

Quick start guide for FR-CS82S and FR-CS84

Frequency inverter

Art. No.: 573555 UK, Version A, 11082020



CAUTION:
There is a risk to the life and health of the user if appropriate precautionary measures are not taken. The precautions can be found in the instruction manual of the frequency inverter FR-CS80. These and other manuals are available free of charge on the Internet. (<https://eu3a.mitsubishielectric.com>).



Further information

If you have any questions about the installation, programming and operation of the frequency inverter, please do not hesitate to contact your sales office or one of your sales partners. You can reach our technical support at the following number: +49 (0) 2102 103 7914

Wiring of power supply and motor

Terminal	Power supply	Motor connection	Earth	DC link choke, brake resistor, brake unit
230 V, 1~				
400 V, 3~				

Wiring of the main circuit

Use insulated blade terminals to connect the power supply and the motor.

Terminal	Description
R/L1, S/L2, T/L3 ①	Power supply connection
U, V, W	Motor connection
P/+ ②, PR	Connection for external brake resistor
P/+ ②, N/-	Connection for external brake unit
P/+ ②, P1	Connection for DC link choke
	PE

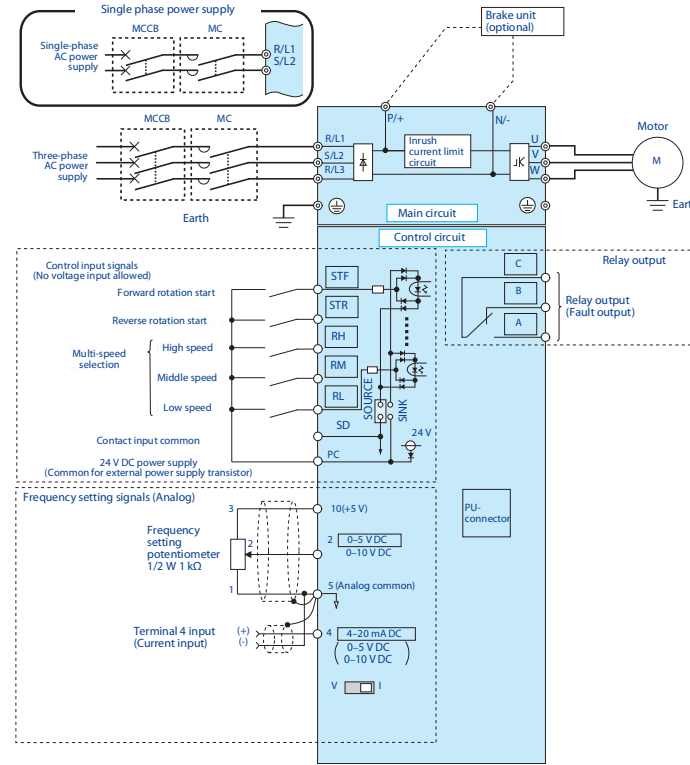
① L1 and N for single phase power supply.

② For single-phase frequency inverters, this terminal is marked with "+".

Wiring

Source logic

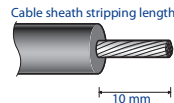
- ⊙ Main circuit terminals
- Control circuit terminals



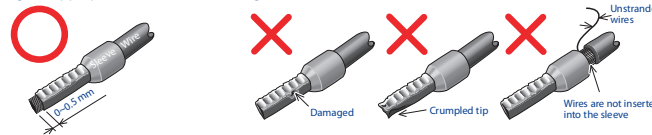
Wiring method

Power supply connection

- Strip off the sheath for the below length. If the length of the sheath peeled is too long, a short circuit may occur with neighboring wires. If the length is too short, wires might come off. Wire the stripped cable after twisting it to prevent it from becoming loose. In addition, do not solder it



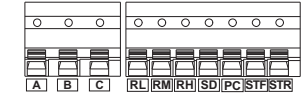
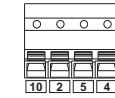
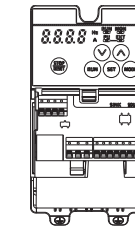
- Crimp the blade terminal. Insert wires to a blade terminal, and check that the wires come out for about 0 to 0.5 mm from a sleeve. Check the condition of the blade terminal after crimping. Do not use a blade terminal of which the crimping is inappropriate, or the face is damaged.



Blade terminals commercially available (as of February 2017)

Wiring of the control circuit

Recommended cable gauge: 0.3 to 0.75 mm²



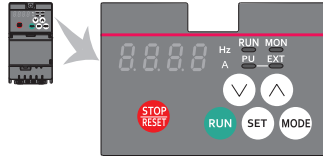
Input signals

Use a wire end ferrule and a cable for the connection to the terminals where the end is striped appropriately. Single-core cables can be connected directly to the terminals after removing the insulation.

Terminal	Description
STF	Forward rotation start signal
STR	Reverse rotation start signal
RH, RM, RL	Multi-speed selection
SD	Common terminal for the contact input terminal (sink logic). Common terminal (0V) for the 24 V DC power supply (terminal PC).
PC	24 V DC output and common terminal for control circuit inputs in source logic

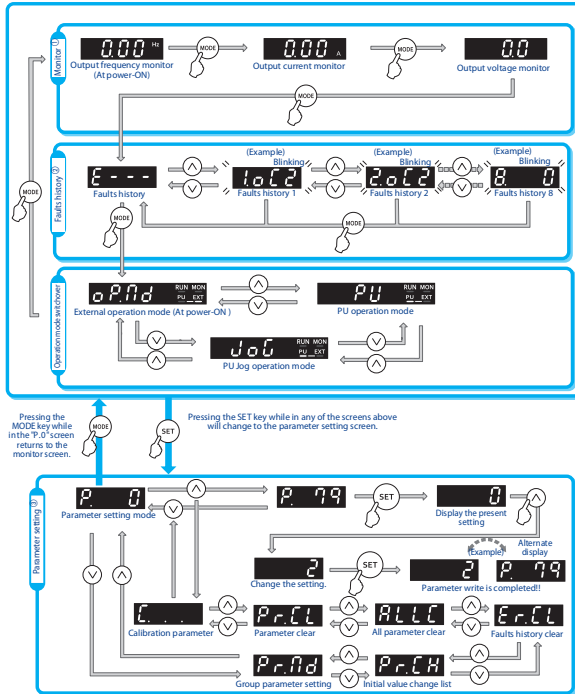
Terminal	Type	Description
10	Frequency setting power supply	Used as the power supply for an external device such as a frequency setting potentiometer or digital panel meter.
2	Frequency setting (voltage)	Inputting 0 to 5 V DC (or 0 to 10 V DC) provides the maximum output frequency at 5 V (or 10 V) and makes input and output proportional.
4	Frequency setting (current)	Inputting 4 to 20 mA DC (or 0 to 5 V, 0 to 10 V) provides the maximum output frequency at 20 mA and makes input and output proportional. This input signal is valid only when the AU signal is ON (terminal 2 input is invalid).
5	Frequency setting and analog outputs common	Terminal 5 represents the reference point (0 V) for all analog set-point values and for the analog output signal AM (voltage). The terminal is isolated from the reference potential of the digital circuit (SD).
10, 2	PTC input (PTC sensor)	Terminals 10 and 2 serve as an input for a PTC sensor (thermal motor protection).
A, B, C	Relay output	A changeover contact output that indicates that an inverter's protective function has been activated and the outputs are stopped.
RS-485	PU interface	The PU connector supports the RS-485 communication.

Components of the operation panel



Appearance	Name	Description
	STOP/RESET key	Stops the operation commands. Used to reset the inverter when the protective function is activated.
	UP/DOWN key	Used to change the setting of frequency or parameter, etc. The following operations are also enabled: • Displaying the present setting during calibration • Displaying a fault record number in the fault history
	MODE key	Switches the monitor screen (item) in the monitor mode. Every key on the operation panel becomes inoperable (locks) by holding this key for 2 seconds. The key lock function is disabled when Pr.161 = "0" (initial value). Holding this key for one second displays the initial screen. (During normal inverter operation it will appear as the first screen in the monitor mode; during abnormal operation it will appear as the first screen in the fault history mode. Reverts to the previous screen if pressed during frequency setting when the easy setting function is enabled. Initial setting in monitor mode Output frequency → Output current → Output voltage → Faults history → Operation mode switchover
	SET key	Confirms each selection. Pressing this key in a mode other than the parameter setting mode will display parameter settings.
	RUN key	Used to give the start command to the inverter. The rotation direction depends on the Pr.40 setting.

Basic operation



- The monitor items can be changed.
- In each fault record display, "0" is displayed instead of the fault indication when no fault record exists.
- "P.0" will appear if the MODE key is pressed during parameter setting.

Changing the parameter setting value

Change the setting of Pr.1 Maximum frequency.

Operating procedure

- Turning ON the power of the inverter
The operation panel is in the monitor mode.
 - Selecting the parameter setting mode
Press **SET** to choose the parameter setting mode.
 - Selecting the parameter
Press **▲** or **▼** to show **P. 1** (Pr.1). Press **SET** to read the present set value.
120.0 (initial value) appears.
 - Changing the setting value
Press **▲** or **▼** change the set value to **50.00**. Press **SET** to enter the setting
50.00 and **P. 1** are displayed alternately.
- Press **▲** or **▼** to read another parameter.
 - Press **SET** to show the setting again.
 - Press **SET** twice to show the next parameter.
 - Press **MODE** for one second to return the display to the first screen in the monitor mode (the monitor item initially set in the first screen is the frequency).

NOTE

- If a parameter write condition is not satisfied, a parameter write error appears on the LCD display.
- When Pr.77 Parameter write selection = "2" (initial value)", the parameter setting change is available only while the inverter is stopped and under the PU operation mode. To enable the parameter setting change while the inverter is running or under the operation mode other than PU operation mode, change the Pr.77 setting.

Error indication	Description
Er 1	Parameter write error
Er 2	Write error during operation
Er 3	Calibration error
Er 4	Mode designation error

Basic parameters

Pr.	Description	Minimum setting increment	Initial value	Setting range
0	Torque boost	0.1 %	6/4/3 % ^①	0-30 %
1	Maximum frequency	0.01 Hz	120 Hz	0-120 Hz
2	Minimum frequency	0.01 Hz	0 Hz	0-120 Hz
3	Base frequency	0.01 Hz	50 Hz	0-400 Hz
4				
5	Multi-speed setting	RH RM RL	50 Hz 30 Hz 10 Hz	0-400 Hz
6				
7	Acceleration time		0.1	5/10 s ^①
8	Deceleration time			0-3600 s
9	Electronic thermal O/L relay		0.01A	Inverter rated current
79	Operation mode selection		1	0
125		Terminal 2		0/1/2/3/4/6/7
126	Frequency setting gain frequency	Terminal 4	0.01 Hz	50 Hz
				0-400 Hz

- The factory setting depends on the performance class of the frequency inverter.

Overview of the error messages

If a protective function has been activated, eliminate the cause of the error and then reset the frequency inverter. It is imperative that you follow the procedure in the instruction manual for the FR-CS80 frequency inverter. You can reset the frequency inverter by pressing the STOP/RESET button on the operation panel (only after a serious error), by switching the power supply off and on again, or by switching the RES signal.

Operation panel indication	Name	Description
HOLD	HOLD	Operation panel lock
LOCD	LOCD	Password locked
Er 1	ER1-ER4	Parameter write error
Er 4	Err.	Error
OLC	OL	Stall prevention (overcurrent)
oLv	oL	Stall prevention (overvoltage)
TH	TH	Electronic thermal O/L relay prealarm
PS	PS	PU stop
UV	UV	Undervoltage
iH	iH	Inrush current limit resistor overheat
Fn	FN	Faulty fan
E.OC1	E.OC1	Overcurrent trip during acceleration
E.OC2	E.OC2	Overcurrent trip during constant speed
E.OC3	E.OC3	Overcurrent trip during deceleration or stop
E.OV1	E.OV1	Regenerative overvoltage trip during acceleration
E.OV2	E.OV2	Regenerative overvoltage trip during constant speed
E.OV3	E.OV3	Regenerative overvoltage trip during deceleration or stop
E.THT	E.THT	Inverter overload trip (electronic thermal O/L)
E.THM	E.THM	Motor overload trip (electronic thermal O/L)
E.FIN	E.FIN	Heatsink overheat
E.JLF	E.JLF	Input phase loss
E.OLT	E.OLT	Stall prevention stop
E.GF	E.GF	Output side earth (ground) fault overcurrent
E.LF	E.LF	Output phase loss
E.OHT	E.OHT	External thermal relay operation
E.PE	E.PE	Parameter storage device fault
E.PUE	E.PUE	PU disconnection
E.RET	E.RET	Retry count excess
E.S	E.S	CPU fault
E.CPU	E.CPU	CPU fault
E.CDO	E.CDO	Abnormal output current detection
E.IOH	E.IOH	Inrush current limit circuit fault
E.E10	E.E10	Inverter output fault