

YASKAWA AC Drive T1000V Supplementary Documentation for Software Upgrade

Preface

Thank you for purchasing Yaskawa AC Drive T1000V.

This document lists changes to current parameters, new parameters, and other changes made in the software upgrade for T1000V. Please use this information along with the T1000V Technical Manual (SIEP C710606 44□ and SIEP C710606 38□).

The user should have a thorough understanding of all safety precautions and operating instructions prior to using T1000V.

Models covered in this document

This document concerns T1000V drives running software version PRG: 6003 or later. The software version is listed on the nameplate located on the side of the drive, and can also be viewed by displaying monitor parameter U1-25.

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1. Analog Input Terminal Enable Selection

Enables or disables analog input terminals by closing or opening set terminals when the “Terminal A1/A2 Enable” (H1-□□=C) is set.

■ New Parameter

No.	Name	Description	Setting Range	Default Setting	Changes during Run	Control Mode			MEMOBUS Register (Hex)
						V/f	OLV	OLV/PM	
H3-14	Analog Input Terminal Enable Selection	Determines which of the analog input terminals will be enabled when a digital input programmed for “Terminal A1/A2 Enable” (H1-□□ = C) is activated. 1: Terminal A1 only 2: Terminal A2 only 7: All terminals enabled	1,2,7	7	No	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	41CH

■ Change Multi-Function Digital Input Selection

H1-□□ Setting Value	Function	Description	Control Mode		
			V/f	OLV	OLV/PM
C	Terminal A1/A2 Enable	Open: Analog input selected by H3-14 is disabled. Closed: Analog input selected by H3-14 is enabled.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2. Analog Input Terminal Offset Adjustment

Determines the amount of offset to be used to calibrate an analog input signal. The offset should already be set properly when the unit is first shipped, so adjustment is normally not needed.

Calibrating the Input Signal Offset

Enter a 0 V signal to terminal A1. Next adjust the offset in H3-16 until the monitor U1-13 for the terminal A1 input voltage reads 0.0%.

The process is the same for terminal A2. Enter a 0 V signal, and adjust the offset for terminal A2 in H3-17 until the monitor U1-14 for terminal A2 input voltage reads 0.0%.

■ New Parameters

No.	Name	Description	Setting Range	Default Setting	Changes during Run	Control Mode			MEMOBUS Register (Hex)
						V/f	OLV	OLV/PM	
H3-16	Terminal A1 Offset Adjustment	Sets the amount of offset applied to the signal input to terminal A1. This setting rarely needs to be changed.	-500 to 500	0	No	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	440H
H3-17	Terminal A2 Offset Adjustment	Sets the amount of offset applied to the signal input to terminal A2. This setting rarely needs to be changed.	-500 to 500	0	No	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	441H

3. Selecting Frequency Agree Conditions

L4-08 was added to allow the user to determine what constitutes a frequency agree situation: SFS output or motor speed (estimated).

■ New Parameter

No.	Name	Description	Setting Range	Default Setting	Changes during Run	Control Mode			MEMOBUS Register (Hex)
						V/f	OLV	OLV/PM	
L4-08	Speed Agreement Detection Conditions	0: Match speed with the soft-starter output 1: Match frequency reference and motor speed Note: In V/f Control, the drive ignores the value set to L4-08 and refers to the soft-starter output to determine if a speed agree situation has been reached or not.	0,1	0	No	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	47FH

The following functions influence the conditions that determine that frequency agree has been achieved:

1. When overtorque alarms oL3 and oL4 are used to determine frequency agree, then parameters L6-01 and L6-04 that select the type of overtorque and undertorque to use influence

2. Multi-Function Digital Outputs

Setting Value	Function
2	Frequency (speed) agree 1
3	User-set frequency (speed) agree 1
4	Frequency (FOUT) detection 1
5	Frequency (FOUT) detection 2
13	Frequency (speed) agree 2
14	User-set frequency (speed) agree 2
15	Frequency (FOUT) detection 3
16	Frequency (FOUT) detection 4

3. MEMOBUS Monitor Data

Register No.	Description	
002CH	Drive status 2	
	bit 2	Speed agree, 1: during agree
	bit 3	User-set speed agree, 1: during agree
	bit 4	Frequency detection 1, 1: output frequency \leq L4-01
	bit 5	Frequency detection 2, 1: output frequency \geq L4-01
004BH	Drive status (U1-12)	
	bit 4	1: During speed agree

4. U: Monitor

No.	Name	Description
U1-12	Drive Status	The fifth digit from right side : During speed agree

4. Protection for 50 Hz Motor

Protection for a 50 Hz motor was added to L1-01.

■ New Parameter

No.	Name	Description	Setting Range	Default Setting	Changes during Run	Control Mode			MEMOBUS Register (Hex)
						V/f	OLV	OLV/PM	
L1-01	Motor Overload Protection Selection	<p>Sets the motor thermal overload protection (oL1) based on the cooling capacity of the motor.</p> <p>0: Disabled 1: Standard Fan Cooled (speed range 10:1) 2: Standard Blower Cooled (speed range 10:1) 3: Vector Motor (speed range 100:1) 4: PM motor with variable torque 6: Custom motor operating at 50 Hz</p> <p>NOTICE: When multiple motors are used the drive may not be able to provide protection, even if it is enabled in L1-01. Set L1-01 to "0" ensure motor has a thermal relay installed.</p>	0 to 4,6	1	No	S	S	S	480H

The diagram below illustrates the allowable load for a 50 Hz motor. Because the motor is self-cooled, the allowable load level falls as the motor speeds up. Setting L1-01 to 6 allows the drive to adjust overheating protection to match the electrical thermal changes at low and high speeds.

Allowable Load	Cooling Capacity at 100% Motor Load	Overload Characteristics
<p>Rated speed=100% speed</p> <p>60s instantaneous torque</p> <p>Continuous</p> <p>Torque (%)</p> <p>Rated Motor Rotations (%)</p>	<p>Motor designed to operate from line power. Motor cooling is most effective when running at rated base frequency, 50 Hz.</p>	<p>Continuous operation at less than 50 Hz with 100% torque can trigger motor overload protection (oL1). A fault is output and the motor will coast to stop.</p>

5. Contact Outputs for rH and rr Faults

A fault output option was added so that the output terminal can be set to close when there is a problem with the built-in dynamic braking resistor.

■ New Multi-Function Digital Outputs

H2-□□ Setting Value	Function	Description	Control Mode		
			V/f	OLV	OLV/PM
4E	Braking Transistor Fault (rr)	Closed: The built-in dynamic braking transistor failed.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4F	Braking Resistor Overheat (rH)	Closed: The dynamic braking resistor has overheated	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

6. Maintenance Period Alarm Function

Notifies the user when certain components may require maintenance.

■ New Alarm Displays

Display	Alarm Name	Cause	Possible Solutions	Minor Fault Output
LT-1 (flashing)	Cooling Fan Maintenance Time	The cooling fan has reached 90% of its expected performance life. Note: An alarm output will be triggered if H2-□□= 2F.	Replace the cooling fan and reset the Maintenance Monitor by setting o4-03 to 0.	No output
LT-2 (flashing)	Capacitor Maintenance Time	The main circuit and control circuit capacitors have reached 90% of their expected performance life. Note: An alarm output will be triggered if H2-□□= 2F.	Replace either the control board or the entire drive. For instructions on replacing the control board, contact Yaskawa or your nearest sales representative.	No output
LT-3 (flashing)	Soft Charge Bypass Relay Maintenance Time	The DC bus soft charge relay is nearing the end of its expected performance life. Note: An alarm output will be triggered if H2-□□= 2F.	Replace either the control board or the entire drive. For instructions on replacing the control board, contact Yaskawa or your nearest sales representative.	No output
LT-4 (flashing)	IGBT Maintenance Time (50%)	IGBTs have reached 50% of their expected performance life. Note: An alarm output will be triggered if H2-□□= 2F.	Check the load, carrier frequency, and output frequency.	No output
TrPC (flashing)	IGBT Maintenance Time (90%)	IGBTs have reached 90% of their expected performance life. Note: An alarm output will be triggered if H2-□□= 10.	Replace the drive.	YES

■ New Multi-Function Digital Output

H2-□□ Setting Value	Function	Description	Control Mode		
			V/f	OLV	OLV/PM
2F	Maintenance Period	Closed: Cooling fan, electrolytic capacitors, IGBTs, or the soft charge bypass relay may require maintenance.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

7. MECHATROLINK-II Option Error Detection Setting

Determines what action the drive should take when an error is detected with the MECHATROLINK-II option card.

■ New Parameters

No.	Name	Description	Setting Range	Default Setting	Changes during Run	Control Mode			MEMOBUS Register (Hex)
						V/f	OLV	OLV/PM	
F6-25	MECHATROLINK- II WDT Error Selection	Determines how the drive should stop if a MECHATROLINK-II watchdog timer error occurs (E5). 0: Ramp to stop (uses the deceleration time in C1-02) 1: Coast to stop 2: Fast Stop (uses the deceleration time in C1-09) 3: Continue operation (alarm only)	0 to 3	1	Not Possible.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	3C9H
F6-26	Number of MECHATROLINK-II bUS Errors	Sets the number of times allowed for a MECHATROLINK- II bUS error to be detected.	2 to 10	2	Not Possible.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	3CAH

■ New Fault Display

Display	Fault Name	Cause	Possible Solutions
E5	MECHATROLINK- II Watchdog Error	The watchdog timer expired waiting for data from the controller.	Issue a DISCONNECT or ALM_CLR command, followed by a CONNECT or SYNC_SET command and move to phase 3.

■ New Alarm Displays

Display	Alarm Name	Cause	Possible Solutions	Minor Fault Output
E5 (flashing)	MECHATROLINK-II Watchdog Error	The watchdog timer expired waiting for data from the controller.	Issue a DISCONNECT or ALM_CLR command, followed by a CONNECT or SYNC_SET command and move to phase 3.	YES
CyC (flashing)	MECHATROLINK-II Comm. Cycle Setting Error	The controller is using a comm. cycle beyond the allowable setting range for MECHATROLINK- II option card.	Set the comm. cycle for the upper controller within the allowable setting range for the option card.	YES

8. Motor Output Power Lower Limit Value Changed: T1-02

The lower limit value of the setting range for the motor rated power set in T1-02 was changed from 0.00 kW to 0.03 kW.

■ Change to Parameter

No.	Name	Description	Setting Range	Default Setting	Changes during Run	Control Mode			MEMOBUS Register (Hex)
						V/f	OLV	OLV/PM	
T1-02	Motor Rated Power	Sets the motor rated power in kilowatts.	0.03 to 650.00	Dep. on capacity	No	<input type="radio"/>	<input type="radio"/>	×	702H

9. Setting Range for Motor Induction Voltage Constant 2 Changed: E5-24

Set range for the motor induction voltage constant 2 (E5-24) has changed from 0.0-2000.0 to 0.0-6500.0.

Change to Parameter

No.	Name	Description	Setting Range	Default Setting	Changes during Run	Control Mode			MEMOBUS Register (Hex)
						V/f	OLV	OLV/PM	
E5-24	Motor Induction Voltage Constant 2	Set the induced phase-to-phase rms voltage in units of 0.1 mV/(r/min) [mechanical angle]. Set this parameter when using a Yaskawa SMRA Series SPM Motor. When setting this parameter, E5-09 should be set to 0. An alarm will be triggered if both E5-09 and E5-24 are set to 0, or if neither parameter is set to 0. If E5-03 (Motor Rated Current) is set to 0, however, then an alarm will not be triggered when both E5-09 and E5-24 are set to 0.	0.0 to 6500.0	Dep. on parameter E5-01	No	×	×	S	353H

10. Reverse Operation Selection 2 by PID Output: b5-47

Reverse Operation Selection 2 by PID Output (b5-47) was added.

New Parameter

No.	Name	Description	Setting Range	Default Setting	Changes during Run	Control Mode			MEMOBUS Register (Hex)
						V/f	OLV	OLV/PM	
b5-47	Reverse Operation Selection 2 by PID Output	Reverses operation selection when b5-01 = 3 or 4 0: Zero limit when PID output is a negative value 1: Reverse operation when PID output is a negative value (Zero limit if the reverse operation is prohibited by b1-04)	0,1	1	No	○	○	○	17DH

11. Speed Search Induced Voltage Level: b3-29

Speed Search Induced Voltage Level (b3-29) was added.

New Parameter

No.	Name	Description	Setting Range	Default Setting	Changes during Run	Control Mode			MEMOBUS Register (Hex)
						V/f	OLV	OLV/PM	
b3-29	Speed Search Induced Voltage Level	Performs Speed Search when the motor induced voltage exceeds the set level. This setting rarely needs to be changed. If changes are necessary, try lowering this value in small increments. If set too low, then the drive will not perform Speed Search.	0 to 10	10%	No	×	×	○	77CH

12. Lower Limit of the Drive Transmit Wait Time Changed: H5-06

Set range for the lower limit of the Drive Transmit Wait Time (H6-06) has changed from 5-65 to 0-65.

New Parameter

No.	Name	Description	Setting Range	Default Setting	Changes during Run	Control Mode			MEMOBUS Register (Hex)
						V/f	OLV	OLV/PM	
H5-06	Drive Transmit Wait Time	Set the wait time between receiving and sending data.	0 to 65	5 ms	No	○	○	○	42AH

13. Parameters to Adjust Default Settings Using the PM Motor Code Selection Changed: E5-01

Parameters to adjust default settings using the PM Motor Code Selection (E5-01) have changed.

Table B.9 1800 rpm Type Yaskawa SMRA Series SPM Motor Settings

No.	Description	Unit	Default Settings				
E5-01 <1>	PM Motor Code Selection	—	0002	0003	0005	0006	0008
	Voltage class	—	200 Vac	200 Vac	200 Vac	200 Vac	200 Vac
	Rated power	—	0.4 kW	0.75 kW	1.5 kW	2.2 kW	3.7 kW
	Rated speed	—	1800	1800	1800	1800	1800
E5-02	Motor Rated Power	kW	0.4	0.75	1.5	2.2	3.7
E5-03	Motor Rated Current	A	2.1	4	6.9	10.8	17.4
E5-04	Number of Motor Poles	—	8	8	8	8	8
E5-05	Motor Stator Resistance	Ω	2.47	1.02	0.679	0.291	0.169
E5-06	Motor d-Axis Inductance	mH	12.7	4.8	3.9	3.6	2.5
E5-07	Motor q-Axis Inductance	mH	12.7	4.8	3.9	3.6	2.5
E5-09	Motor Induction Voltage Constant 1	mVsec/ rad	0	0	0	0	0
E5-24	Motor Induction Voltage Constant 2	mV/ (r/min)	62	64.1	73.4	69.6	72.2
E1-04	Maximum Output Frequency	Hz	120	120	120	120	120
E1-05	Maximum Voltage	V	200	200	200	200	200
E1-06	Base Frequency	Hz	120	120	120	120	120
E1-09	Minimum Output Frequency	Hz	6	6	6	6	6
n8-49	d-Axis Current for High Efficiency Control	%	0	0	0	0	0

<1> Default setting value varies by the drive model (o2-04).

Table B.10 3600 rpm Type Yaskawa SMRA Series SPM Motor Settings

No.	Description	Unit	Default Settings			
E5-01 <1>	PM Motor Code Selection	—	0103	0105	0106	0108
	Voltage class	—	200 Vac	200 Vac	200 Vac	200 Vac
	Rated power	—	0.75 kW	1.5 kW	2.2 kW	3.7 kW
	Rated speed	—	3600	3600	3600	3600
E5-02	Motor Rated Power	kW	0.75	1.5	2.2	3.7
E5-03	Motor Rated Current	A	4.1	8	10.5	16.5
E5-04	Number of Motor Poles	—	8	8	8	8
E5-05	Motor Stator Resistance	Ω	0.538	0.2	0.15	0.097
E5-06	Motor d-Axis Inductance	mH	3.2	1.3	1.1	1.1
E5-07	Motor q-Axis Inductance	mH	3.2	1.3	1.1	1.1
E5-09	Motor Induction Voltage Constant 1	mVsec/ rad	0	0	0	0
E5-24	Motor Induction Voltage Constant 2	mV/ (r/min)	32.4	32.7	36.7	39.7
E1-04	Maximum Output Frequency	Hz	240	240	240	240
E1-05	Maximum Voltage	V	200	200	200	200
E1-06	Base Frequency	Hz	240	240	240	240
E1-09	Minimum Output Frequency	Hz	12	12	12	12
n8-49	d-Axis Current for High Efficiency Control	%	0	0	0	0

<1> Default setting value varies by the drive model (o2-04).

Table B.11 200 V, 1750 rpm Type Yaskawa SSR1 Series Motor

No.	Description	Unit	Default Settings									
			1202	1203	1205	1206	1208	120A	120B	120D	120E	120F
E5-01 <1>	PM Motor Code Selection	—	1202	1203	1205	1206	1208	120A	120B	120D	120E	120F
	Voltage class	—	200 Vac	200 Vac	200 Vac	200 Vac	200 Vac	200 Vac	200 Vac	200 Vac	200 Vac	200 Vac
	Rated power	—	0.4 kW	0.75 kW	1.5 kW	2.2 kW	3.7 kW	5.5 kW	7.5 kW	11 kW	15 kW	18 kW
	Rated speed	—	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
E5-02	Motor Rated Power	kW	0.4	0.75	1.5	2.2	3.7	5.5	7.5	11	15	18.5
E5-03	Motor Rated Current	A	1.77	3.13	5.73	8.44	13.96	20.63	28.13	41.4	55.4	68.2
E5-04	Number of Motor Poles	—	6	6	6	6	6	6	6	6	6	6
E5-05	Motor Stator Resistance	Ω	8.233	2.284	1.470	0.827	0.455	0.246	0.198	0.094	0.066	0.051
E5-06	Motor d-Axis Inductance	mH	54.84	23.02	17.22	8.61	7.2	4.86	4.15	3.4	2.45	2.18
E5-07	Motor q-Axis Inductance	mH	64.1	29.89	20.41	13.5	10.02	7.43	5.91	3.91	3.11	2.55
E5-09	Motor Induction Voltage Constant 1	mVsec/ rad	223.7	220.3	240.8	238	238.7	239.6	258.2	239.3	248.1	253.6
E5-24	Motor Induction Voltage Constant 2	mV/ (r/min)	0	0	0	0	0	0	0	0	0	0
E1-04	Maximum Output Frequency	Hz	87.5	87.5	87.5	87.5	87.5	87.5	87.5	87.5	87.5	87.5
E1-05	Maximum Voltage	V	190	190	190	190	190	190	190	190	190	190
E1-06	Base Frequency	Hz	87.5	87.5	87.5	87.5	87.5	87.5	87.5	87.5	87.5	87.5
E1-09	Minimum Output Frequency	Hz	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4
n8-49	d-Axis Current for High Efficiency Control	%	-7.6	-11.5	-9.1	-19	-18.7	-23.4	-18.5	-10.9	-16.5	-11.3

<1> Default setting value varies by the drive model (o2-04).

Table B.12 400 V, 1750 rpm Type Yaskawa SSR1 Series Motor

No.	Description	Unit	Default Settings									
			1232	1233	1235	1236	1238	123A	123B	123D	123E	123F
E5-01 <1>	PM Motor Code Selection	—	1232	1233	1235	1236	1238	123A	123B	123D	123E	123F
	Voltage class	—	400 Vac	400 Vac	400 Vac	400 Vac	400 Vac	400 Vac	400 Vac	400 Vac	400 Vac	400 Vac
	Rated power	—	0.4 kW	0.75 kW	1.5 kW	2.2 kW	3.7 kW	5.5 kW	7.5 kW	11 kW	15 kW	18 kW
	Rated speed	—	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
E5-02	Motor Rated Power	kW	0.4	0.75	1.5	2.2	3.7	5.5	7.5	11	15	18.5
E5-03	Motor Rated Current	A	0.89	1.56	2.81	4.27	7.08	10.31	13.65	20.7	27.5	33.4
E5-04	Number of Motor Poles	—	6	6	6	6	6	6	6	6	6	6
E5-05	Motor Stator Resistance	Ω	25.370	9.136	6.010	3.297	1.798	0.982	0.786	0.349	0.272	0.207
E5-06	Motor d-Axis Inductance	mH	169.00	92.08	67.71	34.40	32.93	22.7	16.49	13.17	10.30	8.72
E5-07	Motor q-Axis Inductance	mH	197.5	119.56	81.71	54.00	37.7	26.8	23.46	15.60	12.77	11.22
E5-09	Motor Induction Voltage Constant 1	mVsec/ rad	392.6	440.6	478.3	466.3	478.8	478.1	520.0	481.5	498.8	509.5
E5-24	Motor Induction Voltage Constant 2	mV/ (r/min)	0	0	0	0	0	0	0	0	0	0
E1-04	Maximum Output Frequency	Hz	87.5	87.5	87.5	87.5	87.5	87.5	87.5	87.5	87.5	87.5
E1-05	Maximum Voltage	V	380	380	380	380	380	380	380	380	380	380
E1-06	Base Frequency	Hz	87.5	87.5	87.5	87.5	87.5	87.5	87.5	87.5	87.5	87.5
E1-09	Minimum Output Frequency	Hz	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4
n8-49	d-Axis Current for High Efficiency Control	%	-8.6	-11.5	-10.3	-19.8	-8.5	-11	-18.6	-12.5	-15.5	-17.9

<1> Default setting value varies by the drive model (o2-04).

Table B.13 200 V, 1450 rpm Type Yaskawa SSR1 Series Motor

No.	Description	Unit	Default Settings									
E5-01 <1>	PM Motor Code Selection	—	1302	1303	1305	1306	1308	130A	130B	130D	130E	130F
	Voltage class	—	200 Vac	200 Vac	200 Vac	200 Vac	200 Vac	200 Vac	200 Vac	200 Vac	200 Vac	200 Vac
	Rated power	—	0.4 kW	0.75 kW	1.5 kW	2.2 kW	3.7 kW	5.5kW	7.5 kW	11 kW	15 kW	18 kW
	Rated speed	—	1450	1450	1450	1450	1450	1450	1450	1450	1450	1450
E5-02	Motor Rated Power	kW	0.4	0.75	1.5	2.2	3.7	5.5	7.5	11	15	18.5
E5-03	Motor Rated Current	A	1.88	3.13	5.63	8.33	14.17	20.63	27.71	39.6	55.5	65.6
E5-04	Number of Motor Poles	—	6	6	6	6	6	6	6	6	6	6
E5-05	Motor Stator Resistance	Ω	3.190	1.940	1.206	0.665	0.341	0.252	0.184	0.099	0.075	0.057
E5-06	Motor d-Axis Inductance	mH	32.15	26.12	14.72	12.27	8.27	6.49	6.91	4.07	3.29	2.53
E5-07	Motor q-Axis Inductance	mH	41.74	34.3	20.15	14.77	9.81	7.74	7.66	4.65	3.84	3.01
E5-09	Motor Induction Voltage Constant 1	mVsec/ rad	264.3	269.6	284.3	287.1	284.5	298.0	335.0	303.9	311.2	300.9
E5-24	Motor Induction Voltage Constant 2	mV/ (r/min)	0	0	0	0	0	0	0	0	0	0
E1-04	Maximum Output Frequency	Hz	72.5	72.5	72.5	72.5	72.5	72.5	72.5	72.5	72.5	72.5
E1-05	Maximum Voltage	V	190	190	190	190	190	190	190	190	190	190
E1-06	Base Frequency	Hz	72.5	72.5	72.5	72.5	72.5	72.5	72.5	72.5	72.5	72.5
E1-09	Minimum Output Frequency	Hz	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
n8-49	d-Axis Current for High Efficiency Control	%	-6.6	-10.9	-13.5	-9	-9.5	-10.1	-6	-9.3	-10.7	-13.2

<1> Default setting value varies by the drive model (o2-04).

Table B.14 400 V, 1450 rpm Type Yaskawa SSR1 Series Motor

No.	Description	Unit	Default Settings									
E5-01 <1>	PM Motor Code Selection	—	1332	1333	1335	1336	1338	133A	133B	133D	133E	133F
	Voltage class	—	400 Vac	400 Vac	400 Vac	400 Vac	400 Vac	400 Vac	400 Vac	400 Vac	400 Vac	400 Vac
	Rated power	—	0.4 kW	0.75 kW	1.5 kW	2.2 kW	3.7 kW	5.5 kW	7.5 kW	11 kW	15 kW	18 kW
	Rated speed	—	1450	1450	1450	1450	1450	1450	1450	1450	1450	1450
E5-02	Motor Rated Power	kW	0.4	0.75	1.5	2.2	3.7	5.5	7.5	11	15	18.5
E5-03	Motor Rated Current	A	0.94	1.56	2.81	4.27	6.98	10.21	13.85	19.5	27.4	32.9
E5-04	Number of Motor Poles	—	6	6	6	6	6	6	6	6	6	6
E5-05	Motor Stator Resistance	Ω	12.76	7.421	4.825	2.656	1.353	0.999	0.713	0.393	0.295	0.223
E5-06	Motor d-Axis Inductance	mH	128.6	85.11	58.87	46.42	31.73	26.2	27.06	15.51	12.65	9.87
E5-07	Motor q-Axis Inductance	mH	166.96	113.19	80.59	60.32	40.45	30.94	33.45	19.63	15.87	12.4
E5-09	Motor Induction Voltage Constant 1	mVsec/ rad	528.6	544.2	568.5	572.8	562.9	587.6	670.1	612.7	624.6	610.4
E5-24	Motor Induction Voltage Constant 2	mV/ (r/min)	0	0	0	0	0	0	0	0	0	0
E1-04	Maximum Output Frequency	Hz	72.5	72.5	72.5	72.5	72.5	72.5	72.5	72.5	72.5	72.5
E1-05	Maximum Voltage	V	380	380	380	380	380	380	380	380	380	380
E1-06	Base Frequency	Hz	72.5	72.5	72.5	72.5	72.5	72.5	72.5	72.5	72.5	72.5
E1-09	Minimum Output Frequency	Hz	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
n8-49	d-Axis Current for High Efficiency Control	%	-6.6	-9.2	-13.5	-12.1	-13.7	-10.1	-12.2	-15.5	-15.1	-16

<1> Default setting value varies by the drive model (o2-04).

Table B.15 200 V, 1150 rpm Type Yaskawa SSR1 Series Motor

No.	Description	Unit	Default Settings									
			1402	1403	1405	1406	1408	140A	140B	140D	140E	140F
E5-01 <1>	PM Motor Code Selection	—	1402	1403	1405	1406	1408	140A	140B	140D	140E	140F
	Voltage class	—	200 Vac	200 Vac	200 Vac	200 Vac	200 Vac	200 Vac	200 Vac	200 Vac	200 Vac	200 Vac
	Rated power	—	0.4 kW	0.75 kW	1.5 kW	2.2 kW	3.7 kW	5.5kW	7.5 kW	11 kW	15 kW	18 kW
	Rated speed	—	1150	1150	1150	1150	1150	1150	1150	1150	1150	1150
E5-02	Motor Rated Power	kW	0.4	0.75	1.5	2.2	3.7	5.5	7.5	11	15	18.5
E5-03	Motor Rated Current	A	1.88	3.02	6.00	8.85	14.27	20.21	26.67	39.9	55.6	63.5
E5-04	Number of Motor Poles	—	6	6	6	6	6	6	6	6	6	6
E5-05	Motor Stator Resistance	Ω	4.832	2.704	1.114	0.511	0.412	0.303	0.165	0.113	0.084	0.066
E5-06	Motor d-Axis Inductance	mH	48.68	32.31	19.22	12.15	7.94	11.13	6.59	4.96	3.83	3.33
E5-07	Motor q-Axis Inductance	mH	63.21	40.24	24.38	15.35	11.86	14.06	8.55	6.12	4.65	4.5
E5-09	Motor Induction Voltage Constant 1	mVsec/ rad	320.4	327.1	364.4	344.4	357.5	430.8	391.5	384.4	372.1	421.3
E5-24	Motor Induction Voltage Constant 2	mV/ (r/min)	0	0	0	0	0	0	0	0	0	0
E1-04	Maximum Output Frequency	Hz	57.5	57.5	57.5	57.5	57.5	57.5	57.5	57.5	57.5	57.5
E1-05	Maximum Voltage	V	190	190	190	190	190	190	190	190	190	190
E1-06	Base Frequency	Hz	57.5	57.5	57.5	57.5	57.5	57.5	57.5	57.5	57.5	57.5
E1-09	Minimum Output Frequency	Hz	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9
n8-49	d-Axis Current for High Efficiency Control	%	-8.8	-9.9	-9.3	-10	-17.7	-12.3	-15.3	-13.9	-14.4	-17.9

<1> Default setting value varies by the drive model (o2-04).

Table B.16 400 V, 1150 rpm Type Yaskawa SSR1 Series Motor

No.	Description	Unit	Default Settings									
			1432	1433	1435	1436	1438	143A	143B	143D	143E	143F
E5-01 <1>	PM Motor Code Selection	—	1432	1433	1435	1436	1438	143A	143B	143D	143E	143F
	Voltage class	—	400 Vac	400 Vac	400 Vac	400 Vac	400 Vac	400 Vac	400 Vac	400 Vac	400 Vac	400 Vac
	Rated power	—	0.4 kW	0.75 kW	1.5 kW	2.2 kW	3.7 kW	5.5kW	7.5 kW	11 kW	15 kW	18 kW
	Rated speed	—	1150	1150	1150	1150	1150	1150	1150	1150	1150	1150
E5-02	Motor Rated Power	kW	0.4	0.75	1.5	2.2	3.7	5.5	7.5	11	15	18.5
E5-03	Motor Rated Current	A	0.94	1.51	3.00	4.43	7.08	10.1	13.33	19.9	27.8	31.8
E5-04	Number of Motor Poles	—	6	6	6	6	6	6	6	6	6	6
E5-05	Motor Stator Resistance	Ω	19.32	10.8	4.456	2.044	1.483	1.215	0.66	0.443	0.331	0.264
E5-06	Motor d-Axis Inductance	mH	194.7	129.2	76.88	48.6	37.58	44.54	26.36	19.1	15.09	13.32
E5-07	Motor q-Axis Inductance	mH	252.84	160.9	97.52	61.4	47.65	56.26	34.2	24.67	18.56	18
E5-09	Motor Induction Voltage Constant 1	mVsec/ rad	640.9	654.1	728.8	688.9	702.0	861.5	783.0	762.2	749.6	842.7
E5-24	Motor Induction Voltage Constant 2	mV/ (r/min)	0	0	0	0	0	0	0	0	0	0
E1-04	Maximum Output Frequency	Hz	57.5	57.5	57.5	57.5	57.5	57.5	57.5	57.5	57.5	57.5
E1-05	Maximum Voltage	V	380	380	380	380	380	380	380	380	380	380
E1-06	Base Frequency	Hz	57.5	57.5	57.5	57.5	57.5	57.5	57.5	57.5	57.5	57.5
E1-09	Minimum Output Frequency	Hz	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9
n8-49	d-Axis Current for High Efficiency Control	%	-8.8	-9.9	-9.3	-10	-12.8	-12.3	-15.3	-16.7	-14.9	-17.9

<1> Default setting value varies by the drive model (o2-04).

14. Addition of New Faults and Alarms, and Change to Operator Programming Error

■ New Fault Displays

Display	Fault Name	Cause	Possible Solutions
E5 (Fault Code: 0039H)	MECHATROLINK-II Watchdog Error	The watchdog timer expired waiting for data from the controller.	Issue a DISCONNECT or ALM_CLR command, followed by a CONNECT or SYNC_SET command and move to phase 3.
SC (Fault Code: 0005H)	IGBT Upper Arm and Lower Arm Short Circuit	The motor is damaged or insulation has become weak.	Check the motor insulation resistance. ⇒ Replace the motor if the insulation is bad.
		The motor cable is damaged so that a short circuit occurred.	Check the motor cable. ⇒ Repair the short circuited section or replace the cable.
		Hardware fault	Check if an output transistor may have failed. ⇒ With the drive completely unwired perform a continuity check between terminals: B1 ↔ U, V, W (with + terminal of tester connected to B1 and – terminal connected to output phase terminals) ⊖ ↔ U, V, W (with –terminal of tester connected to ⊖ terminal and + terminal of the tester connected to drive output phase terminals. In continuity is measured in any of the phases the output transistor is broken. ⇒ Do not reconnect power and contact your Yaskawa sales representative.

■ New Alarm Displays

Display	Alarm Name	Cause	Possible Solutions	Minor Fault Output
E5 (flashing) (Fault Code: 0031H)	MECHATROLINK-II Watchdog Error	The watchdog timer expired waiting for data from the controller.	Issue a DISCONNECT or ALM_CLR command, followed by a CONNECT or SYNC_SET command and move to phase 3.	YES
CyC (flashing) (Fault Code: 0033H)	MECHATROLINK-II Comm. Cycle Setting Error	The controller is using a comm. cycle beyond the allowable setting range for MECHATROLINK- II option card.	Set the comm. cycle for the upper controller within the allowable setting range for the option card.	YES
LT-1 (flashing) (Fault Code: 0035H)	Cooling Fan Maintenance Time	The cooling fan has reached 90% of its expected performance life. Note: An alarm output will be triggered if H2-□□= 2F.	Replace the cooling fan and reset the Maintenance Monitor by setting o4-03 to 0.	No output
LT-2 (flashing) (Fault Code: 0036H)	Capacitor Maintenance Time	The main circuit and control circuit capacitors have reached 90% of their expected performance life. Note: An alarm output will be triggered if H2-□□= 2F.	Replace either the control board or the entire drive. For instructions on replacing the control board, contact Yaskawa or your nearest sales representative.	No output
LT-3 (flashing) (Fault Code: 0043H)	Soft Charge Bypass Relay Maintenance Time	The DC bus soft charge relay is nearing the end of its expected performance life. Note: An alarm output will be triggered if H2-□□= 2F.	Replace either the control board or the entire drive. For instructions on replacing the control board, contact Yaskawa or your nearest sales representative.	No output
LT-4 (flashing) (Fault Code: 0044H)	IGBT Maintenance Time (50%)	IGBTs have reached 50% of their expected performance life. Note: An alarm output will be triggered if H2-□□= 2F.	Check the load, carrier frequency, and output frequency.	No output
TrPC (flashing) (Fault Code: 0042H)	IGBT Maintenance Time (90%)	IGBTs have reached 90% of their expected performance life. Note: An alarm output will be triggered if H2-□□= 10.	Replace the drive.	YES

■ Change to Operator Programming Error

Display	Error Name	Cause	Possible Solutions
oPE13	Pulse Train Monitor Selection Error	The pulse train monitor scaling in H6-07 was set to 0 while the pulse train monitor in H6-07 was not set to one of the following required settings: 101: Frequency reference 102: Output frequency 105: Motor speed 116: Output frequency after SFS	Set H6-06 to the correct value.



For questions and comments, refer to the contact information listed on the back of the Technical Manual.