GOT1000

GT1150/GT1155 to FR-A700 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-A700 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)
- Inverter FR-A 700 Instruction Manual (Applied) (IB(NA)-0600257ENG-B)

CAUTION:

This Start-up Guide includes a brief summary of the main specifications of the GOT1000 graphic operation terminals and the FR-A700 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 GT1150 or GT1155 Graphic Operation Terminal (GOT) hardware and firmware for use with an FR-A700 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 Communication)	24 V DC
GT1155	-QSBD		STN, 256 colors		
	-QTBD		TFT, 256 colors		

Tab. 1: *Specifications of the operator terminals*

A

B

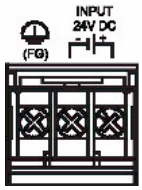
For new GT1150 and GT1155 units, included in the box should be the following items:

- (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.

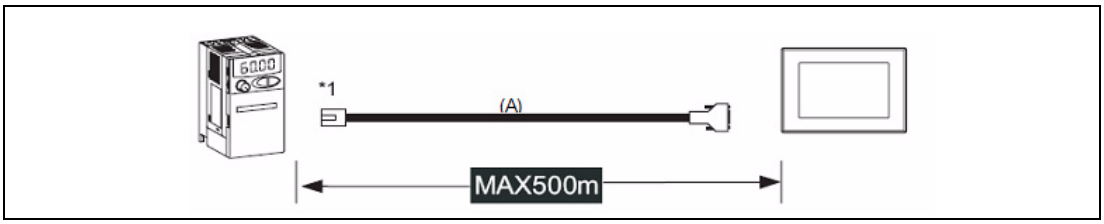


Fig. 1: *One inverter connection (PU port connection)*

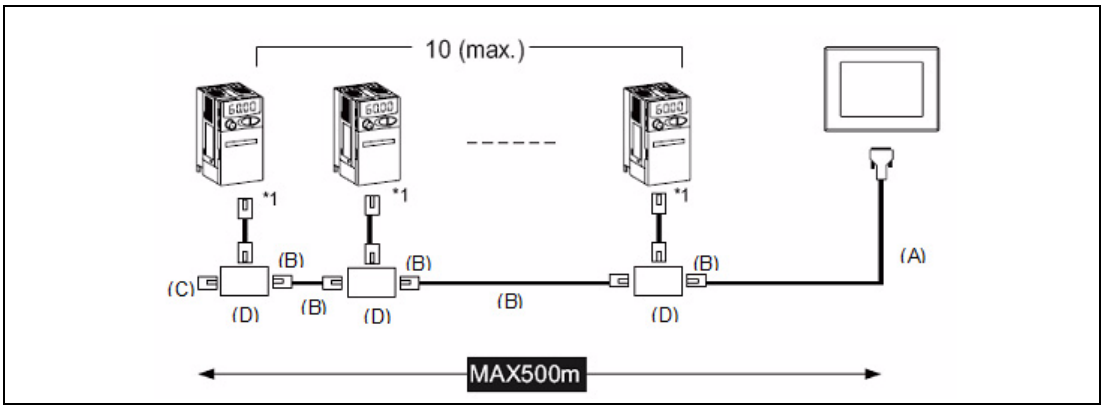
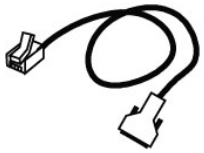
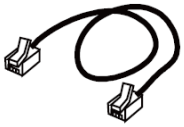


Fig. 2: *Multi-drop connection (PU port connection)*

*1 Connect to the PU port of the inverter.

Discription to Fig. 1 and Fig. 2:

	A	B	C	D
Detailled 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.

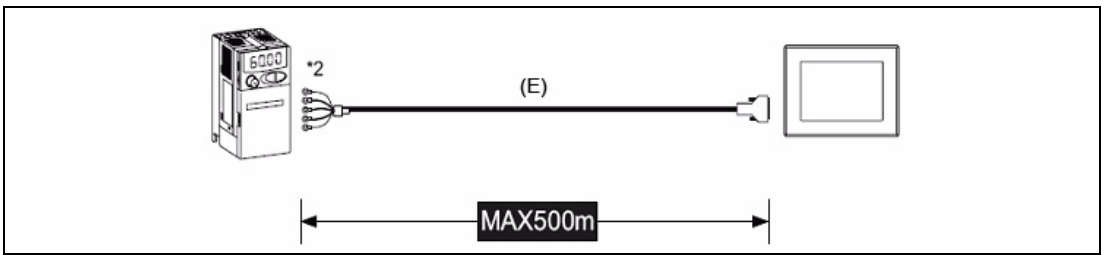


Fig. 3: *One inverter connection (to inverter RS485 port)*

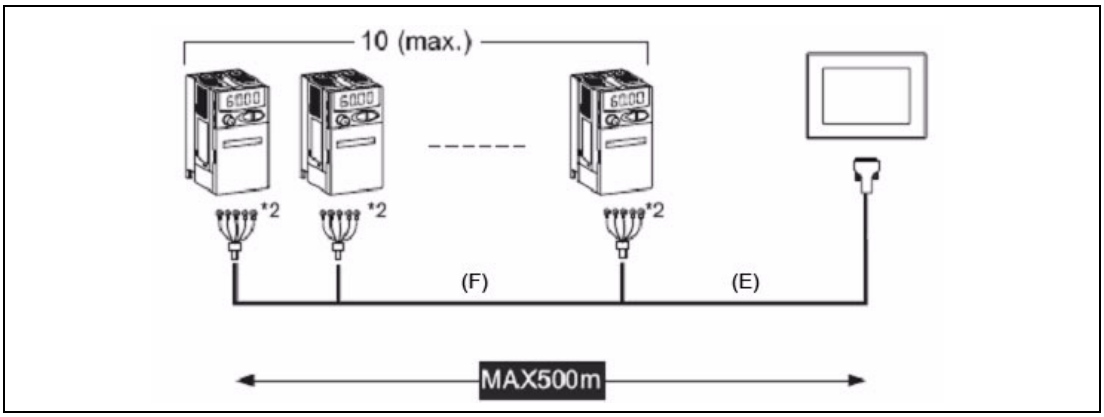
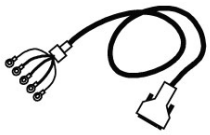
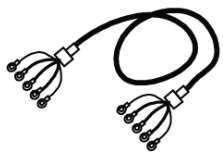


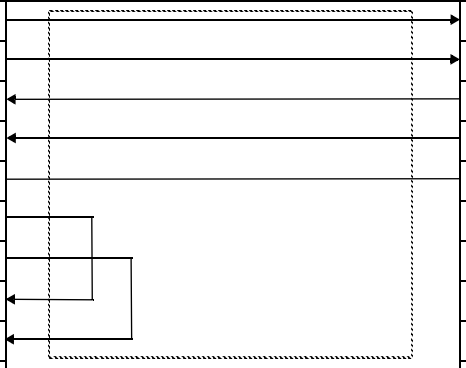
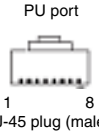
Fig. 4: *Multi-drop connection (to inverter RS485 port)*

*2 Connect to Terminal block.

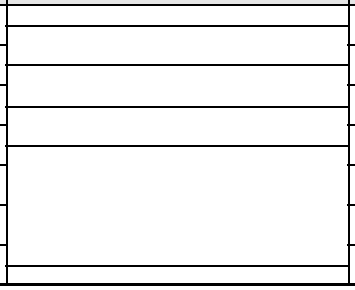
Discription to Fig. 3 and Fig. 4:

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

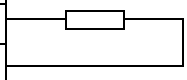
3.1 GOT and Inverter Wiring Diagrams

GOT side		Cable connection and signal direction	Inverter side or discributor side (Modular connector)		
Signal name	Pin No.		Pin No.	Signal name	Pin layout①
SDA	1		3	RDA	
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		–	–	
FG	—				

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
	SDA	5		5	SDA	
	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.	
	SDA	5	
	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)*

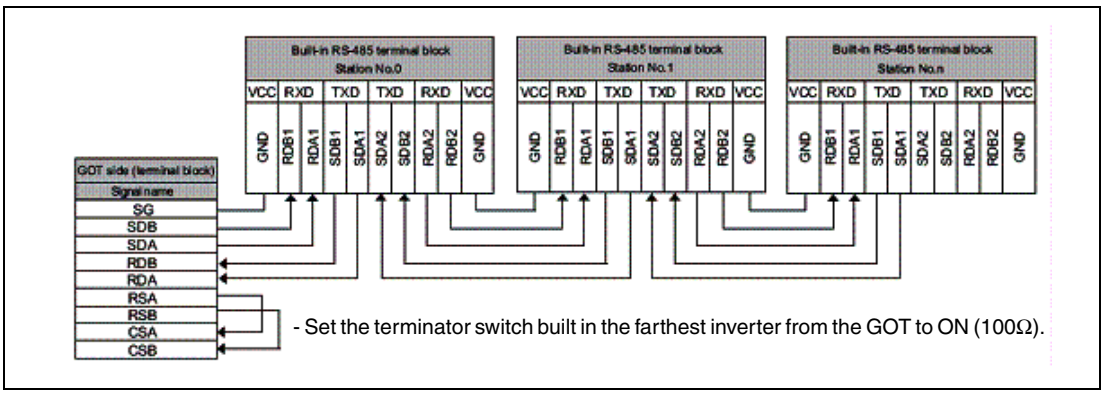


Fig. 5: *Connection diagramm for Multi-drop*

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.

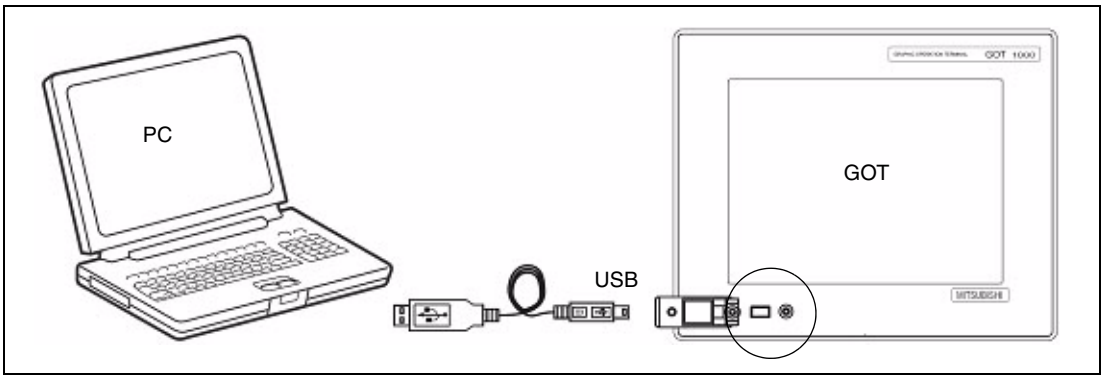


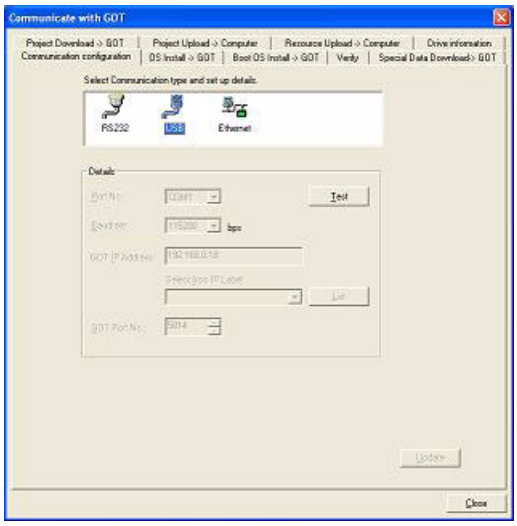
Fig. 6: *Connection diagram*

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.

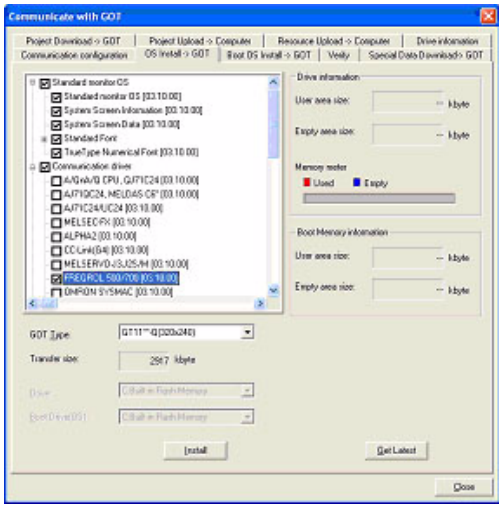
Launch the latest copy of GT Designer2 and start a new project for the GOT model “GT11**-Q(320x240)” with the “FREQROL500/700” Inverter Type. Select **Yes** to set the Communication Setting and make sure the Standard I/F-1 CH No. is set to 1 before selecting **OK**. The “Screen Property” window that 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.

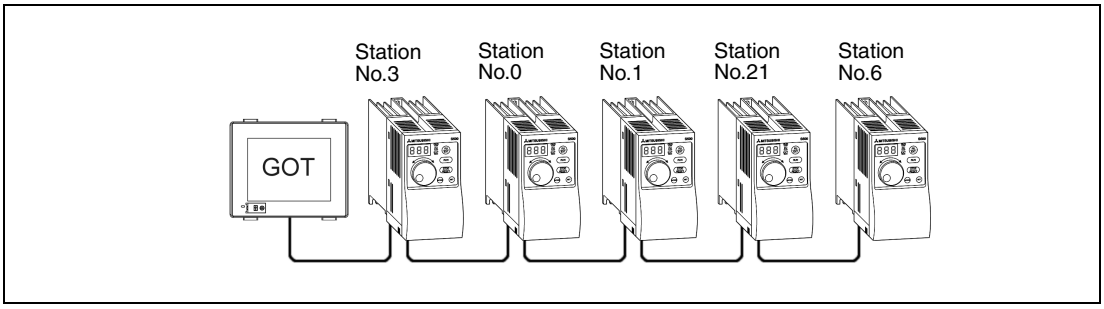


Fig. 7: *Examples of station number setting*

6.1 Indirect Specification

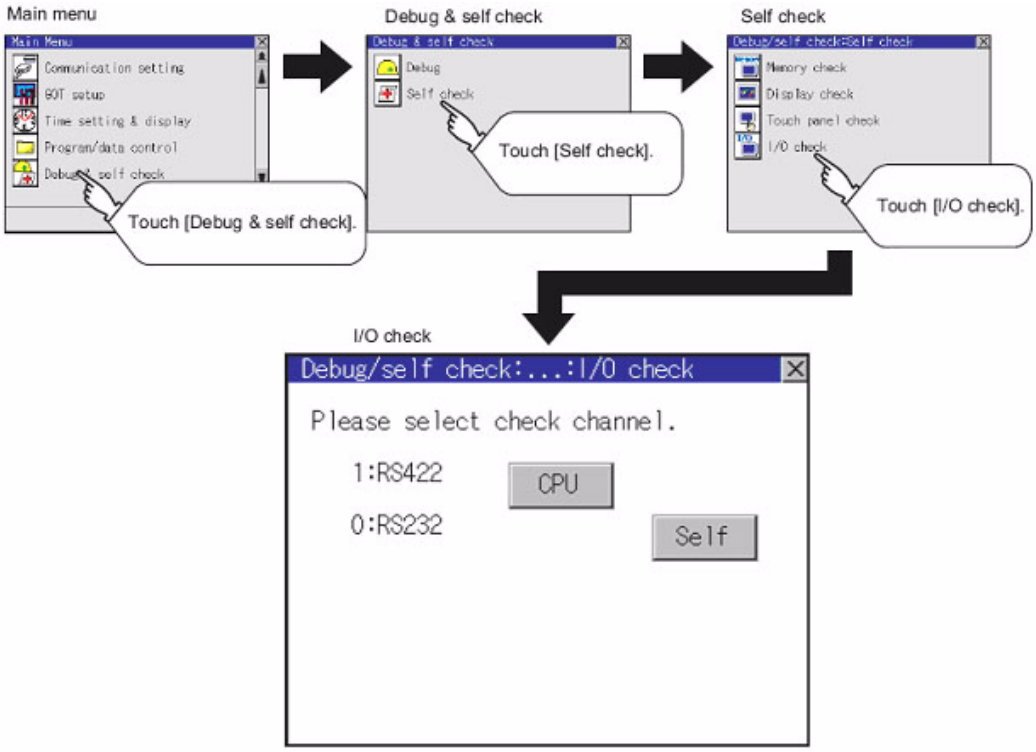
When setting the station number indirectly, the station number of the inverter can be changed using the 16-bit GOT internal data register (GD10 to GD25). When specifying the station No. from 100 to 155 on GT Designer 2, the value within GD10 to GD25 is equal to the station No.

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: *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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