HIWIN® MIKROSYSTEM

E2 Series Servo Drive

Replacement Guide

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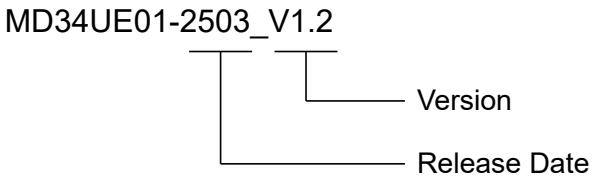
Revision History

The version of the manual is also indicated on the bottom of the front cover.



Release Date	Version	Applicable Product	Revision Contents
Mar. 13th, 2025	1.2	E2 series servo drive	1. Add section 1.1.2 **E2-R drive model**. 2. Update section 1.1.5 **Power specification comparison of drives**. 3. Add E2-R specifications in the following sections: Section 1.1.6 **Encoder type and interface comparison of drives** Section 1.2 **Replace D1 drive with E2 drive** Section 1.3 **Replace E1 drive with E2 drive** Section 4.1 **Software/Firmware comparison of drives** 4. Add section 3.1.3 **Peripheral configuration difference: D1 drive vs E2-R drive**. 5. Add section 3.1.4 **Peripheral configuration difference: E1 drive vs E2-R drive**.
Dec. 20th, 2024	1.1	E2 series servo drive	1. Update **Related Documents**. 2. Update section 1.1 **Specification table of drives**. 3. Update section 1.1.4 **Power specification comparison of drives**. 4. Update section 1.3 **Replace E1 drive with E2 drive**. 5. Update section 2.1.2 **Dimension difference: E1 drive vs E2 drive**. 6. Update section 3.2.1 **Connector specification of E2 drive**. 7. Update section 4.1 **Software/Firmware comparison of drives**.
Apr. 25th, 2023	1.0	E2 series servo drive	First edition.

Related Documents

Through related documents, users can quickly understand the positioning of this manual and the correlation between manuals and products. Go to HIWIN MIKROSYSTEM's official website → Download → Manual Overview for details (https://www.hiwinmikro.tw/Downloads/ManualOverview_EN.htm).

Preface

This manual aims to provide the information needed for replacing HIWIN D1 series servo drive and E1 series servo drive with E2 series servo drive. The contents in this manual, including manual preface, specification comparison, size difference, hardware interface and software interface, are arranged in accordance with the procedure of configuring a machine. Carefully read through this manual to correctly perform the replacement.

General Precautions

This manual provides some specification comparisons with old series products. For detailed application functions, please contact technical service personnel of HIWIN MIKROSYSTEM.

Chapter Overview

Chapter	Title	Contents
1	Replacement of drive specifications	This chapter describes how to replace D1 drive or E1 drive with E2 drive model.
2	Differences in drive dimensions	This chapter introduces the dimension differences after D1 drive or E1 drive is replaced with E2 drive.
3	Differences in drive hardware interfaces	This chapter introduces the hardware interface differences when D1 drive or E1 drive is replaced with E2 drive.
4	Differences in drive software interfaces	This chapter introduces the software/firmware differences when D1 drive or E1 drive is replaced with E2 drive.

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1. Replacement of drive specifications

1.1 Specification table of drives

1.1.1 E2 drive model

The table below is the specification table for identifying E2 drive model. For detailed drive specifications, refer to “E2 Series Servo Drive User Manual.”

Table 1.1.1.1

Code	1	2	3	4	-	5	6	-	7	8	9	-	10	-	11	-	12	13
Example	E	D	2	S	-	V	0	-	0	0	3	-	1	-	C	-	0	0
1, 2, 3: E2 Series Servo Drive	ED2																	
4: Type	S = Standard								F = Fieldbus									
5, 6: Control Interface	V0 = Voltage command and pulse								E0 = EtherCAT (CoE) H3 = mega-ulink (For HIWIN MoE HIMC motion controller or API/MPI library) P0 = PROFINET R0 = EtherNet/IP L3 = MECHATROLINK-III									
7, 8, 9: Rated Output	003 = 3 Arms 006 = 6.3 Arms 009 = 9.4 Arms 012 = 12 Arms 018 = 18 Arms																	
10: Phase Input	1 = Single/Three-phase 100~240 Vac; 48~120 Vdc (Rated 003, 006, 009) 2 = Three-phase 200~240 Vac (Rated 018) 3 = Three-phase 200~480 Vac (Rated 009) 4 = Single/Three-phase 100~240 Vac (Rated 012)																	
11: Function	A = AC B = Basic C = Advanced T = GT																	
12, 13: Reserved	Reserved																	

Explanations are based on each model. The eleventh number is the servo drive’s functional code, which shows partial difference in function and performance. Users need to select suitable servo drive according to the usage scenarios. Refer to table 1.1.2.2 below.

1.1.2 E2-R drive model

The table below is the specification table for identifying E2-R drive model. For detailed drive specifications, refer to “E2-R Series Servo Drive User Manual.”

Table 1.1.2.1

Code	1	2	3	4	-	5	6	-	7	8	9	-	10	-	11	-	12	13
Example	E	D	2	F	-	E	0	-	0	0	6	-	5	-	R	-	0	0
1, 2, 3: E2-R Series Servo Drive	ED2 Series																	
4: Type	F = Support Fieldbus interface																	
5, 6: Control Interface	E0 = EtherCAT (CoE), pulse, and voltage command P0 = PROFINET, pulse, and voltage command																	
7, 8, 9: Rated Output	003 = 3 Arms 006 = 6.3 Arms 009 = 9.4 Arms																	
10: Phase Input	5 = Single-phase 100~240 V_{AC}																	
11: Function	R = Rich																	
12, 13: Reserved	Reserved																	

Note:

CoE is the acronym for “CANopen over EtherCAT.”

E2-R model includes a set of differential pulse input signals and two sets of analog voltage command inputs.

Table 1.1.2.2

Function Model	AC	Basic	Rich	Advanced	GT
Supported Motor	AC	LM, DM	LM, DM	AC, LM, DM	AC, LM, DM
Speed Response Bandwidth	3.2 kHz	0.3 kHz	3.2 kHz	3.2 kHz	3.2 kHz
Supported Function	• Multi-motion function • Velocity ripple compensation • Fast tuning function • Tuneless function of AC motor • Gantry control function • Position trigger	• Multi-motion function • Velocity ripple compensation • Fast tuning function	• Multi-motion function • Velocity ripple compensation • Fast tuning function • Gantry control function • Position trigger (Differential, single-ended)	• Multi-motion function • Velocity ripple compensation • Fast tuning function • Tuneless function of AC motor • Gantry control function • Position trigger • Electronic cam	• Multi-motion function • Velocity ripple compensation • Fast tuning function • Tuneless function of AC motor • Gantry control function • Position trigger • 2D error map • Nano-positioning

- AC: High-speed response drive that supports various functions. It is applicable to HIWIN EM1 series AC servo motors.
- Basic: It can be applied in the original application scenarios where HIWIN D1 series drives are used. It is applicable to linear motors and direct drive motors, and can be applied in general automatic transfer machines.
- Rich: It is a high-speed response drive that supports various advanced functions and integrates differential pulse input (position mode), voltage command (speed, torque command) and Fieldbus interface into one. It is applicable to linear motors and direct drive motors.
- Advanced: High-speed response drive that supports various functions. It supports EM1 series AC servo motors, linear motors, and direct drive motors.
- GT: Similar to Advanced model but has additional high-level functions of nano-positioning and 2D error map.

Note: For GT servo drive, if 2D error map function is applied, gantry control function is not available.

1.1.3 D1 drive model

The table below is the specification table for identifying D1 drive model. For detailed drive specifications, refer to “D1 Servo Drive User Manual.”

Table 1.1.3.1

Code	1	2	-	3	4	-	5	6	-	7	-	8	-	9	10
Example	D	1	-	3	6	-	S	2	-	2	-	0	-	0	0
1, 2: D1 Series Servo Drive	D1														
3, 4: Output Current	36 = Peak current 36 Apk (25.4 Arms)														
5: Control Interface	S = Voltage command and pulse E = EtherCAT (CoE, the 9th and 10th bit is 00, for HIWIN CoE HIMC motion controller) E = EtherCAT (MoE, the 9th and 10th bit is 51, for HIWIN MoE HIMC motion controller) F = mega-ulink (For API/MPI library)														
6: Encoder Interface	2 = Analog (sin/cos), Digital (without Encoder alarm signal) 3 = Digital (with Encoder alarm signal) 4 = Resolver (Discontinued)														
7: Main Input Power	2 = Single/Three-phase 100~240 Vac														
8: Heat Sink	0 = Without heat sink (Continuous current 5.6 Arms) 1 = With heat sink (Continuous current 8.5 Arms)														
9, 10: Reserved	00 = Standard 51 = Control interface is EtherCAT, for HIWIN MoE HIMC motion controller														

Note:

(1) CoE is the acronym for “CANopen over EtherCAT”; MoE is the acronym for “mega-ulink over EtherCAT.”

(2) mega-ulink interface is applicable to HIWIN MoE HIMC controller or API/MPI library integrated in a computer. When using API/MPI library, please note: it only supports Windows XP/7/10 instead of Windows 11 or above.

1.1.4 E1 drive model

The table below is the specification table for identifying E1 drive model. For detailed drive specifications, refer to “E1 Series Servo Drive User Manual.”

Table 1.1.4.1

Code	1	2	3	4	-	5	6	-	7	8	9	10	-	11	12	-	13	14
Example	E	D	1	S	-	V	G	-	0	4	2	2	-	0	1	-	0	0
1, 2, 3: E1 Series Servo Drive	ED1																	
4: Type	S = Standard								F = Fieldbus									
5: Control Interface	V = Voltage command and pulse								E = EtherCAT (CoE) H = mega-ulink (For HIWIN MoE HIMC motion controller or API/MPI library) L = MECHATROLINK-III P = PROFINET									
6: Special Function	G = Gantry N = No special function																	
7, 8: Rated Output	04 = 400 W 05 = 500 W 10 = 1 kW 12 = 1.2 kW 20 = 2 kW 40 = 4 kW 50 = 5 kW 75 = 7.5 kW																	
9: AC Phase	2 = Single/Three-phase (For 400 W/500 W/1 kW/1.2 kW model) 3 = Three-phase (For 2 kW/4 kW/5 kW/7.5 kW model)																	
10: AC Power	2 = 110 V/220 V (100 Vac ~ 240 Vac) 3 = 400 V (380 Vac ~ 480 Vac)																	
11: Applicable Category	0 = AC, LM, DM and TM A = AC only T = GT																	
12: Safety Version	1 = STO function security approval																	
13, 14: Reserved	Reserved																	

Note:

(1) CoE is the acronym for “CANopen over EtherCAT”; MoE is the acronym for “mega-ulink over EtherCAT.”

(2) mega-ulink interface is applicable to HIWIN MoE HIMC controller or API/MPI library integrated in a computer. When using API/MPI library, please note: it only supports Windows XP/7/10 instead of Windows 11 or above.

1.1.5 Power specification comparison of drives

This section provides the power specification comparison of D1, E1 drive and E2 drive. For detailed specifications, refer to the user manual of each drive.

1.1.5.1 Power specification difference: D1 drive vs E2 drive

- D1 drive without heat sink and the corresponding E2 drive

Table1.1.5.1.1

Model		D1-36-□□-2-0-00	ED2□-□□-006-□-□-00
Current Output (Arms)	Continuous Current	5.6	6.3
	Peak Current	25.4	18
Main Input Power	DC Power	No	DC 48~120V*1
	AC Power	1 Ø or 3 Ø /AC 100~240V	1 Ø or 3 Ø /AC 100~240V*2
Control Input Power		DC 24V	AC 100~240V
Regenerative Resistor		External	External
Dynamic Brake		No	Built-in
Fan		No	Built-in

- D1 drive with heat sink and the corresponding E2 drive

Table 1.1.5.1.2

Model		D1-36-□□-2-1-00	ED2□-□□-009-□-□-00
Current Output (Arms)	Continuous Current	8.5	9.4
	Peak Current	25.4	28.3
Main Input Power	DC Power	No	DC 48~120V*1
	AC Power	1 Ø or 3 Ø /AC 100~240V	1 Ø or 3 Ø /AC 100~240V*2
Control Input Power		DC 24V	AC 100~240V
Regenerative Resistor		External	External
Dynamic Brake		No	Built-in (with resistor)
Fan		No	Built-in

Note:

*1: E2 rated 003, 006, 009 drives all support DC power input; E2-R servo drive does not support DC power input.

*2: E2-R servo drive only supports 1 Ø /AC 100 ~ 240V.

1.1.5.2 Power specification difference: E1 drive vs E2 drive

■ 400 W, 500 W E1 drive and the corresponding E2 drive

Table 1.1.5.2.1

Model		ED1□-□□-0422-□□-00	ED1□-□□-0522-□□-00	ED2□-□□-003-□-□-00
Current Output (Arms)	Continuous Current	2.5	3	3
	Peak Current	10	10	12
Main Input Power	DC Power	No[*1]	No[*1]	DC 48~120V[*1]
	AC Power	1 Ø or 3 Ø / AC 100~240V	1 Ø or 3 Ø / AC 100~240V	1 Ø or 3 Ø / AC 100~240V[*2]
Control Input Power		AC 100~240V	AC 100~240V	AC 100~240V
Regenerative Resistor		External	External	External
Dynamic Brake		Built-in (without resistor)	Built-in (without resistor)	Built-in (without resistor)
Fan		Built-in	Built-in	No

■ 1 kW E1 drive and the corresponding E2 drive

Table 1.1.5.2.2

Model		ED1□-□□-1022-□□-00	ED2□-□□-006-□-□-00
Current Output (Arms)	Continuous Current	5.6	6.3
	Peak Current	23.3	18
Main Input Power	DC Power	No[*1]	DC 48~120V[*1]
	AC Power	1 Ø or 3 Ø /AC 100~240V	1 Ø or 3 Ø /AC 100~240V[*2]
Control Input Power		AC 100~240V	AC 100~240V
Regenerative Resistor		Built-in or External	External
Dynamic Brake		Built-in (with resistor)	Built-in (without resistor)
Fan		Built-in	Built-in

■ 1.2 kW E1 drive and the corresponding E2 drive

Table 1.1.5.2.3

Model		ED1□-□□-1222-□□-00	ED2□-□□-009-1-□-00
Current Output (Arms)	Continuous Current	9	9.4
	Peak Current	23.3	28.3
Main Input Power	DC Power	No*1	DC 48~120V*1
	AC Power	1 Ø or 3 Ø /AC 100~240V	1 Ø or 3 Ø /AC 100~240V*2
Control Input Power		AC 100~240V	AC 100~240V
Regenerative Resistor		Built-in or External	External
Dynamic Brake		Built-in (with resistor)	Built-in (with resistor)
Fan		Built-in	Built-in

■ 2 kW E1 drive and the corresponding E2 drive

Table 1.1.5.2.4

Model		ED1□-□□-2022-□□-00	ED2□-□□-012-4-□-00
Current Output (Arms)	Continuous Current	12(9)*3	12
	Peak Current	42	55
Main Input Power	DC Power	No*1	No
	AC Power	1 Ø or 3 Ø /AC 200~240V	1 Ø or 3 Ø /AC 100~240V
Control Input Power		AC 100~240V	AC 100~240V
Regenerative Resistor		Built-in or External	External
Dynamic Brake		Built-in (with resistor)	Built-in (with resistor)
Fan		Built-in	Built-in

Note:

*1: E1 GT servo drive additionally supports DC power input; E2 rated 003, 006, 009 drives all support DC power input; E2-R servo drive does not support DC power input.

*2: E2-R servo drive only supports 1 Ø /AC 100 ~ 240V.

*3: When using single-phase 200VAC ~ 240VAC power supply, operate the servo amplifier at 75% (9 Arms) or smaller effective load ratio.

1.1.6 Encoder type and interface comparison of drives

This section provides the encoder type and interface comparison of D1, E1 drive, and E2 drive. For detailed specifications, refer to the user manual of each drive.

1.1.6.1 Encoder type and interface difference: D1 drive vs E2 drive

- Supported encoder / signal

Table 1.1.6.1.1

		D1 Drive	E2 Drive
Encoder	EnDat	N/A	Built-in
	BiSS-C	N/A	Built-in
	TAMAGAWA	N/A	Built-in
	Digital	Built-in	Built-in
	Analog	Built-in	Built-in
Hall sensor		Built-in	Built-in
PTC thermal sensor		Built-in	Built-in
STO		N/A	Built-in

- Supported I/O interface

Table 1.1.6.1.2

	D1 Drive		E2 Drive		
	D1-36-S	D1-36-E D1-36-F	ED2S	ED2F	E2-R
Pulse train	Pulse/Dir, CW/CCW, AqB, PWM	Pulse/Dir, CW/CCW, AqB, PWM	Pulse/Dir, CW/CCW, AqB	N/A	Pulse/Dir*1, CW/CCW*1, AqB*1
Digital input	10	10	10	8	6
Digital output	4*2	4*2	5	5	4
Analog input	1	1	2	2	2
Analog output	N/A	N/A	2	2	2
Encoder output	AqB	AqB	AqB	AqB	AqB
Position trigger	N/A	N/A	Built-in*3	Built-in*3	Built-in
Gantry interface	N/A	N/A	Built-in*3	Built-in*3	Built-in

Note:

*1: E2-R servo drive only supports differential input.

*2: 3 sets of digital outputs and 1 set of fixed brake output.

*3: Basic type does not support this item.

1.1.6.2 Encoder type and interface difference: E1 drive vs E2 drive

■ Supported encoder / signal

Table 1.1.6.2.1

		E1 Drive	E2 Drive
Encoder	EnDat	with ESC	Built-in
	BiSS-C	with ESC	Built-in
	TAMAGAWA	Built-in	Built-in
	Digital	Built-in	Built-in
	Analog	with ESC	Built-in
Hall sensor		with ESC	Built-in
PTC thermal sensor		with ESC	Built-in
STO		Built-in	Built-in

■ Supported I/O interface

Table 1.1.6.2.2

	E1 Drive		E2 Drive		
	ED1S	ED1F	ED2S	ED2F	E2-R
Pulse train	Pulse/Dir, CW/CCW, AqB	N/A	Pulse/Dir, CW/CCW, AqB	N/A	Pulse/Dir*1, CW/CCW*1, AqB*1
Digital input	10	8	10	8	6
Digital output	5	5	5	5	4
Analog input	2	N/A	2	2	2
Analog output	2	2	2	2	2
Encoder output	AqB	AqB	AqB	AqB	AqB
Position trigger	Built-in	Built-in	Built-in*2	Built-in*2	Built-in
Gantry interface	Optional	Optional	Built-in*2	Built-in*2	Built-in

Note:

*1: E2-R servo drive only supports differential input.

*2: Basic type does not support this item.

1.2 Replace D1 drive with E2 drive

Replace D1 drive with E2 drive according to the recommendations given in the table below.

Table 1.2.1

D1 Drive Model	E2 Drive Model	Description
D1-36-S□-2-0-00	ED2S-V0-006-1-B-00 ED2S-V0-009-1-B-00 ED2F-E0-006-5-R-00 ED2F-E0-009-5-R-00 ED2F-P0-006-5-R-00 ED2F-P0-009-5-R-00	(1) Pulse*1 and voltage interface. (2) Without heat sink, its continuous current is 5.6 Arms. (3) If peak current exceeds 18 Arms, use the model of 009.
D1-36-E□-2-0-00	ED2F-E0-006-1-B-00 ED2F-E0-009-1-B-00 ED2F-E0-006-5-R-00 ED2F-E0-009-5-R-00	(1) Fieldbus interface, CoE communication. (2) Without heat sink, its continuous current is 5.6 Arms. (3) If peak current exceeds 18 Arms, use the model of 009.
D1-36-F□-2-0-00	ED2F-H3-006-1-B-00 ED2F-H3-009-1-B-00	(1) Fieldbus interface, HIWIN mega-ulink communication, used with API/MPI library. (2) Without heat sink, its continuous current is 5.6 Arms. (3) If peak current exceeds 18 Arms, use the model of 009.
D1-36-E□-2-0-51	ED2F-H3-006-1-B-00 ED2F-H3-009-1-B-00	(1) Fieldbus interface, used with HIWIN MoE HIMC motion controller. (2) Without heat sink, its continuous current is 5.6 Arms. (3) If peak current exceeds 18 Arms, use the model of 009.
D1-36-S□-2-1-00	ED2S-V0-009-1-B-00 ED2F-E0-009-5-R-00 ED2F-P0-009-5-R-00	(1) Pulse*1 and voltage interface. (2) With heat sink, its continuous current is 8.5 Arms.
D1-36-E□-2-1-00	ED2F-E0-009-1-B-00 ED2F-E0-009-5-R-00	(1) Fieldbus interface, CoE communication. (2) With heat sink, its continuous current is 8.5 Arms.
D1-36-F□-2-1-00	ED2F-H3-009-1-B-00	(1) Fieldbus interface, HIWIN mega-ulink communication, used with API/MPI library. (2) With heat sink, its continuous current is 8.5 Arms.
D1-36-E□-2-1-51	ED2F-H3-009-1-B-00	(1) Fieldbus interface, used with HIWIN MoE HIMC motion controller. (2) With heat sink, its continuous current is 8.5 Arms.

Note:

Users can directly select Basic model (the 11th bit is B). To improve performance, select Advanced model (the 11th bit is C).

*1: E2-R servo drive only supports differential input and not supports AC servo motor.

1.3 Replace E1 drive with E2 drive

Replace 400 W, 500 W E1 drive with E2 drive according to the recommendations given in the table below.

Table 1.3.1

E1 Drive Model	E2 Drive Model	Description
ED1S-V□-0422-A□-00 ED1S-V□-0522-A□-00	ED2S-V0-003-1-A-00	Pulse and voltage interface, for AC servo motor only.
ED1F-E□-0422-A□-00 ED1F-E□-0522-A□-00	ED2F-E0-003-1-A-00	Fieldbus interface, CoE communication, for AC servo motor only.
ED1F-H□-0422-A□-00 ED1F-H□-0522-A□-00	ED2F-H3-003-1-A-00	Fieldbus interface, MoE communication, for AC servo motor only. It can be used with HIWIN MoE HIMC motion controller or API/MPI library.
ED1F-L□-0422-A□-00 ED1F-L□-0522-A□-00	ED2F-L3-003-1-A-00	Fieldbus interface, MECHATROLINK-III communication, for AC servo motor only.
ED1F-P□-0422-A□-00 ED1F-P□-0522-A□-00	ED2F-P0-003-1-A-00	Fieldbus interface, PROFINET communication, for AC servo motor only.
ED1S-V□-0422-0□-00 ED1S-V□-0522-0□-00	ED2S-V0-003-1-C-00 ED2F-E0-003-5-R-00 ED2F-P0-003-5-R-00	Pulse[*1] and voltage interface, support AC servo motor[*1], linear motor, direct drive motor.
ED1F-E□-0422-0□-00 ED1F-E□-0522-0□-00	ED2F-E0-003-1-C-00 ED2F-E0-003-5-R-00	Fieldbus interface, CoE communication, support AC servo motor[*1], linear motor, direct drive motor.
ED1F-H□-0422-0□-00 ED1F-H□-0522-0□-00	ED2F-H3-003-1-C-00	Fieldbus interface, MoE communication, support AC servo motor, linear motor, direct drive motor. It can be used with HIWIN MoE HIMC motion controller or API/MPI library.
ED1F-L□-0422-0□-00 ED1F-L□-0522-0□-00	ED2F-L3-003-1-C-00	Fieldbus interface, MECHATROLINK-III communication, support AC servo motor, linear motor, direct drive motor.
ED1F-P□-0422-0□-00 ED1F-P□-0522-0□-00	ED2F-P0-003-1-C-00 ED2F-P0-003-5-R-00	Fieldbus interface, PROFINET communication, support AC servo motor[*1], linear motor, direct drive motor.
ED1S-V□-0422-T□-00 ED1S-V□-0522-T□-00	ED2S-V0-003-1-T-00	(1) Pulse and voltage interface, support AC servo motor, linear motor, direct drive motor. (2) High performance GT model drive.
ED1F-E□-0422-T□-00 ED1F-E□-0522-T□-00	ED2F-E0-003-1-T-00	(1) Fieldbus interface, CoE communication, support AC servo motor, linear motor, direct drive motor. (2) High performance GT model drive.
ED1F-H□-0422-T□-00 ED1F-H□-0522-T□-00	ED2F-H3-003-1-T-00	(1) Fieldbus interface, MoE communication, support AC servo motor, linear motor, direct drive motor. It can be used with HIWIN MoE HIMC motion controller or API/MPI library. (2) High performance GT model drive.
ED1F-L□-0422-T□-00 ED1F-L□-0522-T□-00	ED2F-L3-003-1-T-00	(1) Fieldbus interface, MECHATROLINK-III communication, support AC servo motor, linear motor, direct drive motor. (2) High performance GT model drive.
ED1F-P□-0422-T□-00 ED1F-P□-0522-T□-00	ED2F-P0-003-1-T-00	(1) Fieldbus interface, PROFINET communication, support AC servo motor, linear motor, direct drive motor. (2) High performance GT model drive.

Note: *1: E2-R servo drive only supports differential input and not supports AC servo motor.

Replace 1 kW E1 drive with E2 drive according to the recommendations given in the table below.

Table 1.3.2

E1 Drive Model	E2 Drive Model	Description
ED1S-V□-1022-A□-00	ED2S-V0-006-1-A-00	Pulse and voltage interface, for AC servo motor only.
ED1F-E□-1022-A□-00	ED2F-E0-006-1-A-00	Fieldbus interface, CoE communication, for AC servo motor only.
ED1F-H□-1022-A□-00	ED2F-H3-006-1-A-00	Fieldbus interface, MoE communication, for AC servo motor only. It can be used with HIWIN MoE HIMC motion controller or API/MPI library.
ED1F-L□-1022-A□-00	ED2F-L3-006-1-A-00	Fieldbus interface, MECHATROLINK-III communication, for AC servo motor only.
ED1F-P□-1022-A□-00	ED2F-P0-006-1-A-00	Fieldbus interface, PROFINET communication, for AC servo motor only.
ED1S-V□-1022-0□-00	ED2S-V0-006-1-C-00	Pulse[*1] and voltage interface, support AC servo motor[*1], linear motor, direct drive motor.
	ED2F-E0-006-5-R-00	
	ED2F-P0-006-5-R-00	
ED1F-E□-1022-0□-00	ED2F-E0-006-1-C-00	Fieldbus interface, CoE communication, support AC servo motor[*1], linear motor, direct drive motor.
	ED2F-E0-006-5-R-00	
ED1F-H□-1022-0□-00	ED2F-H3-006-1-C-00	Fieldbus interface, MoE communication, support AC servo motor, linear motor, direct drive motor. It can be used with HIWIN MoE HIMC motion controller or API/MPI library.
ED1F-L□-1022-0□-00	ED2F-L3-006-1-C-00	Fieldbus interface, MECHATROLINK-III communication, support AC servo motor, linear motor, direct drive motor.
ED1F-P□-1022-0□-00	ED2F-P0-006-1-C-00	Fieldbus interface, PROFINET communication, support AC servo motor[*1], linear motor, direct drive motor.
	ED2F-P0-006-5-R-00	
ED1S-V□-1022-T□-00	ED2S-V0-006-1-T-00	(1) Pulse and voltage interface, support AC servo motor, linear motor, direct drive motor. (2) High performance GT model drive.
ED1F-E□-1022-T□-00	ED2F-E0-006-1-T-00	(1) Fieldbus interface, CoE communication, support AC servo motor, linear motor, direct drive motor. (2) High performance GT model drive.
ED1F-H□-1022-T□-00	ED2F-H3-006-1-T-00	(1) Fieldbus interface, MoE communication, support AC servo motor, linear motor, direct drive motor. It can be used with HIWIN MoE HIMC motion controller or API/MPI library. (2) High performance GT model drive.
ED1F-L□-1022-T□-00	ED2F-L3-006-1-T-00	(1) Fieldbus interface, MECHATROLINK-III communication, support AC servo motor, linear motor, direct drive motor. (2) High performance GT model drive.
ED1F-P□-1022-T□-00	ED2F-P0-006-1-T-00	(1) Fieldbus interface, PROFINET communication, support AC servo motor, linear motor, direct drive motor. (2) High performance GT model drive.

Note:

*1: E2-R servo drive only supports differential input and not supports AC servo motor.

Replace 1.2 kW E1 drive with E2 drive according to the recommendations given in the table below.

Table 1.3.3

E1 Drive Model	E2 Drive Model	Description
ED1S-V□-1222-A□-00	ED2S-V0-009-1-A-00	Pulse and voltage interface, for AC servo motor only.
ED1F-E□-1222-A□-00	ED2F-E0-009-1-A-00	Fieldbus interface, CoE communication, for AC servo motor only.
ED1F-H□-1222-A□-00	ED2F-H3-009-1-A-00	Fieldbus interface, MoE communication, for AC servo motor only. It can be used with HIWIN MoE HIMC motion controller or API/MPI library.
ED1F-L□-1222-A□-00	ED2F-L3-009-1-A-00	Fieldbus interface, MECHATROLINK-III communication, for AC servo motor only.
ED1F-P□-1222-A□-00	ED2F-P0-009-1-A-00	Fieldbus interface, PROFINET communication, for AC servo motor only.
ED1S-V□-1222-0□-00	ED2S-V0-009-1-C-00	Pulse[*1] and voltage interface, support AC servo motor[*1], linear motor, direct drive motor.
	ED2F-E0-009-5-R-00	
	ED2F-P0-009-5-R-00	
ED1F-E□-1222-0□-00	ED2F-E0-009-1-C-00	Fieldbus interface, CoE communication, support AC servo motor[*1], linear motor, direct drive motor.
	ED2F-E0-009-5-R-00	
ED1F-H□-1222-0□-00	ED2F-H3-009-1-C-00	Fieldbus interface, MoE communication, support AC servo motor, linear motor, direct drive motor. It can be used with HIWIN MoE HIMC motion controller or API/MPI library.
ED1F-L□-1222-0□-00	ED2F-L3-009-1-C-00	Fieldbus interface, MECHATROLINK-III communication, support AC servo motor, linear motor, direct drive motor.
ED1F-P□-1222-0□-00	ED2F-P0-009-1-C-00	Fieldbus interface, PROFINET communication, support AC servo motor[*1], linear motor, direct drive motor.
	ED2F-P0-009-5-R-00	
ED1S-V□-1222-T□-00	ED2S-V0-009-1-T-00	(1) Pulse and voltage interface, support AC servo motor, linear motor, direct drive motor. (2) High performance GT model drive.
ED1F-E□-1222-T□-00	ED2F-E0-009-1-T-00	(1) Fieldbus interface, CoE communication, support AC servo motor, linear motor, direct drive motor. (2) High performance GT model drive.
ED1F-H□-1222-T□-00	ED2F-H3-009-1-T-00	(1) Fieldbus interface, MoE communication, support AC servo motor, linear motor, direct drive motor. It can be used with HIWIN MoE HIMC motion controller or API/MPI library. (2) High performance GT model drive.
ED1F-L□-1222-T□-00	ED2F-L3-009-1-T-00	(1) Fieldbus interface, MECHATROLINK-III communication, support AC servo motor, linear motor, direct drive motor. (2) High performance GT model drive.
ED1F-P□-1222-T□-00	ED2F-P0-009-1-T-00	(1) Fieldbus interface, PROFINET communication, support AC servo motor, linear motor, direct drive motor. (2) High performance GT model drive.

Note:

*1: E2-R servo drive only supports differential input and not supports AC servo motor.

Replace 2 kW E1 drive with E2 drive according to the recommendations given in the table below.

Table 1.3.4

E1 Drive Model	E2 Drive Model	Description
ED1S-V□-2022-A□-00	ED2S-V0-012-4-A-00	Pulse and voltage interface, for AC servo motor only.
ED1F-E□-2022-A□-00	ED2F-E0-012-4-A-00	Fieldbus interface, CoE communication, for AC servo motor only.
ED1F-H□-2022-A□-00	ED2F-H3-012-4-A-00	Fieldbus interface, MoE communication, for AC servo motor only. It can be used with HIWIN MoE HIMC motion controller or API/MPI library.
ED1F-L□-2022-A□-00	ED2F-L3-012-4-A-00	Fieldbus interface, MECHATROLINK-III communication, for AC servo motor only.
ED1F-P□-2022-A□-00	ED2F-P0-012-4-A-00	Fieldbus interface, PROFINET communication, for AC servo motor only.
ED1S-V□-2022-0□-00	ED2S-V0-012-4-C-00	Pulse and voltage interface, support AC servo motor, linear motor, direct drive motor.
ED1F-E□-2022-0□-00	ED2F-E0-012-4-C-00	Fieldbus interface, CoE communication, support AC servo motor, linear motor, direct drive motor.
ED1F-H□-2022-0□-00	ED2F-H3-012-4-C-00	Fieldbus interface, MoE communication, support AC servo motor, linear motor, direct drive motor. It can be used with HIWIN MoE HIMC motion controller or API/MPI library.
ED1F-L□-2022-0□-00	ED2F-L3-012-4-C-00	Fieldbus interface, MECHATROLINK-III communication, support AC servo motor, linear motor, direct drive motor.
ED1F-P□-2022-0□-00	ED2F-P0-012-4-C-00	Fieldbus interface, PROFINET communication, support AC servo motor, linear motor, direct drive motor.
ED1S-V□-2022-T□-00	ED2S-V0-012-4-T-00	(1) Pulse and voltage interface, support AC servo motor, linear motor, direct drive motor. (2) High performance GT model drive.
ED1F-E□-2022-T□-00	ED2F-E0-012-4-T-00	(1) Fieldbus interface, CoE communication, support AC servo motor, linear motor, direct drive motor. (2) High performance GT model drive.
ED1F-H□-2022-T□-00	ED2F-H3-012-4-T-00	(1) Fieldbus interface, MoE communication, support AC servo motor, linear motor, direct drive motor. It can be used with HIWIN MoE HIMC motion controller or API/MPI library. (2) High performance GT model drive.
ED1F-L□-2022-T□-00	ED2F-L3-012-4-T-00	(1) Fieldbus interface, MECHATROLINK-III communication, support AC servo motor, linear motor, direct drive motor. (2) High performance GT model drive.
ED1F-P□-2022-T□-00	ED2F-P0-012-4-T-00	(1) Fieldbus interface, PROFINET communication, support AC servo motor, linear motor, direct drive motor. (2) High performance GT model drive.

2. Differences in drive dimensions

2.1 Dimension comparison of drives

This section provides the dimension comparison of D1, E1 drive and E2 drive. For detailed specifications, refer to the user manual of each drive.

2.1.1 Dimension difference: D1 drive vs E2 drive

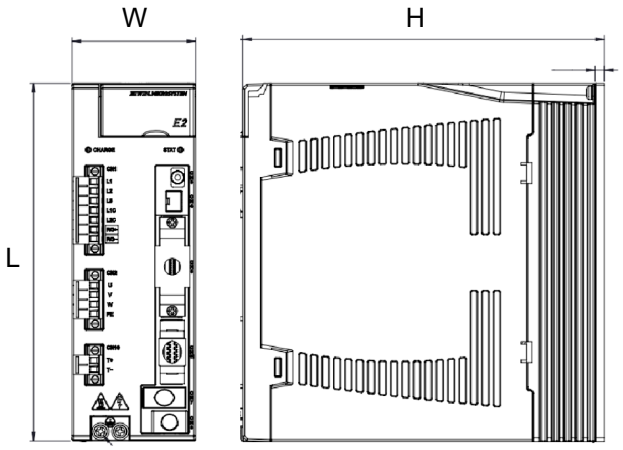

Figure 2.1.1.1 Diagram of dimensions

- D1 drive without heat sink and the corresponding E2 drive

Table 2.1.1.1

Dimension (mm) \ Model	D1-36-□□-2-0-00	ED2□-□□-006-□-□-00
L	191.6	188
W	64.8	55
H	139.8	160

- D1 drive with heat sink and the corresponding E2 drive

Table 2.1.1.2

Dimension (mm) \ Model	D1-36-□□-2-1-00	ED2□-□□-009-□-□-00
L	191.6	188
W	100	65
H	139.8	190

2.1.2 Dimension difference: E1 drive vs E2 drive

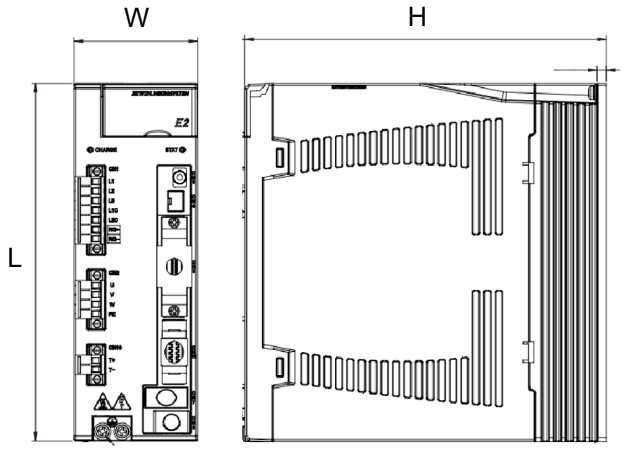

Figure 2.1.2.1 Diagram of dimensions

- 400 W, 500 W E1 drive and the corresponding E2 drive

Table 2.1.2.1

Model / Dimension (mm)	ED1□-□□-0422-□□-00 ED1□-□□-0522-□□-00	ED2□-□□-003-□-□-00
L	168	188
W	50	55
H	160	160

- 1 kW E1 drive and the corresponding E2 drive

Table 2.1.2.2

Model / Dimension (mm)	ED1□-□□-1022-□□-00	ED2□-□□-006-□-□-00
L	168	188
W	60	55
H	190	160

■ 1.2 kW E1 drive and the corresponding E2 drive

Table 2.1.2.3

Model / Dimension (mm)	ED1□-□□-1222-□□-00	ED2□-□□-009-□-□-00
L	168	188
W	60	65
H	190	190

■ 2 kW E1 drive and the corresponding E2 drive

Table 2.1.2.4

Model / Dimension (mm)	ED1□-□□-2022-□□-00	ED2□-□□-012-4-□-00
L	168	188
W	75	90
H	190	230

3. Differences in drive hardware interfaces

3.1 Peripheral configuration comparison of drives

This section provides the peripheral configuration comparison of D1, E1 drive and E2 drive. For detailed specifications, refer to the user manual of each drive.

3.1.1 Peripheral configuration difference: D1 drive vs E2 drive

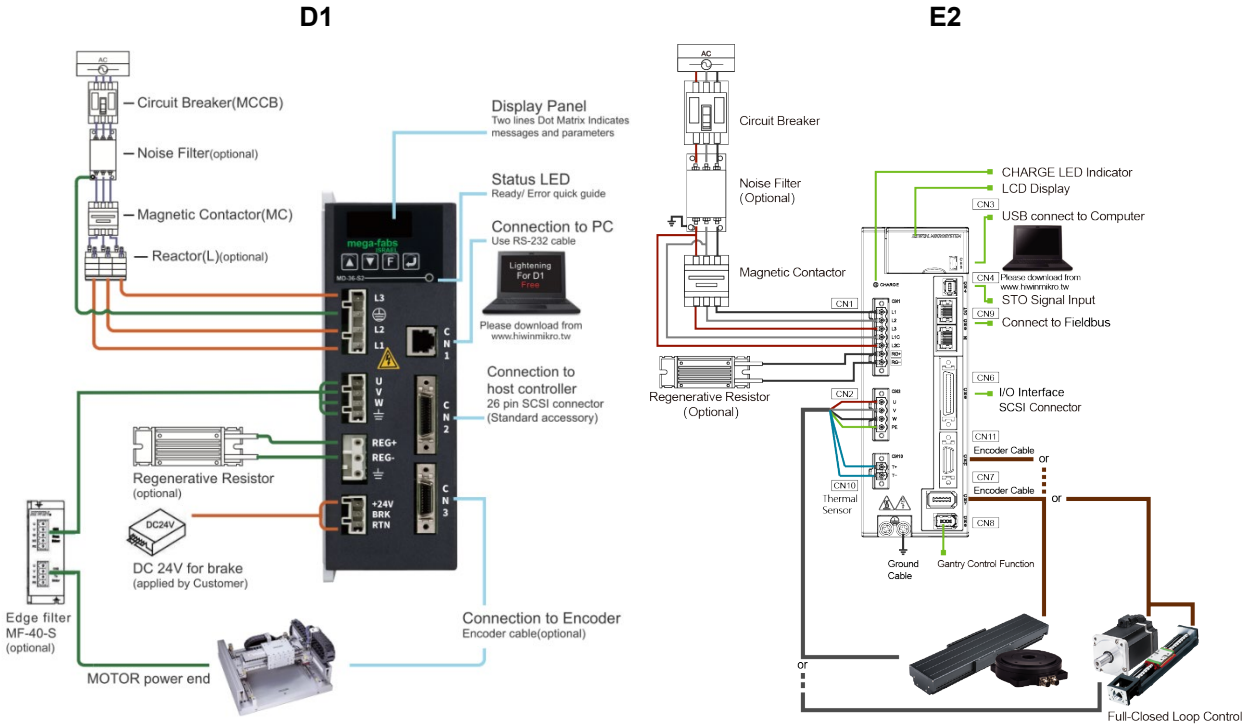

Figure 3.1.1.1

Table 3.1.1.1

	D1 Terminal Symbol	E2 Terminal Symbol	Use Previous Cable	Use Previous Connector	Note
Main input power	L1, L2, ⏚, L3	CN1 (L1, L2, L3)	Yes	No	Use R type terminal to connect to the frame for grounding.
Control input power	+24V, RTN	CN1 (L1C, L2C)	No	No	Different control input power.
Regenerative resistor	REG+, REG-	CN1 (RG+, RG-)	Yes	No	N/A
Motor power supply	U, V, W, ⏚	CN2 (U, V, W, PE)	Yes	No	N/A
PC communication	CN1	CN3	No	No	N/A
Control signal cable	CN2	CN6	No	No	N/A
Encoder signal cable	CN3	CN11	Yes	Yes	Digital, Analog encoder; Hall, PTC signal.
Fieldbus communication	CN4 (IN, OUT)	CN9 (IN, OUT)	Yes	Yes	N/A

3.1.2 Peripheral configuration difference: E1 drive vs E2 drive

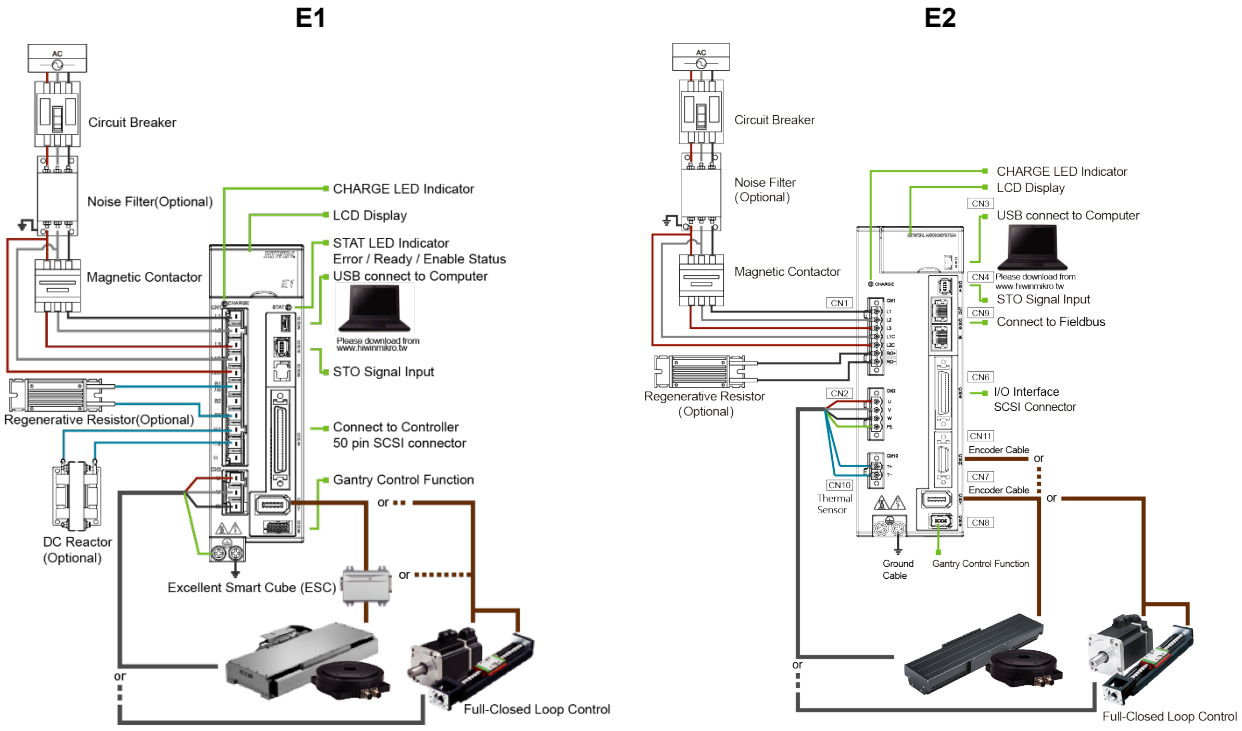

Figure 3.1.2.1

Table 3.1.2.1

	E1 Terminal Symbol	E2 Terminal Symbol	Use Previous Cable	Use Previous Connector	Note
Main input power	CN1 (L1, L2, L3)	CN1 (L1, L2, L3)	Yes	No	Use R type terminal to connect to the frame for grounding.
Control input power	CN1 (L1C, L2C)	CN1 (L1C, L2C)	Yes	No	N/A
Regenerative resistor	CN1 (B1/⊕, B3)	CN1 (RG+, RG-)	Yes	No	E2 only supports external regenerative resistor.
Motor power supply	CN2 (U, V, W)	CN2 (U, V, W, PE)	Yes	No	Use R type terminal for grounding: connect to the frame Use European terminal for grounding: connect to CN2 (PE)
PC communication	CN3	CN3	Yes	Yes	N/A
STO function	CN4	CN4	Yes	Yes	N/A
Control signal cable	CN6	CN6	Yes	Yes	Standard: 50 PIN Fieldbus: 36 PIN
E1 without ESC	CN7	CN7	Yes	Yes	EM1, TAMAGAWA, Digital encoder, Dual-loop (EM1 and Digital encoder) are all suitable.
E1 with ESC: Analog encoder, Hall sensor	ESC: Encoder	CN11	No	No	E2 with Analog encoder, thermal signal (PTC), Hall sensor does not need ESC.
E1 with ESC: BiSS, EnDat encoder	ESC: Encoder	CN7	No	No	E2 with BiSS, EnDat encoder does not need ESC.
E1 with ESC: thermal signal (PTC)	ESC: TS	CN10 (T+, T-)	Yes	No	When encoder signal cable does not contain thermal signal, thermal signal can be externally connected.
Gantry communication	CN8	CN8	No	No	E2 Basic model does not support this item.
Fieldbus communication	CN9 (IN, OUT)	CN9 (IN, OUT)	Yes	Yes	N/A

3.1.3 Peripheral configuration difference: D1 drive vs E2-R drive

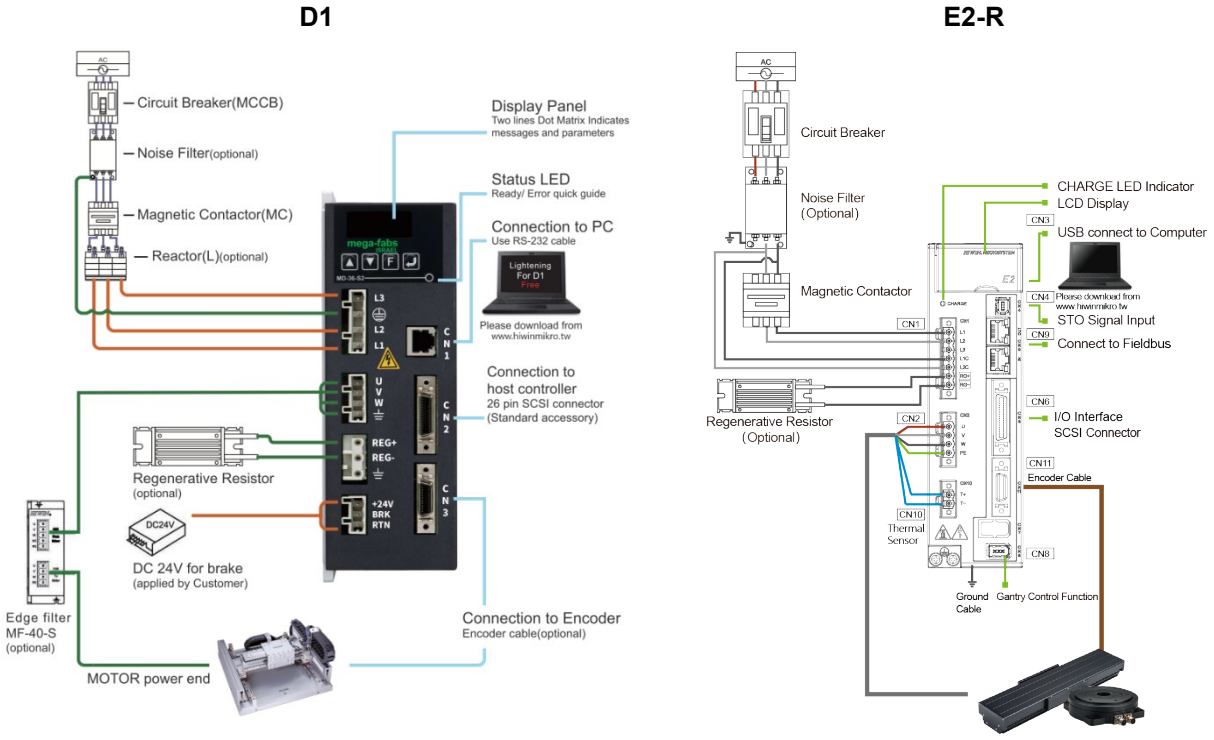

Figure 3.1.3.1

Table 3.1.3.1

	D1 Terminal Symbol	E2-R Terminal Symbol	Use Previous Cable	Use Previous Connector	Note
Main input power	L1, L2, ⏚, L3	CN1 (L1, L2)	Yes	No	Use R type terminal to connect to the frame for grounding. Do not connect to L3 on E2-R.
Control input power	+24V, RTN	CN1 (L1C, L2C)	No	No	Different control input power.
Regenerative resistor	REG+, REG-	CN1 (RG+, RG-)	Yes	No	N/A
Motor power supply	U, V, W, ≒	CN2 (U, V, W, PE)	Yes	No	N/A
PC communication	CN1	CN3	No	No	N/A
Control signal cable	CN2	CN6	No	No	N/A
Encoder signal cable	CN3	CN1	Yes	Yes	Digital, Analog encoder; Hall, PTC signal.
Fieldbus communication	CN4 (IN, OUT)	CN9 (IN, OUT)	Yes	Yes	N/A

3.1.4 Peripheral configuration difference: E1 drive vs E2-R drive

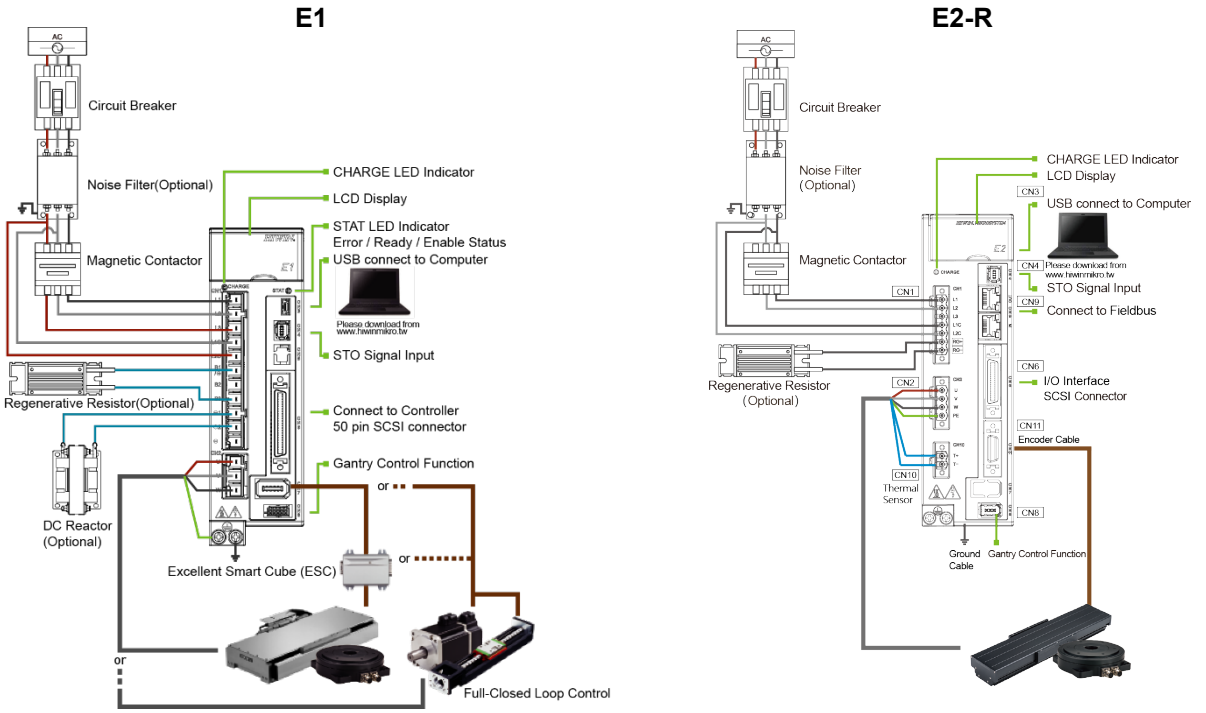

Figure 3.1.4.1

Table 3.1.4.1

	E1 Terminal Symbol	E2-R Terminal Symbol	Use Previous Cable	Use Previous Connector	Note
Main input power	CN1 (L1, L2, L3)	CN1 (L1, L2)	Yes	No	Use R type terminal to connect to the frame for grounding. Do not connect to L3 on E2-R.
Control input power	CN1 (L1C, L2C)	CN1 (L1C, L2C)	Yes	No	N/A
Regenerative resistor	CN1 (B1/⊕, B3)	CN1 (RG+, RG-)	Yes	No	E2 only supports external regenerative resistor.
Motor power supply	CN2 (U, V, W)	CN2 (U, V, W, PE)	Yes	No	Use R type terminal for grounding: connect to the frame Use European terminal for grounding: connect to CN2 (PE)
PC communication	CN3	CN3	Yes	Yes	N/A
STO function	CN4	CN4	Yes	Yes	N/A
Control signal cable	CN6	CN6	Yes	Yes	Standard: 50 PIN Fieldbus: 36 PIN
E1 without ESC	CN7	CN11	No	No	EM1*, TAMAGAWA, Digital encoder, Dual-loop (EM1 and Digital encoder) are all suitable.
E1 with ESC: Analog encoder, Hall sensor	ESC: Encoder	CN11	No	No	E2 with Analog encoder, thermal signal (PTC), Hall sensor does not need ESC.
E1 with ESC: BiSS, EnDat encoder	ESC: Encoder	CN11	No	No	E2 with BiSS, EnDat encoder does not need ESC.
E1 with ESC: thermal signal (PTC)	ESC: TS	CN10 (T+, T-)	Yes	No	When encoder signal cable does not contain thermal signal, thermal signal can be externally connected.
Gantry communication	CN8	CN8	No	No	N/A
Fieldbus communication	CN9 (IN, OUT)	CN9 (IN, OUT)	Yes	Yes	N/A

Note: *E2-R does not support EM1. E2-R servo drive is exclusively used for direct drive, it only uses dual-loop in special applications. For detailed information, please refer to section 8.16 **Full-closed loop function** in “E2-R Series Servo Drive User Manual.”

3.2 Connector specification

This section provides the connector specification of D1, E1 drive and E2 drive. For detailed specifications, refer to the user manual of each drive.

3.2.1 Connector specification of E2 drive

The accessory kit of E2 drive is included when the drive is shipped out. For the contents inside the accessory kit, please refer to the table below.

Table 3.2.1.1

Name	HIWIN Part Number	Description	Qty.
ED2 CK1 accessory kit (003~009 Standard)	180600100007	CN1: AC main input power terminal, control input power terminal and terminal for regenerative resistor. (7 pins, DINKLE 2ESSM-07P)	1
		CN2: Motor power connector (4 pins, DINKLE 2ESSM-04P)	1
		CN4: STO connector (TE 1971153-1)	1
		CN6: Control signal connector (50 pins welded type EUMAX XDR-10350AS)	1
		CN10: DINKLE 2ESSM-02P	1
ED2 CK2 accessory kit (003~009 Fieldbus)	180600100008	CN1: AC main input power terminal, control input power terminal and terminal for regenerative resistor. (7 pins, DINKLE 2ESSM-07P)	1
		CN2: Motor power connector (4 pins, DINKLE 2ESSM-04P)	1
		CN4: STO connector (TE 1971153-1)	1
		CN6: Control signal connector (36 pins welded type EUMAX XDR-10336AS)	1
		CN10: DINKLE 2ESSM-02P	1
ED2 CK3 accessory kit (012~018 Standard)	180600100011	CN1: AC main input power terminal, control input power terminal, and terminal for regenerative resistor. (7 pins, DINKLE EC762VM-07P)	1
		CN2: Motor power connector (4 pins, DINKLE EC762VM-04P)	1
		CN4: STO connector (TE 1971153-1)	1
		CN6: Control signal connector (50 pins welded type EUMAX XDR-10350AS)	1
		CN10: DINKLE 2ESSM-02P	1
ED2 CK4 accessory kit (012~018 Fieldbus)	180600100012	CN1: AC main input power terminal, control input power terminal, and terminal for regenerative resistor. (7 pins, DINKLE EC762VM-07P)	1
		CN2: Motor power connector (4 pins, DINKLE EC762VM-04P)	1
		CN4: STO connector (TE 1971153-1)	1
		CN6: Control signal connector (36 pins welded type EUMAX XDR-10336AS)	1

Name	HIWIN Part Number	Description	Qty.
		CN10: DINKLE 2ESSM-02P	1

Note: CN4 STO connector has been installed on the servo drive.

■ Connector specification of E2 drive

Table 3.2.1.2

Connector (Cable Side)	HIWIN Part Number	Description
Main circuit connector (CN1)	934201900074 (For 003~009 models)	2ESSM-07P / one row 7 port / 5.08mm / cable side / direct plug-in
	934201900098 (For 012~018 models)	EC762VM-07P / one row 7 port / 7.62mm / cable side / direct plug-in
Connector for motor power cable (CN2)	934201900073 (For 003~009 models)	2ESSM-04P / one row 4 port / 5.08mm / cable side / direct plug-in
	934201900097 (For 012~018 models)	EC762VM-04P / one row 4 port / 7.62mm / cable side / direct plug-in
Mini USB communication connector (CN3)		USB 2.0 Type A to mini-B 5 Pin (1.8 M) (Shielding)
Safety bypass connector (CN4)	051500400545	INDUSTRIAL MINI I/O BYPASS CONNECTOR TYPE I TE Connectivity 1971153-1
Safety device connector (CN4)	051500400404	INDUSTRIAL MINI I/O PLUG CONNECTOR KIT D-SHAPE TYPE 1 TE Connectivity 2013595-1 Connect to external safety device.
Control signal connector (CN6) (For standard servo drive)	051500100141	50 pins, mini D Ribbon (MDR), standard welding-type connector SCSI 50PIN (male) Wire size: 24-30 AWG
Control signal connector (CN6) (For Fieldbus servo drive)	051500100213	36 pins, mini D Ribbon (MDR), standard welding-type connector SCSI 36PIN (male) Wire size: 24-30 AWG
Encoder connector (CN7)	180600100002	Shielded compact ribbon (SCR) connectors (363 series)
Connector for gantry communication (CN8)		HIWIN standard communication cable
PTC thermal sensor connector (CN10)	934201900072	2ESSM-02P / one row 2 port / 5.08mm / cable side / direct plug-in
Encoder connector (CN11)	051500400182	10320-52A0-008 / SCSI 20PIN

3.2.2 Connector specification of D1 drive

The accessory kit of D1 drive is not included when the drive is shipped out, so users need to purchase it additionally. For the contents inside the accessory kit, please refer to the table below.

Table 3.2.2.1

Name	HIWIN Part Number	Description	Qty.
D1 Servo Drive Accessory Pack (With CN3 connector)	051800200064	Connector for AC main power cable; 4 pin, pitch 7.5 mm	1
		Connector for motor power cable; 4 pin, pitch 5 mm	1
		Connector for regenerative resistor; 3 pin, pitch 7.5 mm	1
		Connector for control power; 3 pin, pitch 5 mm	1
		Connector for CN2 (control signal); MDR 26P solder connector	1
		Connector for CN3 (feedback signal); MDR 20P solder connector	1
		Connector tool; Wago 231-131	1

3.2.3 Connector specification of E1 drive

The accessory kit of E1 drive is included when the drive is shipped out. For the contents inside the accessory kit, please refer to the table below.

Table 3.2.3.1

Name	HIWIN Part Number	Description	Qty.
ED1 CK1 accessory kit (400 W~2 kW Standard)	051800200158	CN1: AC main input power terminal, control input power terminal, terminal for regenerative resistor and terminal for DC reactor. (11 pins, TE 1-2229794-1-PT1)	1
		CN2: Motor power connector (3 pins, TE 3-2229794-1)	1
		CN4: STO connector (TE 1971153-1)	1
		CN6: Control signal connector (50 pins welded type EUMAX XDR-10350AS)	1
		Headers and wire housings for CN1 and CN2 connectors (TE 1981045-1)	2
ED1 CK2 accessory kit (400 W~2 kW Fieldbus)	051800200159	CN1: AC main input power terminal, control input power terminal, terminal for regenerative resistor and terminal for DC reactor. (11 pins, TE 1-2229794-1-PT1)	1
		CN2: Motor power connector (3 pins, TE 3-2229794-1)	1
		CN4: STO connector (TE 1971153-1)	1
		CN6: Control signal connector (36 pins welded type EUMAX XDR-10336AS)	1
		Headers and wire housings for CN1 and CN2 connectors (TE 1981045-1)	2
ED1 CK3 accessory kit (4 kW Standard)	180600100003	CN4: STO connector (TE 1971153-1)	1
		CN6: Control signal connector (50 pins welded type EUMAX XDR-10350AS)	1
ED1 CK4 accessory kit (4 kW Fieldbus)	180600100004	CN4: STO connector (TE 1971153-1)	1
		CN6: Control signal connector (36 pins welded type EUMAX XDR-10336AS)	1

■ Connector specification of E1 drive

Table 3.2.3.2

Connector (Cable Side)	HIWIN Part Number	Description
Main circuit connector (CN1)	051500400681	AC main input power terminal, control input power terminal, terminal for regenerative resistor and terminal for DC reactor D3950 / one row 11 port / 7.5 mm / cable side / X key TE Connectivity 1-2229794-1
Connector for motor power cable (CN2)	051500400572	D3950 / one row 3 port / 7.5 mm / cable side / X key TE Connectivity 3-2229794-1
Mini USB communication connector (CN3)		USB 2.0 Type A to mini-B 5 Pin (1.8 M) (Shielding)
Safety bypass connector (CN4)	051500400545	INDUSTRIAL MINI I/O BYPASS CONNECTOR TYPE I TE Connectivity 1971153-1
Safety device connector (CN4)	051500400404	INDUSTRIAL MINI I/O PLUG CONNECTOR KIT D-SHAPE TYPE 1 TE Connectivity 2013595-1 Connect to external safety device.
Control signal connector (CN6) (For standard servo drive)	051500100141	50 pins, mini D Ribbon (MDR), standard welding-type connector SCSI 50PIN (male) Wire size: 24-30 AWG
Control signal connector (CN6) (For Fieldbus servo drive)	051500100213	36 pins, mini D Ribbon (MDR), standard welding-type connector SCSI 36PIN (male) Wire size: 24-30 AWG
Encoder connector (CN7)	180600100002	Shielded compact ribbon (SCR) connectors (363 series)
Connector for gantry communication (CN8)		HIWIN standard communication cable

4. Differences in drive software interfaces

4.1 Software/Firmware comparison of drives

This section provides the software/firmware comparison of D1, E1 drive and E2 drive. For detailed specifications, refer to the user manual of each drive.

4.1.1 Software/Firmware difference: D1 drive vs E2 drive

Table 4.1.1.1

	D1 Drive	E2 Drive	E2-R Drive
Software name	Lightening	Thunder	Thunder
Supported software version	0.178 or above	1.9.7.0 or above	1.13.7.0 or above
Supported firmware version	D1: 0.215 or above D1 CoE: 0.305 or above	3.9.0 or above	4.13.6 or above

Note: E2 drive can load D1 drive's parameters.

4.1.2 Software/Firmware difference: E1 drive vs E2 drive

Table 4.1.2.1

	E1 Drive	E2 Drive	E2-R Drive
Software name	Thunder	Thunder	Thunder
Supported software version	1.1.6.3 or above	1.9.7.0 or above	1.13.7.0 or above
Supported firmware version	2.1.8 or above	3.9.0 or above	4.13.6 or above

Note:

(1) E2 drive can load the parameters of E1 drive. Please update E1 drive's firmware to version 2.8.9 or above before saving the parameters.

(2) E2 drive's firmware 3.13.6 or above can load the parameters of E2-R drive.

(3) E2-R drive can load the parameters of E1 and E2 drives. Please update the E1 drive's firmware to version 2.13.6 or above or update the E2 drive's firmware to version 3.13.6 or above before saving.