

Wiring of main circuit

Circuit Breaker (MCCB)
Protects the power lines.
Shuts off the circuit when
overcurrent passes.

Noise Filter (NF)
Prevents external noise from the
power lines. And reduces an effect
of the noise generated by the
servo driver.

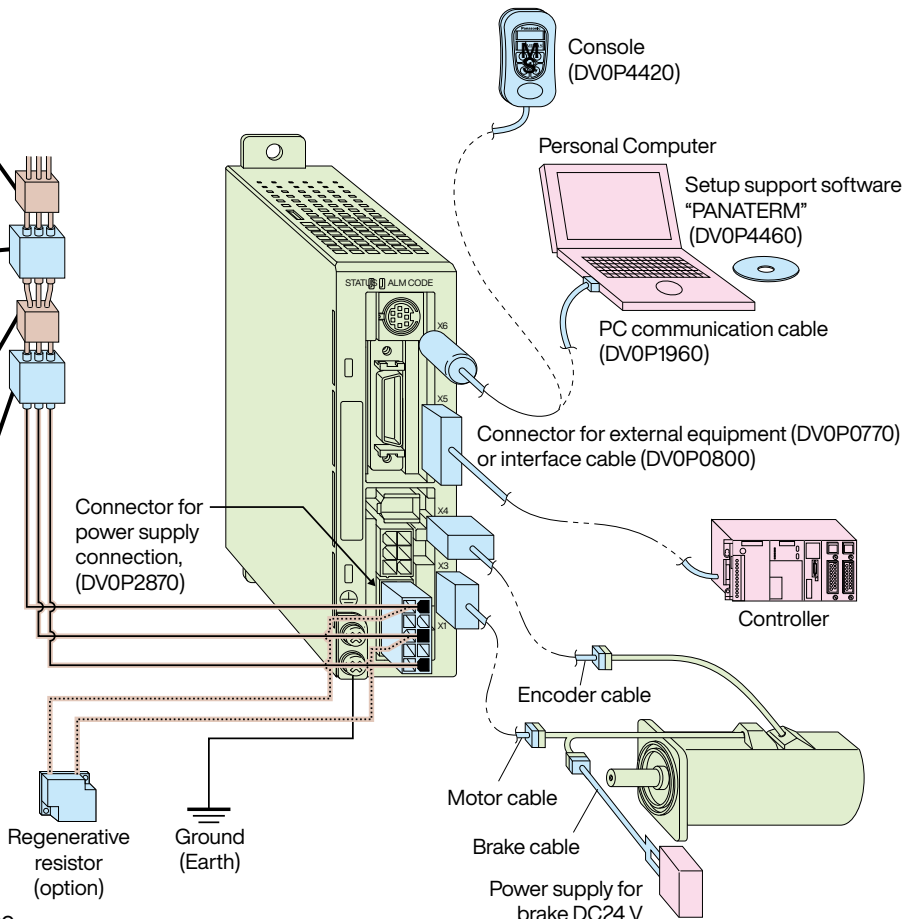
Magnetic Contactor (MC)
Turns on/off the main power of the
servo driver.
Surge absorber to be used
together with this.

Reactor (L)
Reduces harmonic current of the
main power.

Pin-5 and Pin-3 of CN POWER

Connect an external
regenerative resistor (option)
between P(pin-5) and B(pin-3)
of connector, CN X1, when
regenerative energy is large.
(Refer to P.404 for regenerative
resistor.)

Motor	to P.389
Driver	to P.385
Option	to P.398
Recommended equipments	
Parts customer to prepare	



List of recommended peripheral devices

Power supply	Motor		Power capacity (at rated output)	Circuit Breaker (Rated current)	Noise Filter	Magnetic Contactor (Contact Composition)	Wire diameter (L1, L2, L3, U, V and W)
	Series	Output					
Single phase, 100 V	MUMA	50 W	0.3 kVA	5 A	DV0P4160	10 A (3P+1a)	0.75 mm² to 0.85 mm² AWG18
		100 W	0.4 kVA				
		200 W	0.5 kVA				
Single phase, 200 V		50 W	0.3 kVA	5 A			
		100 W					
		200 W	0.5 kVA				
		400 W	0.9 kVA				
3-phase 200 V		50 W	0.3 kVA	5 A			
		100 W					
		200 W	0.5 kVA				
		400 W	0.9 kVA				

- * Select the single and 3-phase common specifications corresponding to the power supplies.
- To conform to EU Directives/UK Regulation, install a circuit breaker which conforms to IEC and UL Standards (Listed, marked) between noise filter and power supply.
- For details of the noise filters, refer to 416.

Remarks

- Use a copper conductor cables with temperature rating of 60 °C or higher for main power connector and ground terminal wiring.
Use a cable for ground with diameter of 2.0 mm² (AWG14) or larger.

Fastening torque list

Ground terminal screw		Connector to host controller[X5]	
Nominal size	Fastening torque (N•m) ^(Note 3)	Nominal size	Fastening torque (N•m) ^(Note 3)
M4	0.7~0.8	M2.6	0.2±0.05

(Note 3) Caution

- Applying fastening torque larger than the maximum value may result in damage to the product.

Remarks

- To check for looseness, conduct periodic inspection of fastening torque once a year.

Carrying page

Options			Part No.	Carrying page
Console			DV0P4420	403
Setup Support Software, PANATERM	Japanese		DV0P4460	398
	English			
RS232 Communication Cable (for Connection with PC)			DV0P1960	403
Interface Cable			DV0P0800	403
Connector Kit for Interface			DV0P0770	402
Connector Kit for Motor and Encoder			DV0P3670	401
Connector Kit for Driver Power Supply			DV0P2870	401
Encoder Cable		MFECA0 * * 0EAM		400
Motor Cable		MFMCA0 * * 0AEB		400
Brake Cable		MFMCB0 * * 0GET		400
Cable Set (3 m) ^(Note 4)		DV0P37300		400
Cable Set (5 m) ^(Note 4)		DV0P39200		400
DIN Rail Mount Unit		DV0P3811		404
External Regenerative Resistor	100 V	50 Ω 10 W	DV0P2890	404
	200 V	100 Ω 10 W	DV0P2891	
Reactor		100 V	DV0P227	405
			DV0P228	
		200 V	DV0P220	
Noise Filter			DV0P4160	416
Surge Absorber	Single phase 100 V, 200 V		DV0P4190	416
	3-phase 200 V		DV0P1450	
Ferrite core			DV0P1460	416

(Note 4) Cable set (3 m) contains,
1) Interface cable: DV0P0800
2) Encoder cable (3 m): MFECA0030EAM
3) Motor cable (3 m): MFMCA0030AEB
4) Connector kit for driver power supply connection: DV0P2870
Cable set (5 m) contains,
1) Interface cable: DV0P0800
2) Encoder cable (5 m): MFECA0050EAM
3) Motor cable (5 m): MFMCA0050AEB
4) Connector kit for driver power supply connection: DV0P2870

Table of Part Numbers and Options

Power supply	Output (W)	2500P/r, Incremental				Option														
		Motor ^{Note) 1}	Rating/Spec. (page)	Driver	Dimensions (Frame symbol)	Encoder Cable ^{Note) 2}	Motor Cable ^{Note) 2}		Brake Cable ^{Note) 2}	External Regenerative Resistor	Reactor	Noise Filter								
Single phase 100 V	50	MUMA5AZP1 □	389	MKDET1105P	388 (K)	MFECA0 * * 0EAM	MFMCA0 * * 0AEB			DV0P2890	DV0P227	DV0P4160								
	100	MUMA011P1 □	389	MKDET1110P	388 (K)						DV0P228									
	200	MUMA021P1 □	389	MLDET2110P	388 (L)															
Single phase 200 V	50	MUMA5AZP1 □	391	MKDET1505P	388 (K)					DV0P2891	DV0P220									
	100	MUMA012P1 □	391	MKDET1505P	388 (K)															
	200	MUMA022P1 □	391	MLDET2210P	388 (L)															
	400	MUMA042P1 □	391	MLDET2510P	388 (L)															
3-phase 200 V	50	MUMA5AZP1 □	391	MKDET1505P	388 (K)															
	100	MUMA012P1 □	391	MKDET1505P	388 (K)															
	200	MUMA022P1 □	391	MKDET1310P	388 (K)															
	400	MUMA042P1 □	391	MLDET2510P MLDET2310P	388 (L)															

Note) 1 Motor model number suffix: □
S: Key way with center tap, without brake
T: Kew way with center tap, with brake
Note) 2 * * represents cable length. For details, refer to P.399.

Compliance to EU/ UK Regulation and EMC Directives

EU Directives/ UK Regulation

The EU Directives/ UK Regulation apply to all such electronic products as those having specific functions and have been exported to EU and directly sold to general consumers. Those products are required to conform to the EU unified standards and to furnish the CE marking on the products. MINAS AC Servos conforms to the EU Directives for EU Low Voltage Directives/ UK Low Voltage Regulation Equipment so that the machine incorporating our servos has an easy access to the conformity to relevant EU Directives for the machine.

EU EMC Directives/UK EMC Regulation

MINAS Servo System conform to relevant standard under EU EMC Directives/UK EMC Regulation setting up certain model (condition) with certain locating distance and wiring of the servo motor and the driver. And actual working condition often differs from this model condition especially in wiring and grounding. Therefore, in order for the machine to conform to the EU EMC Directives/UK EMC Regulation, especially for noise emission and noise terminal voltage, it is necessary to examine the machine incorporating our servos.

Conformed Standards

Subject	Conformed Standard					IEC : International Electrotechnical Commission EN : Europäischen Normen EMC : Electromagnetic Compatibility UL : Underwriters Laboratories CSA : Canadian Standards Association
Motor	IEC60034-1	IEC60034-5	UL1004	CSA22.2 No.100	Conforms to EU Low Voltage Directives/UK Low Voltage Regulation	
Motor and driver		UL61800-5-1	CSA22.2	No.14	Conforms to references by EU EMC Directives/UK EMC Regulation	Pursuant to at the directive 2004/108/EC, article 9(2)
	EN55011	Radio Disturbance Characteristics of Industrial, Scientific and Medical (ISM) Radio-Frequency Equipment				
	EN61000-6-2	Immunity for Industrial Environments				
	IEC61000-4-2	Electrostatic Discharge Immunity Test				
	IEC61000-4-3	Radio Frequency Electromagnetic Field Immunity Test				
	IEC61000-4-4	Electric High-Speed Transition Phenomenon/Burst Immunity Test				
	IEC61000-4-5	Lightening Surge Immunity Test				
	IEC61000-4-6	High Frequency Conduction Immunity Test				
	IEC61000-4-11	Instantaneous Outage Immunity Test				

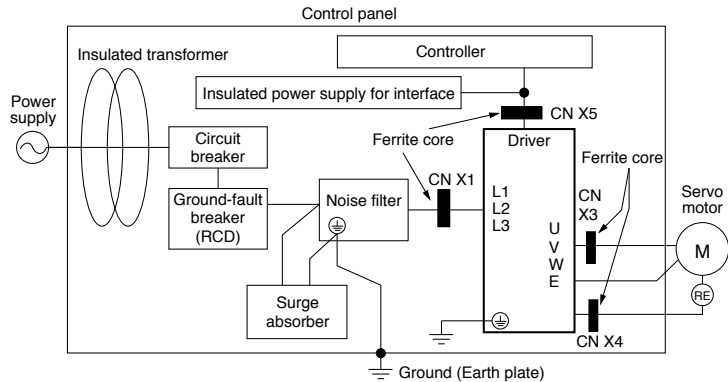
Composition of Peripheral Components

<Precautions in using options>

Use options correctly after reading operation manuals of the options to better understand the precautions. Take care not to apply excessive stress to each optional part.

Installation Environment

Use Minas driver in environment of Pollution Degree 1 or 2 prescribed in IEC-60664-1 (e.g. Install the driver in control panel with IP54 protection structure.)




Power Supply

100 V system	Single phase, 100 V	+10 % -15 %	to	115 V	+10 % -15 %	50 Hz/60 Hz
200 V system	Single phase, 200 V	+10 % -15 %	to	240 V	+10 % -15 %	50 Hz/60 Hz
200 V system	3-phase, 200 V	+10 % -15 %	to	240 V	+10 % -15 %	50 Hz/60 Hz

- (1) Use the power supply under an environment of Overvoltage Category II specified in IEC60664-1.
- (2) For a interface power supply, use the insulated one with 12 VDC to 24 VDC which conforms to CE Marking or EN Standards (EN60950).

Circuit Breaker

Connect a circuit breaker which conforms to IEC standards and is UL recognized (UL Listed,  marked), between the power supply and the noise filter.

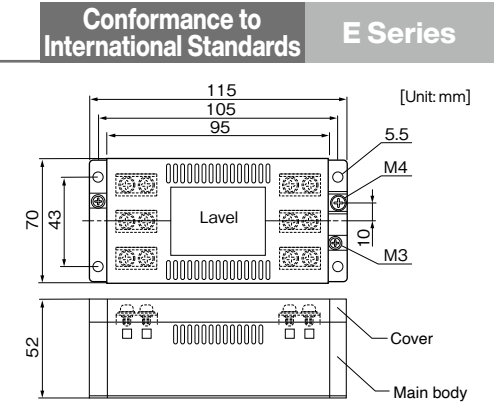
Composition of Peripheral Components

Conformity to UL Standards

Noise Filter

When you install one noise filter in the power supply for multi axis application, consult with the manufacture of the filter.

Option part No.	Part No.	Manufacturer
DV0P4160	3SUP-HU10-ER-6	Okaya Electric Industries Co.

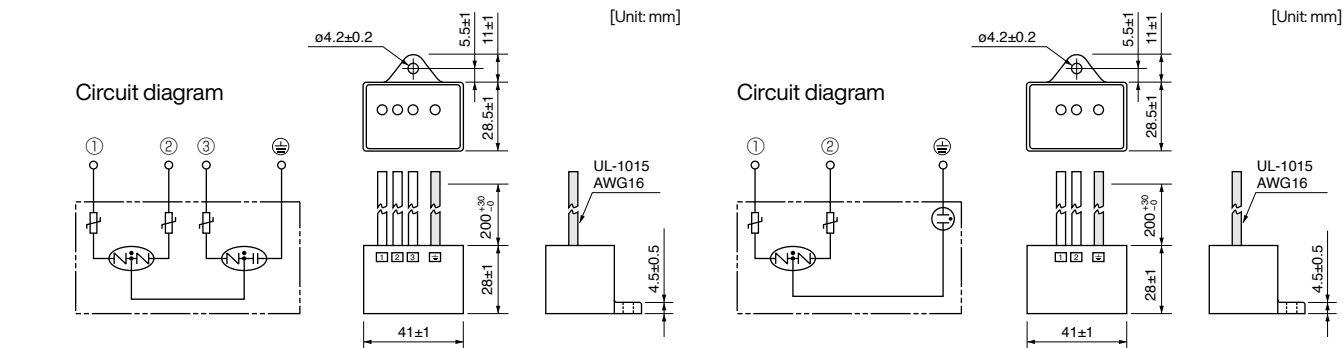


Surge Absorber

Install a surge absorber at primary side of the noise filter.

Option part No.	Driver voltage spec	Part No.	Manufacturer
DV0P1450	3-phase, 200 V	R · A · V-781BXZ-4	Okaya Electric

Option part No.	Driver voltage spec	Part No.	Manufacturer
DV0P4190	Single phase, 100 V, 200 V	R · A · V-781BWZ-4	Okaya Electric



<Remarks>

Remove this surge absorber when you perform dielectric test on the machine, or surge absorber might be damaged.

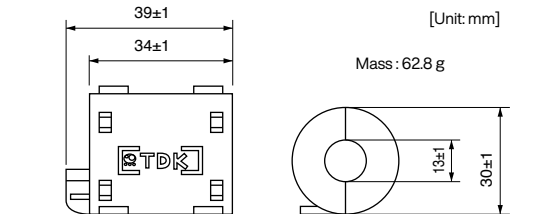
Ferrite core

Install ferrite core to all cables (Power line, motor cable, encoder cable, interface cable)



<Caution>

- Please fix a ferrite core to avoid excessive stress to the cable.
- When using multiple axes, noise generated from each driver might influence driver and peripheral equipment and result to malfunction. Please insert a ferrite core between driver and motor wires (U, V, W but grounding). (Please refer to P.415 "Composition of Peripheral Components".)

Option part No.	Part No.	Qty.	Manufacturer
DV0P1460	ZCAT3035-1330	4	TDK Corp.



Grounding

- (1) Connect the protective earth terminal of the driver () and protective earth terminal of the control panel (PE) without fail to prevent electrical shocks.
- (2) Do not co-clamp to the ground terminals (). Two ground terminals are provided.

Ground-Fault Breaker

Install a ground fault curcuit braker (RCD) to the primary side of the power supply.

Please use B-type (DC sensitive) ground fault circuit breakers defined in IEC60947-2, JISC8201-2-2.