

Application Description

An Automation Direct EZ Touch Panel controlling several GS2 AC micro drives via RS485 and Modbus RTU.

Specifications

EZ Touch Control:

- 1 x EZ-T10C-F
- 1 x EZ-TOUCHEDIT
- 1 x EZTOUCH-PGMCBL
- 1 x EZ-COMCON3
- 1 x PS24-050D (external power supply)

GS2 Drives

- 8 x GS2-43P0
- 8 x GS2-43P0-FKIT
- 8 x GS2-43P0-LR
- 8 x GS2-43P0-BR
- 1 x GS-RS485-8

Process: User needs to control 8 GS2 drives running pumps via a RS485 network. The control includes start/stop, direction, and speed reference. The user also needs to monitor frequency, output voltage, dc bus voltage, and current.

Drive settings: (Motor information based on 3 HP 460 VAC motor nameplate)

GS2-43P0	DEFAULT	NEW	COMMENTS
P 0.00	480	460	Motor Nameplate Voltage Setting
P 0.01	5	4.8	Motor Nameplate Amps Setting
P0.02	60	60	Motor Base frequency
P0.03	1750	1725	Motor base RPM
P0.04	1750	1725	Motor Maximum RPM
P1.00	0	1	Coast to stop
P1.01	10	20	Acceleration time
P2.00	0	2	Volts/Hertz set to fans and pumps
P3.00	0	3	RS485 operation control enabled
P4.00	0	5	RS485 speed reference control
P8.00	0	3	RPM display
P9.00	1	xx	Communication address (dependent on drive 1-8)
P9.01	1	1	9600 Baud rate
P9.02	0	5	MODBUS RTU 8 data bits, odd parity, 1 stop bit



EZ touch panel set-up:

Step 1: Project Information

Step 1
It's as easy as 1-2-3...

SELECT ACTION

- Edit Program OFF-LINE (Write to Panel Later)
- Read Program from Panel and Edit OFF-LINE
- Edit Program ON-LINE

Ethernet/COM Port: COM1

Selected Action : Edit Offline Write Later

ENTER PROJECT INFORMATION

Project Location : C:\Program Files\EZTouch\Project\ Browse...

Project Name : gs2 modbus control.ezt

Start Editing Screen
Number 1 Name gs2 main

Panel Type EZ-T10C-F, 10" Color 640x480 Firmware Revision

PLC Type and Protocol Modicon Modbus RTU - Rev C View/Edit PLC Com Setup...

Think-n-Do Map file Browse...

Ok Help Clear Exit

EZTouch Programming Software Version 2.2
Automationdirect.com : Phone: 1-770-844-4200
www.automationdirect.com

Modbus RTU Attributes

PLC Editor Revision : C

Communication Parameters

Baud Rate 9600
Protocol RTU
Parity Odd
Stop Bits One
Select RS485 Yes
Control RTS Yes
Require CTS Yes

Other Parameters

Default PLC Slave No. 1
Registers per Message 64
Coils per Message 64

Timeout time (1-255) tenths of Second . 30
Poll Time (0-255) tenths of Second . 0

Byte Order

☐ Low Byte, High Byte
☒ High Byte, Low Byte (Default)

Word Order

☒ Low Word, High Word (Default)
☐ High Word, Low Word

Character Order in Registers

☒ Char 1, Char 2 (Default) ☐ Char 2, Char 1

OK Cancel Help

PLC Type must be Modicon Modbus RTU – Rev C. Ref Appendix C page C-13 of EZ Touch Programming Software User Manual

The communication parameters must match GS drive parameter 9.02. RS485 must be selected as well as Control RTS and require CTS.

EDIT TAG DETAILS

Enter TagDetails for the Tag

RUN

(PlcType: Modicon Modbus RTU - Rev C)

Address String: 402332/0

IO Type: R/W

Data Type: DISCRETE

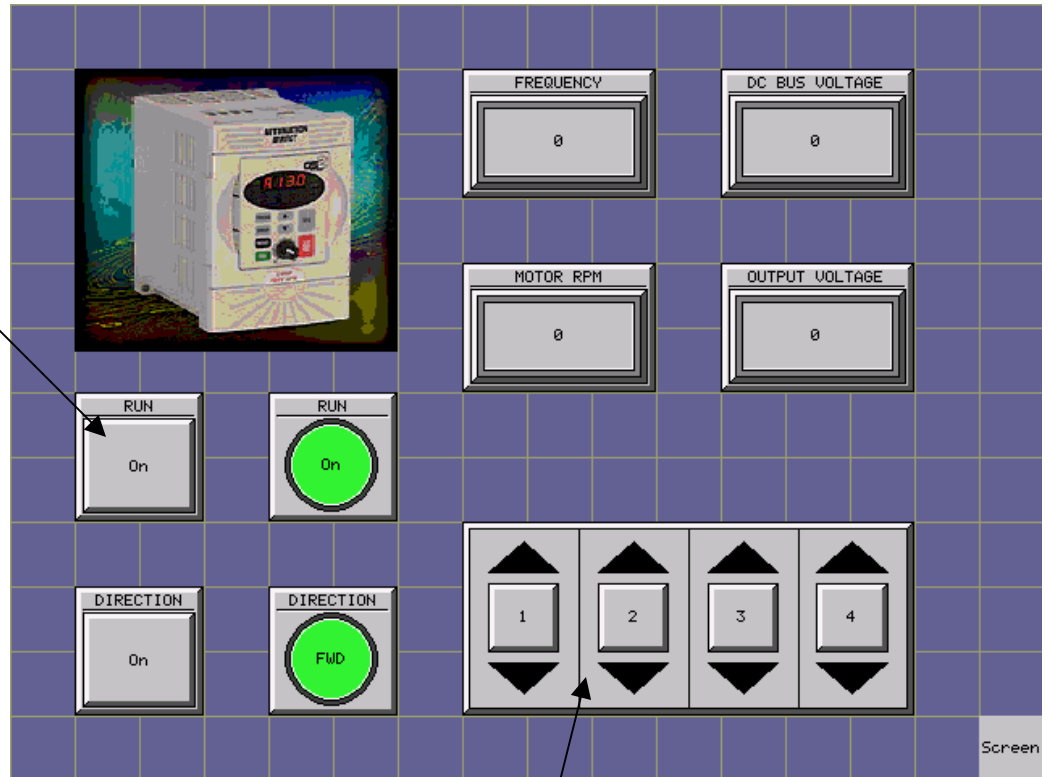
No. of Chars: 0

OK Cancel Help

Modbus addressing examples:

Run slave 1 = 42332/0
 Run slave 2 = 2-42332/0
 Run slave 3 = 3-42332/0
 Speed slave 1 = 42331
 Speed slave 2 = 2-42331
 Speed slave 3 = 3-42331

Discrete control will have an address string of communication address – Modbus address – and discrete bit. This example shows Run which is address 1 (the 1 does not need to be written for this address only), Modbus address 42332 or 402332 (page 4-60 of GS2 manual), and /0 for bit 0 of this 16 bit word.



EDIT TAG DETAILS

Enter TagDetails for the Tag

SPEED

(PlcType: Modicon Modbus RTU - Rev C)

Address String: 402331

IO Type: R/W

Data Type: UNSIGNED_INT_16

No. of Chars: 0

OK Cancel Help

The speed reference is Modbus address 42331 or 402331. The drive is set-up for 0-60 hertz control. The input un-scaled is 0-600 in decimal.

Modbus Addressing for GS2 drives:

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	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

Note:

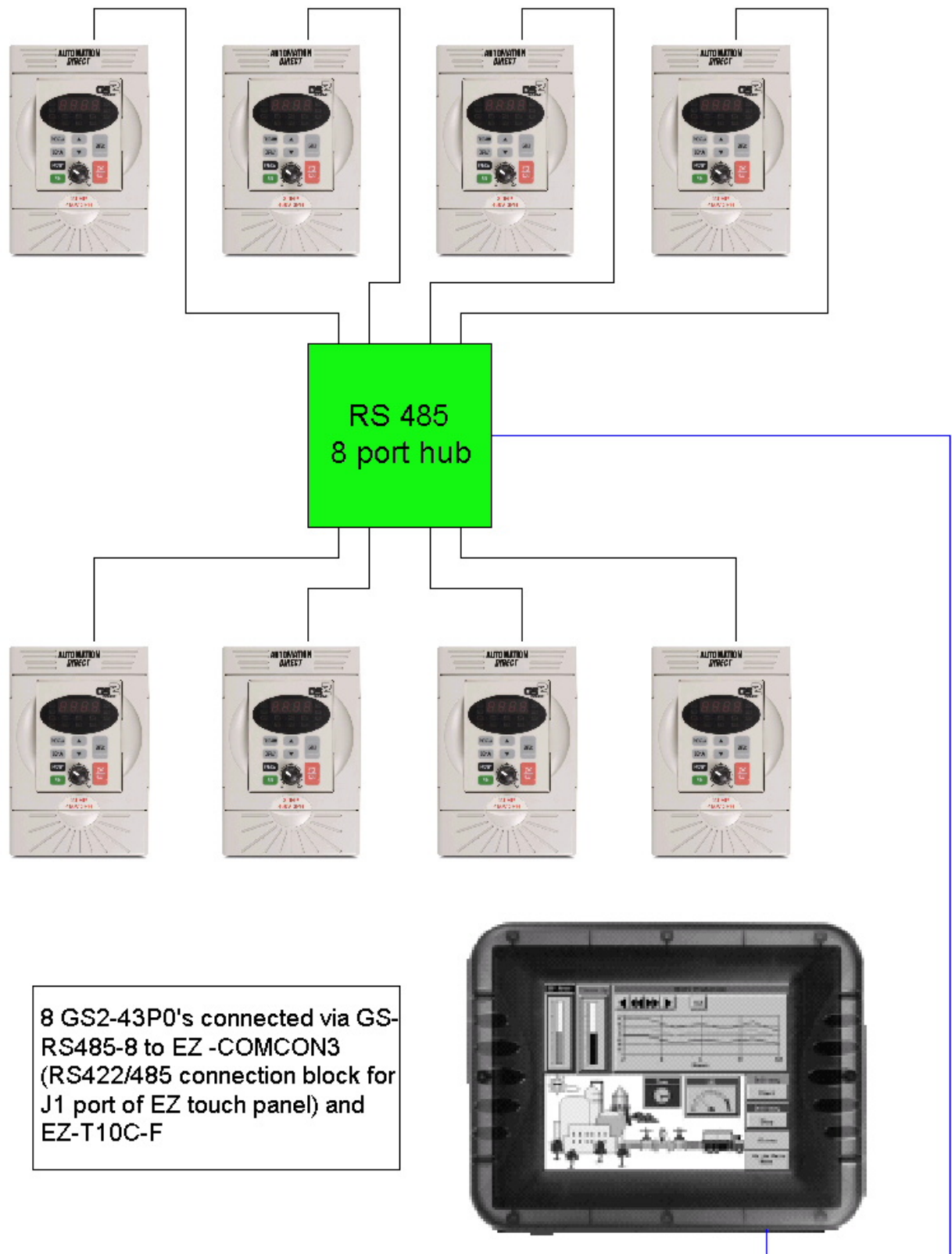
If you have the Koyo V memory location or the Modbus address in Hex do the following:

0205H is 1005 in octal. Convert to decimal and add 40001 for the modbus address. = 40518 in modbus

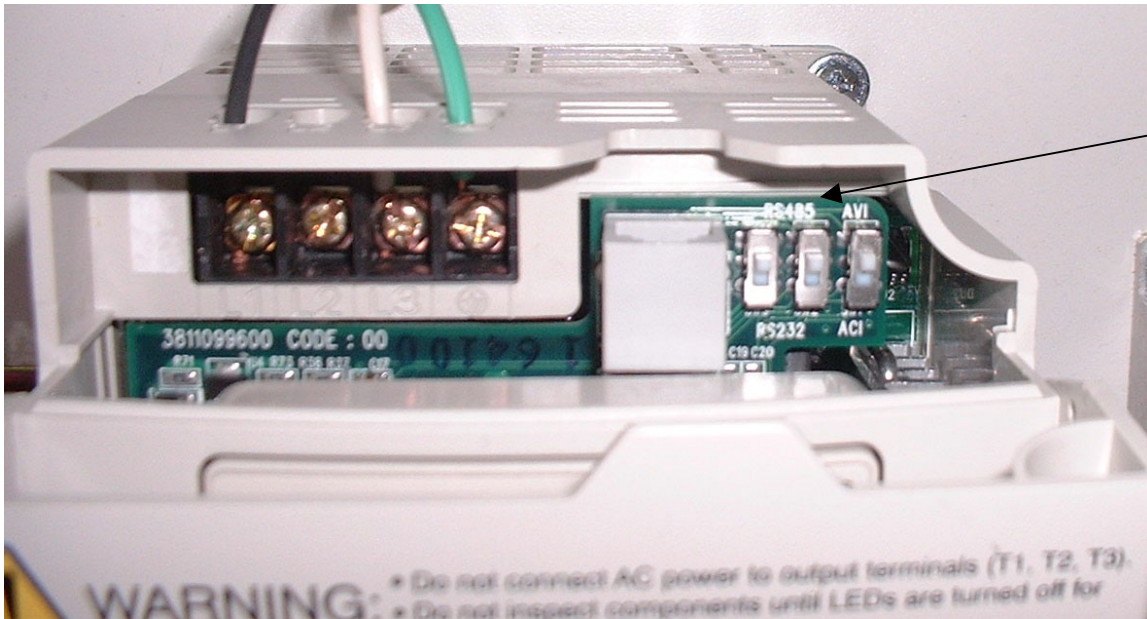
If you have the modbus address do the following:

40518 in modbus. Subtract 40001 and convert to octal = 1005

Basic Diagram:



Hardware notes:



Ensure that the dip switches are in the RS485 position

The RS485 SG+ and SG- come into top terminal for breakout.

The RJ11 ports go to the 8 slave drives.



The EZ-COMCON3 is for 4 wire RS422. For this set-up; jumper the RD+ to the SD+ and RD- to the SD-. Also jumper the RD+ to the TERM terminal. The jumpered +s become SG+ on a RS485 network. The -s become the SG- as well.



The finished product