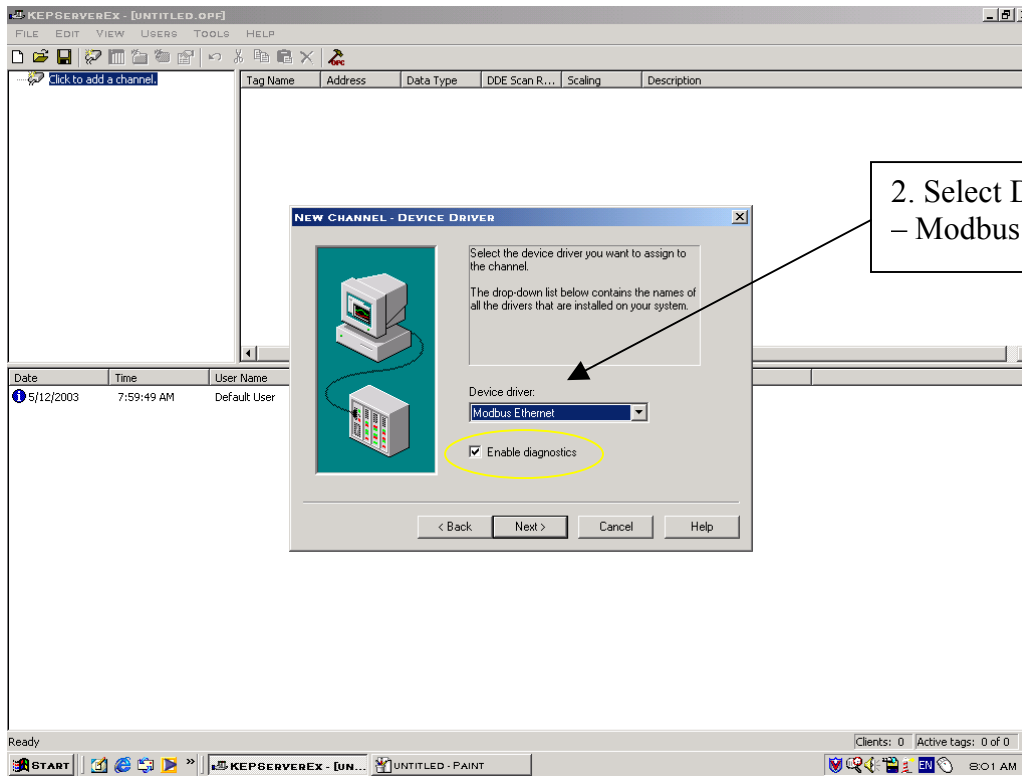
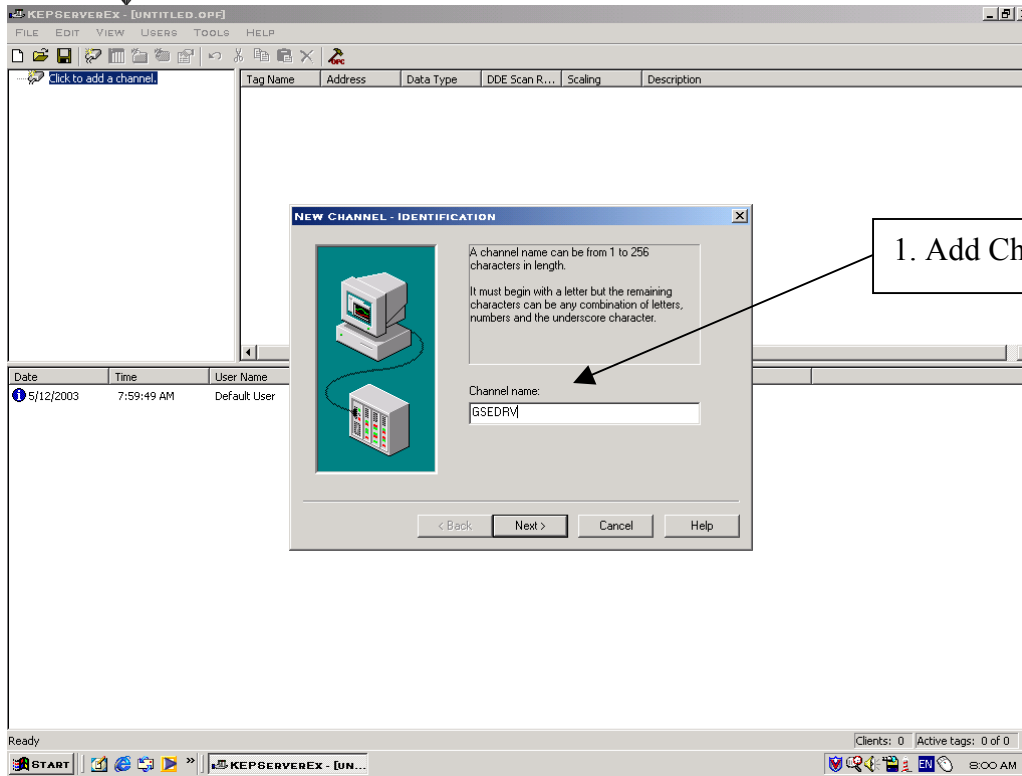
Basic Drive Communication parameter setting:

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



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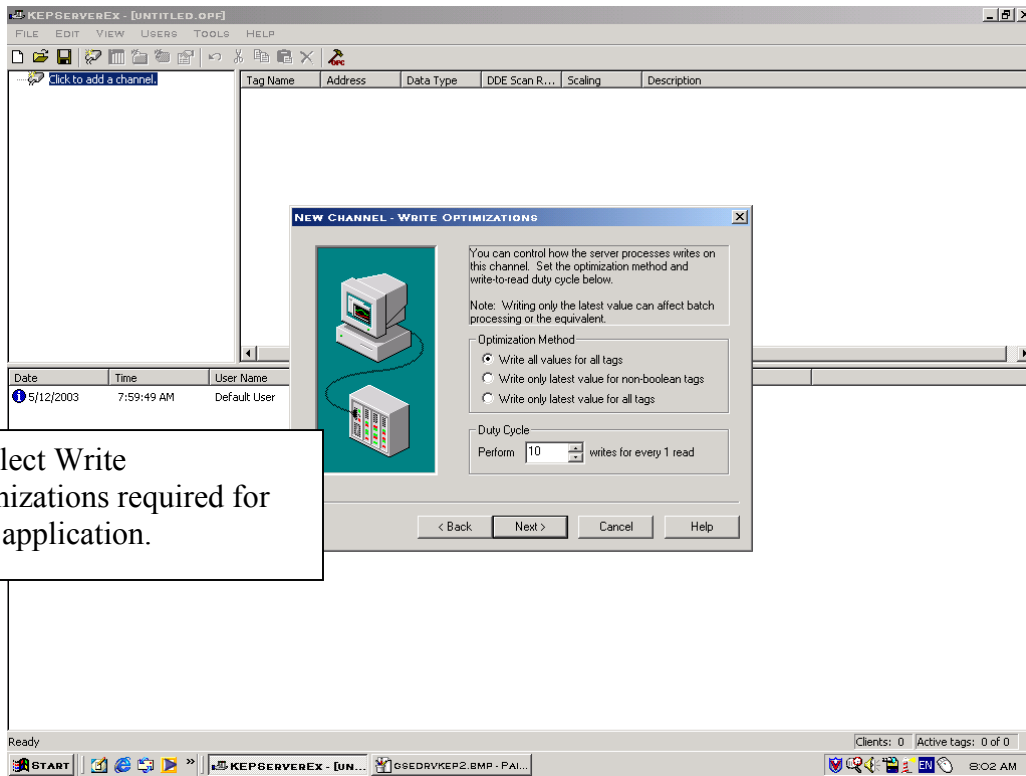
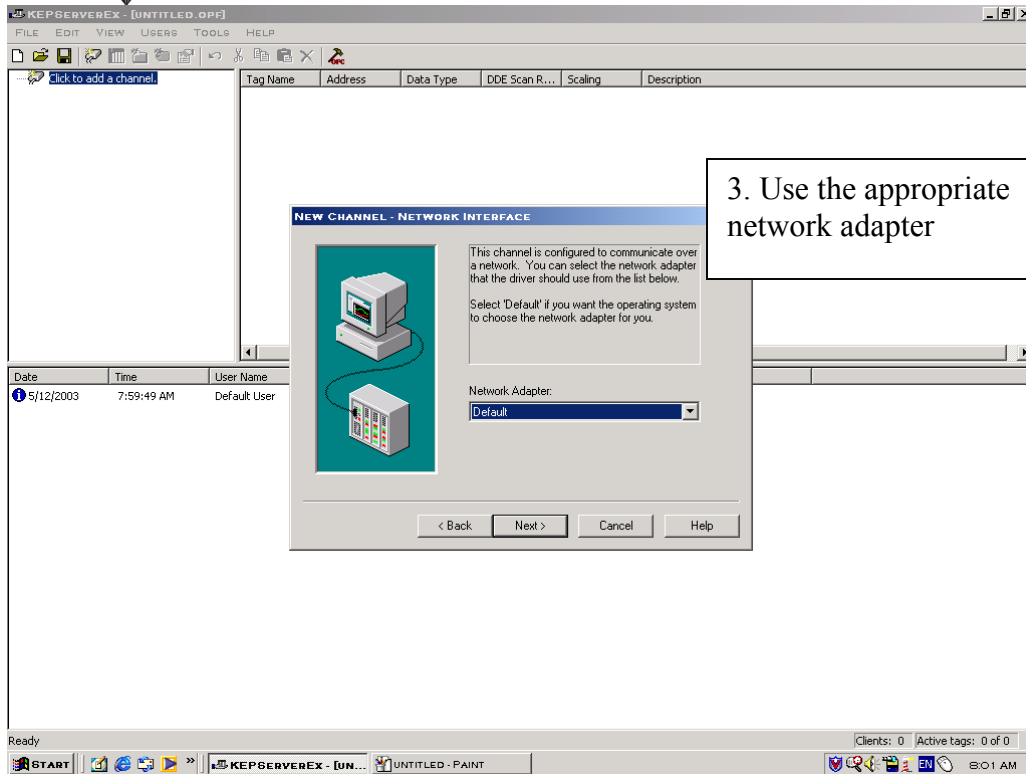
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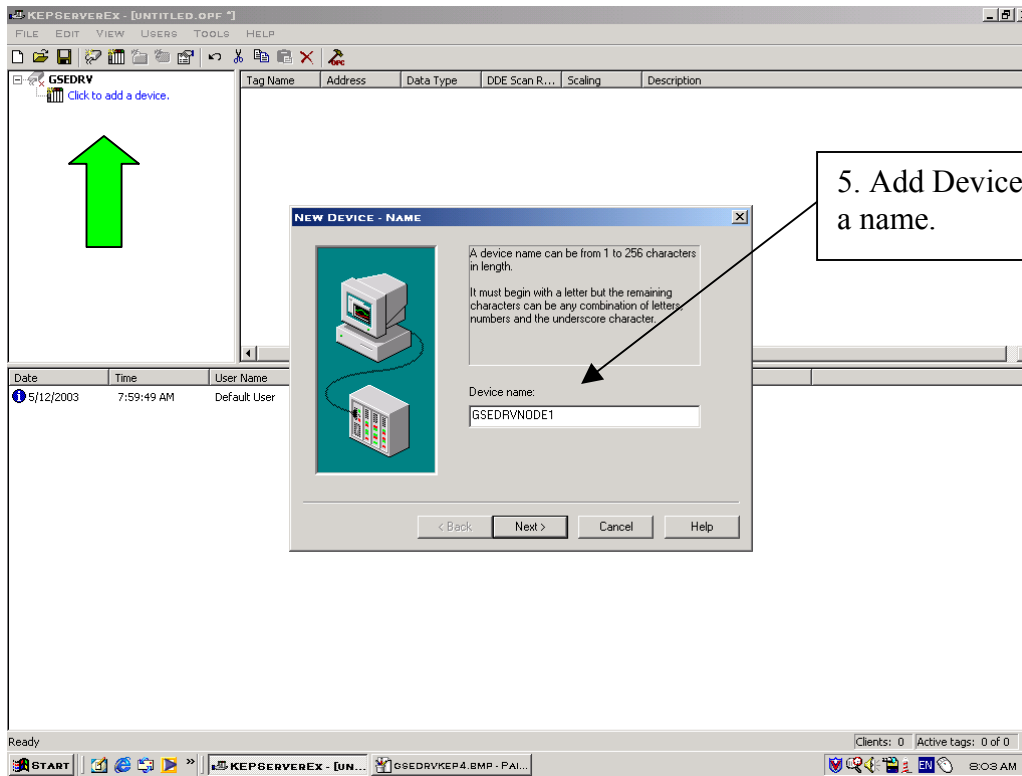
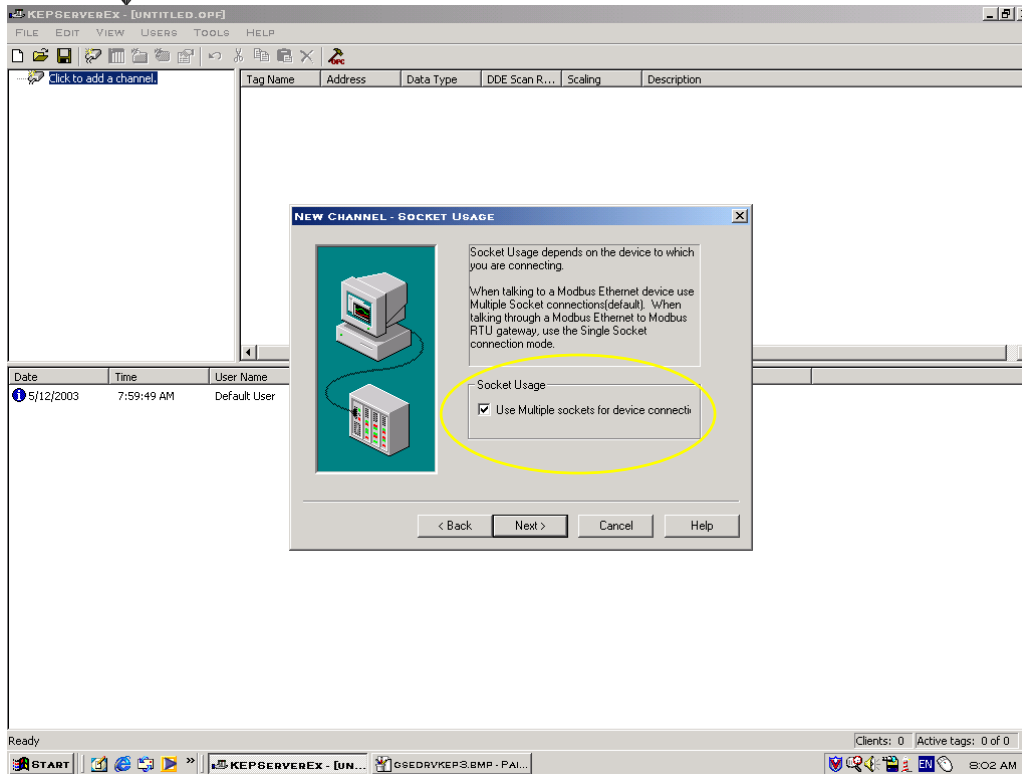
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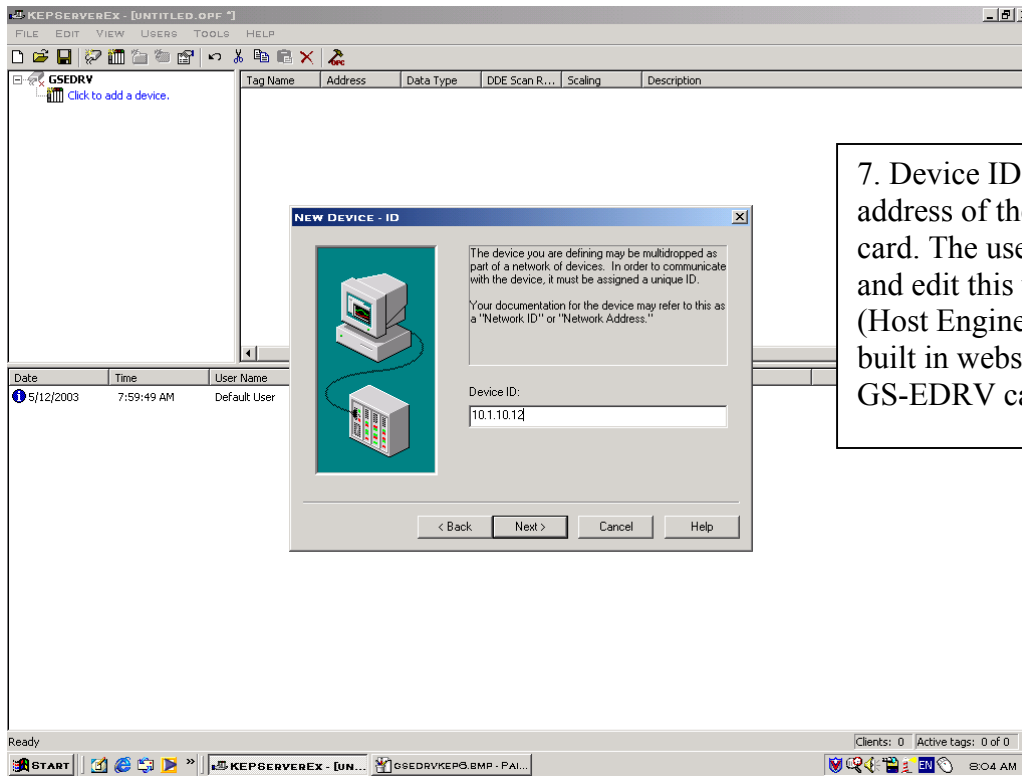
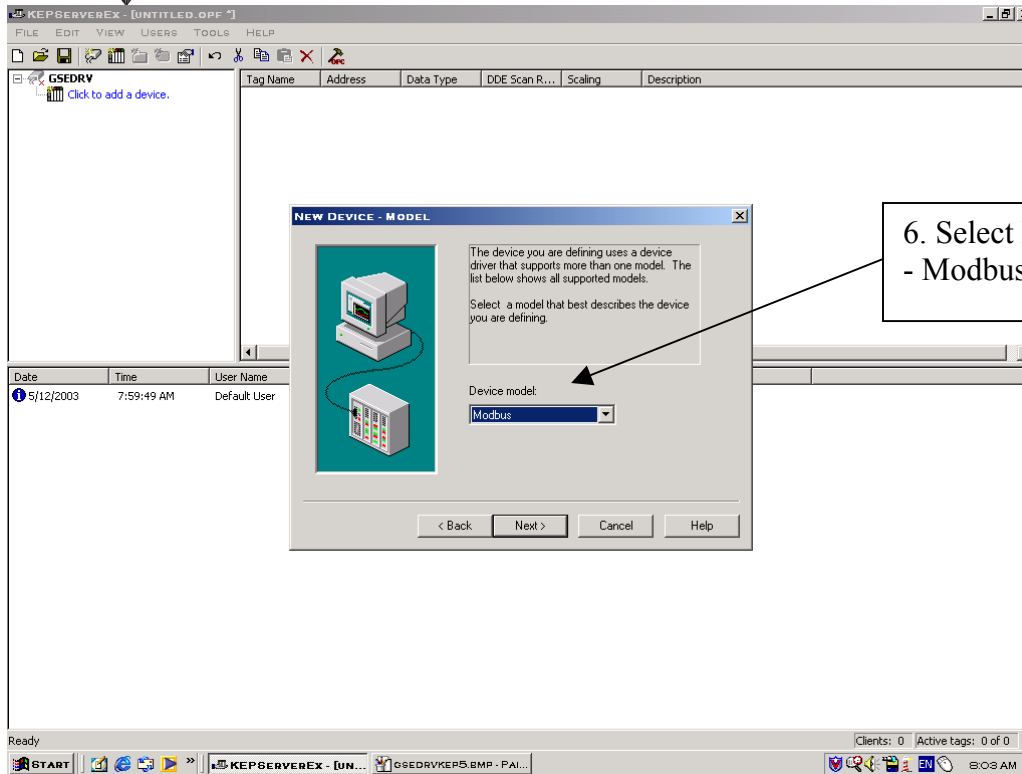
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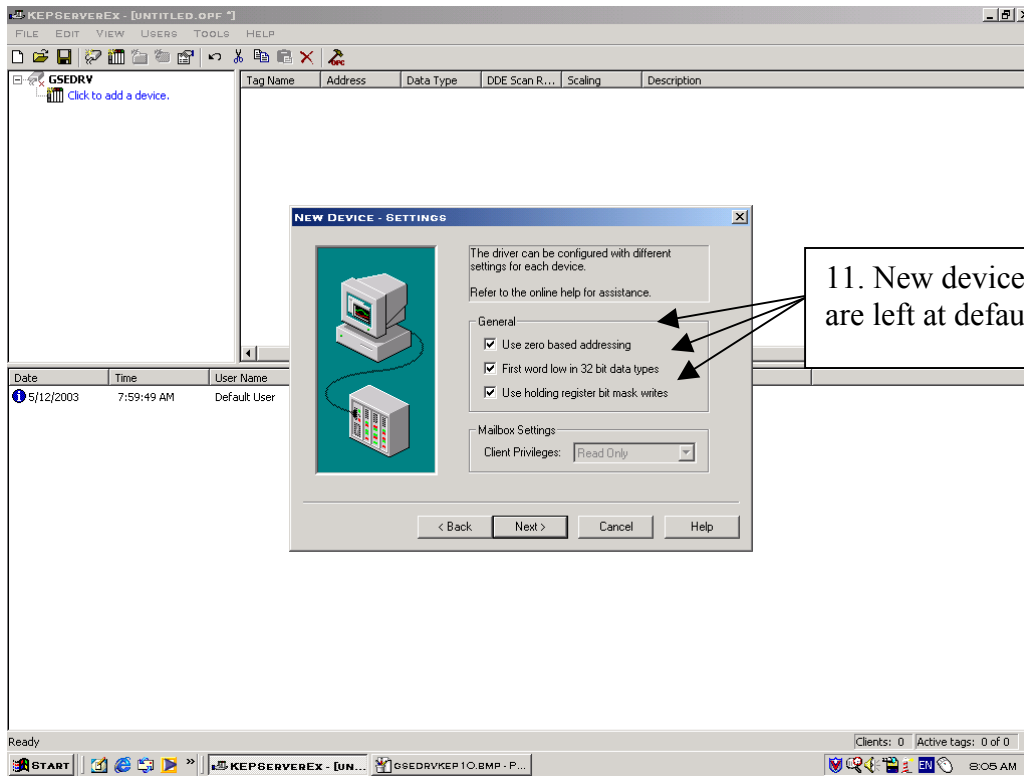
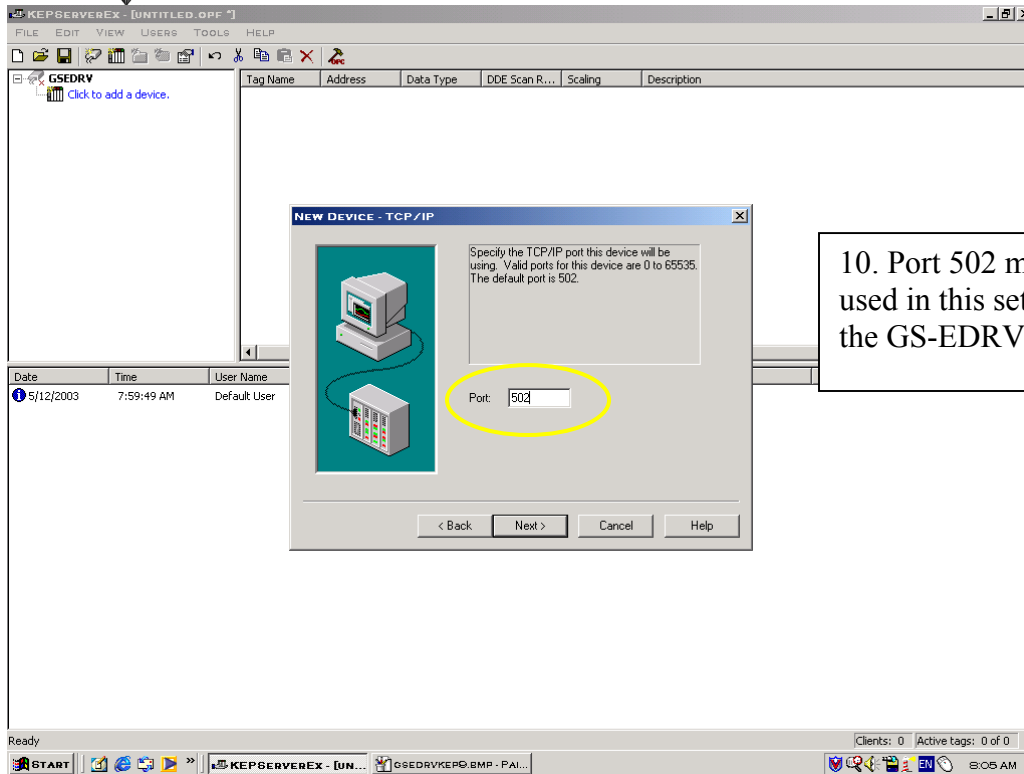
8. Communication setting based on the requirements of the application.

9. Database creation is N/A. There is no capability for this interface currently. So the tagnames must be created individually from the Modbus addressing scheme of the drive.



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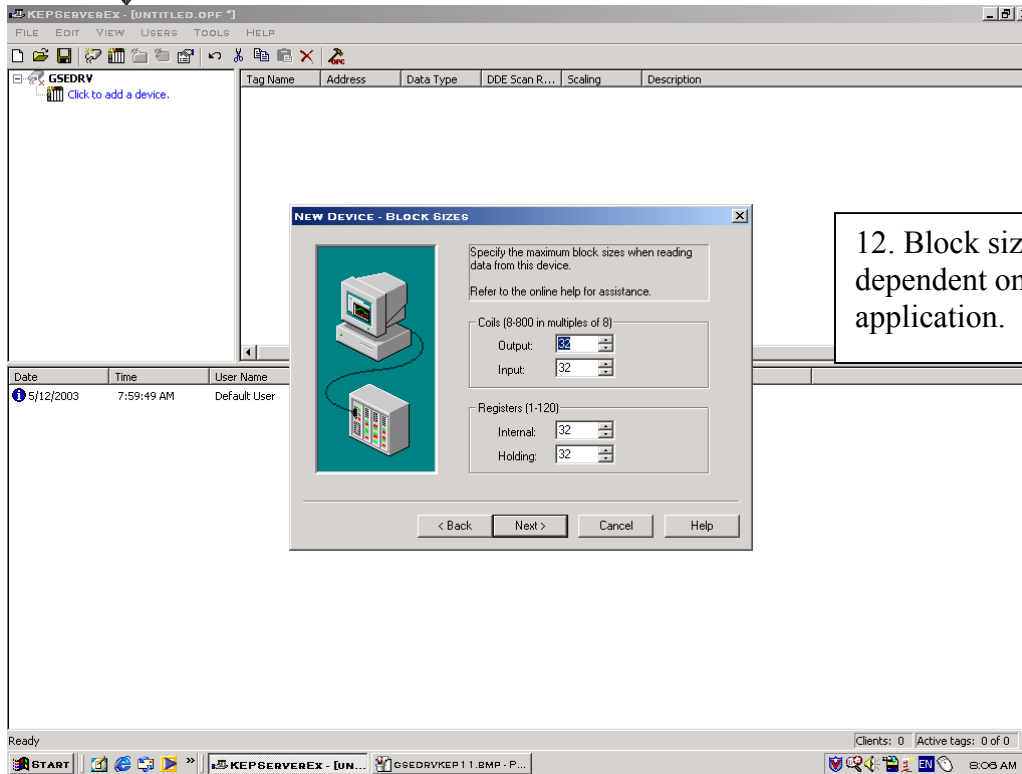
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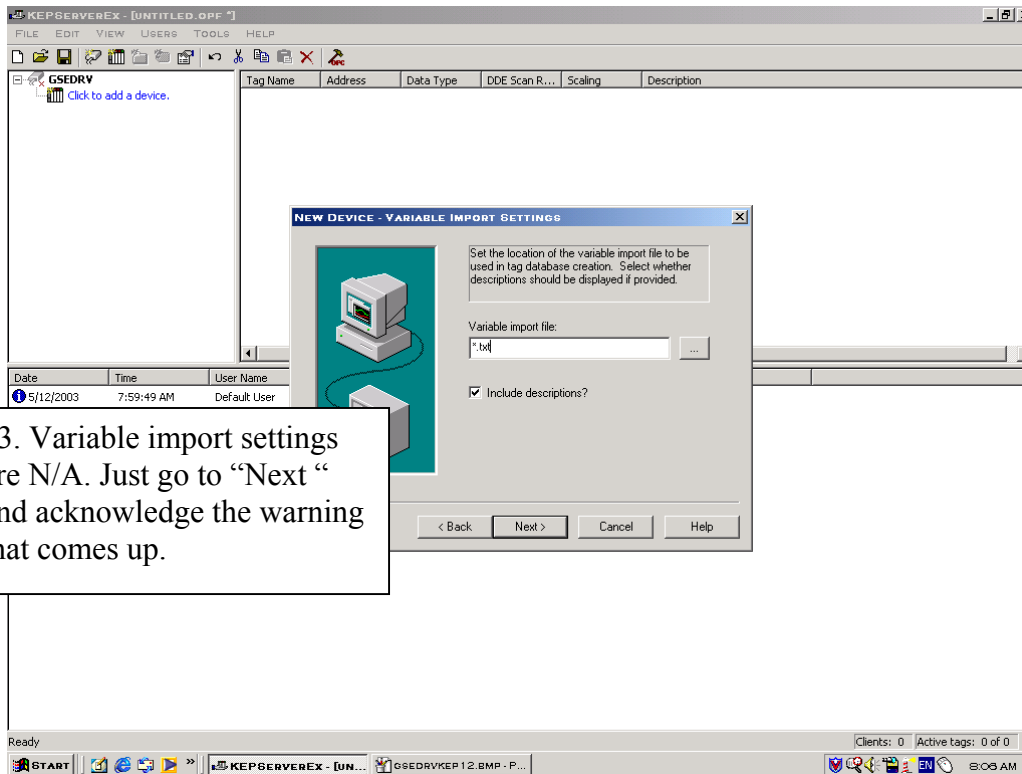


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12. Block size is dependent on the application.



13. Variable import settings are N/A. Just go to "Next" and acknowledge the warning that comes up.



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14. Create write tagnames for speed reference 42331 and run command 42332.

15. Create read tagnames for output current 48453 and dc bus voltage 48452.



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The screenshot shows the KEPSERVEREX application window. The 'TOOLS' menu is open, and 'LAUNCH OPC QUICK CLIENT' is selected. Below the menu, a table displays data points:

Data Type	DDE Scan R...	Scaling	Description
Word	100	None	dc bus voltage
Word	100	None	output current

Below the menu, an event log table is visible:

Date	Time	User Name	Source	Event
5/12/2003	7:59:49 AM	Default User	KEPServerEx	Modbus Plus device driver loaded successfully.
5/12/2003	8:07:11 AM	Default User	KEPServerEx	Starting Modbus Ethernet device driver.
5/12/2003	8:07:11 AM	Default User	Modbus Ethernet	Modbus Ethernet Manager Started

A large green text overlay reads "Launch OPC Quick Client".

The screenshot shows the OPC QUICK CLIENT application window. The tree view on the left shows the following structure:

- KEPware.KEPServerEx.V4
 - GSEDRV_Statistics
 - GSEDRV_System
 - GSEDRV.GSEDRWODE1
 - GSEDRV.GSEDRWODE1_System
 - GSEDRV.GSEDRWODE1.reads
 - GSEDRV.GSEDRWODE1.writes

The main pane displays a table of data points:

Item ID	Data Type	Value	Timestamp	Quality
GSEDRV_Statistics_Reset	Boolean	0	08:14:22:202	Good
GSEDRV_Statistics_FailedReads	DWord	0	08:14:22:202	Good
GSEDRV_Statistics_FailedWrites	DWord	0	08:14:22:202	Good
GSEDRV_Statistics_RxBytes	DWord	5668	08:14:33:137	Good
GSEDRV_Statistics_SuccessfulReads	DWord	436	08:14:33:137	Good
GSEDRV_Statistics_SuccessfulWrites	DWord	0	08:14:22:202	Good
GSEDRV_Statistics_TxBytes	DWord	5232	08:14:33:137	Good

Below the table, an event log table is visible:

Date	Time	Event
5/12/2003	8:14:22 AM	Connected to server 'KEPware.KEPServerEx.V4'.
5/12/2003	8:14:22 AM	Added group 'GSEDRV_Statistics' to 'KEPware.KEPServerEx.V4'.
5/12/2003	8:14:22 AM	Added group 'GSEDRV_System' to 'KEPware.KEPServerEx.V4'.
5/12/2003	8:14:22 AM	Added 7 items to group 'GSEDRV_Statistics'.
5/12/2003	8:14:22 AM	Added group 'GSEDRV.GSEDRWODE1_System' to 'KEPware.KEPServerEx.V4'.
5/12/2003	8:14:22 AM	Added 4 items to group 'GSEDRV_System'.
5/12/2003	8:14:22 AM	Added group 'GSEDRV.GSEDRWODE1' to 'KEPware.KEPServerEx.V4'.
5/12/2003	8:14:22 AM	Added 8 items to group 'GSEDRV.GSEDRWODE1_System'.
5/12/2003	8:14:22 AM	Added group 'GSEDRV.GSEDRWODE1.reads' to 'KEPware.KEPServerEx.V4'.
5/12/2003	8:14:22 AM	Added group 'GSEDRV.GSEDRWODE1.writes' to 'KEPware.KEPServerEx.V4'.
5/12/2003	8:14:22 AM	Added 2 items to group 'GSEDRV.GSEDRWODE1.reads'.
5/12/2003	8:14:22 AM	Added 2 items to group 'GSEDRV.GSEDRWODE1.writes'.



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The screenshot shows the OPC QUICK CLIENT interface. On the left, a tree view shows the project structure under 'KEPware.KEPServerEx.V4'. The main pane displays a table with columns: Item ID, Data Type, Value, Timestamp, and Quality. A context menu is open over the item 'GSEDRV.GSEDRVNODE1.writes.runco...', with 'SYNCHRONOUS WRITE...' highlighted. Below the table is an event log showing connection and item addition events.

Date	Time	Event
5/12/2003	8:14:22 AM	Connected to server 'KEPware.KEPServerEx.V4'.
5/12/2003	8:14:22 AM	Added group 'GSEDRV.Statistics' to 'KEPware.KEPServerEx.V4'.
5/12/2003	8:14:22 AM	Added group 'GSEDRV._System' to 'KEPware.KEPServerEx.V4'.
5/12/2003	8:14:22 AM	Added 7 items to group 'GSEDRV.Statistics'.
5/12/2003	8:14:22 AM	Added group 'GSEDRV.GSEDRVNODE1._System' to 'KEPware.KEPServerEx.V4'.
5/12/2003	8:14:22 AM	Added 4 items to group 'GSEDRV._System'.
5/12/2003	8:14:22 AM	Added group 'GSEDRV.GSEDRVNODE1' to 'KEPware.KEPServerEx.V4'.
5/12/2003	8:14:22 AM	Added 8 items to group 'GSEDRV.GSEDRVNODE1._System'.
5/12/2003	8:14:22 AM	Added group 'GSEDRV.GSEDRVNODE1.reads' to 'KEPware.KEPServerEx.V4'.
5/12/2003	8:14:22 AM	Added group 'GSEDRV.GSEDRVNODE1.writes' to 'KEPware.KEPServerEx.V4'.
5/12/2003	8:14:22 AM	Added 2 items to group 'GSEDRV.GSEDRVNODE1.reads'.
5/12/2003	8:14:22 AM	Added 2 items to group 'GSEDRV.GSEDRVNODE1.writes'.

Perform a synchronous write on the selected items Item Count: 23

Write 600 to 42331 for a speed reference of 60 hz. And write a 1 to 42332 for a run command. The drive should go into run mode and control up to max speed of 60hz.

Note – The drive must be connected to the GS-EDRV and powered up for all connection and testing purposes.

The screenshot shows the OPC QUICK CLIENT interface after the synchronous write operation. The 'SYNCHRONOUS WRITE' dialog box is open, showing a table with columns: Item ID, Current Value, and Write Value. The item 'GSEDRV.GSEDRVNODE1.writes.runco...' is selected with a current value of 1 and a write value of 1. The event log at the bottom shows the successful completion of the write operation.

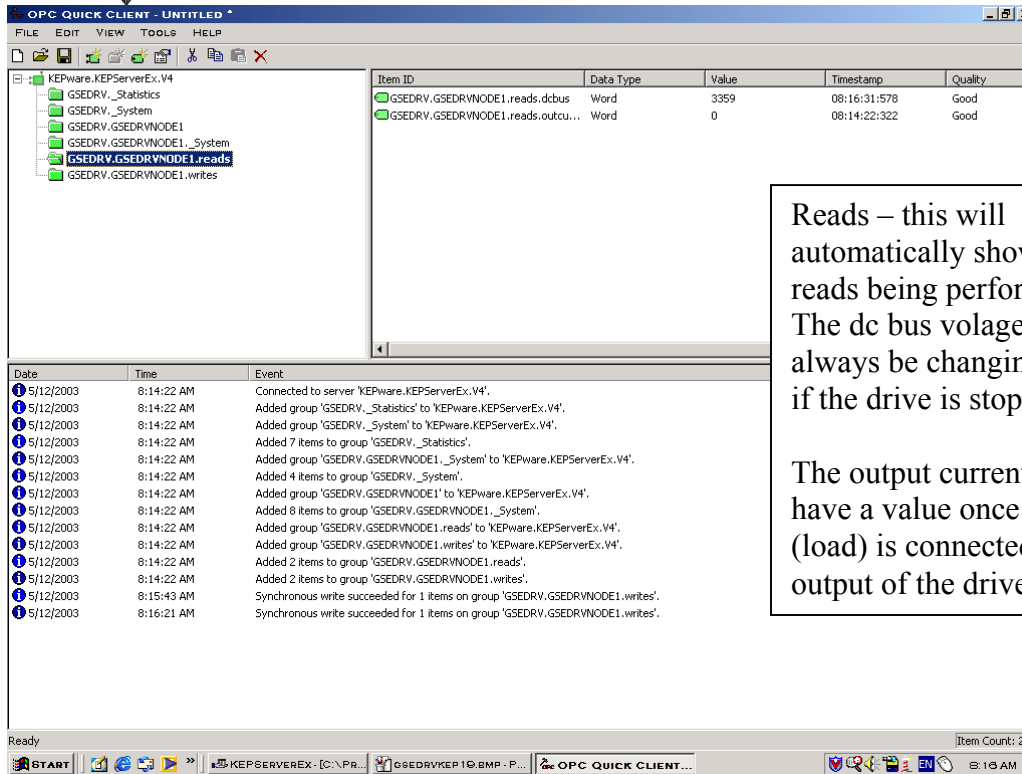
Item ID	Current Value	Write Value
GSEDRV.GSEDRVNODE1.writes.runco...	1	1

Ready Item Count: 23



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Reads – this will automatically show the reads being performed. The dc bus volage will always be changing even if the drive is stopped.

The output current will have a value once a motor (load) is connected to the output of the drive.

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.