V/F INVERTER

Q3-12-06-056-03

LFD-U Series

Product Instruction

Contents

1. Warnings

1.1 Overall

Cautions

- This operation manual provides product operation and safety cautions.
- Only qualifiers with professional knowledge in electrical and mechanical fields should use this product.
- Please read the operation manual carefully and adhere to the warnings, cautions, and important instructions mentioned in the manual.
- The company shall not be held responsible for any damages resulting from disregarding these warnings and instructions.

Warning

- Installation, wiring, operation, troubleshooting, and diagnosis should be performed by qualified personnel.
- Do not use this product in explosive environments, flammable gas environments, corrosive environments, areas prone to water exposure, or near combustible materials, as it may cause fire or harm to personnel.
- Do not perform any moving, installation, or wiring operations while the power is on. Please disconnect the power before performing any operations to avoid fire or harm to personnel.
- Follow the wiring examples carefully to avoid electric shock.
- Ensure that the power input voltage of the inverter is within the rated range to prevent equipment damage or fire hazards.
- Do not use the inverter in lifting devices. Once the protective function of the inverter is activated, the motor will stop, and moving parts may fall, resulting in potential harm to personnel or equipment damage.
- When the protective function of the inverter is activated, identify and eliminate the cause before releasing the protective function. Releasing the protective function without identifying the cause may result in incorrect motor operation, leading to potential harm to personnel or equipment damage.
- Do not attempt to repair, modify, or disassemble the product on your own, as it may cause fire or harm to personnel.

1.2 Operating Environment

Cautions

To guarantee that this product functions properly when used within the following environmental conditions: Operating temperature: 0 to +40℃ (non-freezing)、Relative humidity: below 85% (non-condensing)、Altitude: below 1000m、Low electromagnetic interference environment、No explosive gases、No harmful gases or liquids、Avoid direct sunlight and contact with liquids.

1.3 Installation

Cautions

- The inverter should be kept at least 25mm above the frame and other machinery inside the frame horizontally, and at least 50mm vertically. Avoid placing devices with high heat dissipation or excessive noise in the vicinity.
- The inverter should be installed on a vibration-resistant and smooth metal plate. The front panel of the inverter should be securely fastened using screws and nuts on the mounting holes, with no gaps left on the installation plate.
- Ensure proper fixation of the inverter on the mounting plate to prevent it from falling and causing potential harm to individuals.
- Use power cables with a wire gauge of at least 16AWG for the inverter's power lines to avoid the risk of fire.
- Ensure the grounding terminal of the inverter is grounded with the shortest distance possible to prevent electric shock.
- Do not share the grounding terminal with welding machines or high-noise ground terminals.
- Use insulated and reinforced DC power supplies for the input and output signal power to prevent electric shock.
- When replacing the inverter, ensure that the power is disconnected and the power indicator is completely off before proceeding with the replacement to avoid electric shock.

1.4 Operating

Cautions

- It is necessary to install an emergency stop device or emergency stop circuit outside the equipment to ensure the overall safety in the event of device failure or abnormal operation. Failure to do so may result in potential harm to individuals.
- In case of any abnormalities, immediately stop the operation and disconnect the power supply of the inverter to prevent fires or injuries.
- Do not exceed the rated specifications of the inverter during operation, as it may cause equipment damage.
- Before turning on the power supply of the inverter, ensure that all input signals to the inverter are disconnected.
- The surface temperature of the inverter may exceed 70°C during normal operation. Please post warning signs in locations where people may come into proximity to the inverter.

1.5 Noise Strategy

Noise is divided into two types: noise entering the inverter from external sources, causing malfunctions in the inverter, and noise emitted from the inverter, causing malfunctions in peripheral devices.

- Noise Suppression
  - When using relays or electromagnetic switches, use noise filters.
  - Enclose the inverter with metal plates such as aluminum to shield the emitted noise.
- Prevention of Noise Propagation
  - Ensure that power systems and signal lines are kept at least 10cm apart and avoid bundling them together.
  - Use signal lines for the inverter with a wire gauge of 26AWG or higher and keep the length below 3m.
  - Wrap cables prone to noise propagation around a ferrite core to prevent the spread of noise into or from the inverter.
- EMC Directive: The noise emitted by the inverter to the surrounding control system can cause serious interference to other devices if effective measures are not taken.
  - To suppress the impact of noise propagation, use ferrite cores installed around the inverter.
  - To prevent noise from propagating through the power lines to the outside, users

should prepare AC filters and connect them to the AC input lines.

- The suitability of EMC must be configured based on the above instructions, and the user must confirm EMC compliance.

1.6 Movement、Storage

Cautions

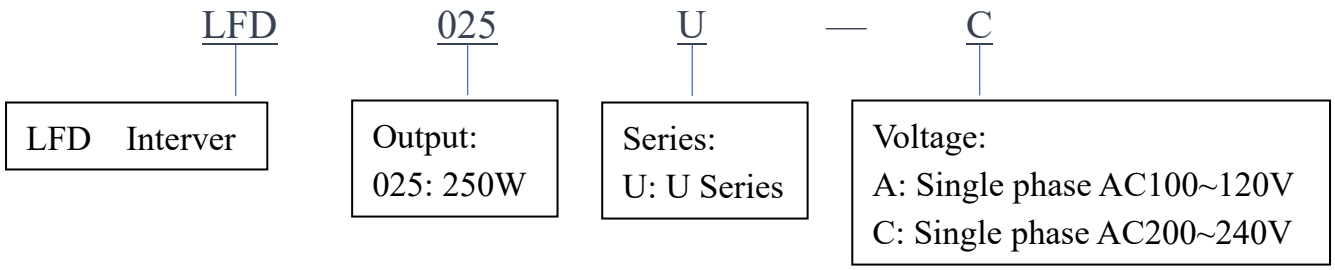
- Please store this product in the provided packaging box.
- Store this product in an environment with a temperature range of -20 to +60℃ (do not freeze), humidity below 85% (avoid condensation), altitude below 3000m, and in a location with minimal direct sunlight, low salt content, and good ventilation.

1.7 Packed Contents

Cautions

Inverter.....1 unit
Operation manual.....1 copy

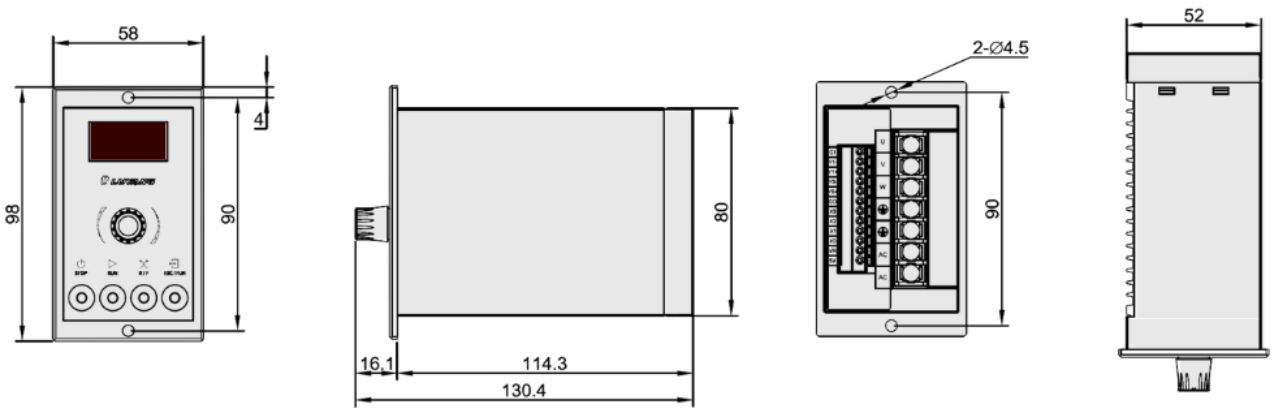
2. Model Instruction



3. Specification Instruction

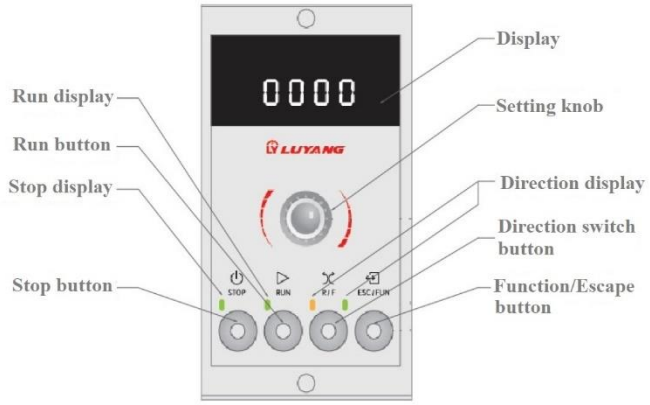
Model		LFD025U-C	LFD025U-A
Input	Voltage	Single Phase 220Vac 50/60Hz	Single Phase 110Vac 50/60Hz
	Voltage Tolerance	±10%	±10%
	Frequency Tolerance	±5%	±5%
	Rated Input Current (A)	1.2	2.4
	Maximum Input Current (A)	2.0	4
Maximum Applicable Motor Output (W)		250	
Output Frequency Range (Hz)		1.0 to 400	
Output Frequency Resolution (Hz)		0.1	
Control System		V/F control, SPWM	
Carrier Frequency Range (Hz)		2kHz to 15kHz	
Acceleration/ Deceleration		0.1~15sec(can be set in sections), Soft Start, Soft Stop Setting	
Output Voltage		Three-phase corresponding input voltage	
Control Features		Torque Boots, Slip Boots, Stall Prevention	
Protective Function		Over Voltage, Under Voltage, Over Current/Over Load, IGBT Over Heating, Open Circuit	
Frequency Setting Method		Panel operation, Potentiometer, Multi-speed setting (16-speed)	
Operation Setting Method		Panel Operation, I/O X0~X3 Composition	
Others		Carrier Frequency Adjustment, Abnormal Record, Increase/Deceleration Ratio Setting, Stop Mode Selection	
Degree of Protection		IP20	
Cooling		Natural air-cooling	
Environmental	Installation Location	Indoor (keep from corrosive gasses, liquid, dust, and low electromagnetic interference environment)	
	Ambient Temperature	0°C to 40°C (non-condensing and no freezing)	
	Storage Temperature	-20°C to 60°C (non-condensing and no freezing)	
	Humidity	Below 85% RH (non-condensing)	
	Altitude	Below 1000m above sea level	
	Vibration	5.88m/S^2 (0.6G)	
Save-environmental Conditions		Temperature: -20℃ to +60℃(Non-Condensing and no freezing)	

4. Dimension

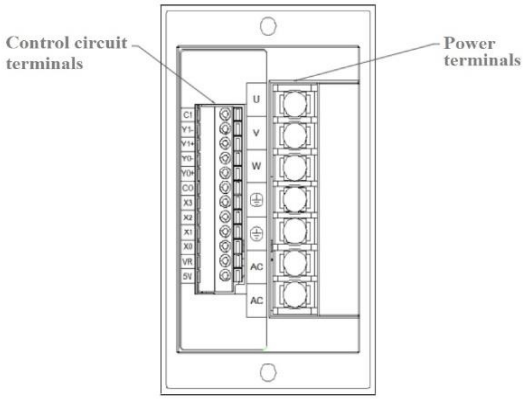


5. Operating Instruction

5.1 Inverter Function Instruction



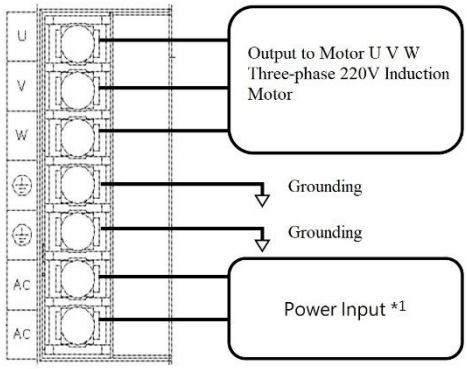
Front Side



Rear Side

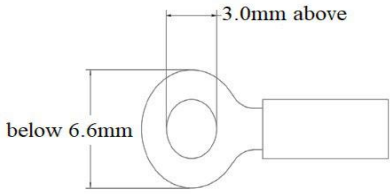
Operating mode	Detailed Contents
Monitored mode	Speed Display, Mains voltage, Motor current, Loading factor, Operating Segments, Warning, Input Signal, Output signal, External Speed Controller Voltage, The temperature of inverter
Multiple Segment Mode	Operating Data 16 Segments, Frequency, Acceleration/Deceleration Time
Parameter mode	Frequency Input Mode, Operating Mode, Acceleration/Deceleration Ratio, Deceleration Ratio Digits, Gentle Start/Stop, Acceleration/Deceleration Time, Stopping Mode, Input/Output Functions, Frequency Upper/Under Limits, Over/Low Voltage, Overload Conditions, Frequency Detection Width, Torque Limit, Restore Original Parameters, Carrier Frequency, Motor Poles, Rated Frequency, Rated Power, Rated Current, Maximum Current Ratio Limitation, Stalling Current Ratio Limitation, Maximum Slip Frequency.

5.2 Power Supply Lead Wiring



*1: Input according to the "Power Supply Voltage" of the inverter. Refer to the instructions for Model 2.

- Connect to Terminal Block Terminals
  For the connection between the wires and the terminal block, please use the following terminals to prevent wire detachment. Suitable terminal: Insulated coated round crimp terminal.



- Grounding precautions
  Please make sure to ground the motor and inverter.

5.3 I/O Signal Instruction

Pin No.	Terminal	Function	Voltage Range
1	5V	Internal Power Supply 5V	DC5V
2	VR	External VR Input Voltage	DC 0V to 5V
3	X0	IN-0 Input Function	DC 10V to 30V Current below 10mA
4	X1	IN-1 Input Function	
5	X2	IN-2 Input Function	
6	X3	IN-3 Input Function	
7	CO	External Power Supply COM	COM
8	Y0+	OUT-0 Output Function (Positive Terminal)	DC 10V to 30V Current below 10mA
9	Y0-	OUT-0 Output Function (Negative Terminal)	
10	Y1+	OUT-1 Output Function (Positive Terminal)	
11	Y1-	OUT-1 Output Function (Negative Terminal)	
12	C1	Internal Power Supply 0V	DC 0V

※ Output/Input signal wires should have a diameter larger than 26AWG.

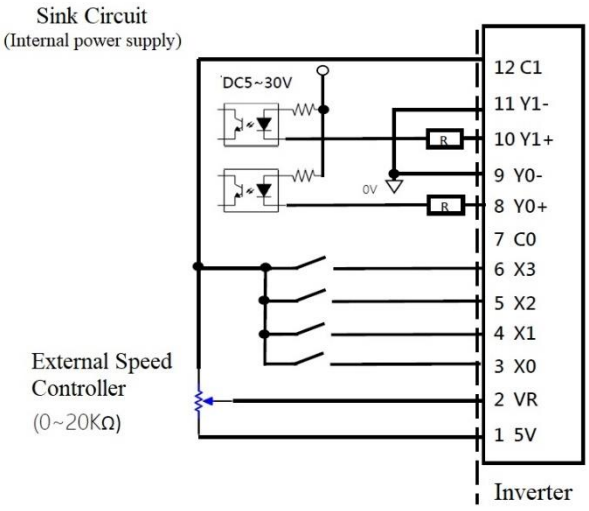
※ Can allocate 4 groups of inputs (X0~X3) and 2 groups of outputs (Y0~Y1) from the following signals.

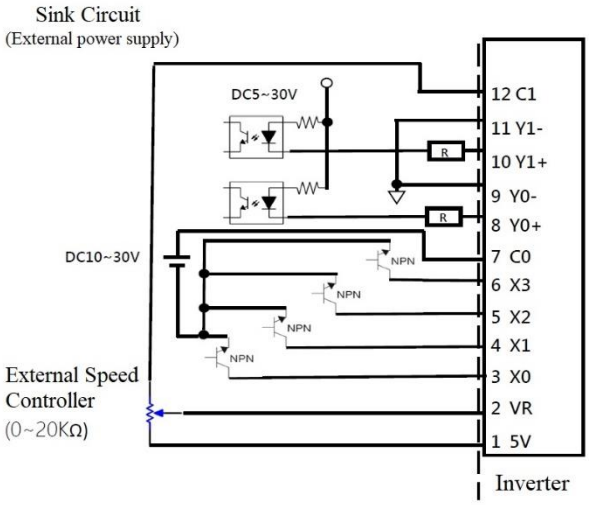
Relative input signals: 11 groups.

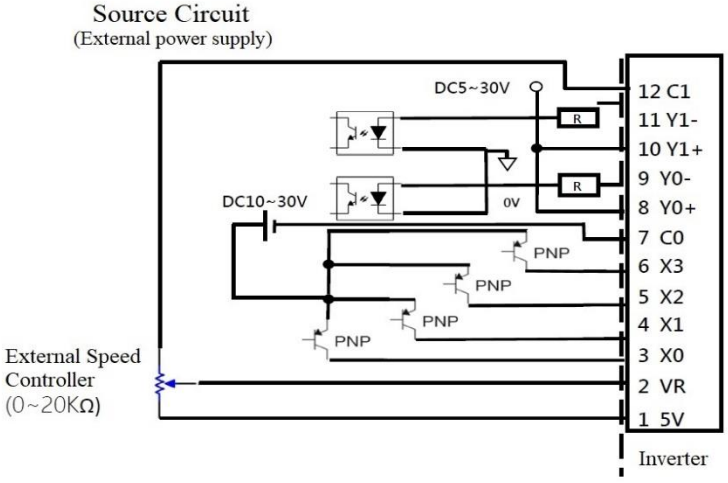
Non-using, RUN/STOP, FWD/REV, FWD, REV, M0, M1, M2, M3, ALARM_RESET, EMERGENCY_SWITCH.

Relative output signals: 4 groups - Not using, ALARM_OUT, MOVE, DIR, VA.

5.4 I/O Signal Connection







6. Operation

Warning

Do not use the power supply's ON/OFF to operate the motor's start and stop functions. Please make sure to use the RUN/STOP input and input terminals X0, X1, X2, X3. Failure to do so may result in fire or personal injury.

Cautions

- Ensure that input signals are spaced apart by at least 10ms when activated to prevent incorrect motor operations.
- The larger the friction load and inertia load, or the more frequent the start-instant stop-reverse actions, the faster the motor's temperature rises. Please keep the motor surface temperature below 90°C, and the heat sink temperature of the inverter should also be kept below 90°C.

6.1 Setting Instructions

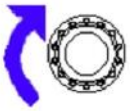
Diagram Explanation

Run Button
Press to start the motor operation.

Stop Button
Press to stop the motor operation.

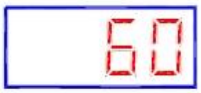
Direction Switch Button
Press to switch the motor rotation direction.

Function/Escape Button
Press to enter the function parameter setting area or return to the previous level.

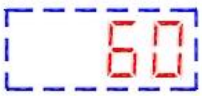


Setting Knob
Rotate to select data.

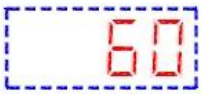
Button
Press to select data settings.



Display characters without flashing
Information, Parameters, Numeric Display.



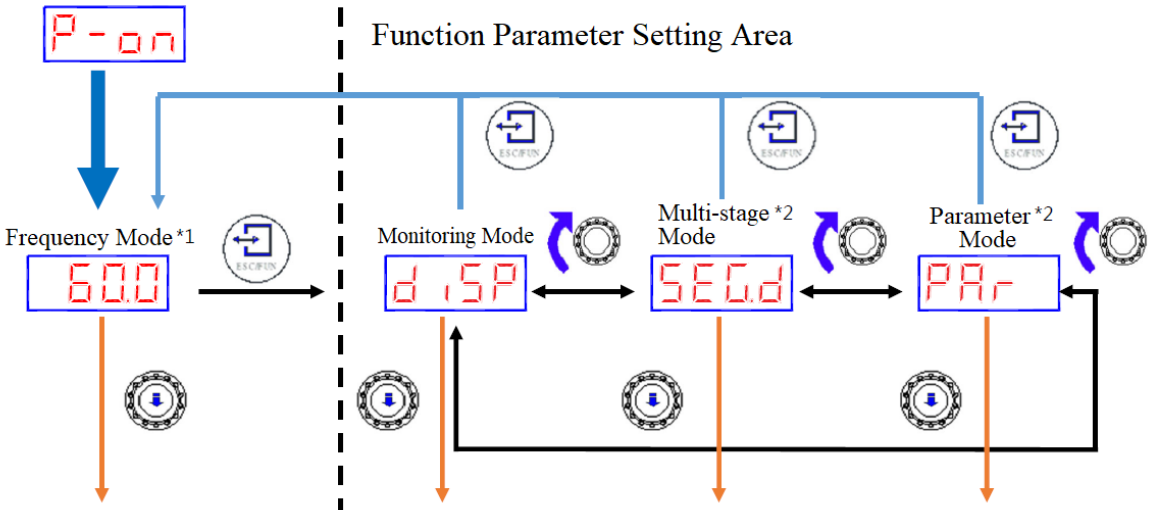
Display characters with low-frequency flashing
Parameter Value Selection.



Display characters with fast flashing
Numeric Setting Storage.

6.2 Operation Mode Instruction

Mode Menu



Enter the "Internal Frequency" setting, refer to section 6.6 for instructions.

Enter the "Monitoring Mode" menu, refer to section 6.3 for instructions.

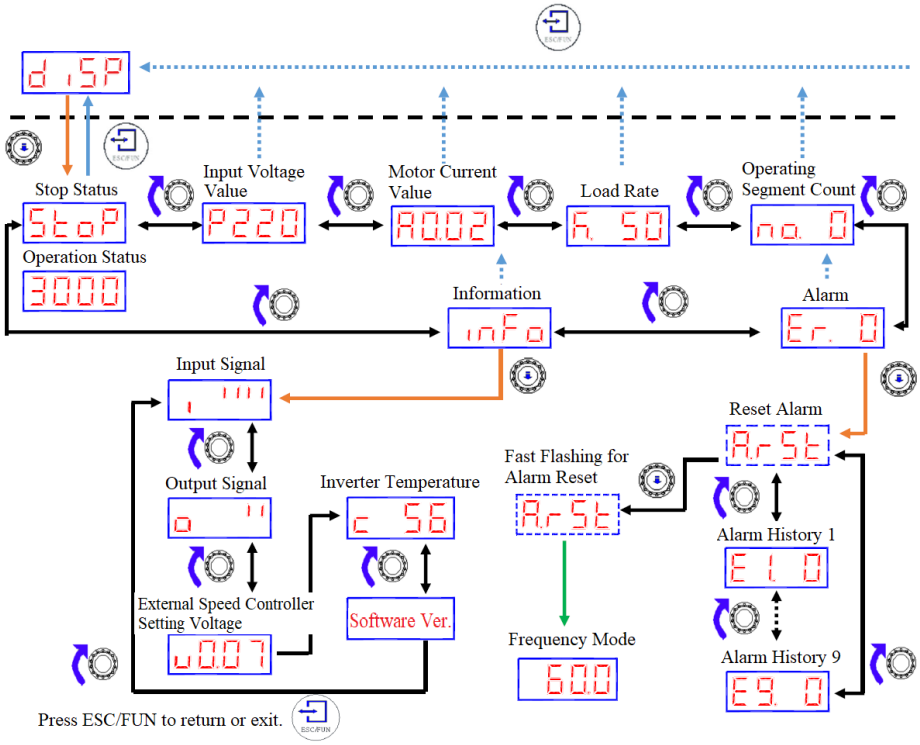
Enter the "Multi-stage Mode" menu, refer to section 6.4 for instructions.

Enter the "Parameter Mode" menu, refer to section 6.5 for instructions.

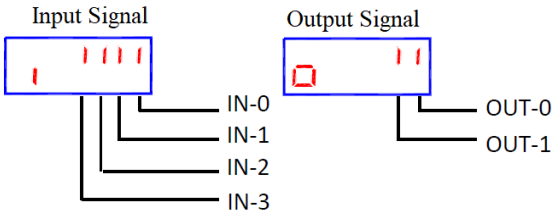
*1 : Displays the frequency setting value.

*2 : In this mode, the motor cannot be started or operated, and entering this mode is not possible during motor operation.

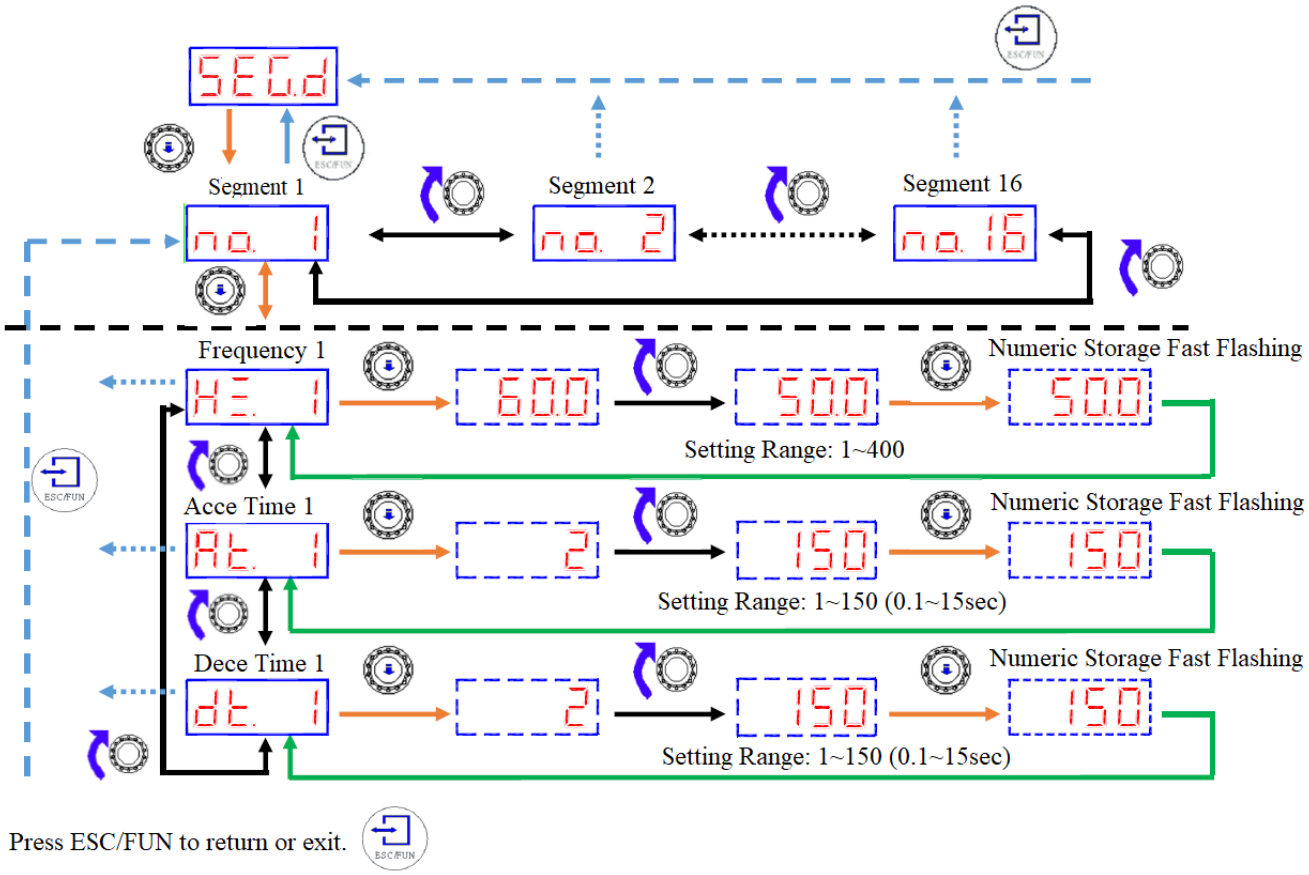
6.2 Monitoring Mode



Monitoring Mode Instruction

Item	Display	Detail
Speed		● Displays the motor's speed during operation and when stopped. ● When the "Gear Ratio" parameter is set, it displays the speed of the output shaft of the gearbox or the speed of a conveyor. ● When the "Speed Boost Ratio" parameter is set, it displays the speed after being increased by an external mechanism. ● Refer to section 6.8 for Speed Display.
Input Voltage Value		Displays the input voltage of the power supply.
Motor Current		Displays the input current of the power supply.
Load Rate		Displays the load rate of the motor, with the rated torque displayed as 100%.
Operating Segment Count		Displays the selected number of operating segments.
Alarm		● Displays the alarm code that has occurred and allows for an alarm reset and confirmation of alarm history. Please refer to "7. Abnormal Codes" for the types of alarm codes. ● Alarm History A#, where # indicates the number of the alarm history, with a larger number indicating a more distant record.
Information		● Displays output/input signals, please refer to the diagram on the right. ● External Speed Controller Voltage ● Displays the temperature of the power module in the inverter. ● Software version, for reference only. 

6.4 Multi-stage Mode



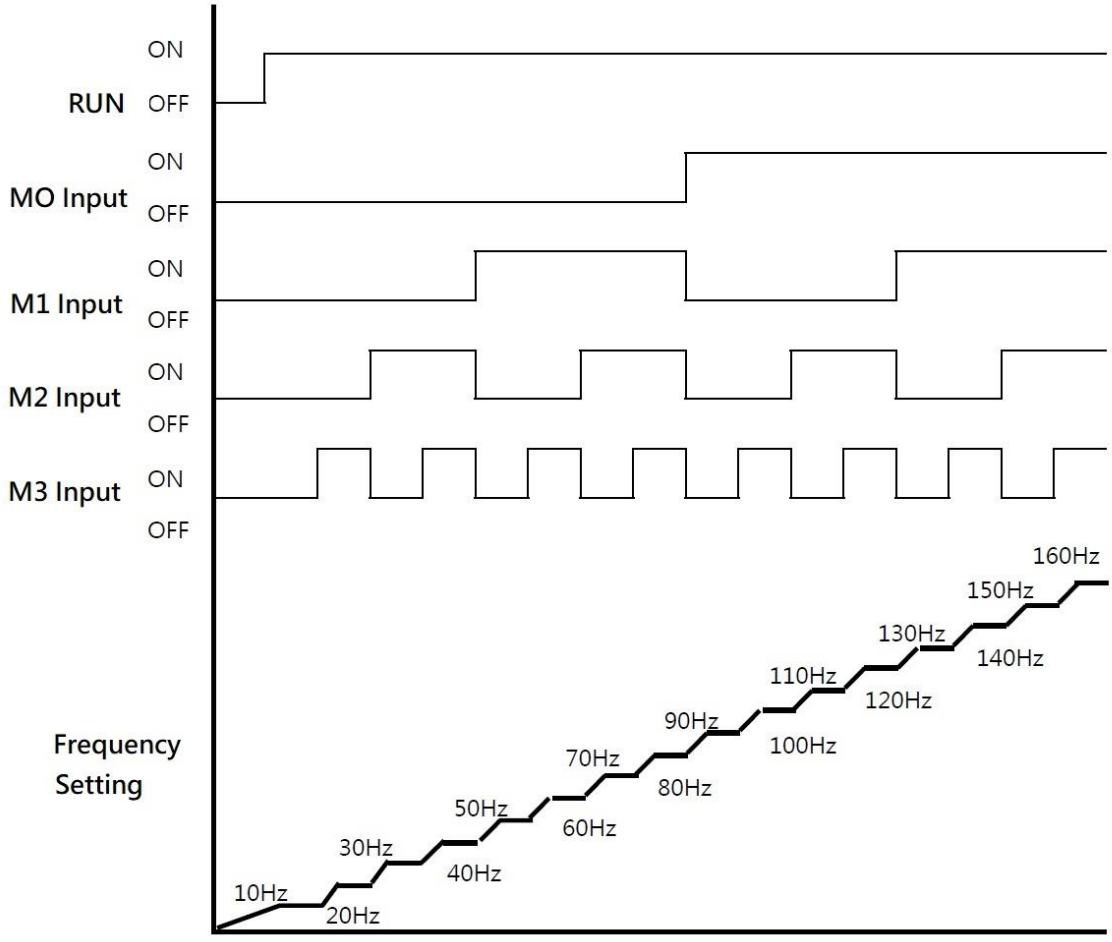
※When using multi-stage speed, you can switch between segments by using M0, M1, M2, M3 inputs for multi-stage operation.

Multi-stage Mode Instruction

Item	Display	Multi-Stage Mode
Segments		Segment Setting: 1~16 segments
Frequency		Frequency setting with reference to upper and lower limits: P3.01, P3.02
Acceleration Time		Acceleration time setting with reference to: P1.03
Deceleration Time		Deceleration time setting with reference to: P1.04

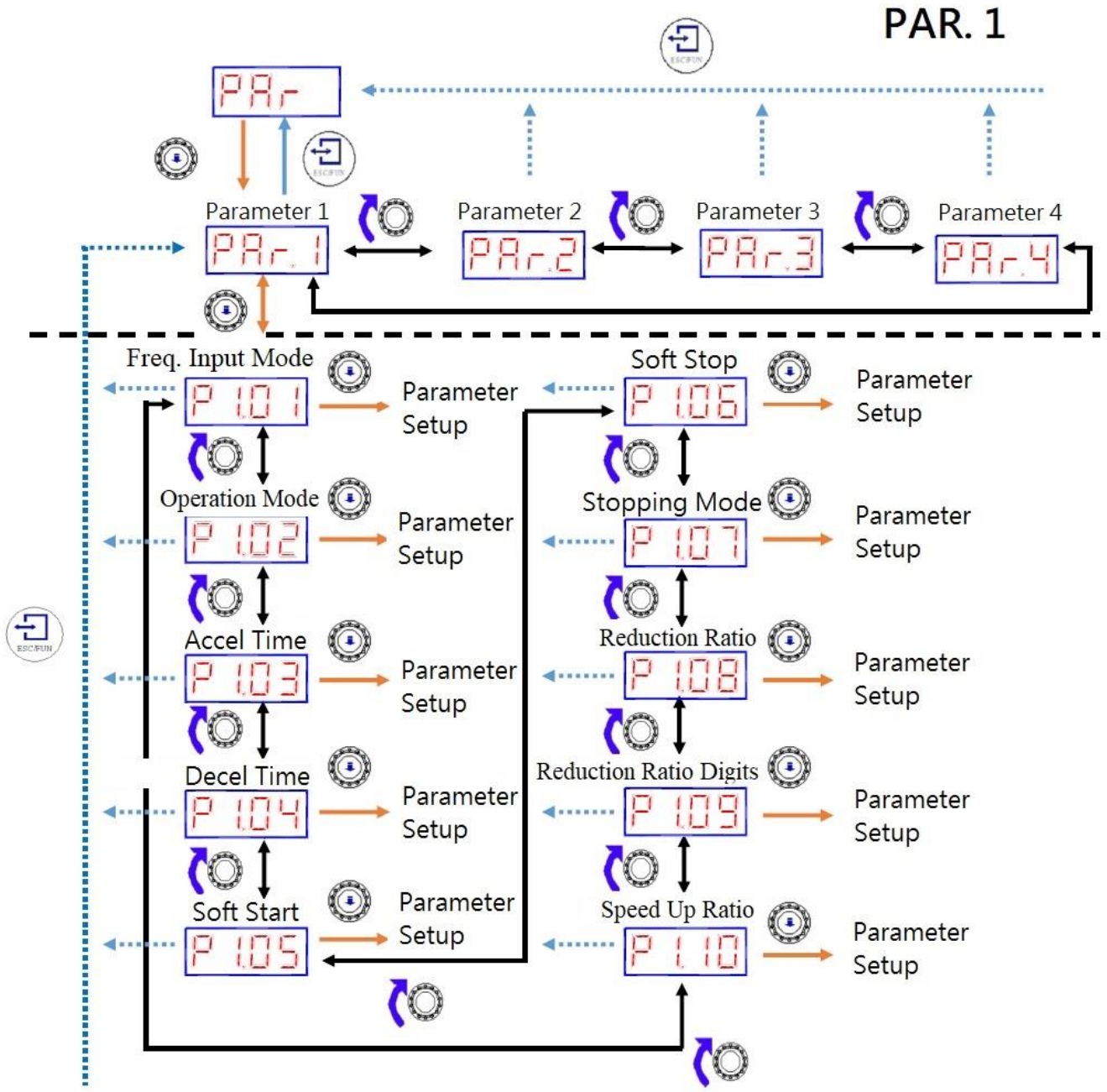
Multi-stage Mode Instruction Introduction

Operating Date	M0	M1	M2	M3	Frequency Setting
1	OFF	OFF	OFF	OFF	10
2	OFF	OFF	OFF	ON	20
3	OFF	OFF	ON	OFF	30
4	OFF	OFF	ON	ON	40
5	OFF	ON	OFF	OFF	50
6	OFF	ON	OFF	ON	60
7	OFF	ON	ON	OFF	70
8	OFF	ON	ON	ON	80
9	ON	OFF	OFF	OFF	90
10	ON	OFF	OFF	ON	100
11	ON	OFF	ON	OFF	110
12	ON	OFF	ON	ON	120
13	ON	ON	OFF	OFF	130
14	ON	ON	OFF	ON	140
15	ON	ON	ON	OFF	150
16	ON	ON	ON	ON	160



6.5 Parameter mode

PAR.1 Parameter



※ Press ESC/FUN to return or exit.

※ Please refer to the following for parameter detail.

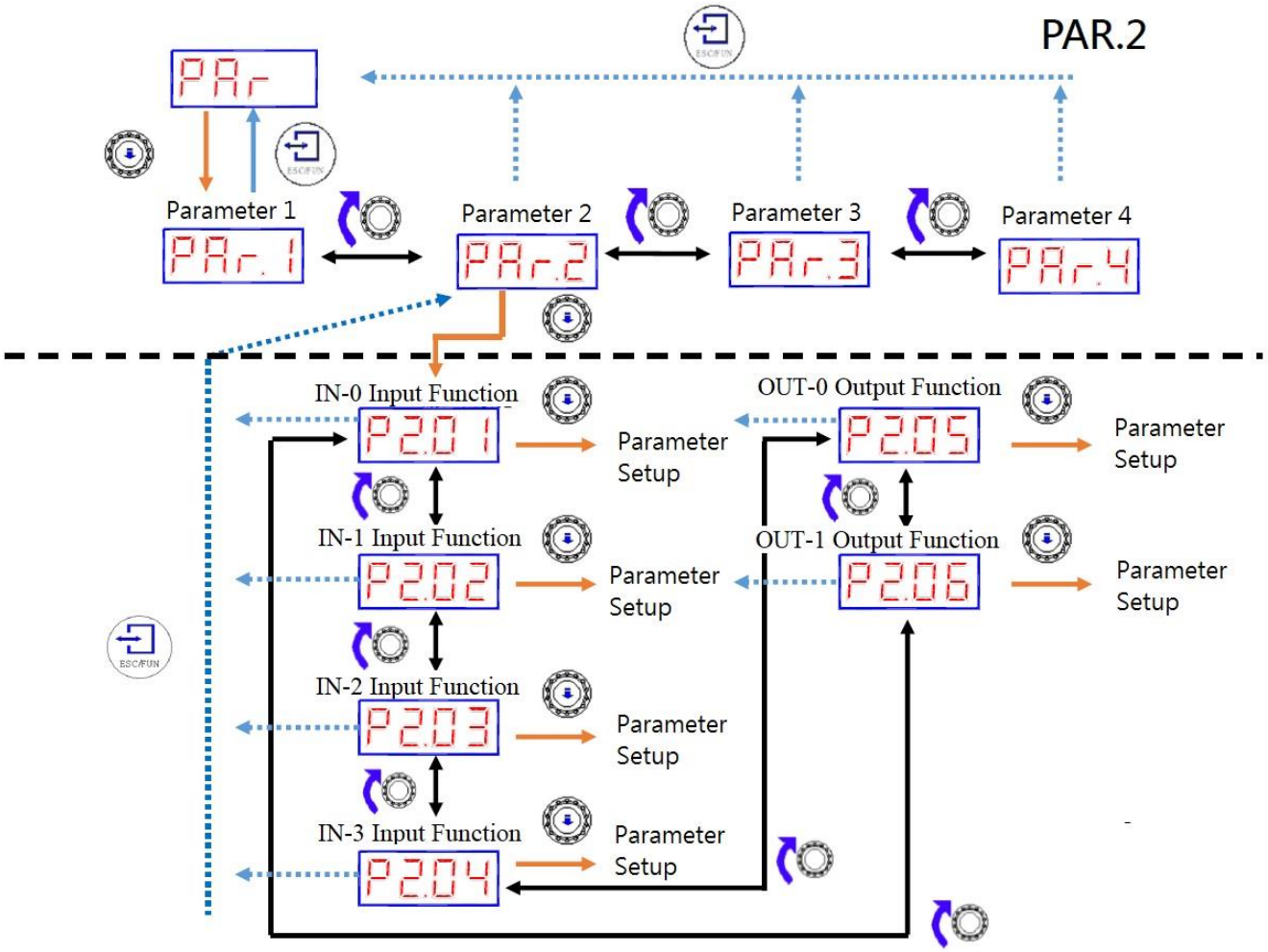
Parameter Mode

PAR.1 Parameter Explanation

PAR Code	Parameter Name	Code	Range	Unit	Default	Explanation
P1.01	Frequency input mode	HZCH	0~2		0	0: Internal Frequency(Panel control, digital frequency setting) 1: External Frequency(Panel control, analogy frequency input) 2: M0~M3 Multi-segment frequency(I/O control, parameter setting)
P1.02	Operation mode	OPM	0~2		0	0: Panel control 1: Panel control+ I/O control 2: I/O control 3: I/O control
P1.03	Acceleration time	ACCT	1~150	100ms	10	Refer to 6.11. Internal Frequency, external Frequency. It works when P1.01=0&1.
P1.04	Deceleration time	DECT	1~150	100ms	10	Internal Frequency, external Frequency, refer to 6.11. It works when P1.01=0&1 and P1.10=1.
P1.05	Soft start	SACC	0~4		0	0~15Hz speed up ratio, refer to 6.9. 0: Disable 1: Mode 1 (Parameter P1.08 ACCT*2) 2: Mode 2 (Parameter P1.08 ACCT*4) 3: Mode 3 (Parameter P1.08 ACCT*8) 4: Mode 4 (Parameter P1.08 ACCT*16)
P1.06	Soft stop	SDEC	0~4		0	0~15Hz reduction ratio, refer to 6.9. 0: Disable 1: Mode 1 (Parameter P1.09 DECT*2) 2: Mode 2 (Parameter P1.09 DECT*4) 3: Mode 3 (Parameter P1.09 DECT*8) 4: Mode 4 (Parameter P1.09 DECT*16)
P1.07	Stopping mode	BKMD	0~1		0	Refer to 6.10. 0: Freewheel stop: The motor stop autonomously based on load and inertia. 1: Decelerate stop: The motor stop based on deceleration time setting.
P1.08	Reduction	GR-R	1~9999		1	Set the reduction ratio relative to the

	ratio					motor output axle speed. In monitored mode, indicates the speed convert from reduction ratio, reduction ratio digits and speed up ratio. After calculate and input the reduction ratio on transmission axle, it can also indicate converted speed.
P1.09	Reduction ratio digits	GR.DG	1~0.01		1	1: Parameter P1.03 GRR *1 0.1: Parameter P1.03 GR-R*0.1 0.01: Parameter P1.03 GR-R*0.01
P1.10	Speed up ratio	SP-R	1.0~5.0		10	After increasing the motor speed through external mechanisms, etc., the converted speed can be indicated.

PAR.2 Parameter



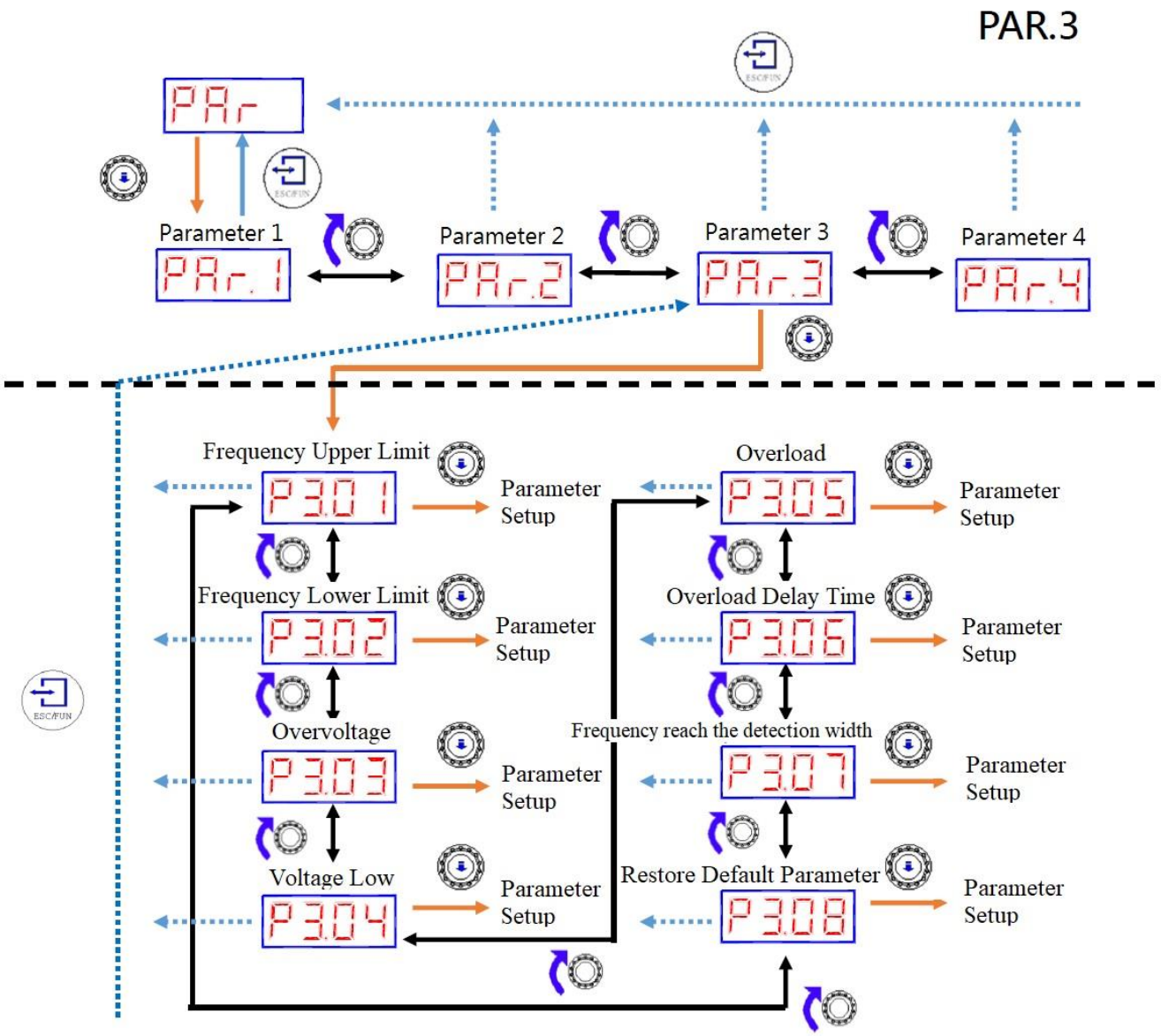
※ Press ESC/FUN to return or exit.

※Parameter settings please refer to parameter contents below and 6.7 parameter settings explanation.

PAR.2 Parameter Explanation

PAR Code	Parameter Name	Code	Range	Unit	Default	Explanation
P2.01	IN-0 input function	IN-0	0~9999		3	0: NO USED 1: RUN/STOP 2: FWD/REV CW/CCW rotation/ 3: FWD Clockwise rotation 4: REV Left-hand rotation 5: M0 (Multi-segment speed BIT-0) 6: M1 (Multi-segment speed BIT-1) 7: M2 (Multi-segment speed BIT-2) 8: M3 (Multi-segment speed BIT-3) 9:ALARM RESET 10: Emergency switch
P2.02	IN-1 input function	IN-1	0~9999		4	
P2.03	IN-2 input function	IN-2	0~9999		5	
P2.04	IN-3 input function	IN-3	0~9999		6	
P2.05	OUT-0 output function	OUT0	0~9999		101	0: NO USED 100: ALARM OUT 101: MOVE (Operating status) 102: DIR (Motor rotation direction) 103: VA (Reach revolutions per minute)
P2.06	OUT-1 output function	OUT1	0~9999		102	

PAR.3 Parameter



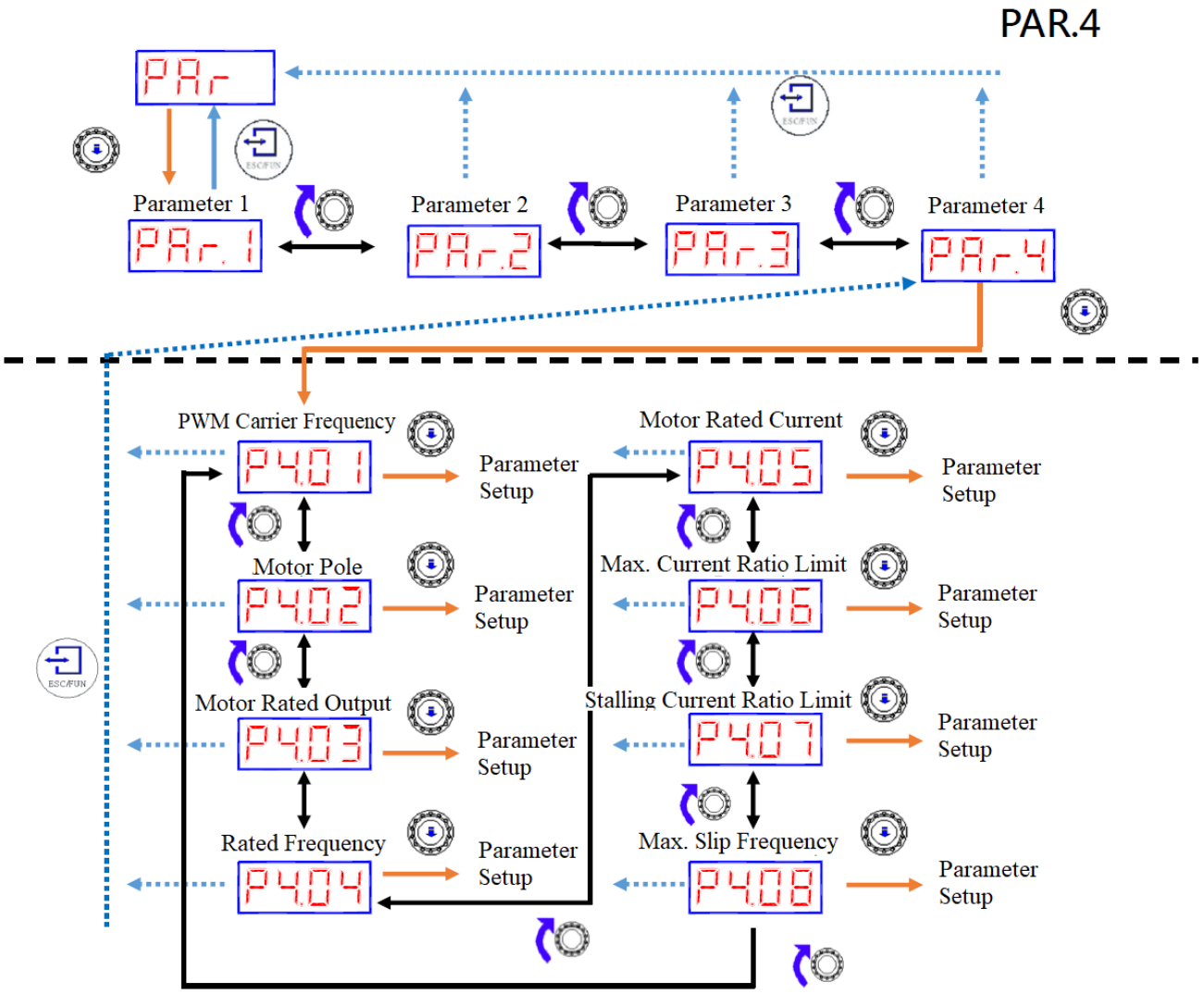
※ Press ESC/FUN to return or exit.

※Parameter settings please refer to parameter contents below and 6.7 parameter settings explanation.

PAR.3 Parameter Explanation

PAR Code	Parameter Name	Code	Range	Unit	Default	Explanation
P3.01	Frequency upper limit	MXHZ	1.0~400.0	Hz	200.0	Set frequency upper limit.
P3.02	Frequency lower limit	MNHZ	1.0~400.0	Hz	1.0	Set frequency lower limit.
P3.03	Overvoltage condition	OV	240~315	Vac	268	Set overvoltage protection value.
P3.04	Voltage low condition	LV	120~180	Vac	176	Set voltage low protection value.
P3.05	Overload condition	OL	100~300	%	200	Set overload percentage. [Parameter P4.05]MRI*percentage
P3.06	Overload alarm delay time	OL.DT	1~130	Sec	20	Set Overload protection delay time.
P3.07	Frequency reach the detection width	VA.W	0.0~10.0	Hz	3.0	Frequency reach the detection tolerance.
P3.08	Restore default parameter	P.RES	0/1		0	1: Restore default parameter setting.

PAR.4 Parameter



※ Press ESC/FUN to return or exit.

※Parameter settings please refer to parameter contents below and 6.7 parameter settings explanation.

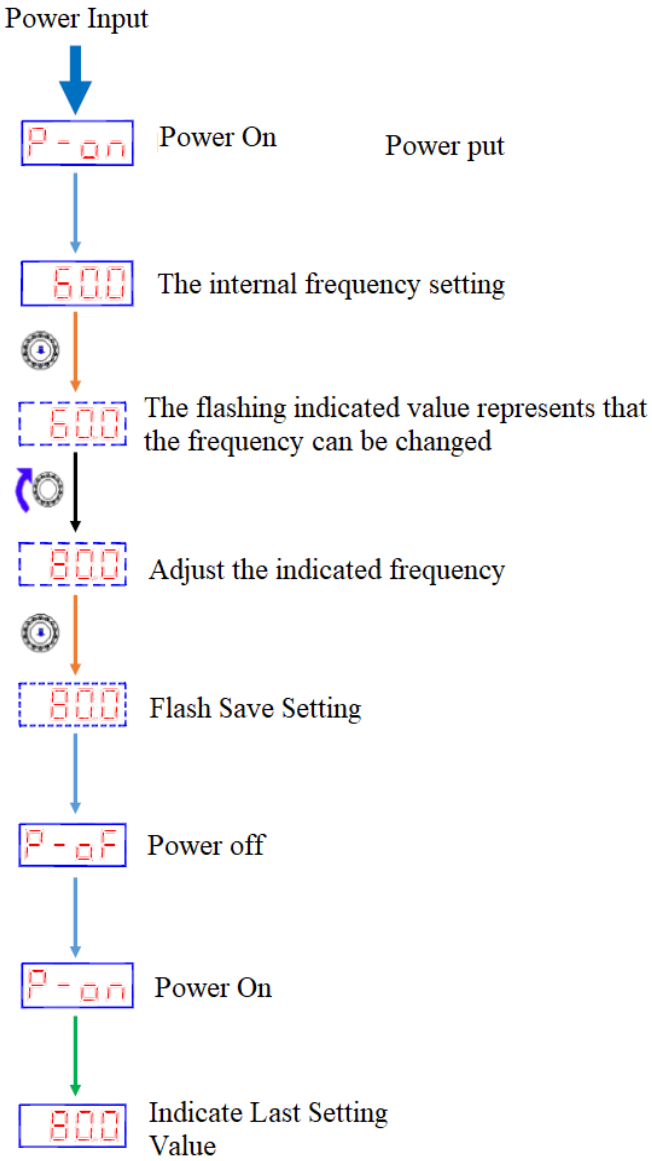
PAR.4 Parameter Explanation

PAR Code	Parameter Name	Code	Range	Unit	Default	Explanation
P4.01	Carrier frequency	PWMF	2~15	KHz	10	Set carrier frequency.
P4.02	Motor pole number	M.POL	2~10	Pole	4	Set motor pole number.
P4.03	Nominal horsepower power output	MRP	5~250	W	250	Set nominal horsepower power output.
P4.04	Nominal horsepower frequency	MRHZ	30.0~100.0	Hz	50.0	Set nominal horsepower frequency.
P4.05	Nominal horsepower current	MRI	0.01~5.00	A	0.85	Set nominal horsepower current.
P4.06	Maximum current ratio limit	MXIR	100~300	%	200	Set maximum current percentage, refer to 6.12. [Parameter P4.05]MRI*percentage
P4.07	Stalling current ratio limit	LSIR	100~300	%	150	Set stalling current percentage, refer to 6.13. [Parameter P4.05]MRI*percentage
P4.08	Maximum slip frequency	MXSF	0~25.0	Hz	5.0	Set motor slip frequency, refer to 6.14.

6.7 Internal Frequency Adjustment Explanation

Front panel operation

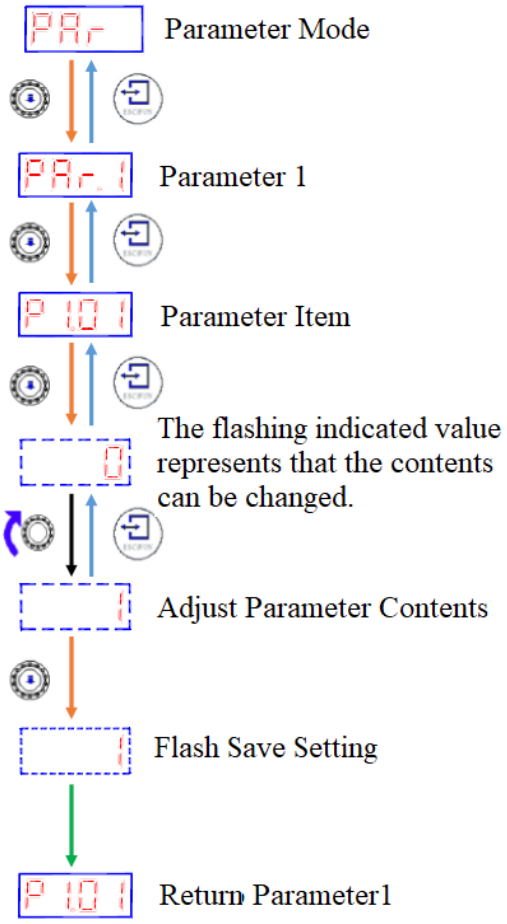
Parameter P1.01=0 (Use internal frequency)



6.6 Internal Frequency Adjustment Explanation

Front panel operation

Parameter P1.01=0 (Use internal frequency)



Motor Operation and Stop (Parameters P1.01 and P1.02 Selection)

During P1.01=0			During P1.01=1			During P1.01=2		
P1.01	**P1.02**	**Instruction**	**P1.01**	**P1.02**	**Instruction**	**P1.01**	**P1.02**	**Instruction**
0	0	Panel Operation for Internal Frequency Operation Panel Control: Run (RUN) Stop (STOP) 0: Rotate Direction (R/F) I/O Control:	1	0	Panel Operation for Internal Frequency Operation Panel Control: Run (RUN) Stop (STOP) 0: Rotate Direction (R/F) I/O Control:	2	0	Panel Operation for Multi-Speed Operation Frequency Operation Panel Control: Run (RUN) Stop (STOP) I/O Control: Multi-Speed Switching
	1	Panel Control: Run (RUN) Stop (STOP) I/O Control: 11: Rotate Direction (R/F)		1	Panel Control: Run (RUN) Stop (STOP) I/O Control: 11: Rotate Direction (R/F)		1	Panel Control: Run (RUN) Stop (STOP) I/O Control: 11: Rotate Direction (R/F) Multi-Speed Switching
	2	I/O Control: 10: START/STOP (START/ STOP)		2	I/O Control: 10: START/STOP (START/ STOP)		2	I/O Control:
	3	I/O Control:		3	I/O Control:		3	I/O Control: Multi-Speed Switching

6.8 Speed Display

※ Calculation of Output Shaft RPM for Gear Reducer

Output Shaft RPM [rpm] = Motor RPM / Gear Reducer Ratio

Motor RPM = 120 x Frequency / Motor Pole Number (Parameter P4.02 - M.POL)

Gear Reducer Ratio = Reduction Ratio (Parameter P1.08- GR-R) x Reduction Ratio Digits (Parameter P1.09 - GR.DG)

Example:

Frequency: 100Hz, Motor Pole: 4, Gear Reducer Ratio: 125, Reduction Ratio Digits: 0.1

Motor RPM = 120 x 100 / 4 = 3000

Output Shaft RPM = 3000 / 125 / 0.1 = 240rpm

※ Calculation of External Mechanism Speed Increase

External Mechanism Speed [rpm] = Output Shaft RPM x Speed Increase Ratio

Example:

Output Shaft RPM: 240rpm, Speed Increase Ratio (SP-R): 2

External Mechanism Speed = 240 x 2 = 480rpm

※ Calculation of Conveyor Belt Speed Display

Conveyor Belt Speed [m/min] = Output Shaft RPM / Conveyor Belt Reduction Ratio

Conveyor Belt Reduction Ratio = Gear Reducer Ratio / Belt Pulley Diameter [m] / π

Example:

Motor RPM: 3000rpm

Gear Reducer Reduction Ratio: 125

Belt Pulley Diameter: 0.2 meters

Conveyor Belt Speed [m/min] = 3000 / (125 / 0.2 / π) ≈ 15.15m/min

6.9 Soft Start and Soft Stop Setting

Soft Start: The time required for the motor to smoothly accelerate from stop to 15Hz.
Soft Stop: The time required for the motor to smoothly decelerate from 15Hz to stop.

Example:

Parameter P4.04 (Motor Rated Frequency) set to 50Hz.
Acceleration Time set to 150ms.
Deceleration Time set to 150ms.
Gentle Start setting is 3, Gentle Start Time = Acceleration Time x 8.
Gentle Stop setting is 4, Gentle Stop Time = Deceleration Time x 16.
Motor Acceleration Time from stop to 50Hz:
[(150ms x 8 x (15/50)] + [150ms x (50-15) / 50]
= 360ms + 105ms = 465ms

Motor Deceleration Time from 60Hz to stop:
[(150ms x 16 x (15/50)] + [150ms x (60-15) / 50]
= 720ms + 135ms = 855ms

※ The actual acceleration and deceleration time of the motor may vary due to factors such as load and inertia, which may result in deviations from the set motion time.

6.10 Stopping Modes

	Stop Modes	Motor Operation Status	Instruction
Signal Locations	0	Free Stop	Stop By Inertia
	1	Deceleration Stop	Inertia Deceleration Stop

6.11 Acceleration and Deceleration Time Setting

Acceleration Time : It refers to the time required for the motor to accelerate from a stop to the set value of the MRHZ parameter (motor rated frequency).

Deceleration Time: It refers to the time required for the motor to decelerate from the set value of the MRHZ parameter to a stop.
Example:

MRHZ (Motor Rated Frequency) is set to 50Hz.
P1.03 (Acceleration Time) is set to 150ms.
P1.04 (Deceleration Time) is set to 150ms.
The acceleration time from a stop to 30Hz is calculated as follows:
Acceleration Time = 150ms × (30 ÷ 50) = 90ms

The deceleration time from 60Hz to a stop is calculated as follows:

Deceleration Time = 150ms × (60 ÷ 50) = 180ms

※ Please note that the actual acceleration and deceleration times of the motor may vary depending on factors such as the load and inertia. There might be some deviation from the set motion times due to these factors.

6.12 Maximum Current Ratio Limitation

Example:

P4.05 (Motor Rated Current) is set to 0.5A, and P4.06 (Maximum Current Ratio Limitation) is set to 300%. In this case, the controller will limit the maximum current to below 1.5A.

6.13 Stall Current Ratio Limitation

Example:

P4.05 (Motor Rated Current) is set to 0.5A, and P4.07 (Stall Current Ratio Limitation) is set to 100% and frequency is 60Hz.

When the motor stalls or the load current exceeds 1A, the inverter will automatically reduce the frequency to keep the current below 1A.

6.14 Maximum Slip Frequency

The inverter adjusts the frequency command value based on the set load size. The value of P4.08 (Maximum Slip Frequency) determines how much the frequency command value increases.

Maximum Slip Frequency [Hz] = (Motor Synchronous Speed - Motor Rated Speed) x Motor Pole Number / 120

Motor Synchronous Speed [rpm] = 120 x Motor Rated Frequency / Motor Pole Number

Example:

Motor Pole Number is 4, Motor Rated Frequency is 60Hz, Motor Rated Speed is 1700rpm

Motor Synchronous Speed = 120 x 60 / 4 = 1800rpm

Maximum Slip Frequency = (1800 - 1700) x 4 / 120 = 3.3Hz

7 Warning Code

Warning Number	Warning Name	Cause of Failure	Troubleshooting
AL.2	Overcurrent	The motor current has exceeded the predefined limit set in parameter [P4.06].	● Please check for any wiring damage between the inverter and the motor. ● Verify the setting value in parameter [P4.06].
AL.3	Overload	otor Load Exceeds Parameter [P3.05] and [P3.06] Settings	● Increase the motor capacity or decrease the load. ● Verify the settings of parameters [P3.05] and [P3.06].

AL.4	Main Power Supply High Voltage	Input power supply voltage exceeds the parameter setting of P3.03.	● If the abnormality persists even when the input voltage is within the rated allowable range, please return the product to the distributor or contact the manufacturer for repairs. ● Verify the parameter setting of P3.03 to ensure it is correctly configured.
AL.5	Main Power Supply Low Voltage	Input power supply voltage exceeds the parameter setting of P3.04.	● If the abnormality persists even when the input voltage is within the rated allowable range, please return the product to the distributor or contact the manufacturer for repairs. ● Verify the parameter setting of P3.04 to ensure it is correctly configured.
AL.6	Voltage Recovery Overvoltage	When the motor brakes, the regenerated power exceeds 445VDC.	● Reduce the load inertia.
AL.7	Motor Open Circuit	Motor not wired.	● Verify if the motor connector is loose.
AL.9	Over Temperature	Inverter power module temperature is too high.	● Reduce the ambient temperature. ● Improve the ventilation conditions inside the enclosure.
AL.13	Power Module Abnormality	Abnormality in the inverter power module.	● If the abnormality persists after resetting, return it to the retailer or manufacturer for inspection.
AL.14	Power Sensor Abnormality	Abnormality in the inverter power module.	● If the abnormality persists after resetting, return it to the retailer or manufacturer for inspection.
AL.99	External Stop	External stop signal input.	● Verify the input signal settings.

8 Font Display

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