

3C — Automatic stop mode

Option: off (default) soft starter will not start automatically.

After the timer stops next time, the soft starter will stop automatically after the delay specified in parameter 3D.

Explain: The clock soft starter will stop automatically at the time set in parameter 3D.

Select whether the soft starter will automatically stop after the specified delay or at the specified time of the day.

3D — Auto stop time

Range: 00:01 - 24:00 (hour: minute)

Default: 1 minute

Note: set the automatic stop time of soft starter according to the 24-hour clock format.

4 Protection settings

These parameters determine when to activate the protection mechanism of the soft starter. The activation point of each protection mechanism can be set according to the needs of the device.

The soft starter responds to the protection event by tripping, warning or writing the event to the event log.

The setting of protection measures (parameter setting 16 protection measures) determines the response.

The default response is trip. .



Look out

The protection setting is very important for the safety of soft starter and motor.

The cancellation of the protection mechanism may endanger the safety of the equipment and should only be used in case of emergency.

4A 4B—Starting limit time

The starting limit time is the maximum time required for the soft starter to try to start the motor. If the motor does not transition to operating mode within the programmed limits, the starter trips. Set a time that is slightly longer than the normal start-up time. A setting of 0 disables the start limit time protection.

Range: 0:00 - 4:00 (minutes: seconds)

Default: 20 seconds

Note: parameter 4A sets the main motor time, parameter 4B (start limit Time-2) sets the second group of motor time.

4C — Under current

Options: 0%-100%

Explain: Set the under current protection trip point according to the motor rated current percentage.

Set to a value between the normal operating current range of the motor and the magnetizing (no-load) current of the motor (usually 25% to 35% of the rated current). Setting 0% disables the under current protection.

4D — Under current delay

Options: 0:00-4:00 (minutes: seconds)

Default: 5 seconds

Explain: Reduce the response speed of soft starter to under current, and avoid tripping due to instantaneous fluctuation.

4E — Instantaneous overcurrent

Options: 80% - 600% rated current

Default: 400%

Explain: Set the instantaneous overcurrent protection trip point according to the motor rated current percentage.

4F — Instantaneous overcurrent delay

Options: 0:00-1:00 (minutes: seconds)

Default: 0 seconds

Explain: Reduce the response speed of the soft starter to the instantaneous overcurrent and avoid tripping due to the instantaneous fluctuation.

4G — Phase sequence

Options: Any order (default)
Forward
reverse

Explain: Select which phase sequence the soft starter will allow when starting. During the pre start check, the starter checks the phase sequence of its input terminals and trips if the actual phase sequence does not match the selected option.

4H — Current imbalance

Options: 10%-50%

Default: 30%

Explain: Set the current unbalance protection trip point.

4I — Current unbalance delay

Range: 0:00 - 4:00 (minutes: seconds) Default: 3 seconds
 Note: reduce the response speed of the soft starter to the current imbalance and avoid tripping due to instantaneous fluctuation.

4J — frequency measurement

Options: No measurement
 Start time only
 Start and run (default)
 Runtime only
 Explain: Determine when and if the starter will monitor the frequency trip.

4K — Frequency change

Options: ±2 Hz
 ±5 Hz (default)
 ±10 Hz
 ±15Hz
 Explain: Select the allowable frequency variation of soft starter.

4L — Frequency delay

Options: 0:01 - 4:00 (minutes: seconds) Default: 1 seconds
 Explain: Reduce the response speed of soft starter to frequency fluctuation, and avoid tripping due to instantaneous fluctuation.



Be careful
 If the power frequency is lower than 35 Hz or higher than 75 Hz, the starter trips immediately.



Look out
 If the motor operates outside the specified frequency range for a long time, it may cause motor damage and permanent failure.

4M — Restart delay

Options: 00:01-60:00 (minute: Second) Default: 10 seconds
 Explain: A soft starter can be configured to force a delay from the end of the stop to the start of the next start. During the restart delay, the display shows the time remaining before another start can be attempted.



Be careful
 The restart delay starts at the end of each stop. Any changes to the restart delay setting will take effect after the next stop.

4N — Motor temperature measurement

Options: Do not measure (default)
 Measure
 Explain: Select whether the soft start verifies that the motor has sufficient thermal capacity to ensure successful start. The soft starter compares the calculated temperature of the motor with the temperature rise of the last motor start, and starts only when the motor is cooled enough to start successfully.

4O — Earth fault current

Options: 20mA - 50A (grade 21) Default: 100mA
 Explain: Set the ground fault protection trip point.

4P — Earth fault delay

Options: 00:01-4:00 (minute: Second) Default: 3 seconds
 Explain: Reduce the response speed of soft start to ground fault fluctuation and avoid tripping due to instantaneous fluctuation.



Be careful
 The earth fault protection can only be used when the RTD / PT100 and the earth fault protection card are installed.

4Q — Retain

This parameter is reserved for internal use.

4R — Retain

This parameter is reserved for internal use.

4S — Retain

This parameter is reserved for internal use.

4T — Retain

This parameter is reserved for internal use.

5 Automatic reset trip

The soft starter can be programmed to automatically reset certain tripping conditions and minimize downtime. According to the risks of the soft starter, the trips that can be reset automatically can be divided into three categories:

group	Tripping operation
A	Current imbalance Lack phase Power failure frequency
B	Under current Instantaneous overcurrent Input tripping Input B trip
C	Motor overload (thermal model) RTD / PT100 temperature trip Motor thermistor radiator overheating

Other trips cannot be reset automatically.

This function is especially suitable for two-wire remote control in remote mode. If there is a two wire start signal after the automatic reset, the soft starter will be restarted.

5A—Automatic reset function

Options: Turn off auto reset (default)
Group A reset
Group A and B reset
Group A, B and C reset

Explain: Select which trips can be reset automatically.

5B — Maximum reset times

Range: 1 - 5 Default value: 1

Explain: Set how many times the soft starter resets automatically in case of continuous tripping. After each automatic reset of the soft starter, the reset counter increases by one, and after each successful start / stop cycle of the soft starter, the reset counter decreases by one.

5C — Reset relay groups A and B

Range: 00:05 - 15:00 (minute: Second) Default: 5 seconds

Explain: Set the reset delay of group a trip and group B trip.

5D — Reset relay group C

Range: 5 - 60 (minute) Default: 5 minute

Explain: Set the reset delay of group C trip.

6 input

Soft start has two programmable inputs, which can control the soft start remotely. If necessary, you can use the I / O expansion card to add two inputs.

6A — Input a function

Options: Motor parameter selection (default) can configure two sets of independent motor data for the soft starter.

To use the auxiliary motor data, parameter 6A must be set to 'motor parameter selection'. When a start command is issued, C53 and C54 must be closed.

The soft starter checks which motor data to use at startup and uses this motor data throughout the start / stop process.

Input trip (N / O)

The soft starter can be tripped with input A. When parameter 6A is set to input trip (N / O), C53 and C54 close the circuit and trip the soft starter.

Input trip (N / C)

When parameter 6A is set to input trip (N / C), C53 and C54 are open to trip the soft starter.

Local / remote selection

You can use input A to select local control or remote control without using the L / R (local / remote) button on the operation panel. When this input is off, the starter is in local control mode and can be started via the operation panel. When this input is closed, the starter control is

Remote control mode. With the START and L / R (local / remote) buttons disabled, the soft starter ignores any local / remote selection commands from the serial communication network.

Emergency operation

To use input A to select local or remote control, parameter 6Q must be set to "Always on" or "On when the motor is stopped".

In the emergency running mode, the soft starter continues to run to stop, ignoring all trips and warnings (See parameter 15C for details).

Disable starter

When C53 and C54 are closed, emergency operation is activated. When the circuit is open, the emergency operation ends and the soft starter stops the motor.

The soft starter can be disabled via the control input. Opening C53, C54 disables the starter. The soft starter does not respond to the start command. If the soft starter is running, it will allow the motor to coast to stop and ignore the soft stop mode set in parameter 2H.

Jog forward

Jog reverse

Activate jog forward operation (only available in remote control mode).

Activates jog reverse operation (only available in remote control mode).

Explain:

Select the input A function.

6B — Enter a name

Options: Input trip (default) no flow

Low pressure

high pressure

Pump failure

Low level

High level

Disable starter

Controller

PLC

Vibration alarm

Explain: Select the message to be displayed on the operation panel when input A is activated.

6C — Input A tripped

Options: Always on (default) It may trip at any time after the soft starter is powered up.

During operation only, the soft starter may trip when it is running, stopped or started.

Trip only Only trips when the soft starter is running.

Explain: Select when an input trip occurs.

6D — Input A Trip Delay

Range: 0:00-4:00 (minutes: seconds)

Default: 0 seconds

Explain: Set the delay from input activation until the soft starter trips.

6E — Input A initial delay

Range:	0:00-30:00 (minutes: seconds)	Default: 0 seconds
Explain:	Set the delay before the input trip occurs. The initial delay is calculated from the start signal received. The input state is ignored until the initial delay has elapsed.	

6F、6G、6H、6I、6J — Input B tripped

Parameters 6F ~ 6J configure input B in the same way as parameters 6A ~ 6E configure input A. See Input A for details.

6F	Input B function (default: input trip (N / 0))
6G	input B name (default: input trip)
6H	Input B trip (default: always on)
6I	Input B trip delay (default: 0:00)
6J	Input B initial delay (default: 0:00)

6K、6L — Input C and input D

Parameters 6A and 6K select the function of input C and input D. See parameter 6A for details. Input C and Input D are only available if an input / output expansion card is installed.

Options:	Motor parameter selection Local / remote selection. Emergency operation Disable starter (normally closed) Off (default)
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6M — Remote reset logic

Options:	Normally closed (N / C) (default) Normally open (N / 0)
Explain:	Select whether the soft starter remote reset input (terminals C41, C42) is normally open or normally closed.

6N — Analog input trip

If necessary, connect the analog input to the soft starter. External devices can activate the analog input to trip the soft starter in response to external conditions.

Options:	Not tripped (default) Over trip Too low trip
Explain:	Select the response of the soft starter to the analog input signal.

6O — Analog input range

Options:	0-10V (default) 2-10V
Explain:	Select the analog output range.

6P — Analog trip point

Options:	0% - 100%	Default: 50%
Explain:	Set the signal level when an analog input trip occurs as a percentage of the maximum input signal.	

6Q — Local / remote

Options:	Always on Always enabled Open when motor is stopped Enable when starter is off Local control only Remote control only	L / R (local / remote) button. L / R (local / remote) button. Disable all remote inputs. Disable local control buttons (START, RESET and L / R (local / remote))
Explain:	Select when to use the L / R (local / remote) button to switch between local and remote control, enable or disable the local control button and remote control input. The STOP button on the operator panel is always enabled.	



Be careful
The STOP button on the operator panel is always enabled. When using two-wire remote control, if the remote start / stop input and remote reset input are still active, the soft starter will restart.

6R — Remote communication

- Options:** Disabled during remote control
Enabled during remote control (default)
- Explain:** Select whether the starter receives start and stop commands from the serial communication network in remote control mode.
Reset commands, forced communication trip commands, and local / remote commands are always enabled.

7 Output

Soft start has three programmable outputs that can be used to signal different operating conditions to related equipment. Three additional outputs on the input / output expansion card can be used.

7A — Relay A function

Options: Turn Off	Relay A is not used.
Main Contactor (default)	When the soft starter receives the start command, the relay closes. Keep it closed during the power.
Run	When the starter switches to the running state, the relay closes.
Trip	When the starter trips, the relay closes (see parameter 16A~16X).
Caveat	When the starter issues a warning, the relay is closed (see parameters 16A ~ 16X).
Low Current Indication	When the low current indication is activated (see parameter 7M Low current indication, when the motor is running), the relay is closed.
High Current Indication	When the high current indication is activated (see parameter 7N High current indication, when the motor is running), the relay is closed.
Motor Temperature Indication	When the motor temperature indication is activated (see parameter 7O Motor temperature indication), the relay is closed.
Input A Tripped	When input A activates the soft starter, the relay closes.
Input B Tripped	When input B activates the soft starter to trip, the relay closes.
Motor Overload (thermal Model)	When the starter trips due to motor overload, the relay closes.
Current Imbalance	When the starter trips due to current imbalance, the relay closes.
Under Current	When the starter trips due to undercurrent, the relay closes.
Instantaneous Overcurrent	When the starter trips due to transient overcurrent, the relay closes.
Frequency	When the starter trips due to frequency, the relay closes.
Ground Fault	When the starter trips due to a ground fault, the relay closes.
Radiator Overheating	When the starter trips due to overheating of the radiator, the relay closes.
Missing Phase	When the starter trips due to a phase loss, the relay closes.
Motor Thermistor	When the starter trips due to the motor thermistor, the relay closes.
Changeover Contactor	When the high rotor resistance current ramp reaches full voltage, the relay closes and can be used with slip ring motors.
Undervoltage	Not suitable for soft starters.
Ready	When the starter is in the ready state, the relay is closed.

7B — Relay A On Delay

Note: Select relay A function (normally open)

Range: 0:00-5:00 (minutes: seconds)	Default: 0 seconds
Explain: Set relay A closing delay.	

7C — Relay A power-off delay

Range: 0:00-5:00 (minutes: seconds)	Default: 0 seconds
Explain: Set relay A reopen delay.	

7D~7L—Output relays B, C, D, E and F

Parameter 7D '7L configures relay B, C, D, E, and F operations in the same way as parameter 7A 7C configure relay A. See Relay A Function for details.

Relay B is a switching relay.

- 7D Relay B Function Default: Run
- 7E Relay B ON Delay
- 7F Relay B OFF delay

Relay C is a switching relay.

- 7G Relay C Function Default: Trip
- 7H Relay C ON Delay
- 7I Relay C OFF delay

Relays D, E, and F can only be used when an input / output expansion card is installed. These relays do not support switching delays and do not support the changeover contactor function.

Relay D is normally closed, and relays E and F are normally open.

- 7J Relay D Function Default: OFF
- 7K Relay E ON Delay Default: OFF
- 7L Relay F OFF delay Default: OFF

7M—Low current indication

The soft starter has a low current indication and a high current indication, and issues an abnormal working alarm in advance. The current flag can be configured to display the abnormal current level between the normal operating current level and the under-current trip level or the over-current trip level during operation. These flags can be used to send an exception to an external device through one of the programmable outputs. These flags are cleared when the current returns to the normal operating range, which is a 10% drop from the rated current of the programmed motor.

Range: 1% - 100% Rated current Default: 50%

Explain: Set the low current indication point according to the motor rated current percentage.

7N—High current indication

Range: 50% - 600% Rated current Default: 100%

Explain: Set the high current indication point according to the motor rated current percentage.

7O—Motor temperature indication

The soft starter has a motor temperature indication and issues an abnormal working alarm in advance. The motor temperature indication may indicate that the motor operating temperature exceeds the normal operating temperature, but is below the overload limit. Motor temperature indication can send abnormal conditions to external devices through one of the programmable outputs.

Range: 0%-160% Default: 80%

Explain: Set the motor temperature indicating working level as a percentage of the motor's thermal capacity.

7P—Analog output A

- Options: Current (% rated current) (default) The current expressed as a percentage of the rated current of the motor.
- Motor temperature (%) Motor temperature expressed as a percentage of motor thermal capacity.
- Motor Power (%) Measured motor kilowatt power, expressed as a percentage of maximum power.
- Motor capacity (%) The measured motor apparent power is expressed as a percentage of the maximum apparent power.
- Motor power factor Motor power factor as measured by the soft starter.

Explain:

Measured motor power: $\sqrt{3} \times \text{average current} \times \text{power reference voltage} \times \text{measured power factor}$
 Maximum motor power: $\sqrt{3} \times \text{rated motor current} \times \text{power reference voltage}$. Assume power factor of 1
 Measured motor apparent power: $\sqrt{3} \times \text{average current} \times \text{power reference voltage}$
 Maximum motor apparent power: $\sqrt{3} \times \text{rated motor current} \times \text{power reference voltage}$

Select which information is reported through the analog output.

7Q—Analog A range

Range: 0-20 mA
 4-20 mA (default)

Explain: Select the analog output range.

7R — Analog A maximum

Range:	0% - 600%	Default: 100%
Explain:	Calibrate the upper limit of the analog output to match the signal measured on an external current measurement device.	

7S — Analog A minimum

Range:	0% - 600%	Default: 0%
Explain:	Calibrate the lower limit of the analog output to match the signal measured on an external current measurement device.	

7T、7U、7V、7W—Analog output B

Parameter 7T~7W configures the operation of analog output B in the same way as parameter 7P~7S configures analog output A. See Analog Output A for details.
Analog output B is only available if an input / output expansion card is installed.

8 Monitor

You can use these parameters to customize the controller for individual user needs.

8A-Language

Options:	English (default) Chinese Español Deutsch Português Français Italiano Russian
Explain:	Select the language in which messages and feedback are displayed on the dashboard.

8B and 8C—F1 and F2 button functions

Options:	Not set Automatic start / stop setting Jog forward Jog reverse
Explain:	Select the function of the F1 and F2 buttons on the operation panel.



Note
No access password is required to use the F1 and F2 buttons. Regardless of the setting of parameter 15B, users can use these functions.
Parameter write protection.

8D—Display current or power

Options:	Current (default) Motor Power
Explain:	Select whether the soft starter displays current (Amps) or motor power on the main monitoring screen.

8E、8F、8G、8H—User programmable screen

Option: Blank selected area does not display data, but displays long messages to avoid overlap.
Starter status Starter working status (starting, running, stopping or tripping).
Can only be displayed in the upper left (default) and lower left corners of the screen.
Motor current Three-phase average current.
Motor power factor Motor power factor as measured by the soft starter.
Power frequency The average frequency measured in three phases.
Motor power Motor operating power kW.
Motor horsepower Motor operating power HP.
Motor temperature The motor temperature calculated using the thermal protection model.
Kilowatt hours The number of kilowatt hours consumed by the motor through the soft starter.
Running hours The number of hours the motor has been running through the soft starter.
Analog input Analog input A level (see parameters 6N ~ 6P).
This setting is only available if an input / output expansion card is installed.

Description: Select what information the programmable monitor screen displays.

- 8E Upper left corner of the screen Default value: Starter status
- 8F Upper right corner of the screen Default value: blank
- 8G Screen bottom left corner Default value: running hours
- 8H Lower right corner of the screen Default value: analog input

8I — Graphic data

The soft starter uses real-time performance charts to report characteristics of important operating parameters.

Option: Current (% rated current) (default) Current expressed as a percentage of the motor's rated current.

Motor temperature (%) Motor temperature expressed as a percentage of motor thermal capacity.

Motor power (%) Measured motor kilowatt power, expressed as a percentage of maximum power.

The motor apparent power measured by motor capacity (%) is expressed as a percentage of the maximum apparent power.

Motor power factor Motor power factor as measured by the soft starter.

Measurement: Measured motor power: $\sqrt{3} \times \text{average current} \times \text{power reference voltage} \times \text{measured power factor}$

Maximum motor power: $\sqrt{3} \times \text{rated motor current} \times \text{power reference voltage}$. Assume power factor of 1

Measured motor apparent power: $\sqrt{3} \times \text{average current} \times \text{power supply reference voltage}$.

Maximum motor apparent power: $\sqrt{3} \times \text{rated motor current} \times \text{power reference voltage}$

Description: Select what information the performance graph displays.

8J — Graphic display period

- Options: 10 seconds (default)
 30 seconds
 1 minute
 5 points
 10 points
 30 points
 1 hour

Explain: Set the graphic time scale. Graphics replace old data with new data.

8K — Graphic maximum

Range: 0% – 600% Default: 400%

Explain: Adjust the upper limit of the performance graph.

8L — Graphic minimum

0% – 600% Default: 0%

Adjust the lower limit of the performance graph.

8M — Current calibration

Range: 85% - 115% Default: 100%

Explain: Calibrate the soft starter's current monitoring circuit to match the external current measurement equipment.

Use the following formula to determine the necessary adjustment:

$$\text{calibration (\%)} = \frac{\text{Current shown on soft starter display}}{\text{Current measured by external device}}$$

$$\text{such as } 102\% = \frac{66\text{A}}{65\text{A}}$$



Attention

This adjustment affects all current-based functions and protections.

8N — Power reference voltage

	Range:	100–690 V	Default: 400V
	Explain:	Set the power frequency voltage of the operation panel monitoring function. Use this setting to calculate motor power and apparent power (kVA), but it will not affect the control or protection of the motor.	
80	Keep		
	Explain:	This parameter is reserved for future use.	

9 Motor data-2

The soft starter can support two different sets of motor start and stop data.

- If you want to use the soft starter with two different motors (such as working / standby configuration), use parameter 9A to select the dual thermal protection model and configure parameters 9B ~ 9E according to the second motor.
- To use a soft starter with two sets of different motor data for the same motor (two-speed motors or applications with varying starting conditions), use parameter 9A to select the single thermal protection model, and use parameters 10A to 10G to configure the start and stop curves as required. The soft starter will ignore parameters 9B ~ 9E and will use the settings of the main motor.

To select the second set of motor data, a programmable input must be configured as a parameter setting selection (parameters 6A and 6F). This input must be activated when the soft starter receives a start signal.



Attention

Only when the soft starter is stopped, which set of motor data can be selected.

9A — Double thermal protection model

Options: Single model (default)
Dual model

Explain: Activate the dual thermal protection model. The dual thermal protection model is required only when the soft starter controls two different motors.

9B — Motor rated current 2

Range: Depending on model

Explain: Set the auxiliary motor rated current.

9C — Locked rotor time -2

Range: 0: 01-2: 00 (minutes: seconds) Default: 10s

Explain: Set the maximum time required for the motor to reach the maximum temperature from the cold state with locked rotor current. Set according to the motor data sheet.

9D — Stall current 2

Range: 400% - 1200% Rated current Default: 600%

Explain: Set the locked rotor current of the connected motor as a percentage of the rated current. Set according to the motor data sheet.

9E — Motor service factor 2

Range: 100% - 130% Rated current Default: 105%

Explain: Set the service factor for the second group of motors.

10 Start / stop method 2

10A — Starting method 2

Options: Constant current (default)
Adaptive Control
Select the soft start method.

10B — Starting ramp-2

Range: 1 - 180 (s) Default: 10s

Explain: Set the total start time of the adaptive control start or the ramp time of the current ramp start (from the initial current to the current limit).

10C — Initial current 2

Range:	100% - 600%	Default: 350%
Options:	Set the initial starting current of the current ramp start as a percentage of the rated motor current. Set the initial current so that the motor starts to accelerate immediately after starting to start. If a current ramp start is not required, set the initial current to the same value as the current limit.	

10D — Current limit 2

Range:	100%-600% Rated current	Default: 350%
Options:	Set the current limit for constant current soft start and current ramp soft start as a percentage of the motor's rated current.	

10E — Adaptive starting curve 2

Option:	Early acceleration Constant acceleration (default) Post-acceleration	
Explain:	Select which curve the soft starter uses for adaptive control soft start.	

10F — Jump start time -2

Range:	0-2000 (ms)	Default: 0000ms
Explain:	Set the kick start duration. Setting 0 disables kick start.	

10G — Recoil start amplitude 2

Range:	100% — 700% Rated current	Default: 500%
Explain:	Set the kick start current amplitude.	

10H — Stop mode 2

Options:	Taxi stop (default) TVR soft stop Adaptive Control Brake	
Explain:	Select the stop method.	

10I — Stop time 2

Range:	0:00 - 4:00 (Minutes: seconds)	Default: 0s
Explain:	Set the stop time.	

10J — Adaptive stop curve 2

Options:	Early deceleration Constant deceleration (default) Deceleration	
Explain:	Select which curve the soft starter uses for adaptive control soft stop.	

10K — Adaptive control gain 2

Range:	1% - 200%	Default: 75%
Explain:	Tuning the performance of adaptive control. This setting affects both start control and stop control.	

10L — Brake torque 2

Range:	20%-100%	Default: 20%
Explain:	Set the amount of braking torque used by the soft starter to slow down the motor.	

10M — Braking Time-2

Range:	1-30 (s)	Default: 1s
Explain:	Set the duration of DC power supply during braking stop.	
