

GOT1000

GT1150/GT1155 to FR-F700 Inverter

Start-up Guide

About this Manual

The texts, illustrations, diagrams and examples in this manual are only intended as aids to help explain the functioning, operation, use and programming of the GOT1000 terminals in combination with an FR-F700 Inverter.

If you have any questions regarding the installation and operation of the hardware described in this manual, please do not hesitate to contact your sales office or one of your Mitsubishi distribution partners.

**CAUTION:**

Do not attempt to install, operate, maintain or inspect the graphical operator terminal or the inverter until you have read through the corresponding instruction manual carefully and can use the equipment correctly. Do not use the inverter until you have a full knowledge of the equipment, safety information and instructions.

You can also obtain information and answers to frequently asked questions from our Mitsubishi website under www.mitsubishi-automation.com.

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Manual References:

Refer to the following manuals for more detailed explanations. For any further questions, please contact your local Mitsubishi Product Provider.

- GOT1000 Series Connection Manual 3/3 (SH(NA)-080532ENG)
- F700 Instruction Manual (Applied) (IB(NA)-0600193ENG-E)

**CAUTION:**

This Start-up Guide includes a brief summary of the main specifications of the GOT1000 graphic operation terminals and the FR-F700 series of inverters, which should be sufficient to enable experienced users to install and configure the units. For further information on the operation terminals and the inverters please refer to the above mentioned manuals.

Please observe also the safety precautions given in the manuals mentioned above.

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1 Overview

This document provides a simple guide to setting up the GT1150 or GT1155 Graphic Operation Terminal (GOT) hardware and firmware for use with an FR-F700 Inverter.

2 Hardware Introduction

The GT1150 and GT1155 are GOT1000 Series touch panel interfaces with three built-in communication channels used for capturing user input to a system. They also have Compact Flash card interfaces and a Reset button built-in.

The models that are connectable to FREQROL inverters are identified in the table below:

| Model | | Display Size | Display Type | Comm. IF | Power |
|--------|-------|-----------------------|------------------------------------|---|---------|
| GT1150 | -QLBD | 5.7" 320 x 240 dot | STN, monochrome, 16 gray-scales | RS232 RS422 USB (for PC Commu- nication) | 24 V DC |
| GT1155 | -QSBD | | STN, 256 colors | | |
| | -QTBD | | TFT, 256 colors | | |

Tab. 1: Specifications of the operator terminals

For new GT1150 and GT1155 units, included in the box should be the following items:

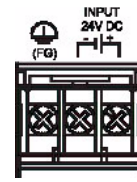
- (A) GT1150/GT1155
- (B) A sealed plastic bag containing
 - 1 rubber Dust-/Water-Proof Packing
 - 4 metal Mounting Brackets
 - 4 M4 Mounting Screws



3 Cabling

Power

All GT1150/GT1155 GOTs require an external 24V DC power supply to be connected to the Power Terminals on the back of the GOT.



Communication

For the GT1150/GT1155 terminal to communicate with the inverter, a communication cable is required. The type of cable used is dependent on the number of inverters used within the system, examples of which are illustrated below.

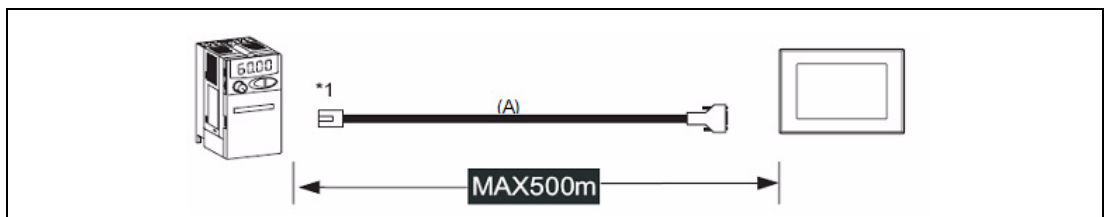


Fig. 1: One inverter connection (PU port connection)

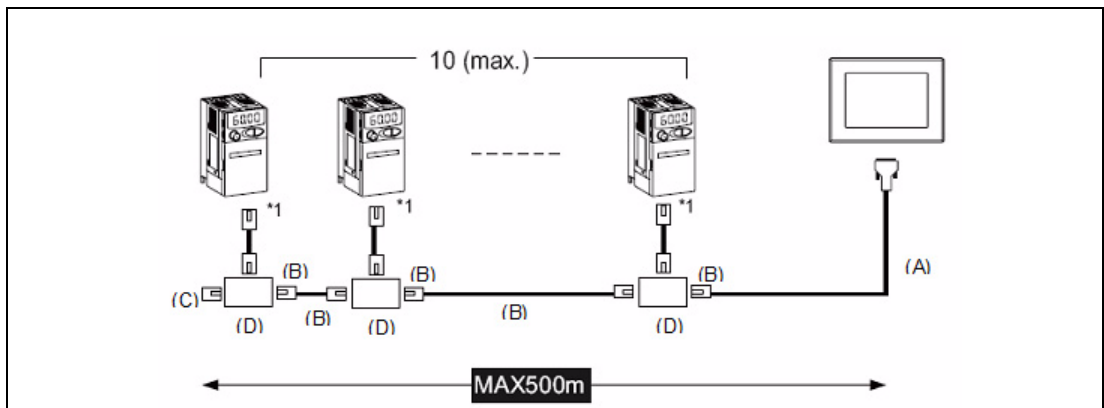


Fig. 2: Multi-drop connection (PU port connection)

*1 Connect to the PU port of the inverter.

Discription to Fig. Fig. 1 and Fig. 2:

| | A | B | C | D |
|---------------|--------------------------|--|----------------------|-------------|
| Detailed view | | | | |
| Standard | RS422 | RS422 | RS422 | RS422 |
| Meaning | Between inverter and GOT | Between distributor and inverter or between distributors | Terminating resistor | Distributor |

For an explanation of the communication cables please refer to the following section 3.1.

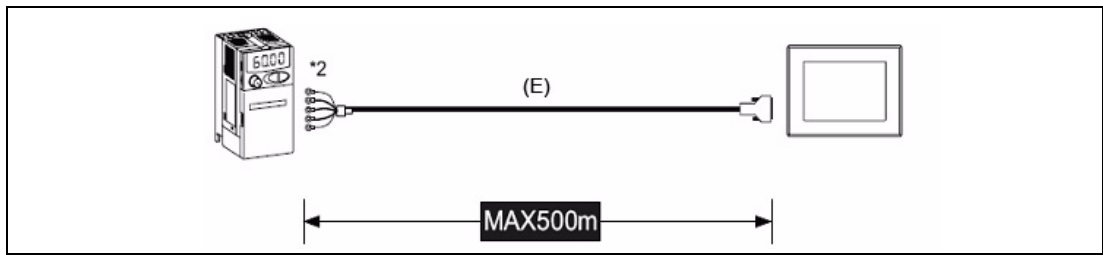


Fig. 3: One inverter connection (to inverter RS485 port)

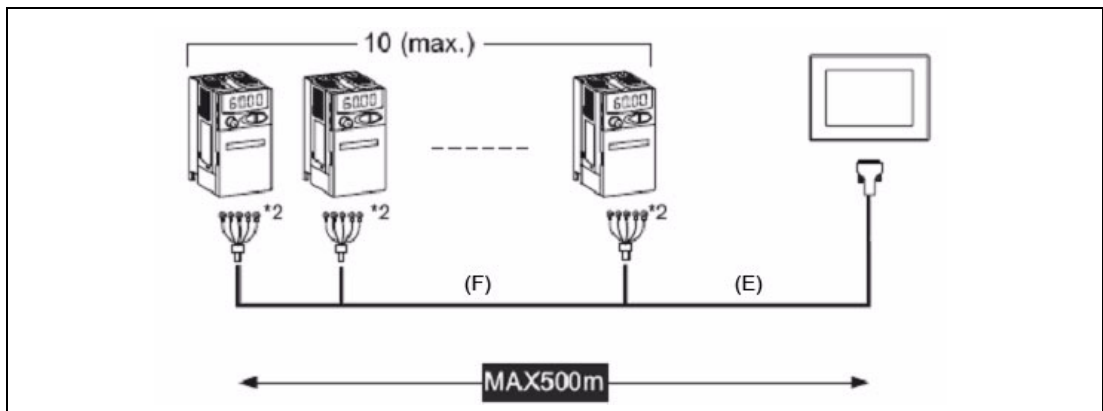


Fig. 4: Multi-drop connection (to inverter RS485 port)

*2 Connect to Terminal block.

Discription to Fig. 3 and Fig. 4:

| | E | F |
|---------------|---|--|
| Detailed view | | |
| Standard | RS422 | RS422 |
| Meaning | Between inverter and GOT (to be made by user) | Between inverters (to be made by user) |

3.1 GOT and Inverter Wiring Diagrams

| GOT side | | Cable connection and signal direction | Inverter side or distributor side (Modular connector) | | |
|-------------|---------|---------------------------------------|---|-------------|----------------------------------|
| Signal name | Pin No. | | Pin No. | Signal name | Pin layout ^① |
| SDA | 1 | | 3 | RDA | PU port RJ-45 plug (male) |
| SDB | 6 | | 6 | RDB | |
| RDA | 2 | | 5 | SDA | |
| RDB | 7 | | 4 | SDB | |
| SG | 5 | | 1 | SG | |
| RSA | 3 | | 2 | P5S | |
| RSB | 8 | | 7 | SG | |
| CSA | 4 | | 8 | P5S | |
| CSB | 9 | | - | - | |

Tab. 2: RS-422 connection between inverter and GOT (Cable type A)

| Distributor side (Modular connector) | | | Cable connection and signal direction | Inverter side or distributor side (Modular connector) | | |
|--------------------------------------|-------------|---------|---------------------------------------|---|-------------|----------------------------------|
| Pin layout ^① | Signal name | Pin No. | | Pin No. | Signal name | Pin layout ^① |
| PU port RJ-45 plug (male) | SDA | 5 | | 5 | SDA | PU port RJ-45 plug (male) |
| | SDB | 4 | | 4 | SDB | |
| | RDA | 3 | | 3 | RDA | |
| | RDB | 6 | | 6 | RDB | |
| | P5S | 2 | | 2 | P5S | |
| | P5S | 8 | | 8 | P5S | |
| | SG | 1 | | 1 | SG | |

Tab. 3: RS-422 connection distributor and inverter (Cable type B)

| Distributor side | | | Cable connection and signal direction |
|----------------------------------|-------------|---------|---------------------------------------|
| Pin layout ^① | Signal name | Pin No. | |
| PU port RJ-45 plug (male) | SDA | 5 | Terminating resistor 100Ω 1/2W |
| | SDB | 4 | |
| | RDA | 3 | |
| | RDB | 6 | |
| | P5S | 2 | |
| | P5S | 8 | |
| | SG | 1 | |

Tab. 4: RS-422 connection for mounting a terminating resistor (Cable type C)

^① The connector figure shows the engagement face.

| GOT side | | Cable connection and signal direction | Inverter side RS485 terminal block (built into the inverter) | |
|-------------|---------|---------------------------------------|--|---------------------|
| Signal name | Pin No. | | Terminal Name | Terminal block name |
| SDA | 1 | | RDA1 (RXD+) | RXD |
| SDB | 6 | | RDB1 (RXD1-) | |
| RDA | 2 | | SDA1 (TXD1+) | TXD |
| RDB | 7 | | SDB1 (TXD1-) | |
| SG | 5 | | SG(GND) | VCC |
| RSA | 3 | | | |
| RSB | 8 | | | |
| CSA | 4 | | | |
| CSB | 9 | | | |
| FG | — | | | |

Tab. 5: RS-485 connection between inverter and GOT (Cable type E)

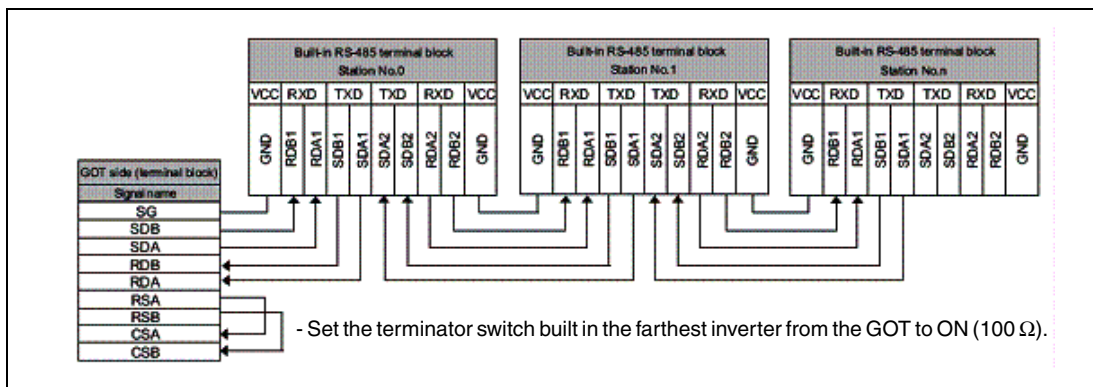


Fig. 5: Connection diagramm for Multi-drop

3.2 Programming Cables

The GT1150 and GT1155 come pre-installed with an OS only and without any project data. To download a project from a PC running GT Designer2 to the GOT, a programming cable is required to connect the PC to one of the communication interfaces.

For a new out-of-the-box GOT, the easiest way to connect to the GOT is through the USB Mini-B type port on the front panel with a standard USB cable. After setting up the GOT communication settings from the GOT main menu or with GT Designer2, the RS-422 and RS-232C interfaces can also be used for program transfer. Connection via USB is shown below.

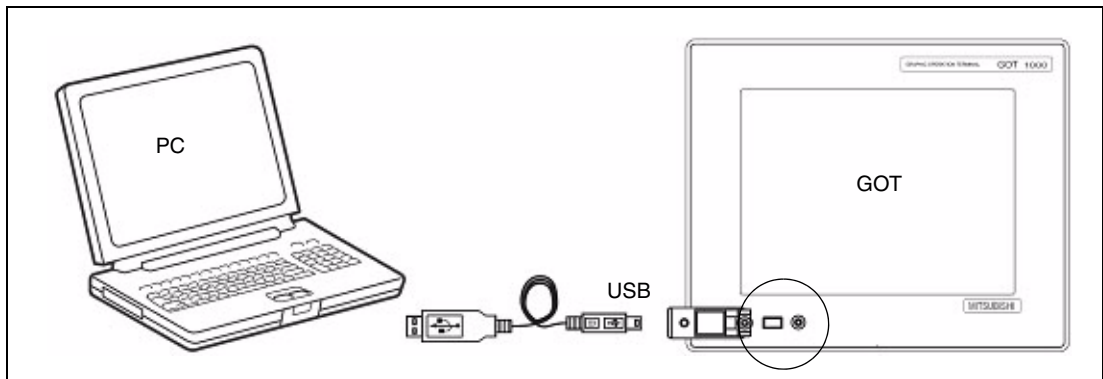


Fig. 6: Connection diagram

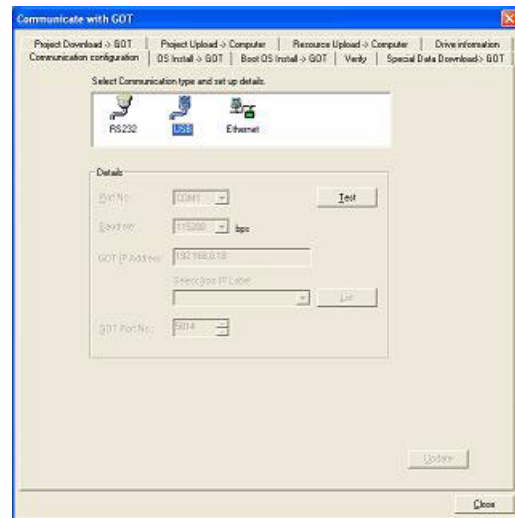
4 GT Designer 2

(Version 2.73 or later)

To make sure the GT1150/GT1155 GOT is able to use the latest functions and features, it is the responsibility of the user to check and update the firmware (Standard monitor OS) of the GOT.

Launch the latest copy of GT Designer2 and start a new project for the GOT model "GT11**-Q(320x240)" with the "FREQROL500/700" Inverter Type. Select **Yes** to set the Communication Setting and make sure the Standard I/F-1 CH No. is set to 1 before selecting **OK**. The "Screen Property" window that pops up for making a new screen can be either canceled or accepted for the following steps.

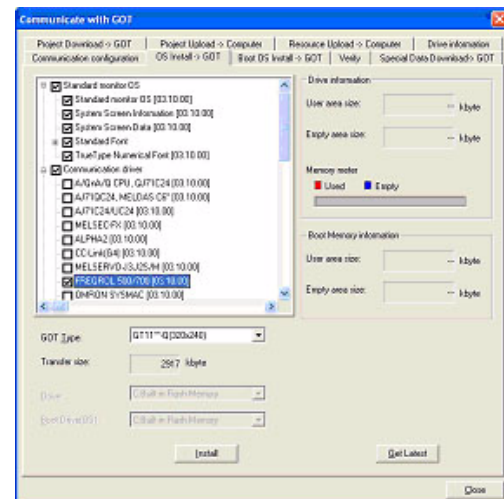
Go to the "Communication" menu and select "To/From GOT" to bring up the "Communicate with GOT" window. Go to the "Communication configuration" tab and select **USB**. With the GOT power ON, use the **Test** button to verify that the PC and GOT can communicate properly then turn the GOT power OFF.



Installing OS and communication drivers

Go to the "OS Install -> GOT" tab in the "Communicate with GOT" window of GT Designer2 and select "Standard monitor OS" and "Communication driver" – "FREQROL 500/700 [**.**.]**" from the data selection tree. Use the **Install** button to initiate the data transfer and update the firmware.

Once the firmware update has been completed the GOT will automatically reboot and all features will be up to date. Note that new project data will need to be downloaded to the GOT.



5 Inverter Settings

When setting the inverter communication parameters it is important to reset the power afterwards so that the settings are saved to the inverter.

The parameters shown in the following table must be set using the PU (Parameter Unit).

NOTE

Do not change these parameters, even though it is possible to monitor them through the GOT. If they are changed, communication with the GOT is disabled.

| Setting item | Parameter | | Set Value | Setting Contents |
|---|--------------|--------------|-----------|--|
| | PU Connector | RS-485 | | |
| PU communication station number/RS-485 communication station number | Pr.117 | Pr.331 | 0 to 31 | See following section |
| PU communication speed/RS-485 communication speed*2 | Pr.118 | Pr.332 | 192 | 19200 bps |
| PU communication stop bit length/RS-485 communication stop bit length*2 | Pr.119 | Pr.333 | 10 | Data length: 7 bit Stop bit length: 1 bit |
| PU communication parity check/RS-485 communication parity check*2 | Pr.120 | Pr.334 | 1 | Odd |
| Number of PU communication retries/RS-485 communication retry count | Pr.121 | Pr.335 | 9999 | The inverter will not come to an alarm stop. |
| PU communication check time interval/RS-485 communication check time interval | Pr.122 | Pr.336 | 9999 | Communication check suspension |
| PU communication waiting time setting/RS-485 communication waiting time setting | Pr.123 | Pr.337 | 0 | 0ms |
| PU communication CR/LF selection/RS-485 communication CR/LF selection | Pr.124 | Pr.341 | 1 | With CR, without LF |
| Protocol selection | – | Pr.549 | 0 | Mitsubishi inverter protocol |
| Operation mode selection | Pr.79 | PU connector | 1 | PU operation mode |
| | | RS-485 | 0 | External operation mode at power on |
| Link start mode selection | Pr.340 | PU connector | 0 | Refer to Pr.79 settings. |
| | | RS-485 | 1 | Network operation mode |
| Communication EEPROM write selection | Pr.342 | | 0 | Written to RAM and EEPROM |

Tab. 6: Inverter setting parameters

6 Station Setting

Set each station number while making sure that each station number is used only once.

The station number can be set regardless of the cable connection order.

Station numbers do not have to be consecutive.

The setting of the Station number has to be between 0 and 31.

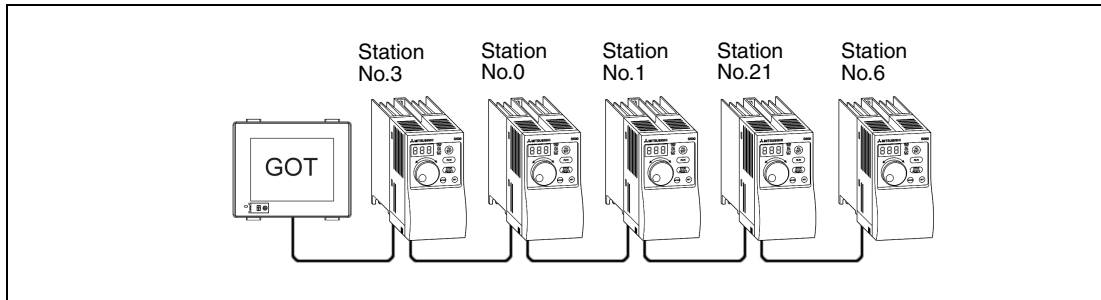


Fig. 7: Examples of station number setting

6.1 Indirect Specification

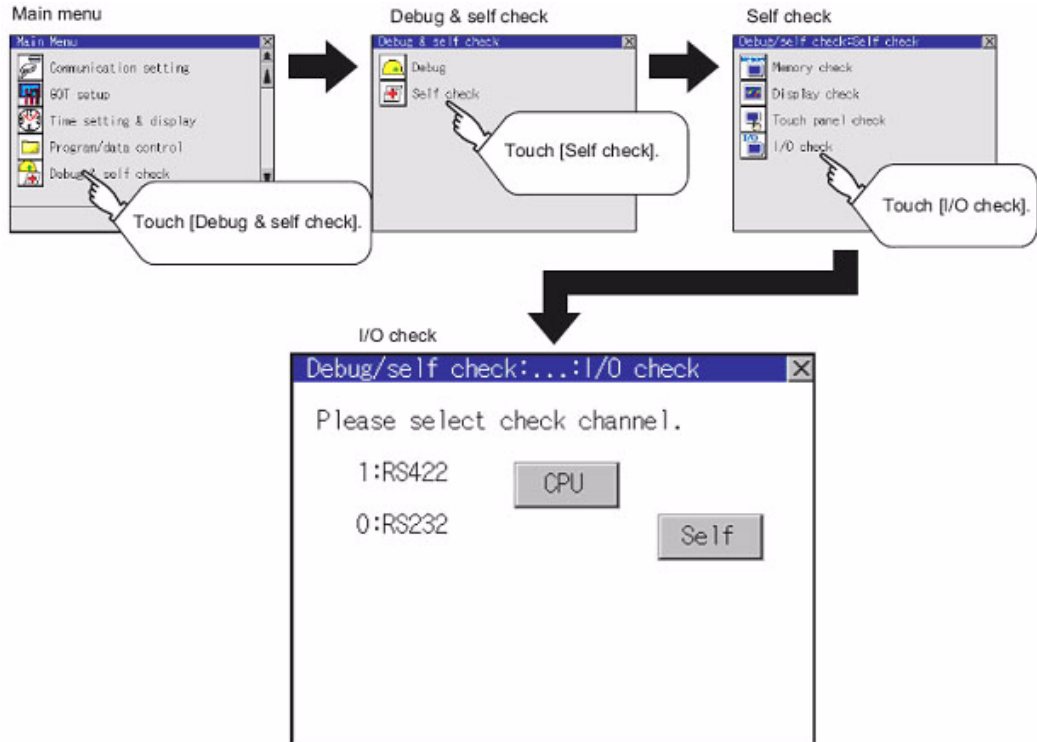
When setting the station number indirectly, the station number of the inverter can be changed using the 16-bit GOT internal data register (GD10 to GD25). When specifying the station No. from 100 to 155 on GT Designer 2, the value within GD10 to GD25 is equal to the station No.

| Specification station No. | Compatible Device | Setting range |
|---------------------------|-------------------|---|
| 100 | GD10 | 0 to 31 If the associated device contains a value outside this range an error (dedicated device is out of range) will occur. |
| 101 | GD11 | |
| 102 | GD12 | |
| 103 | GD13 | |
| 104 | GD14 | |
| 105 | GD15 | |
| 106 | GD16 | |
| 107 | GD17 | |
| 108 | GD18 | |
| 109 | GD19 | |
| 110 | GD20 | |
| 111 | GD21 | |
| 112 | GD22 | |
| 113 | GD23 | |
| 114 | GD24 | |
| 115 | GD25 | |

Tab. 7: Specification of the station number

7 Confirm Communication

Before downloading project data to the GOT, the I/O Check function can be used to verify that the GOT is communicating properly with the PLC. After pressing the “CPU” button, if no error is shown, communication has been set up correctly.



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