

Remote Keypad "TP-E1U"

Thank you for purchasing the remote keypad "TP-E1U." Using this keypad allows you to operate the FRENIC-MEGA/Mini/Ace/VP/Lift series of inverters remotely and locally. To operate the inverter remotely, use a remote operation extension cable (CB-5S, CB-3S or CB-1S) or commercially available LAN cable to connect the remote keypad to the inverter. You can run and stop the motor, specify the function codes, monitor the running status, and perform data copying (read the function code data from an inverter, copy (write) it into another inverter, or verify it).

1. Acceptance Inspection

Check the following:

- (1) The package contains a remote keypad and its installation manual (this book).
- (2) There have been no problems during transportation. In particular, no parts are damaged or have fallen out of place nor are there any dents on the body.
- (3) The model name "TP-E1U" is inscribed on the back of the remote keypad as shown in Figure 1.
- (4) In case of using this keypad for the FRENIC-Ace / VP / Lift series, check the stamps under the model name, as shown in Figure 1.

The model which has "D" to "Z" of the first character of the stamps allows to be applied for FRENIC-Ace / VP / Lift series.

Note that the data copy function is not available in FRENIC-Ace / VP / Lift series if the first character of the stamps is "A" to "C".

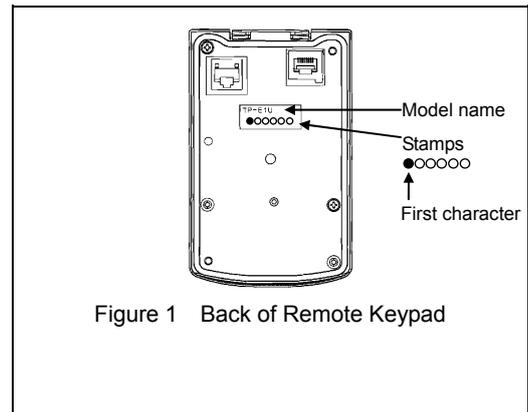


Figure 1 Back of Remote Keypad

If you suspect the product is not working properly or if you have any questions about your product, contact your Fuji Electric representative.

2. Inverters with which the Remote Keypad Interfaces

The remote keypad "TP-E1U" interfaces with the following Fuji inverters:

Type of inverter	Series name	Remarks
FRN □□□G1□ - □□	FRENIC-MEGA	
FRN □□□□ C2□ - □□	FRENIC-Mini	
FRN □□□□ E2□ - □□	FRENIC-Ace	The data copy function is valid in the remote keypad which has the first character of the stamps "D" to "Z" under the model name on the back of the keypad. (Refer in Figure 1)
FRN □□□□ F2□ - □□	FRENIC-VP	
FRN □□□□ LM2□ - □□	FRENIC-Lift	

3. Installation and Connection

To mount the remote keypad to the panel and other devices except inverters, use a remote operation extension cable (CB-5S, CB-3S or CB-1S) or commercially available LAN cable.

- (1) Parts required for connection

In addition to the inverter, the following parts are required.

Parts name	Model	Remarks
Remote operation extension cable (Note 1)	CB-5S, CB-3S and CB-1S	Three types available in length of 5 m, 3 m, and 1 m
Fixing screw	M3×□ (Note 2)	Two screws (prepared by the customer)

(Note 1) When using a commercially available LAN cable, select a 10BASE-T/100BASE-TX straight type cable compliant with US ANSI/TIA/EIA-568A Category 5. (Less than 20 m)

Recommended LAN cable (for 1 m) Manufacturer: Sanwa Supply Inc.
 Model : KB-10T5-01K
 KB-STP-01K (Shielded LAN cable, EMC-compliant)

(Note 2) Use screws with the length suitable for the wall thickness of the panel. (Please refer to Figure 2.3)

- (2) Installation procedure

After finishing the wiring for the inverter, proceed to the following steps. Turn OFF the inverter power.

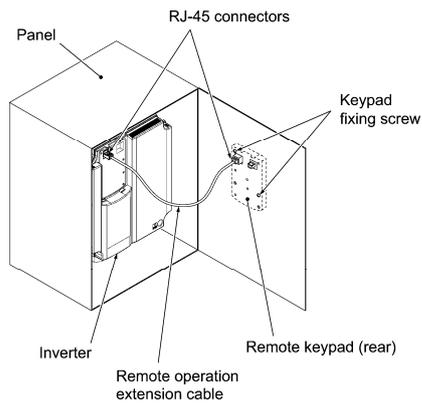


Figure 2.1 Mounting a Remote Keypad on the Panel

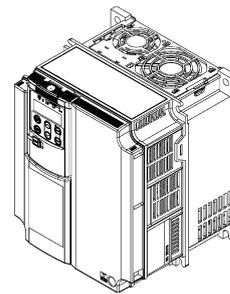


Figure 2.2 Mounting a Remote Keypad on the inverter
(In case of FRENIC-MEGA series)

■ Mounting the remote keypad on the panel (Figure 2.3)

- ① Cut the panel out for a single square area and perforate two screw holes on the panel wall as shown in Figure 2.3.

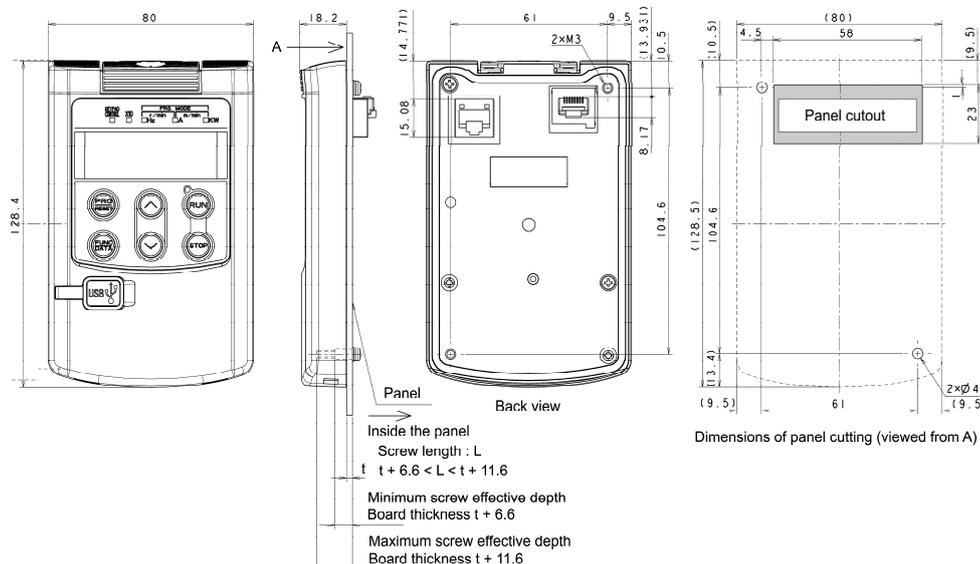


Figure 2.3 External Dimensions, Dimensions of Square Cut-out and Screw Holes

- ② Mount the remote keypad onto the panel wall with 2 screws.
(Recommended tightening torque: 0.7 N·m)
- ③ Using a remote operation extension cable or commercially available LAN cable, connect the remote keypad to the inverter (insert one end of the cable into the RJ-45 connector on the remote keypad and the other end into that on the inverter).

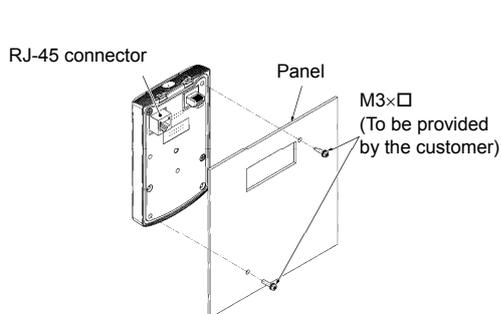


Figure 2.4 Mounting the Remote Keypad

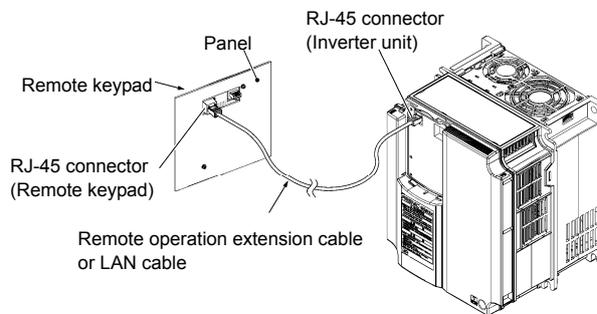


Figure 2.5 Connecting the Remote Keypad to the Inverter with the Remote Operation Extension Cable or LAN Cable (In case of FRENIC-MEGA, Lift series)

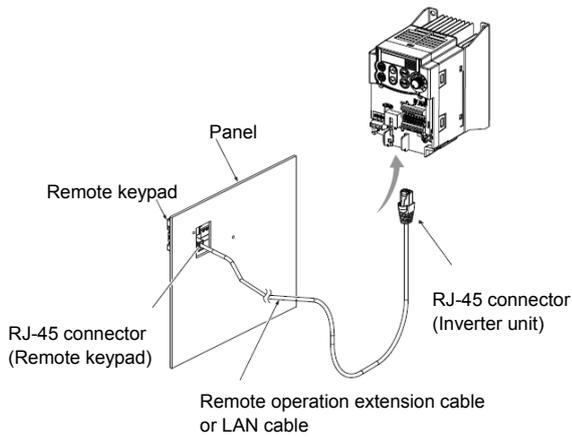


Figure 2.6 Connecting the Remote Keypad to the Inverter with the Remote Operation Extension Cable or LAN Cable(In case of FRENIC-Mini series)

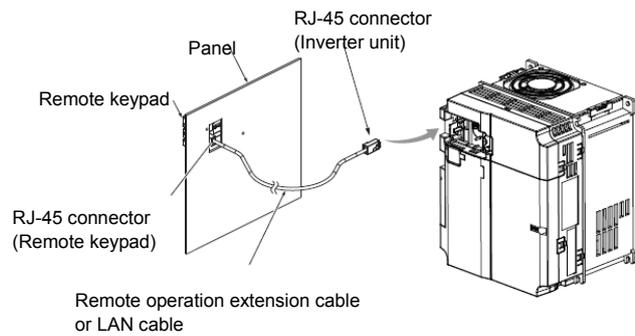


Figure 2.7 Connecting the Remote Keypad to the Inverter with the Remote Operation Extension Cable or LAN Cable(In case of FRENIC-Ace,VP series)

■ Mounting the remote keypad on the inverter (Figure 2.8)

Mount the remote keypad on the inverter unit in the direction of arrows ① and ②. (In case of FRENIC MEGA series)

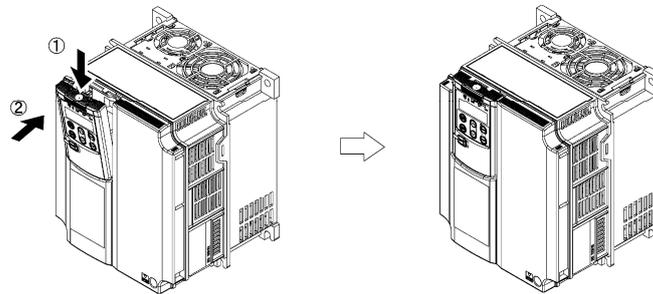


Figure 2.8 Mounting the remote keypad on the inverter (In case of FRENIC-MEGA series)

4. General Specifications

(1) Operating environment

For FRENIC-MEGA or Mini series, refer to their Instruction Manual, Chapter 2, Section 2.1 "Operating Environment." And for FRENIC-Ace series, refer to its Instruction Manual, Chapter 1, Subsection 1.3.1 "Operating Environment."

(2) Operation method

Refer to the FRENIC-MEGA, Mini, Ace, VP or Lift series Instruction Manual, Chapter 3 "OPERATION USING THE KEYPAD." For data copy, refer to the following description.

(3) Copying data -- Menu #7 "Data Copying" --

Menu #7 "Data Copying" is used to read function code data out of an inverter for storing it in the keypad or writing it into another inverter. It is also used to verify the function code data stored in the keypad with the one configured in the inverter. The keypad serves as a temporary storage media.

In addition, using Menu #7 allows you to store the running status information in the keypad, detach the keypad from the inverter, connect it to a PC running FRENIC Loader at an office or off-site place, and check the inverter running status without removing the inverter itself.

To store the inverter running status information into the keypad, use "Read data" (*r-READ*) or "Read inverter running information" (*r-CHECK*) function. For details on how to connect the keypad to a PC and check the inverter running status information stored in the keypad, refer to the FRENIC Loader Instruction Manual.

Figure 3 shows the menu transition in Menu #7 "Data Copying." The keypad can hold function code data for a single inverter.

Table 1 below lists details of the data copying functions.

Note It is not possible to copy the function code data between different type of inverter (e.g. Mini series and Ace series). Error is blinking, if the data is copied between different type of inverter.

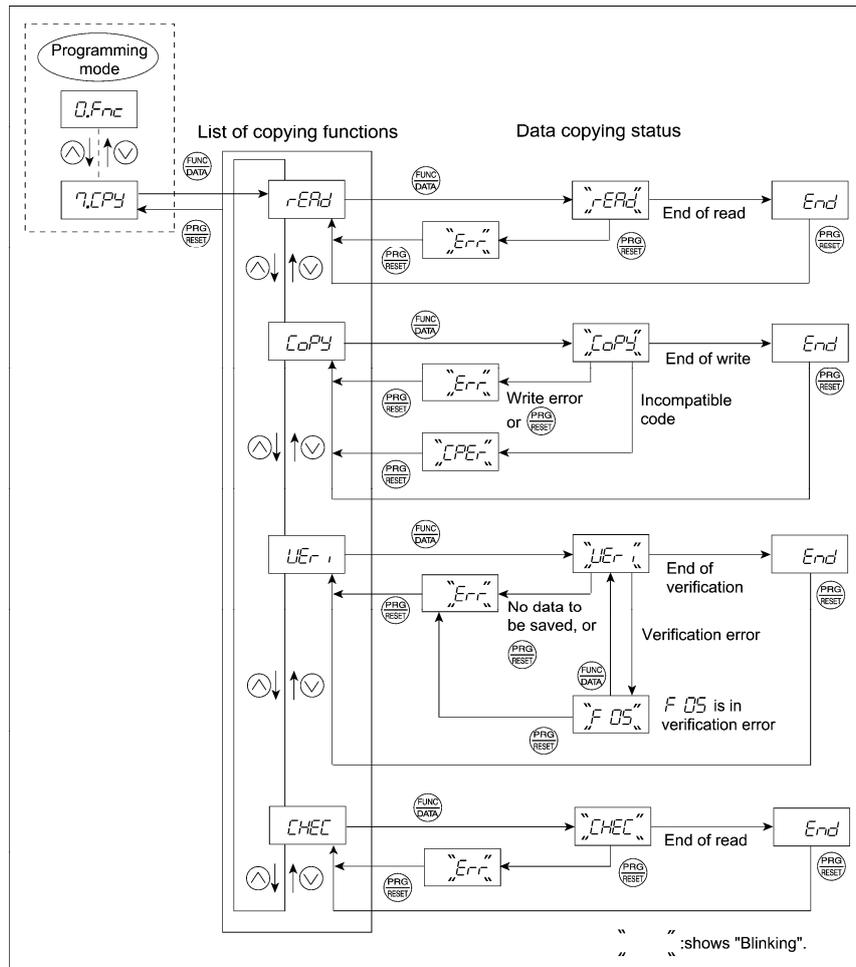


Figure 3 Menu Transition in Menu #7 "Data Copying"

Basic keying operation

- (1) Turn the inverter ON. It automatically enters Running mode. In that mode, press the key to switch to Programming mode. The function selection menu appears.
- (2) Use the and keys to display "Data Copying" (7.CPY).
- (3) Press the key to proceed to the list of data copying functions (e.g. rEAd).
- (4) Use the and keys to select the desired function, then press the key to execute the selected function. (e.g. rEAd will blink.)
- (5) When the selected function has been completed, End appears. Press the key to return to the list of data copying functions. Press the key again to return to the menu.

Table 1 shows the details of the data copying functions.

Table 1 List of Data Copying Functions

Display on LED Monitor	Function	Description
<i>r-EPD</i>	Read data	Reads the function code data out of the inverter's memory and stores it into the keypad memory. Also reads out inverter's current running status information which can be checked by FRENIC Loader, such as information of I/O, system, alarm, and running status. Pressing the  key during a read operation (when <i>r-EPD</i> is blinking) immediately aborts the operation and displays <i>Err</i> (blinking). If this happens, the entire contents of the memory of the keypad will be completely cleared.
<i>CPY</i>	Write data	Writes data stored in the keypad memory into the inverter's memory. If you press the  key during a write operation (when <i>CPY</i> is blinking), the write operation that is under way will be aborted and <i>Err</i> will appear (blinking). If this happens, the contents of the inverter's memory (i.e., function code data) have been partly updated and remain partly old. Therefore, do not operate the inverter. Instead, perform initialization or rewrite the entire data. If this function does not work, refer to "■ If data copying does not work".
<i>VER</i>	Verify data	Verifies (collates) the data stored in the keypad memory with that in the inverter's memory. If any mismatch is detected, the verify operation will be aborted, with the function code in disagreement displayed blinking. Pressing the  key again causes the verification to continue from the next function code. Pressing the  key during a verify operation (when <i>VER</i> is blinking) immediately aborts the operation and displays <i>Err</i> (blinking). <i>Err</i> appears blinking also when the keypad does not contain any valid data.
<i>PrdF</i>	Enable Data protection	Enables the Data protection of data stored in the keypad's memory. In this state, you cannot read any data stored in the inverter's memory, but can write data into the memory and verify data in the memory. Upon pressing the  key the inverter immediately displays <i>Err</i> .
<i>CHEC</i> (*)	Read inverter running information	Reads out inverter's current running status information that can be checked by FRENIC Loader, such as information of I/O, system, alarm, and running status, excluding function code data. Use this command when the function code data saved in the PC should not be overwritten and it is necessary to keep the previous data. Pressing the  key during a read operation (<i>CHEC</i> blinking) immediately aborts the operation and displays <i>Err</i> (blinking).

-  **Tip** To get out of the error state indicated by a blinking *Err* or *CPER*, press the  key.
When *CPER* is blinking, it indicates that the function code number does not match. But in this case the function codes which are consistent completely can continue copying after pressing  key.
While *CPER* is blinking, pressing  key changes display to flashing of *Err*.
- (*) Ace(E2S) series of ROM version number less than 500 or Lift(LM2) series does not support "*CHEC*".

■ Data protection

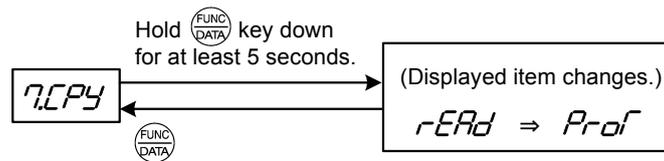
You can protect data saved in the keypad from unexpected modifications. Enabling the data protection that was disabled changes the display *r-EPD* on the "Data Copying" function list to *PrdF*, and prohibits data reading from the inverter.

To enable or disable the data protection, follow the steps below.

- (1) Select the "Data Copying" (*CPY*) on the function selection menu in Programming mode.
- (2) When the *CPY* is displayed, holding the  key down for at least 5 seconds alternates data protection status between enabled or disabled.

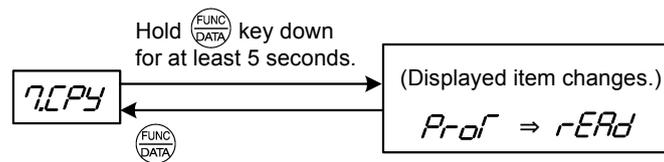
 **Note** For switching the data protection status, be sure to hold the  key down for at least 5 seconds. Once the key is released within 5 seconds, press the  key to go back to the *CPY* display and perform the keying operation again.

- Disabling the enabled data protection



While running the "Data Copying" ($7.CPY$) function, holding down the $[FUNC DATA]$ key for 5 seconds or more displays $rERd$ after displaying $Prof$ for 5 seconds to complete disabling the data protection.

- Enabling the disabled data protection



While running the "Data Copying" ($7.CPY$) function, holding down the $[FUNC DATA]$ key for 5 seconds or more displays $Prof$ after displaying $rERd$ for 5 seconds to complete enabling the data protection.

The followings are restrictions and special notes concerning "Data Copying."

■ If data copying does not work

Check whether Err or $CPER$ is blinking.

- (1) If Err is blinking (a write error), any of the following problems has arisen:
 - No data exists in the keypad memory. (No data read operation has been performed since shipment, or a data read operation has been aborted.)
 - Data stored in the keypad memory contains any error.
 - The models of copy source and destination inverters are different.
 - A data write operation has been performed while the inverter is running.
 - The copy destination inverter is data-protected. (Function code F00 = 1)
 - In the copy destination inverter, the "Enable write from keypad" command $WE-KP$ is OFF.
 - A Read data operation has been performed for the inverter whose data protection was enabled.
- (2) If $CPER$ is blinking, any of the following problems has arisen:
 - The function codes stored in the keypad and ones registered in the inverter are not compatible with each other. (Either of the two may have been revised or upgraded in a non-standard or incompatible manner. Consult your Fuji Electric representative.)
 - If the inverter type is the same
 - $CPER$ has occurs by the software versions mismatch.
 - Pressing $[FUNC DATA]$ key can continue copying. But added function codes according to upgrade can not be copied.
 - If the inverter type is different or special products for special customers
 - Do not copy since the function codes are not compatible between inverters.
- (3) Err is blinking, when the mismatch of the number of function code for customizable logic occurs at UER (Verify): (FRENIC-Ace, VP or Lift series has Err detecting function.)
 - In FRENIC-Ace series, Err is blinking if a customer will copy the function codes relating to customizable logic in an inverter which has the ROM version number 300 or later (has function codes for 200 steps) to TP-E1U and verify whether they matches the codes of another inverter which has the ROM version number less than 300 (has function codes for 100 steps) and vice versa. In FRENIC-VP or Lift series, it works similar behaviour regardless of the ROM version.
- (4) Some models have the password function. If the password has been set, it prevents the copy operation. For more information, please refer to the instruction manual or user's manual for an each model.

(4) USB Connectivity

The keypad has a USB port (mini B connector) on its face. To connect a USB cable, open the USB port cover as shown below.



Connecting the inverter to a PC with a USB cable enables remote control from FRENIC Loader. On the PC running FRENIC Loader, it is possible to edit, check, manage, and monitor the function code data in real-time, to start or stop the inverter, and to monitor the running or alarm status of the inverter.

Note Do not connect or disconnect the USB cable to the USB port on the keypad during the data copying.

 For the instructions on how to use the FRENIC Loader, refer to the FRENIC Loader Instruction Manual (INR-SI47-1526□, INR-SI47-1549□-E) .

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