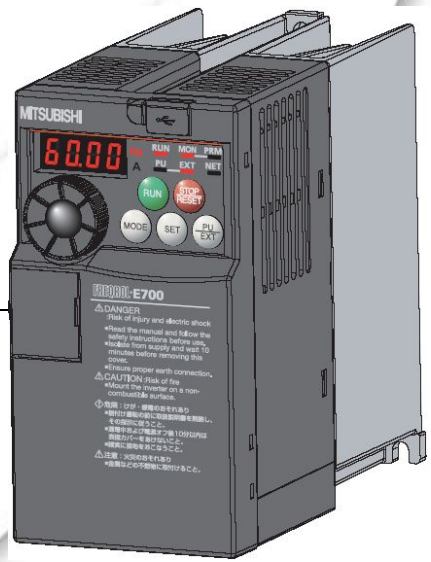
GT10 HMIs connected to Frequency Inverter S500, E700, D700, A700, F700

Quick Start Guide



Please refer to "GOT1000 series connection manual, Chapter 32 !

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Notes

- **In the following Quick Start guide, we will configure a system using the GT10xx-LBD (RS422, 24VDC) connected to a FR-E700 Frequency Inverter.**

- **24V DC power supply for HMI can be taken from Inverter (terminals PC/SD). Please do not connect anything else except the HMI.**

STEP 1 - HMI

- **Select the Terminal**
  (must have 422 interface), product names and SAP no.:
  - GT1030-LBD 206969
  - GT1030-LBDW 206971
  - GT1020-LBD 200491
  - GT1020-LBDW 208668

- **Locate GT10 Mounting Packaging**
  - (1) Rubber Gasket
  - (4) Mounting Clips
  - (1) Communication Terminal IF

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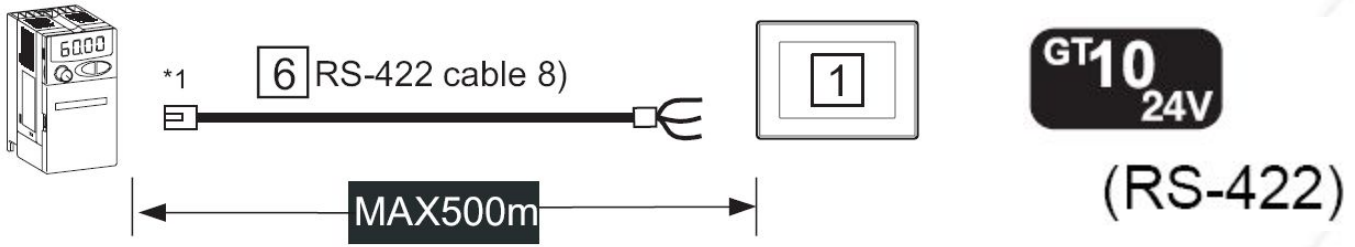
STEP 2 – communication cable



[6]: User prepared cable (RJ45 patch cable)

GOT side (terminal block) Signal name	Cable connection and signal direction	Inverter side or distributor side (Modular connector) Pin No.	Signal name	Pin layout*1
SDA		3	RDA	
SDB		6	RDB	
RDA		5	SDA	
RDB		4	SDB	PU port
SG		1	SG	1 8
RSA		2	P5S	RJ-45 plug (male)
RSB		7	SG	
CSA		8	P5S	
CSB				

*1 The connector figure shows the engagement face.

Please check your cable:

OR

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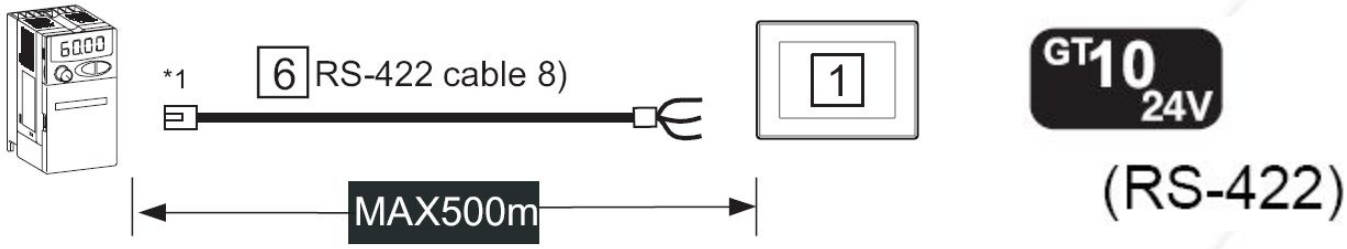
STEP 2 – “568B”-type cable



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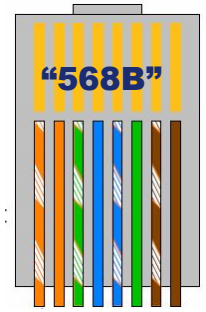
SG		1	SG	1 8
RSA		2	P5S	RJ-45 plug (male)
RSB		7	SG	
CSA		8	P5S	
CSB				

*1 The connector figure shows the engagement face.



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STEP 3 – Programming cable

- **Programming Cable HMI**
  - Option #1 for Serial connections (9pin, RS232)
    - **GT01-C30R2-6P, 163959**
  - Option #2 for USB connections (USB mini)
    - USB/Serial Converter and USB Cable
    - **GT01-RS2TUSB-5S, 200500**
    - **GT09-C30USB-5P, 166373**

QC30R2 or GT01-C30R2-6P

GT10-RS2TUSB-5S

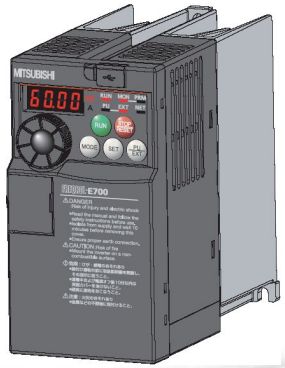
GT09-C30USB-5P

Successful Configuration Example

GT1030-LBD with RS422 CONNECTION

GT1030-LBD

24VDC Power Supply (+10%,-15%)



FR-E700

user-created cable

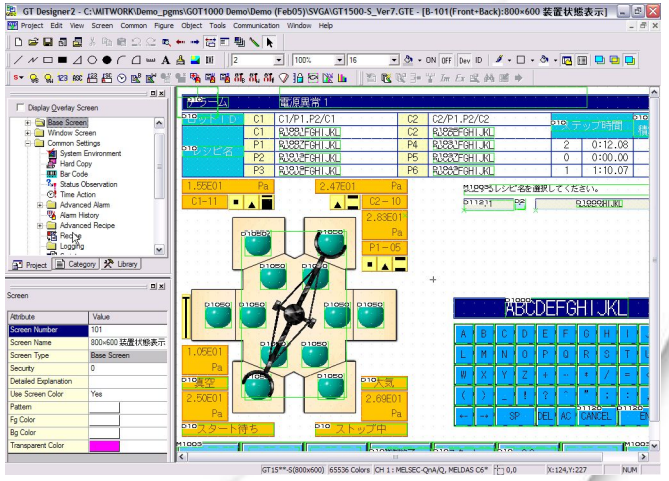
Please use Standard patch cable and cut off one end!

GT01-C30R2-6P or

GT10-RS2TUSB-5S + GT09-C30USB-5P

STEP 4 – Software 1

- **GT-Works2 software Suite**
  - **GT-Designer2**
    - **MUST have Version 2. 73B or later to support Freqrol driver for GT10!!**



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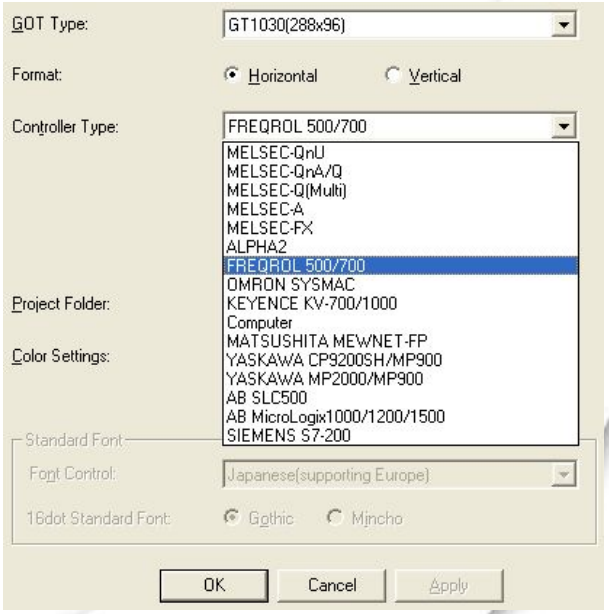
STEP 4 – Software 2

- **Select FREQROL driver**



- **Install new OS and FREQROL driver to GT10 HMI**
  - **=> See next page!**

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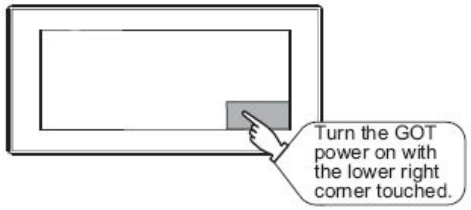
STEP 4 – Software 3

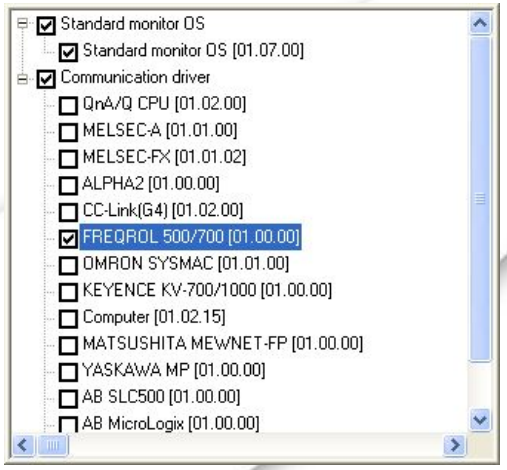
- **Switch GT10 into "OS installation mode"**



1. Turn on the power while pressing and holding the bottom right corner of the screen.

2. The OS installation screen will appear.

- **Install new OS and FREQROL driver to GT10**
- **Download GT Designer and set inverter parameters, see next page**



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Inverter Communication settings

		Parameter		
Setting item	**Setting**	**S500**	**D700/E700 RJ45 port**	**F700/A700 screw terminal**
Inverter station No.	0	N1 = 0	PR117=0	PR331=0
Communication speed*	19200bps	N2 = 192	PR118 = 192	PR332 = 192
Data length + Stop bit	7bits + 1bit	N3 = 10	PR119 = 10	PR333 = 10
Parity	Odd	N4 = 1	PR120 = 1	PR334 = 1
Number of communication retries		N5 = 1	PR121 = 1	PR335 = 1
Communication check time interval	Communication check stop	N6 = "---"	PR122 = 9999	PR336 = 9999
Waiting time setting	0ms	N7 = 0	PR123 = 0	PR337 = 0
Link start mode selection	Computer link	N10 = 1	PR340 = 1	PR340 = 1
CR, LF Yes/No selection	CR: Provided, LF: Not provided	N11 = 1	PR124 = 1	PR341 = 1
EEPROM write selection	Write to RAM or EEPROM	N12 = 0	PR342 = 1	PR342 = 1

Note1: Please set P77 = 2, Write during operation enabled.
Note2: After changing of those parameters, switch off power, wait 5s, switch on power again.

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Inverter Commands

	Device name *4	Setting range			Device No. representation
Bit device	Inverter status monitor (RS) *3	RS0:0 RS0:100	To To	RS7:31 RS7:115	Decimal
	Run command (WS) *5 *6	WS0:0 WS0:0	To To	WS7:31 WS7:115	
Word device	Alarm definition (A) *2 *3	A0:0 A0:100	To To	A7:31 A7:115	Decimal
	Parameter (Pr) *1 *2	Pr0:0 Pr0:100	To To	Pr993:31 Pr993:115	
	Programmed operation (PG) *1 *2	PG0:0 PG0:100	To To	PG89:31 PG89:115	
	Special parameter (SP) *2 *5	SP108:0 SP108:100	To To	SP127:31 SP127:115	

*1 When creating the screen, designate only either of programmed operation (PG) device or parameter (Pr) device. Do no designate both PG (PG0 to PG89) and Pr (Pr900 to Pr905) devices.
*2 Only 16-bit (1-word) designation is possible.
*3 Only reading is possible.
*4 The GOT cannot read or write data from/to consecutive devices.
***5 Precautions for PU operation mode**: When the GOT is connected to the PU connector and the operation mode is set to the PU operation mode, the multi-speed operation (W3 to W7, SP121, SP122) cannot be used.
For using the multi-speed operation, follow either of the operations as below.
• Connect the GOT to the RS-485 terminal and set the operation mode to the NET operation mode (Computer link operation mode), and then operate the inverter.
• Change the motor speed with the set frequency (SP109, SP110), and then operate the inverter with the forward or reverse rotation (WS1, WS2, SP121, SP122).
***6 Precautions for WS devices:**
• Only writing is possible for WS devices. More than one WS cannot turn on at once. (Except the turned on WS device, the other WS devices turn off.) Bits of SP122 (word device) are assigned to WS0 to WS7. When more than one WS turns on at once, convert the values for the bit devices that are assigned to the word device into values for the word device. Write the converted values into SP122. Example: Forward rotation (WS1) and low speed operation (WS3) Write "10" in decimal (the value that turns on WS1 and WS3) into SP122.
• When using a WS device, [Alternate] of a bit switch cannot be used. Use [Set], [Reset], and [Momentary] of a bit switch.

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Inverter Status Monitor

Device name	Description
RS0	Inverter running (RUN)
RS1	Forward rotation (STF)
RS2	Reverse rotation (STR)
RS3	Up to frequency (SU)
RS4	Overload (OL)
RS5	Instantaneous power failure (IPF) *1
RS6	Frequency detection (FU)
RS7	Alarm occurrence

*1 Can be used only for FREQROL-A500/A700/F700 series.

Run Command

Device name	Description
WS0	Current input selection (AU) *2
WS1	Forward rotation (STF)
WS2	Reverse rotation (STR)
WS3	Low speed operation (RL) *1 (Current input selection (AU) for FREQROL-F500 series)
WS4	Middle speed operation (RM) *1
WS5	High speed operation (RH) *1
WS6	Second function selection (RT) *2
WS7	Output stop (MRS) *2

*1 Cannot be used for FREQROL-A500/E500 series.

*2 Can be used only for FREQROL-A700/F700 series.

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Alarm definition

Device name	Description
A0	Second alarm in past
A1	Latest alarm
A2	Fourth alarm in past
A3	Third alarm in past
A4	Sixth alarm in past
A5	Fifth alarm in past
A6	Eighth alarm in past
A7	Seventh alarm in past

*1 Only reading is possible for A0 to A7.
These devices cannot be used for a write object (numerical input etc.).

Special Parameters

Device name	Description	Instruction code	
		Read	Write
SP108	Second parameter changing	6CH	ECH
SP109*1	Set frequency (RAM)	6DH	EDH
SP110*1	Set frequency (RAM, E2PROM)	6EH	EEH
SP111*1	Output frequency	6FH	-
SP112	Output current	70H	-
SP113	Output voltage	71H	-
SP114	Special monitor	72H	-
SP115	Special monitor selection No.	73H	F3H
SP116	Alarm definition all clear	-	F4H
	Latest alarm, second alarm in past	74H	-
SP117	Third alarm in past, fourth alarm in past	75H	-
SP118	Fifth alarm in past, sixth alarm in past	76H	-
SP119	Seventh alarm in past, eights alarm in past	77H	-
SP121	Inverter status monitor (extended)	79H	F9H
	Run command (extend)		
SP122	Inverter status monitor	7AH	-
	Run command	-	FAH
SP123	Communication mode	7BH	FBH
SP124	All parameter clear	-	FCH
SP125	Inverter reset	-	FDH
SP127	Link parameter extended setting	7FH	FFH

***1 GOT cannot monitor SP109 to SP111 if the conditions below are satisfied at the same time. (Only FREQROL-E500/F500J/S500(E)/E700 series)**
- **Pr37 0**
- **SP127 = 1a**

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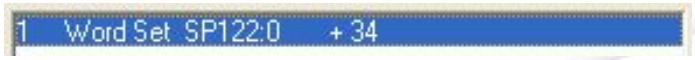
Special Parameter SP122

Item	Instruction Code	Bit Length	Description	Example
Run command	HFA	8bit	b0: AU (current input selection) *3 b1: forward rotation command b2: reverse rotation command b3: RL (low speed operation command) *1*3 b4: RM (middle speed operation command) *1*3 b5: RH (high speed operation command) *1*3 b6: RT (second function selection)*3 b7: MRS (output stop) *1*3	[Example 1] H02... Forward rotation b7 b0 0 0 0 0 0 0 1 0 [Example 2] H00... Stop b7 b0 0 0 0 0 0 0 0 0

- **Example:**

Forward rotation in RH (high speed) mode:
b1 = 1 (value 2) and b5 = 1 (value 32) -> SP122 = 34



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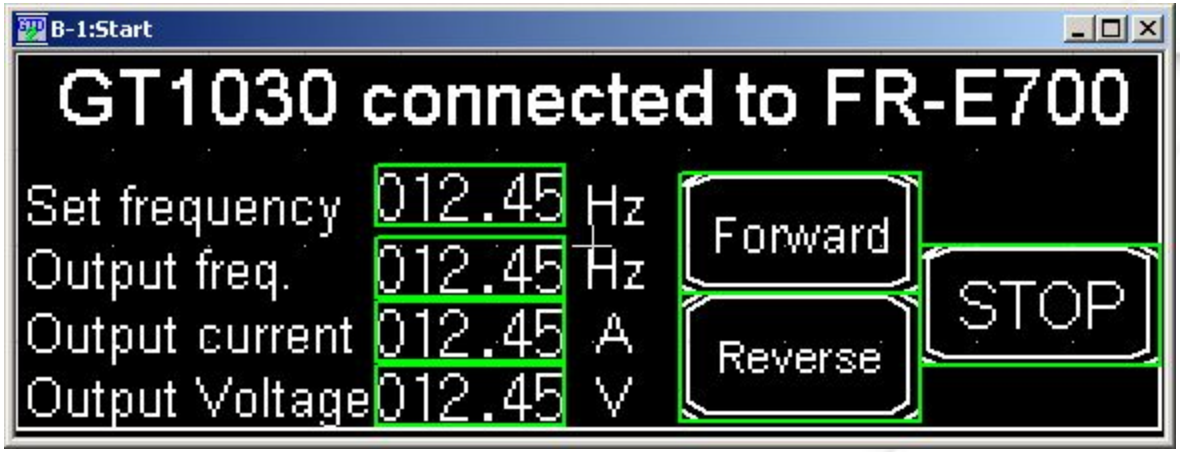
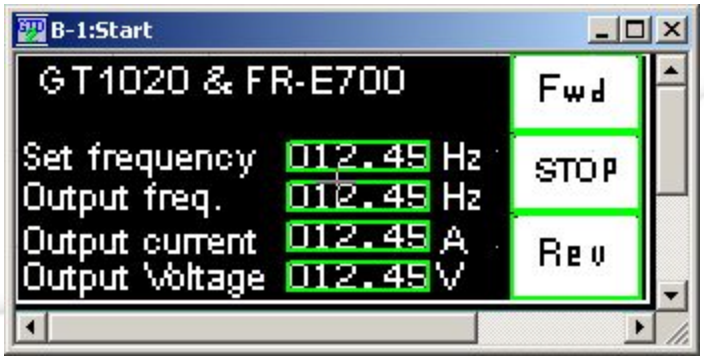
Example Screens GT Designer – GT10 to one FR-E700

Station 0 selected:

SP109:0
SP111:0
SP112:0
SP113:0





SP122 for Touch key actions:
Fwd = 2
Rev = 4
Stop = 0

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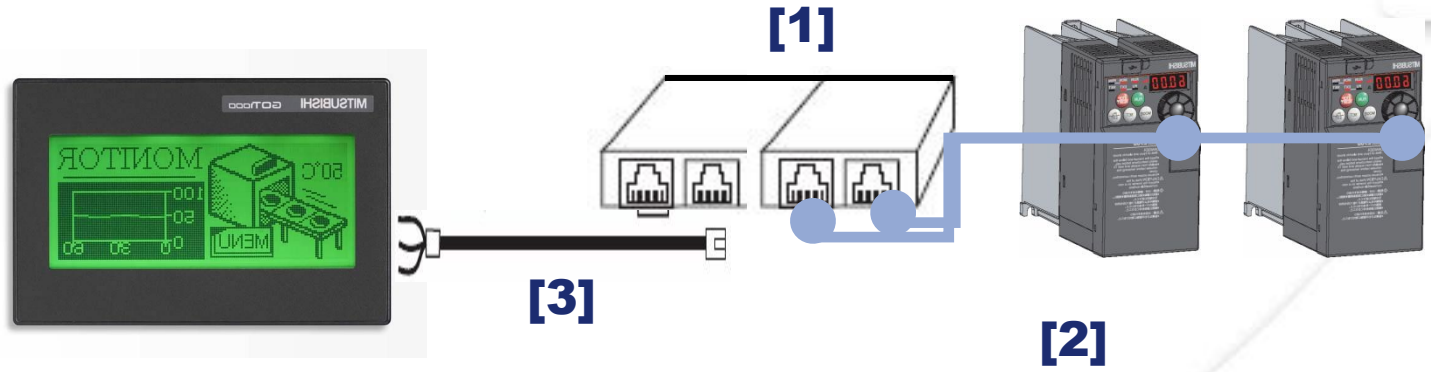
GT10 to two FR-E700 in Multi-drop



[1]: FR-RJ45-HUBxx +
Terminating resistor FR-RJ45-TR
[2]: Ethernet Patch cables
[3]: GT10 to Inverter cable, see Step2

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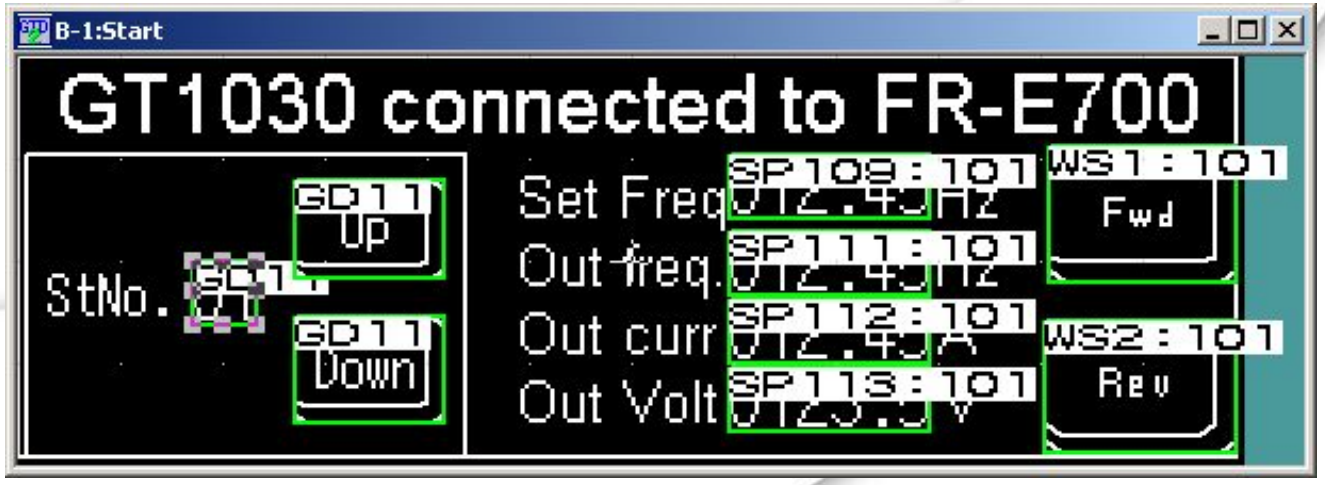
GT10 to two FR-E700 in Multi-drop

- **GT10 are able to use station number-related programming!**
  => Control and set parameters of up to 10 inverters with one HMI!
- **GD11 = Station number value;**
  GD11 then sets Station no. “101” in all devices



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