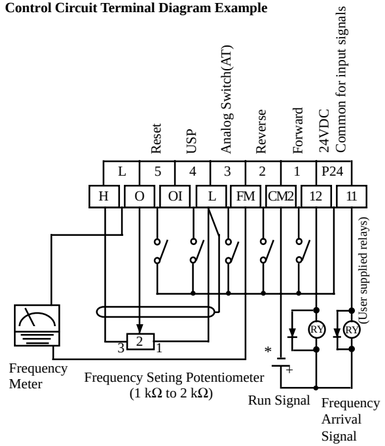
Control Circuit Terminals

Control Circuit Terminal Diagram Example



NOTE 1: See pages 10 and 11 of this guide for the function of the programmable terminals.

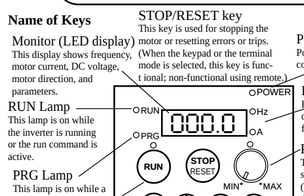
*NOTE 2: User supplied 24 VDC supply (27 VDC, 50 mA maximum relay coil rating).

SJ100 factory settings are:
A01 Frequency-----01—Terminal
A02 Run----------01—Terminal

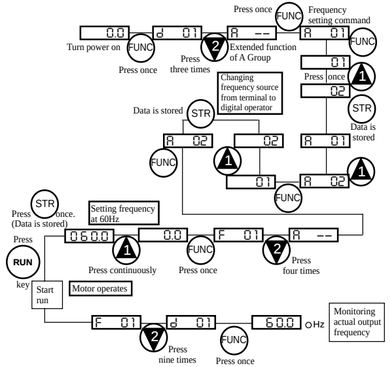
To operate from the Keypad or Door Pot these settings must be changed. See page 7 of this guide.

OPERATION OF THE DIGITAL OPERATOR KEYPAD

Name of Keys

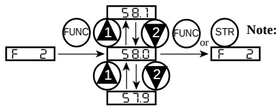


Operation Procedure (Example for the keypad.)



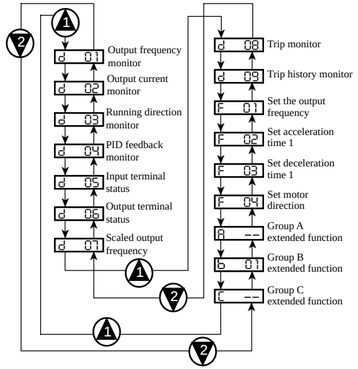
Key Descriptions

FUNC [Function key]...This key switches between the parameter area, data area, and extended functions area.
EXAMPLE: To change speed setting —
Each time the key is pressed, the display changes as follows:



Note: After the data is changed, be sure to press the STR key.

1 2 [Up key (1), Down key (2)]...These keys change the values of data, and parameters.

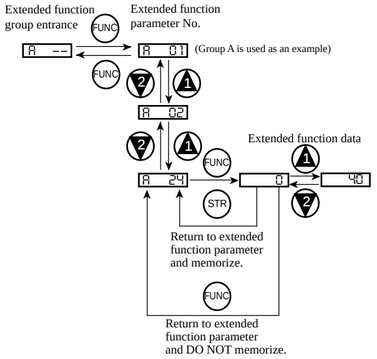


RUN [RUN key]...This key starts the SJ100 (in Keypad mode). The set value of F 04 determines forward run or reverse run.

STOP RESET [STOP/RESET key]... This key stops the SJ100. When a trip occurs, this key becomes the reset key.

Setting extended functions

When an extended function is to be used, select the extended function group from A -- b -- C -- by using the keys 1 and 2 so as to enter the extended function mode.



Explanation of display at power ON

When the inverter is turned on, the display returns to what was displayed when the power was last turned off. (Except in the extended function mode.)

PROTECTIVE FUNCTIONS

The SJ100 series inverter will trip on overcurrent, overvoltage, and undervoltage to protect the inverter. The output is shut down and the motor runs free. This condition is held until it is reset.

Trip	Contents	Display
Overcurrent protection	When the output of the inverter is short circuited, the motor is locked, or a heavy load is suddenly applied, and the inverter output current exceeds a predetermined level, the inverter is shut off.	-Constant speed E 01 -at Deceleration E 02 -at Acceleration E 03 -at Deceleration E 04
Overload protection	When a motor overload is detected by the electronic thermal function the inverter is shut off.	E 05
Overvoltage protection	When the inverter DC bus voltage exceeds a predetermined level due to regenerative energy from the motor, this trip occurs and the inverter is shut off.	E 07
EEPROM error NOTE 1	When the inverter memory has a problem due to noise or excessive temperature rise, this trip occurs and the inverter is shut off.	E 08
Undervoltage protection	A decrease of DC bus voltage may result in improper function of the control circuit. It also may cause motor heating and low torque. The inverter is shut off when the DC bus voltage goes below a certain level.	E 09
CPU error 1	Malfunction or abnormality on the CPU. The inverter is shut off.	E 11 E 22
External trip	A trip signal from external equipment shuts off the inverter. It is necessary to assign the external trip to an intelligent terminal.	E 12
USP error	Indicates an error when power is turned on while the inverter run is enabled. (When USP function is selected)	E 13
Ground fault protection	The inverter is protected by detection of ground faults between the drive output and the motor upon power on. Protection is for the inverter only and not for humans.	E 14
Input overvoltage	When the input voltage is higher than a specified value, it is detected and 100 seconds after power is turned on, the inverter is shut off.	E 15
Thermal protection	When the temperature of the inverter module is beyond specification, the thermal sensor in the inverter module detects the temperature and the inverter is shut off.	E 21
PTC error	When the resistance value of the external thermistor is too large, the equipment detects the abnormal condition of the thermistor and then shuts off the inverter. (When PTC function is selected)	E 35

NOTE 1: If an EEPROM error occurs, be sure to observe its value. If power is turned off while the [RS] is held [ON]. The EEPROM error occurs when power is turned back on.

SJ100 Data Setting Values

SJ100 inverters provide many functions whose parameters can be set by the user. It is recommended that the parameters that have been set by the user be recorded to speed the investigation and repair in the event of a failure.

Cat. No. SJ100 ____
Mfg. No. ____
} This information is written on the nameplate located on the right side of the inverter.

Drive Keypad Display Sequence

Display Sequence	Function	Standard Setting	Set Value
F01	Set Output Frequency	0.0	
F02	Set Acceleration 1	10.0 s	
F03	Set Deceleration 1	10.0 s	
F04	Set Motor Direction	00	
A--	Set extended function group A.	—	—
b--	Set extended function group b.	—	—
C--	Set extended function group C.	—	—

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Extended Function Mode

Extended function mode of group A

Parameter Display	Function	Factory Set Value	Set Value
A01	Frequency source setting 00—Door pot, 01—Terminal, 02—Keypad	01	
A02	Run command source setting 01—Terminal, 02—Keypad	01	
A03	Base frequency setting	60.0	
A04	Maximum frequency setting	60.0	
A11	External frequency setting start point	0	
A12	External frequency setting end point	0	
A13	External frequency setting start point bias	0%	
A14	External frequency setting end point bias	100%	
A15	External frequency start pattern setting 00—Per A11-A14, 01—0 Hz	01	
A16	Time constant of the filter for analog inputs	8	
A20– A35	Multispeed frequency setting	All are 0.0Hz	
A38	Jog frequency setting	1.0	
A39	Jog stop mode 00—Freerun, 01—Decel, 02—DC brake	00	
A41	Torque boost selection method 00—Manual, 01—Automatic	00	
A42	Value of manual torque boost setting	11	
A43	Manual torque boost frequency adjustment	10.0%	
A44	V/F characteristic setting 00—Constant torque 01—Variable torque	00	
A45	V-Gain setting	100%	
A51	Selection of DC braking operation 00—NO, 01—YES	00	
A52	DC braking frequency setting	0.5	
A53	DC braking waiting time setting	0.0	

Extended function mode of group A (continued)

Parameter Display	Function	Factory Set Value	Set Value
A54	DC braking force setting	0	
A55	DC braking time seting	0.0	
A61	Frequency upper limit setting	0.0	
A62	Frequency lower limit setting	0.0	
A63, A65, A67	Jump frequency setting	0.0	
A64, A66, A68	Jump frequency width setting	0.5	
A71	Selection of PID control 00—NO, 01—YES	00	
A72	P (proportional) gain setting	1.0	
A73	I (integral) gain setting	1.0	
A74	D (differential) gain setting	0.0	
A75	Scale conversion of PID control setting	1.00	
A76	Feedback signal location setting 00—Current, 01—Voltage	00	
A81	Selection of AVR function	02	
A82	Selection of voltage of AVR function for the motor	230/460	
A92	Second acceleration time setting	15.0	
A93	Second deceleration time setting	15.0	
A94	Selection of Method to enable second acceleration/deceleration (acc2/dec2)	00	
A95	Changed frequency from acc1 to acc2 setting	0.0	
A96	Changed frequency from dec1 to dec2 setting	0.0	
A97	Pattern of acceleration setting 00—Linear, 01—S-curve	00	
A98	Pattern of deceleration setting 00—Linear. 01—S-curve	00	

Extended function mode of group B

Parameter Display	Function	Factory Set Value	Set Value
b01	Selection of restart mode 00—Alarm, 01—0.0Hz restart, 02—Motor speed match restart, 03—Motor speed match restart decel to stop	00	
b02	Allowable undervoltage power failure time setting	1.0	
b03	Retry waiting time	1.0	
b12	Level of electronic thermal setting	Rated current of inverter	
b13	Selection of electronic thermal characteristic 00—Reduced torque, 01—Constant torque	01	
b21	Selection of overload limit operation mode—— 00—NO, 01—Accel & constant speed, 02—Constant speed	01	
b22	Level of overload limit setting	Rated current times 1.5 per inverter	
b23	Rate of deceleration at overload restriction	1.0	
b31	Selection of software lock mode 00—Terminal, no change, 01—Terminal, frequency change, 02—Keypad, no change 03—Keypad, frequency change	01	
b81	Analog meter adjustment	80	
b82	Start frequency adjustment	0.5	
b83	Carrier frequency setting (kHz)	5.0	
b84	Selection data initialization or clear of trip history	00	
b85	Selection of initialized data	02	
b86	Frequency converted value setting	1.0	

Extended function mode of group B (continued)

Parameter Display	Function	Factory Set Value	Set Value
b87	STOP key ON/OFF in terminal mode 00—YES, 01—NO	00	
b88	Selection of operation when FRS signal is cancelled 00—Restart at 0 Hz 01—Restart at motor speed	00	
b89	Selection of contents of remote display 01—Frequency, 02—Current, 03—Direction, 04—PID feedback, 05—Input terminal status 06—Output terminal status 07—Scaled frequency	01	

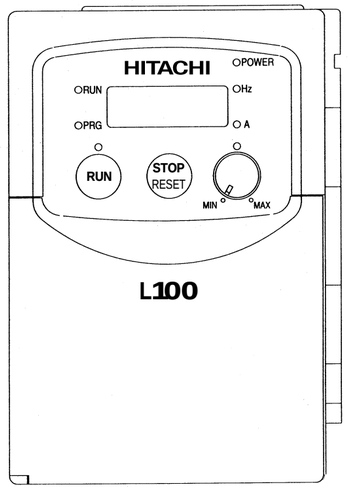
Extended function mode of group C

Parameter Display	Function	Factory Set Value	Set Value
C01	Function of input terminal 1 00—Forward, 01—Reverse, 02—Multispeed 1, 03—Multispeed 2, 04—Multispeed 3, 05—Multispeed 4, 06—Jog, 09—2 Stage Accel/Decel, 11—Free run mode, 12—External trip, 13—USP, 15—Software lock, 16—Analog input type, 18—Reset	00	
C02	Function of input terminal 2 (See C01)	01	
C03	Function of input terminal 3 (See C01)	16	
C04	Function of input terminal 4 (See C01)	13	
C05	Function of input terminal 5 (See C01)	18	

Extended function mode of group C (continued)

Parameter Display	Function	Factory Set Value	Set Value
C11	Polarity input of terminal 1 00—NO, 01—NC	00	
C12	Polarity input of terminal 2 (See C11)	00	
C13	Polarity input of terminal 3 (See C11)	00	
C14	Polarity input of terminal 4 (See C11)	01	
C15	Polarity input of terminal 5 (See C11)	00	
C21	Function of output terminal 11 00—Run, 01—Frequency constant 02—Frequency at setpoint, 03—Overload, 04—PID deviating, 05—Alarm	01	
C22	Function of output terminal 12 (See C11)	00	
C23	Function of FM terminal 00—Analog frequency 01—Analog current 02—Digital frequency	00	
C31	Polarity of terminal 11 00—NO, 01—NC	00	
C32	Polarity of terminal 12 00—NO, 01—NC	00	
C33	Polarity of terminal AL 00—NO, 01—NC	01	
C41	Level of overload signal setting	Rated current of inverter	
C42	Arrival frequency setting for acceleration	0.0	
C43	Arrival frequency setting for deceleration	0.0	
C44	Level of PID deviation signal setting	3.0	
C91	Debug mode display selection DO NOT CHANGE!	00	

L100 Quick Reference Guide



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