GOT1000

GT1020/GT1030 to FR-F700 Inverter

Start-up Guide

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Version A

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 grafical operator terminal or the inverter until you have read through the correrponding 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.

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), Sections 37.1 to 37.6
- 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.

Table of Contents

1 Overview

This document provides a simple guide to setting up the GT1020 or GT1030 Graphic Operation Terminal (GOT) hardware and firmware for use with an FR-F700 Inverter.

2 Hardware Introduction

The GT1020 and GT1030 are monochrome, 3-color backlight, two communication channel GOT1000 Series touch panel interfaces used for capturing user input to a system.

It should be noted that not all products from the GT1020 or GT1030 range are compatible with a FREQROL inverter connection. Compatible products are identified in the table below:

Model		Size	Backlight Colors	Comm. IF	Power
GT1020	-LBD	3.7” 160 x 64 dot	Green/Orange/Red	RS422	24 V DC
	-LBDW		White/Pink/Red		
GT1030	-LBD	4.5” 288 x 96 dot	Green/Orange/Red		
	-LBDW		White/Pink/Red		

Tab. 1: *Specifications of the operator Terminals*

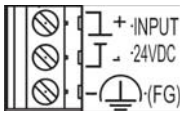
For new GT1020 and GT1030 units, included in the box should be the following items:

- (A) GT1020/GT1030
- (B) 1 PLC Communication Connector
- (C) 1 rubber Panel Mounting Packing
- (D) 4 Panel Mounting Brackets

3 Cabling

Power

The applicable GT1020/GT1030 GOTs require an external 24V DC power supply to be connected to the Power Terminal on the back of the GOT.



Communication

For the GT1020/GT1030 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.

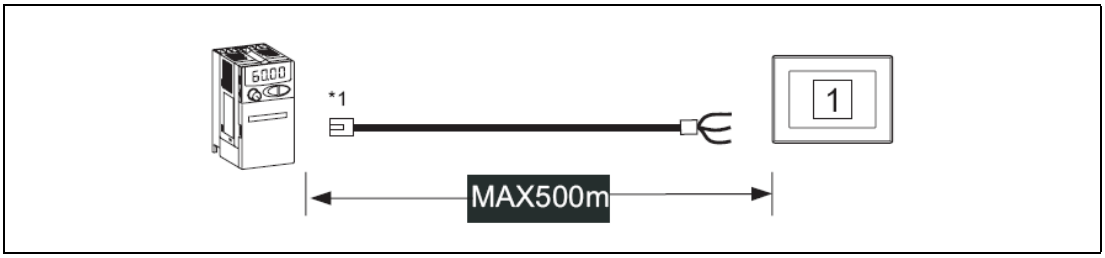


Fig. 1: *One inverter connection (PU port connection)*

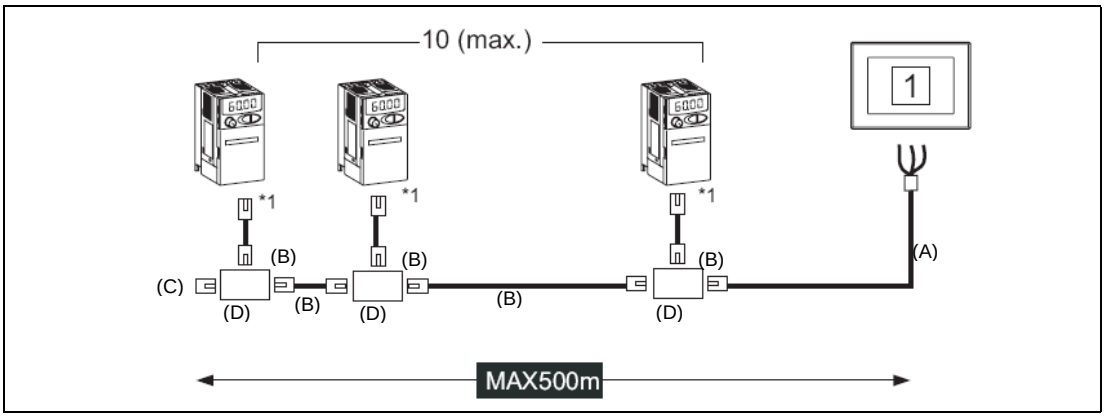
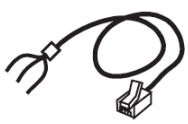
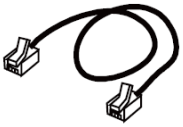


Fig. 2: *Multi-drop connection (PU port connection)*

*1 Connect to the PU port of the inverter.

Discription to Fig. 2:

	A	B	C	D
Detailled view				
Standard	RS422	RS422	RS422	RS422
Meaning	Between inverter and GOT (to be made by user)	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.

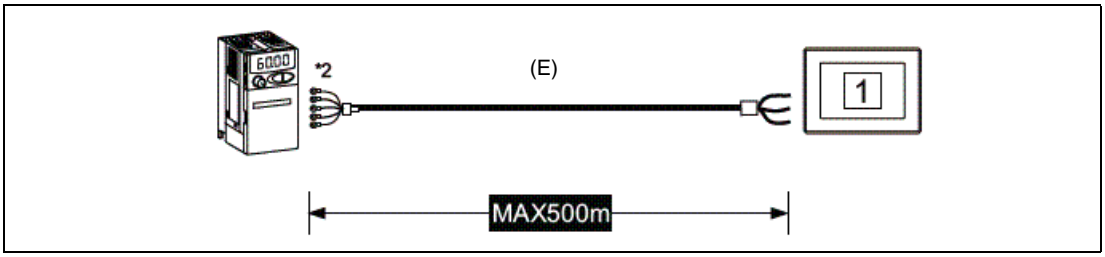


Fig. 3: *One inverter connection (to inverterRS485 port)*

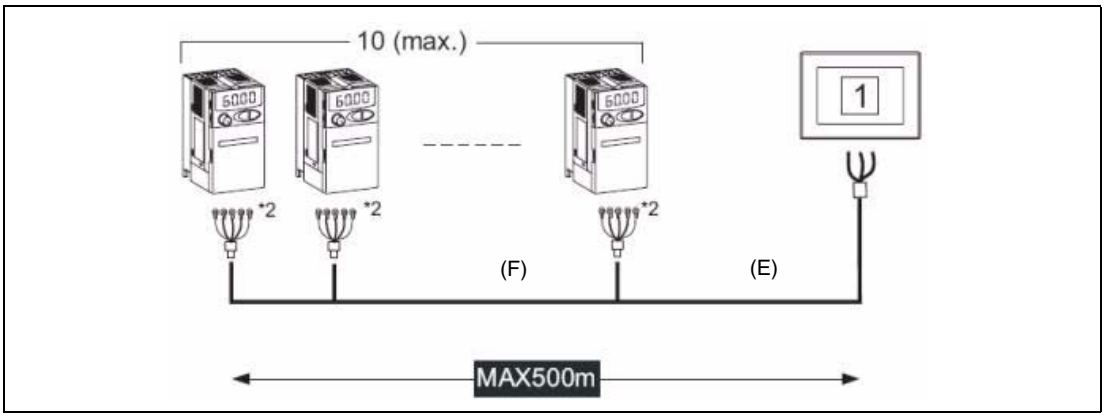
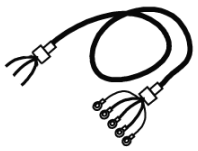
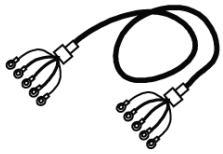


Fig. 4: *Multi-drop connection (to inverterRS485 port)*

*2 Connect to Terminal block.

Discription to Fig. 3 and Fig. 4:

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

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

Distributor side (Modular connector)			Cable connection and signal direction	Inverter side or discributor side (Modular connector)		
Pin layout①	Signal name	Pin No.		Pin No.	Signal name	Pin layout①
PU port 1 8 RJ-45 plug (male)	SDA	5		5	SDA	PU port 1 8 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 layout①	Signal name	Pin No.	
PU port 1 8 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 (terminal block)	Cable connection and signal direction	Inverter side RS485 terminal block (built into the inverter)	
Signal name		Terminal Name	Terminal block name
SDA		RDA1 (RXD+)	RXD
SDB		RDB1 (RXD1–)	
RDA		SDA1 (TXD1+)	TXD
RDB		SDB1 (TXD1–)	
SG		SG(GND)	VCC
RSA			
RSB			
CSA			
CSB			

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

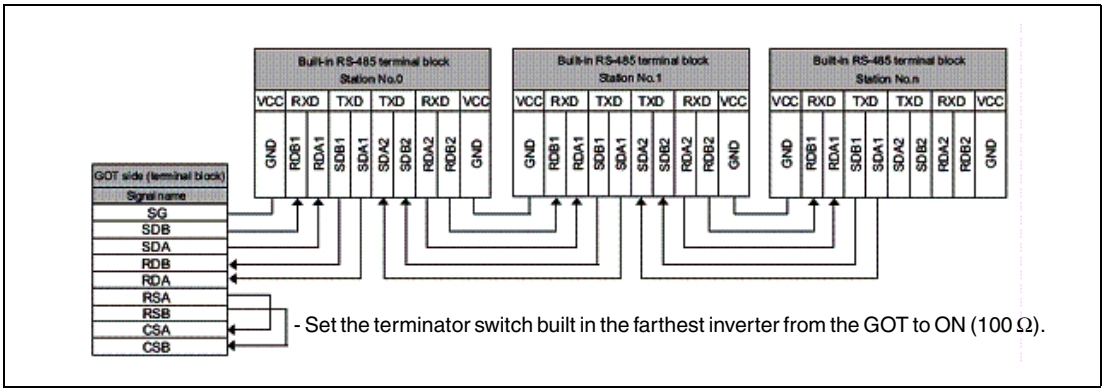


Fig. 5: *Connection diagramm for Mulit-drop*

3.2 GOT Terminals

The GT1020/GT1030 is fitted with screw terminals, use a small flathead screwdriver to secure the wires within the PLC Communication Connector.

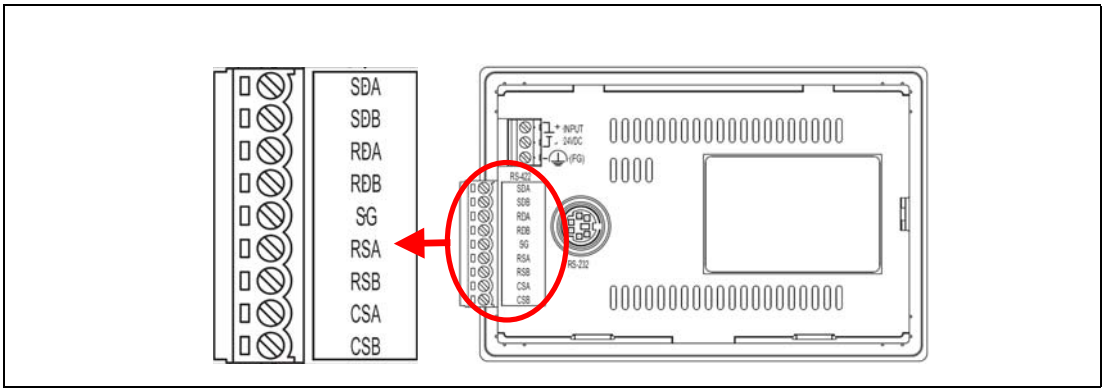


Fig. 6: *Terminal points in detail*

3.3 Programming Cables

The GT1020 and GT1030 come pre-installed with an OS and FX communication driver, but without any project data. To download a project from a PC running GT Designer2 to the GOT, a programming cable is required that connects to the RS-232C 6-pin Mini-DIN port on the back of the GOT. It is recommended to use a shielded USB A-type to Mini-B type cable with a ferrite core paired with the GT10-RS2TUSB-5S, but any RS-232C programming cable for the Q-Series will also work fine. A diagram of both is shown below.

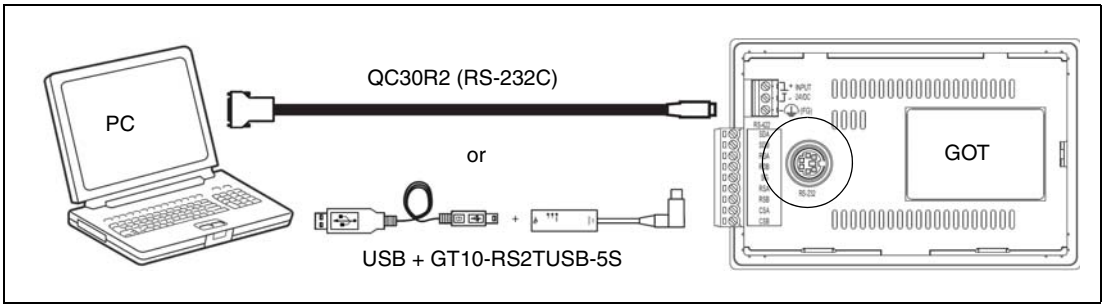


Fig. 7: *Connection diagram*

NOTE

Note that using the GT10-RS2TUSB-5S will require a virtual USB COM port driver to be installed on the PC. The COM port number can be automatically or manually assigned so that it does not overlap with the existing COM port numbers assigned on that PC. When using a Q-Series programming cable, the COM port number already assigned to the RS-232C interface of the PC will have to be checked.

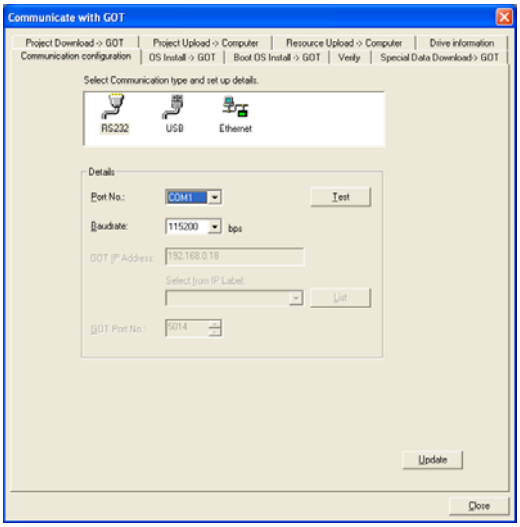
4 GT Designer 2

(Version 2.73 or later)

To make sure the GT1020/GT1030 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.

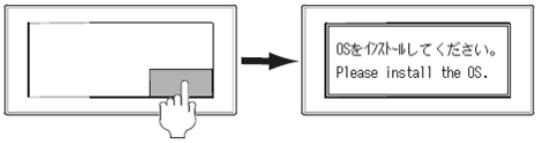
Launch the latest copy of GT Designer2 and start a new project for the corresponding GOT model (GT1020 or GT1030) with the “FREQROL500/700” Inverter Type. Select ***Yes*** to set the Communication Setting and make sure the Standard I/F-1 CH No. is set to 1 before selecting ***OK***. The “Screen Property” 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 “RS232” and the corresponding “Port No.” that connects the PC to the GOT. 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.



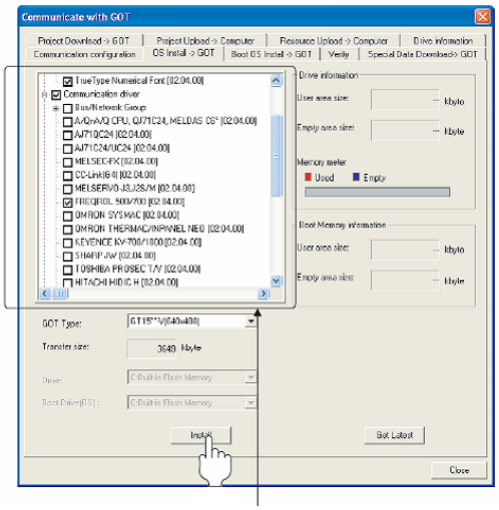
Installing OS and communication drivers

To access the OS installation mode of the GT1020/GT1030, switch the GOT power from OFF to ON, while holding the bottom right corner of the touch screen (in horizontal layout), illustrated in the figure at the right.



While the “Please install the OS” screen is displayed, go to the “OS Install -> GOT” tab in the “Communicate with GOT” window of GT Designer2 and select “Standard monitor OS” and select ‘FREQROL 500/700’ from the ‘Communication Driver’ menu. 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.

Make a selection like viewed on the right side under communication driver.



Select the following under communication driver

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	0-31		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 checkSuspension
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-4850	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 0-31.

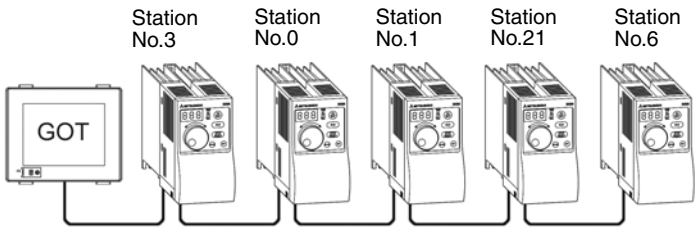


Fig. 8: *Examples of station number setting*

6.1 Indirect Specification

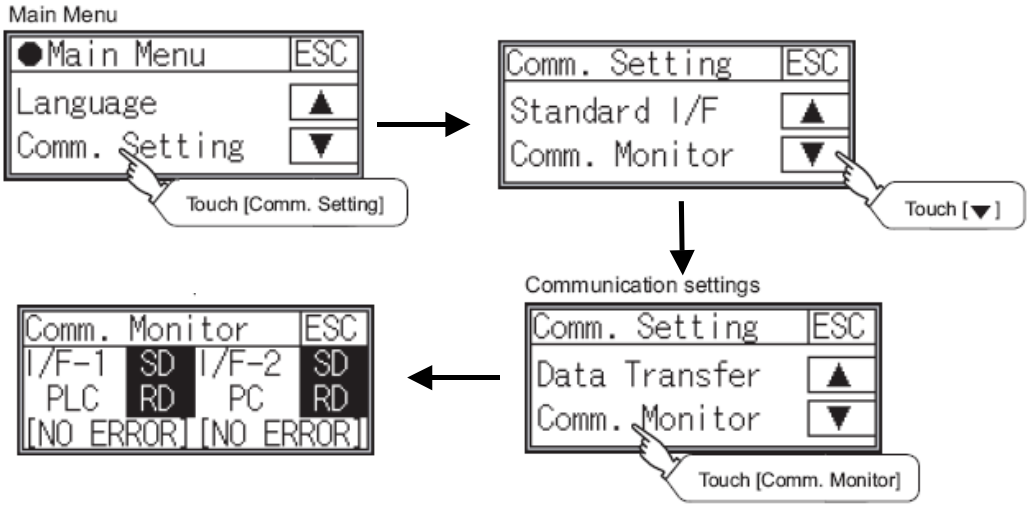
When setting the station number indirectly, the station number of the inverter can be changed using the 16-bit GOT internal data register (GD10 to GD25). When specifying the station No. from 100 to 155 on GT Designer 2, the value within GD10 to GD25 is equal to the station No.

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: *Secification of the station number*

7 Confirm Communication

The communication monitoring is a function that checks whether the GOT can communicate with the Inverter. If no error is shown, communication has been set up correctly.



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