

Elevator Drive System

Exclusive inverters for elevators
Gearless PM Machines

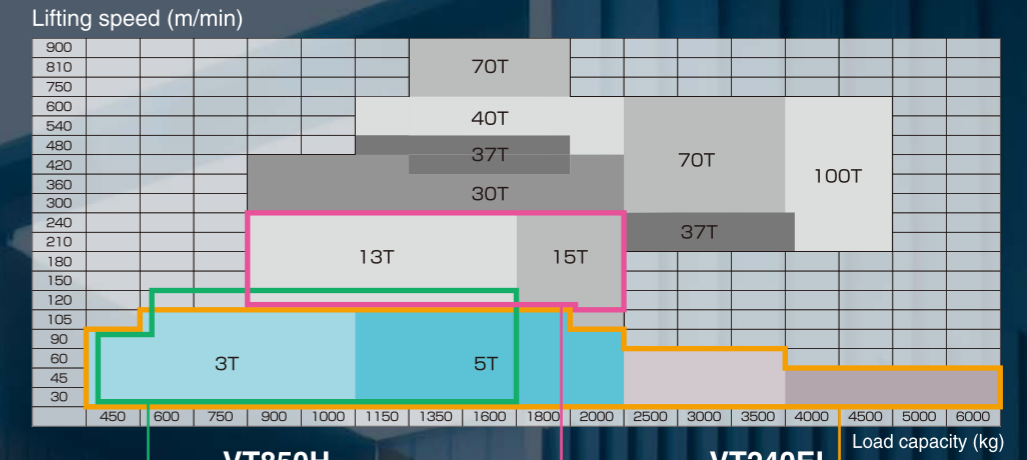


*Low Noise & Low Vibration
State-of-the-Art
Elevator Control Technologies*

Unique Elevator Drive System enhancing design flexibility

Based on its original machine driving technologies, Meidensha Corporation has delivered elevator driving equipment for more than 40 years. At present, Meiden products are widely used in various kinds of elevators, from low speed to high speed, throughout the world. In the business field of elevator drive systems, Meidensha Corporation will continue to be a leading company through further improvements and developments to pursue new products based on the state-of-the-art technologies of the times.

Applicable range



VT800

Inverters for elevators without machine rooms that cover a load capacity range of 450~1600kg and a medium- and low-speed lifting range of 30~120m/min.

VT850H

Inverter equipped with a power regenerative converter intended to cover medium and high-speed zones for the load of 900 ~ 2000kg and the elevating speed of 120 ~ 240m/min.

VT240EL

Multi-functional, general-purpose inverters covering medium- and low-speed lifting of up to 1600kg and cargo handling of 2000~6000kg

Inverter

Product name	Features	Applicable motor	Max. acceleration current	Page
THYFREC VT240EL	<ul style="list-style-type: none"> ● General Purpose ● Magnetic Pole position estimation function *1 ● Auto-tuning for motor constants *2 ● Rollback restrictive function *3 ● Analog setup ● Safe torque off (STO) function *5 	200V class 2.2~50kW	19.8~347.4A	3
		400V class 2.2~45kW	9.9~156.6A	4
THYFREC VT800	<ul style="list-style-type: none"> ● Thin type ● Magnetic Pole position estimation function *1 ● Feasibility of creepless operation by position learning function *4 	200V class 5.6~37kW	46~320A	6
		400V class 8.1~22kW	27~88A	7
THYFREC VT850H	<ul style="list-style-type: none"> ● High-speed operation ● Energy Saving for power regenerative converter ● Magnetic pole locating function *1 ● Roll-back control function *3 ● Creepless operation is possible by position learning operation *4 ● Suppression of harmonics on power source ● Conforming to international safety standard, IEC61508 	400V class 11~54kW	130~160A	9
				10

Detailed descriptions of features

※1 Magnetic pole position estimation function

This function is used to infer the magnetic pole position of the PM motor. Thanks to this function, it is possible to omit encoders with U·V·W signal phases and absolute values. With only A·B·Z signal phases, PM motors can be controlled. In addition, it's not necessary to turn the motor for tuning in inter change of encoder because "phase adjustment of Z phase" is unnecessary.

※2 Auto-tuning for motor constants

Since the auto-tuning function is provided, it is unnecessary to perform troublesome setup actions such as setting motor constants. Even when existing motors are used, optimal tuning can be realized.

※3 Rollback restrictive function

Even though no load sensor is installed or no accurate adjustments have been made, it is possible to restrict rollback actions to support elevator controls. This function improves safety at the time of installation and simplifies adjustment procedures for the load sensor. Note: Installation of a load sensor is indispensable for an elevator system. Note: Please install a load sensor which is necessary for elevator system.

※4 Creepless operation by position learning function

The Inverter learn position such as the floor or limit switch, and running of elevator is managed. The Inverter is connected to a controller with serial option PCB. When a controller sends "operation mode" and "target floor," inverter does "speed control" and "creep-less stopping control" according to the information.

※5 Safe torque off (STO) function

Two independent safety input terminals forcefully switch off the gate signal that drives the power module to perform a free-run stop of the IEC60204-1 stop Category 0 motor.

PM Machine

Product name	Features	Lifting speed	Load mass	Page
Flat PM3T machine	<ul style="list-style-type: none"> ● Low torque ripples and comfortable riding quality ● Small leakage current ● Low noise 	45~105m/min	450~1000kg	11
				12
PM3T machine	<ul style="list-style-type: none"> ● Low torque ripples and comfortable riding quality ● Small leakage current 	45~105m/min	450~1000kg	13
				14
PM5T machine	<ul style="list-style-type: none"> ● Low torque ripples and comfortable riding quality ● Small leakage current 	45~105m/min	1150~2000kg	15
				16
For improvements PM 3.5T /5.2T machine	<ul style="list-style-type: none"> ● 1:1 roping applicable to geared machine replacement ● Size and weight possible to be carried into existing elevators ● Structured for easy disassembly, conveyance, and reassembly ● Comfortable riding with minimal torque ripples ● Less leakage current 	45~105m/min	450~1000kg	17
				18
PM 13T /15T machine	<ul style="list-style-type: none"> ● High-speed operation ● Compact and lightweight ● Comfortable riding with minimal torque ripples ● Less leakage current 	120~240m/min	900~2000kg	19
				20
High-capacity, high-speed 37T machine	<ul style="list-style-type: none"> ● High-speed operation ● Compact and lightweight ● Structured for easy centering work ● Structured for easy disassembly, conveyance, and reassembly ● Complies with the latest safety standards (redundant oil-leak measures) ● Low torque ripples and comfortable riding quality ● Less leakage current 	240~480m/min	1150~3600kg	21
				22

* Conforming to the Revised Building Standard Law (Ordinance by which part of the existing law is revised (Ordinance No.290 in 2008)) Prior to the installation of this facility, the owner is required to take approval tests and others.

Inverters

THYFREC VT240EL

Applicable motors
200V class 2.2~50kW
400V class 2.2~45kW

Max. acceleration current
200V class 19.8~347.4A
400V class 9.9~156.6A

Type description **VT240EL - 4060 AF 2 - 100 X000**

① Shows the type description.
 First digit: Shows the input voltage.
 2***: 200V class
 4***: 400V class
 Latter 3 digits: Shows the capacity class.

② Shows the main-circuit options.
 AO: Standard
 AF: Noise filter incorporated
 AR: DCL attached
 EO: Standard (4020~4040)

③ Shows the operation panel selection.
 0: Nil
 4: LCD type
 2: LED type

④ Shows the control PWB option.
 1**: Speed detection 1 5**: Speed detection 5
 2**: Speed detection 2 8**: Speed detection 8
 3**: Speed detection 3
 **N: Relay option

⑤ Shows the company's management number.

Standard specifications

200V class

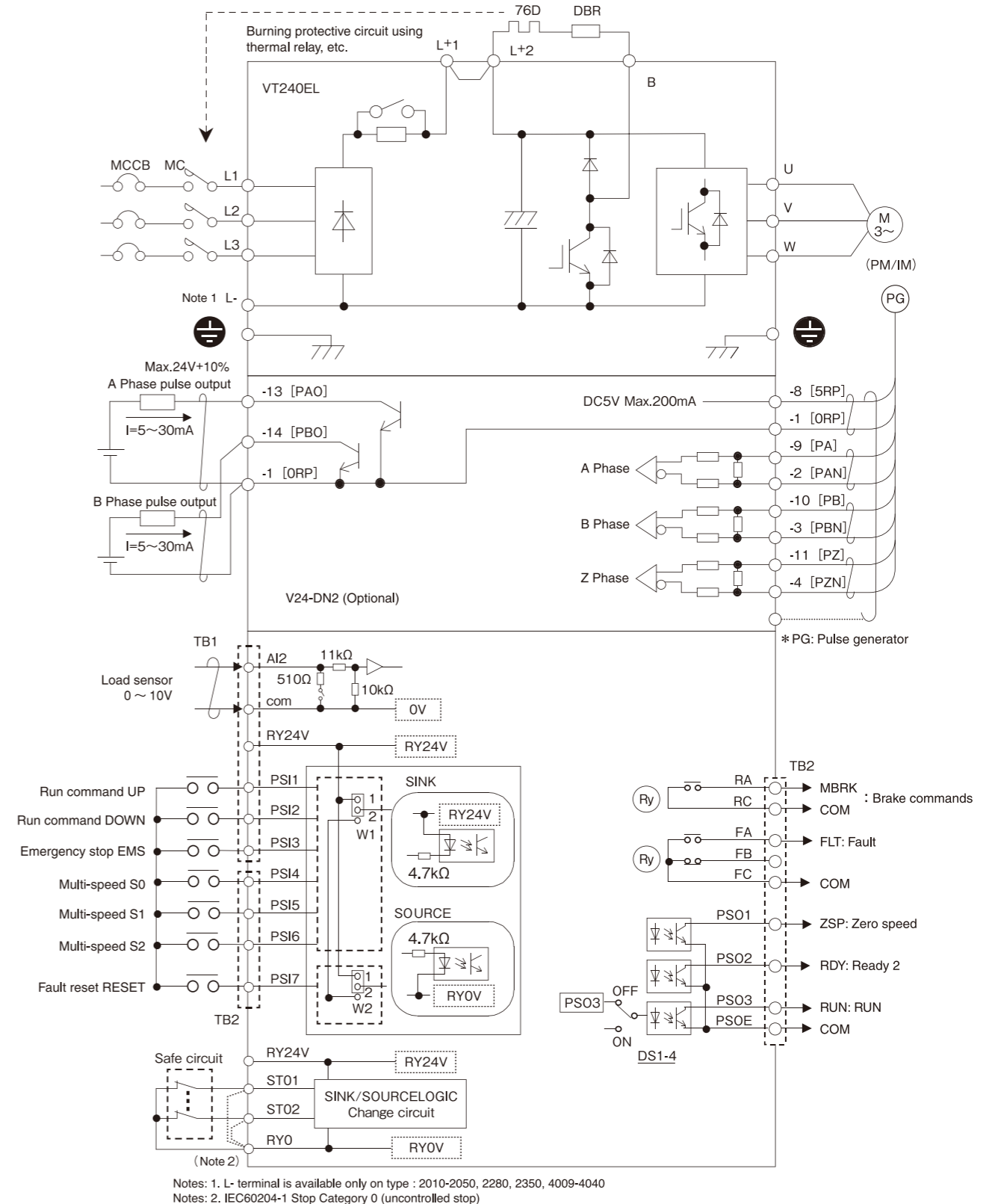
Type (VT240EL-□□□□)		2010	2020	2040	2050	2080	2100	2130	2150	2210	2280	2350	
Rating	Max. continuous rated current (A)	11	16	24	33	46	61	76	88	118	156	193	
	Overload withstand current (A)(180% 5s)	19.8	28.8	43.2	59.4	82.8	109.8	136.8	158.4	212.4	280.8	347.4	
	Max. applicable motor (kW)	2.2	3.7	5.5	7.5	11	15	18.5	22	30	40	50	
Power supply	Rated input voltage	200~240V ±10%				200~230V ±10%							
	Frequency	50 or 60Hz ±5%											
Output	Rated output voltage	200~240V (Max.)				200~230V (Max.)							
	Output frequency range	0~180Hz(IM) / 0~210Hz(PM motor)											
Main circuit devices (optional)	EMI filter	Can be built-in				External							
	DC reactor	External				Can be mounting							
	Dynamic braking circuit	Built-in (Standard)				External							
	Dynamic braking resistor	External				External							
Construction	Structure	Wall mounted											
	Enclosure	IP20				IP00							
	Cooling method	Forced air-cooling											
	Approximate mass (kg)	3	5	12	23	30	45	65					
Paint color		Munsell N4.0											
Working environment		Indoors, working ambient temperature: -10~45°C, Relative humidity: 95%RH or below. (no dew condensation) Altitude: 1000m or less., Vibration: 4.9m/s ² or less. Freedom from corrosive or explosive gases, steam, dust, oil mist, cotton, lint, etc.											

400V class

Type (VT240EL-□□□□)		4009	4015	4020	4030	4040	4052	4060	4070	4100	4130	4150	
Rating	Max. continuous rated current (A)	5.5	8.6	13	17	23	31	37	44	60	73	87	
	Overload withstand current (A)(180% 5s)	9.9	15.5	23.4	30.6	41.4	55.8	66.6	79.2	108.0	131.4	156.6	
	Max. applicable motor (kW)	2.2	3.7	5.5	7.5	11	15	18.5	22	30	37	45	
Power supply	Rated input voltage	380~480V ±10%											
	Frequency	50 or 60Hz ±5%											
Output	Rated output voltage	380~480V (Max.)											
	Output frequency range	0~180Hz(IM) / 0~210Hz(PM motor)											
Main circuit devices (optional)	EMI filter	Can be built-in				External							
	DC reactor	External				Can be mounting							
	Dynamic braking circuit	Built-in (Standard)				External							
	Dynamic braking resistor	External				External							
Construction	Structure	Wall mounted											
	Enclosure	IP20				IP00							
	Cooling method	Forced air-cooling											
	Approximate mass (kg)	3	5	12	23	27							
Paint color		Munsell N4.0											
Working environment		Indoors, working ambient temperature: -10~45°C, Relative humidity: 95%RH or below. (no dew condensation) Altitude: 1000m or less., Vibration: 4.9m/s ² or less. Freedom from corrosive or explosive gases, steam, dust, oil mist, cotton, lint, etc.											

Example of connections

An example of the multi-step speed operation system using the incremental encoder (A.B.Z.signals) is shown below.



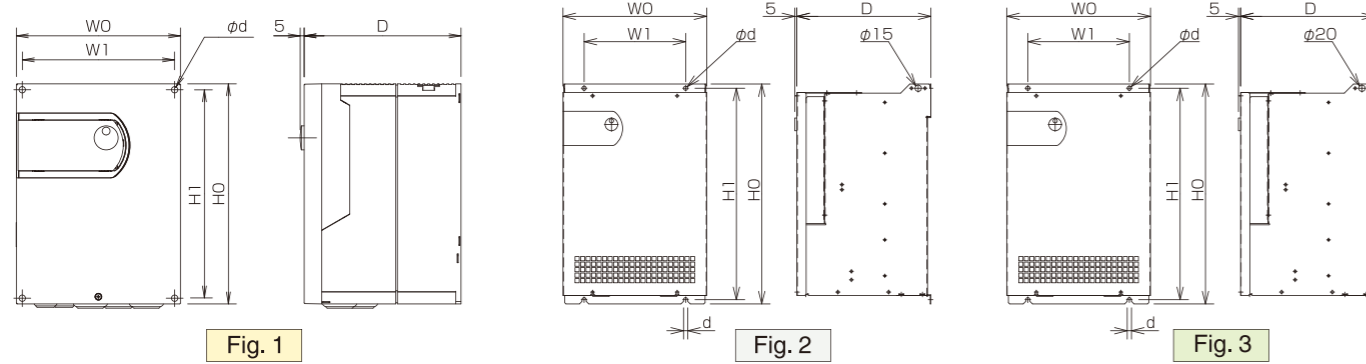
Main circuit options

The following items are available as the main-circuit options:

- AC reactor (ACL)
- DC reactor (DCL)
- EMC filter
- DB unit

THYFREC VT240EL

External dimensions



Application table

Type		Dimension (mm)						Main circuit terminal	Mass (kg)	Fig.
200V class	400V class	W0	W1	H0	H1	D	φ d			
2010	4009	155	140	250	235	180	6	M4	3	Fig. 1
2020	4015									
	4020	205	190	275	260	196	7	M4	5	
	4030									
2040	4040									
2050	4052									
	4060	260	240	350	330	298	7	M5	12	
	4070									
2100										
2130	4100	300	200	470	450	317	10	M8	23	
2150	4130									
	4150									
		340	240	520	500			M8	27	
2210								M10	30	
2280		435	300	615	595	350	10	M10	45	Fig. 3
2350										
		500	400	710	684				65	

Option PCB

This is a built-in type option mounted on the VT240EL control PCB. These PCB options are connected to the connector on the VT240EL control PCB, and can be easily mounted even after purchasing the VT240EL.

Name	Type	Functions available
Speed detection 1 (Complimentary compatible)	V24-DN1 N62P30609=1-01	This is a speed detection PCB for the complimentary output type encoder. Response frequency: change between 60±10kHz and 20kHz
Speed detection 2 (Line driver compatible)	V24-DN2 N62P30610=1-01	This is a speed detection PCB for the line driver output type encoder. Response frequency: 250kHz(Signals:Phases A,B,Z; serial)
Speed detection 3	V24-DN3 N62P30611=1-01	This is a speed detection PCB for systems of Phases U,V,and W. (Applicable to the line driver output type encoder) Response frequency: 250kHz(Signals:Phases A,B,Z,U,V,W)
Speed detection 5 (SIN/COS compatible)	V24-DN5 N62P30676=1-01	This is a speed detection PCB compatible with Heidenhain ERN 1387. or TAMAGAWA TS6063N155. Use this for high-accuracy roll back restrictive. (Signals: 1Vp-p 2phase, 2-set sinewave +Z-phase pulse)
Speed detection 8 (SIN/COS compatible)	V24-DN8 N62P30684=1-01 <Dsub15>	
Relay interface	V24-RY0 N62P30612=1-01	This is used to expand the contact input/output points. Relay input: 4 points (PSI 8~11) 1C contact output: 4 points (PSO 4~7)

Operation panel

For the operation panel of VT240EL, two types of panels are available; LCD panel (V24-OP1A) and LED panel (V24-OP2)

LCD panel (V24-OP1A)



LED panel (V24-OP2)



THYFREC VT800



Applicable motors
200V class 5.6~22kW
400V class 8.1~22kW
Max. acceleration current
200V class 46~176A
400V class 27~88A

Type description **VT800 - 204 N - L2 - 0**

① Shows the unit type of input voltage and maximum current.
 ② Shows the types of control PWB options.
 N: No options
 P: Parallel input interface
 S: Serial communication interface

③ Shows the types of DC reactor (DCL) built-in options.
 L1: 2.0mH L11: 8.0mH
 L2: 1.3mH L11: 5.2mH
 L3: 0.8mH L11: 3.2mH
 00: No DCL (for separate options)

*For the separate DCL options, L4:0.6mH, L5:0.3mH, L14:2.4mH, and L15:1.2mH are available.

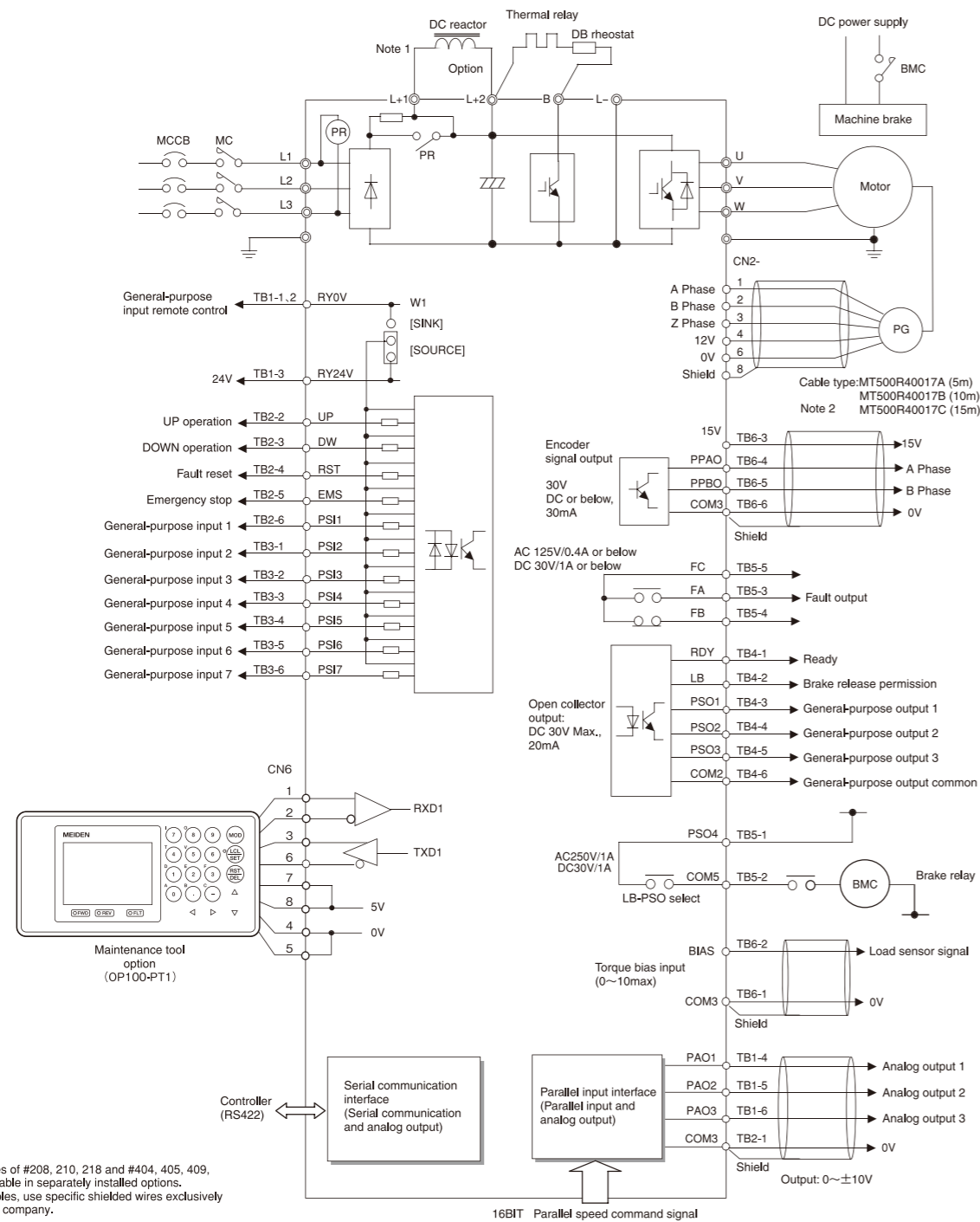
Standard specifications

Item	Specifications									
	200V class					400V class				
Class	Type (VT800-□□□□)					Type (VT800-□□□□)				
Motor	204	206	208	210	218	403	404	405	409	
Max. applicable motor	5.6	6.9	9.7	11.0	22.0	8.1	9.7	11.0	22.0	
Rated torque (%)	100% (Rated speed)									
Accelerating torque (%)	180% (Less than 80% of the rated speed)									
Ratings	Max. continuous rated current (A)									
	26	34	48	63	94	15	23	32	47	
	Max.accelerating current (A) Note 1									
	46	61	87	113	176	27	41	57	88	
	Carrier frequency Note 2									
	7~12kHz									
	Braking method Note 3									
	Resistance discharge braking									
Power supply	Rated input voltage/frequency									
	3-phase 200V ±10% 50Hz ±5%					3-phase 380/400/440V ±10%				
	3-phase 200/220V ±10% 60Hz ±5%					50 or 60Hz ±5%				
Construction	Cooling method Note 4									
	Forced air-cooling									
	Enclosure									
	IP00									
	Paint Note 5									
	None									
	Dimensions W×H×D (mm)									
	300×450×90		340×500×90			400×690×140		300×450×90		400×690×140
	Approximate mass (kg)									
	11		15			27		11		15
Environment	Installation place Note 6									
	Indoors, wall mounted									
	Altitude									
	1000m or less.									
	Unit ambient temperature and humidity									
	-10~45°C 95% RH or below (No dew condensation)									
	Average ambient temperature									
	25°C									
	Storage temperature and relative humidity									
	-25~70°C 20~90% RH (No dew condensation)									
	Atmospheric conditions									
	Freedom from corrosive or explosive gases, steam, dust, oil mist, cotton, lint, direct sunlight, etc.									
	DC reactor									
	Can be built-in		External			Can be built-in		External		
Options	Optional PCB									
	Parallel input interface									
	Data format:Unsigned 16-bit binary data. * Scaling is set up based on the rated speed of the elevator. Synchronizing method: Asynchronous method followin 1ms sampling (Data is updated with eurrent data when data matches three times in succession.) Data width: 16-bit batch Circuit voltage: 24V									
	Serial communication interface									
	Used for serial transmission connection with the controller. In serial communication operation, there are three kinds of modes: speed command mode, multi-speed command mode, and position control mode. In position control mode, position learning operation and running control are possible with the aid of the position control function. Transmission system: RS422 Transmission speed: 38400bps									
	Maintenance tool									
	LCD display type									
	Maintenance tool extension cord									
	LAN cable (straight)									
	PC loader switch									
	Adjustment supporting software									

Notes: 1. Shows the current to be carried when the carrier frequency is 10kHz.
 2. If the inverter is used at 10kHz or above, current derating is needed.
 3. The damping circuit and the braking resistor are optional.
 4. Spacing of at least 50mm should be provided to the inlet and exhaust ports for cooling air.
 5. Hot-dip galvanized steel sheets are used. Stainless steel plates are used for the front panel. (For #218 and #409, however, only hot-dip galvanized steel sheets are used.)
 6. The inverter shall be installed in the elevator controller panel.

THYFREC VT800

Example of connections

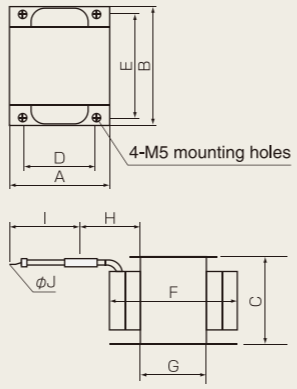


Notes:
 1. For the unit types of #208, 210, 218 and #404, 405, 409, the DCL is available in separately installed options.
 2. For encoder cables, use specific shielded wires exclusively furnished by the company.

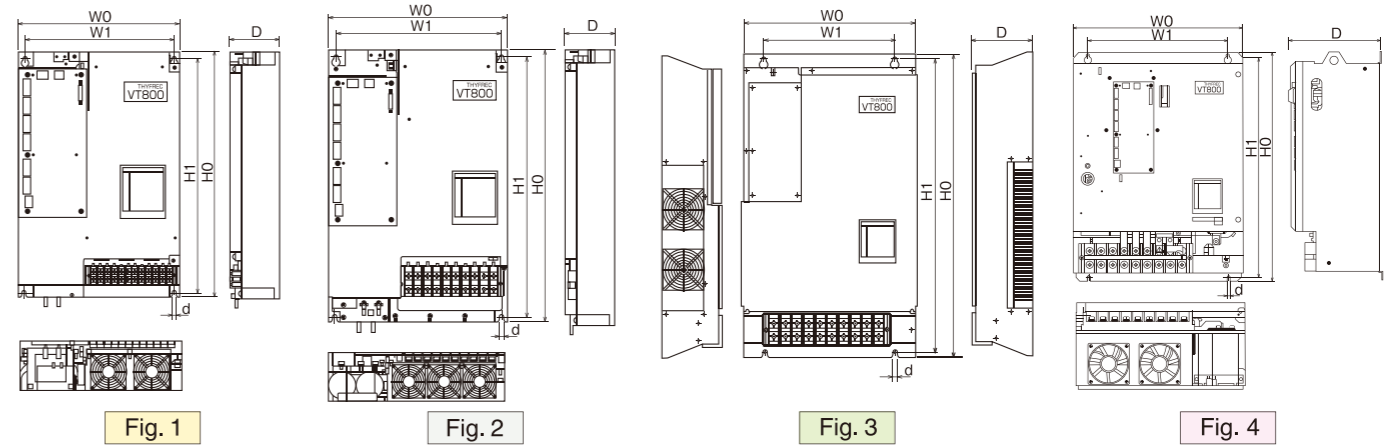
DC reactor (DCL) options

The DC reactors are effective in the improvement of power factor and the suppression of harmonics. According to the units, there are two types, the built-in type and the external type.

VT800-	Type	Type description	Inductance	Dimensions (mm)								Mass (kg)		
				A	B	C	D	E	F	G	H			
204	Built-in	VT800-204□-L2-0	1.3mH	—	—	—	—	—	—	—	—	—	3.5	
206		VT800-206□-L3-0	0.8mH	—	—	—	—	—	—	—	—	—	4.0	
208	External	N71P48936-4	0.6mH	115	128	95	76	113	128	62	50	310	5.3	6.0
210		N71P49140-5	0.3mH	114	115	102	75	95	134	65	65	500	8.4	6.0
403	Built-in	VT800-403□-L13-0	3.2mH	—	—	—	—	—	—	—	—	—	—	4.0
404		N71P48936-14	2.4mH	115	128	95	76	113	128	62	50	310	4.3	6.0
405	External	N71P48936-14	2.4mH	115	128	95	76	113	128	62	50	310	4.3	6.0
409		N71P49140-15	1.2mH	114	115	102	75	95	134	65	65	500	5.3	6.0



External dimensions



Application table

Type		Dimension (mm)						Main circuit terminal	Approx. mass (kg)	Fig.
200V class	400V class	W0	W1	H0	H1	D	d			
204	403	300	280	450	430	90	7	M4	Note 1	Fig. 1
206	---	---	---	---	---	---	---	---	---	---
208	---	---	---	---	---	---	---	M5	---	---
210	---	340	320	500	480	90	7	M4	15	Fig. 2
---	404	---	---	---	---	---	---	---	---	---
---	405	---	---	---	---	---	---	---	---	---
218	---	400	300	690	670	140	10	M8	27	Fig. 3
---	409	---	---	---	---	---	---	M5	---	---
232	---	495	410	670	650	275	9	M10	46	Fig. 4

Note: 1. The mass in the table above applies only when no built-in type DC reactor (DCL) is included.

LCD maintenance tool (Type: OP100-PT1)

(Approximate dimensions: Width 162, height 82, depth 26(mm)) with Backlight

A large graphic LCD can easily perform various kinds of maintenance operation.

- Run/input signal monitor
- Fault record monitor
- Various parameter change
- Parameter backup and installation

This maintenance tool is connected with the connector on the control PCB of VT800 unit through a straight-connection type UTP cable. This tool is used by pulling it out of the unit. Connections can be made without any problem even when the VT800 main body remains powered.

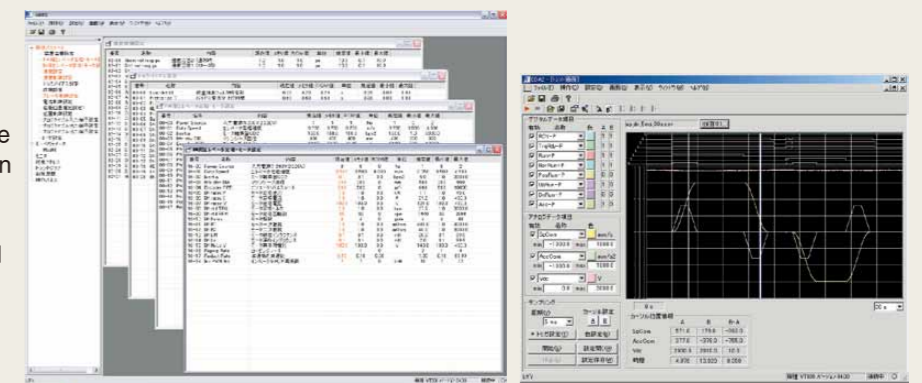


Adjustment supporting software

This PC software can offer functions for ON-line/OFF-line monitoring and fault indications for parameter setting, reference, and operation.


In the monitoring function, it is possible to give 3 types of numerical displays in one window and 8 types of graphic displays in bit indications.

The PC and the VT800 are connected through a connector on the control PCB and a UTP cable of the straight connection type.



Inverters

THYFREC VT850H



Applicable motors
400V class 11~54kW

Max. acceleration current
400V class (Output voltage 513V)
130~160A

Type description

VT850H - 5130

Unit types are shown based on voltage and maximum current.

Standard specifications

Item		Specifications	
Type (VT850H-□□□□)		5130	5160
Motor	Max. applicable motor	40	54
	Rated torque (%)	100%	
	Starting torque (%)	200%	
	max. output voltage (V)	3-phase 513V	
Ratings	max. continuous current (A)	62	75
	Max.accelerating current (A)	130	160
	Carrier frequency	Inverter 4 ~ 10kHz: Standard 8kHz	
Power supply	Braking method <small>Note 1</small>	Normally: Regenerative braking, When converter failed: Rheostat power discharge braking	
	Rated input voltage/frequency	3-phase 380 ~ 440V ±10% 50/60Hz ±5%	
	Cooling method <small>Note 2</small>	Forced air-cooled	
	Enclosure	IP00	
Construction	Paint	Munsell Notation 2.5Y 7.5/0.3	
	Dimensions W×H×D (mm)	Converter unit: 380×590×260, inverter unit: 380×590×260	
	Approximate mass (kg)	Converter unit: 25, inverter unit: 25	
Environment	Installation place <small>Note 3</small>	For wall-hung type, indoors use	
	Altitude	Altitude: 1000m or below	
	Unit ambient temperature and humidity	-10 ~ 45°C 95%RH or below (no dew condensation)	
	Average ambient temperature	25°C	
	Storage temperature and relative humidity	-25 ~ 70°C 20 ~ 90%RH (no dew condensation)	
Options	Atmospheric conditions	Freedom from corrosive gases, explosive gases, steam, dust, oil mist, lint, and exposure to direct sunlight	
	Maintenance tool	LCD display type	
	Maintenance tool extension cord	LAN cable (straight)	
	PC loader switch	Adjustment supporting software	

Notes: 1. The braking rheostat is optional.
2. More than 50mm space is required for the IN/OUT ports of cooling air.
3. Install it inside the elevator control panel.

LCD maintenance tool (Type: OP100-PT1)

(Approximate dimensions: Width 162, height 82, depth 26(mm)) with Backlight
A large graphic LCD can easily perform various kinds of maintenance operation.

- Run/input signal monitor
- Fault record monitor
- Various parameter change
- Parameter backup and installation

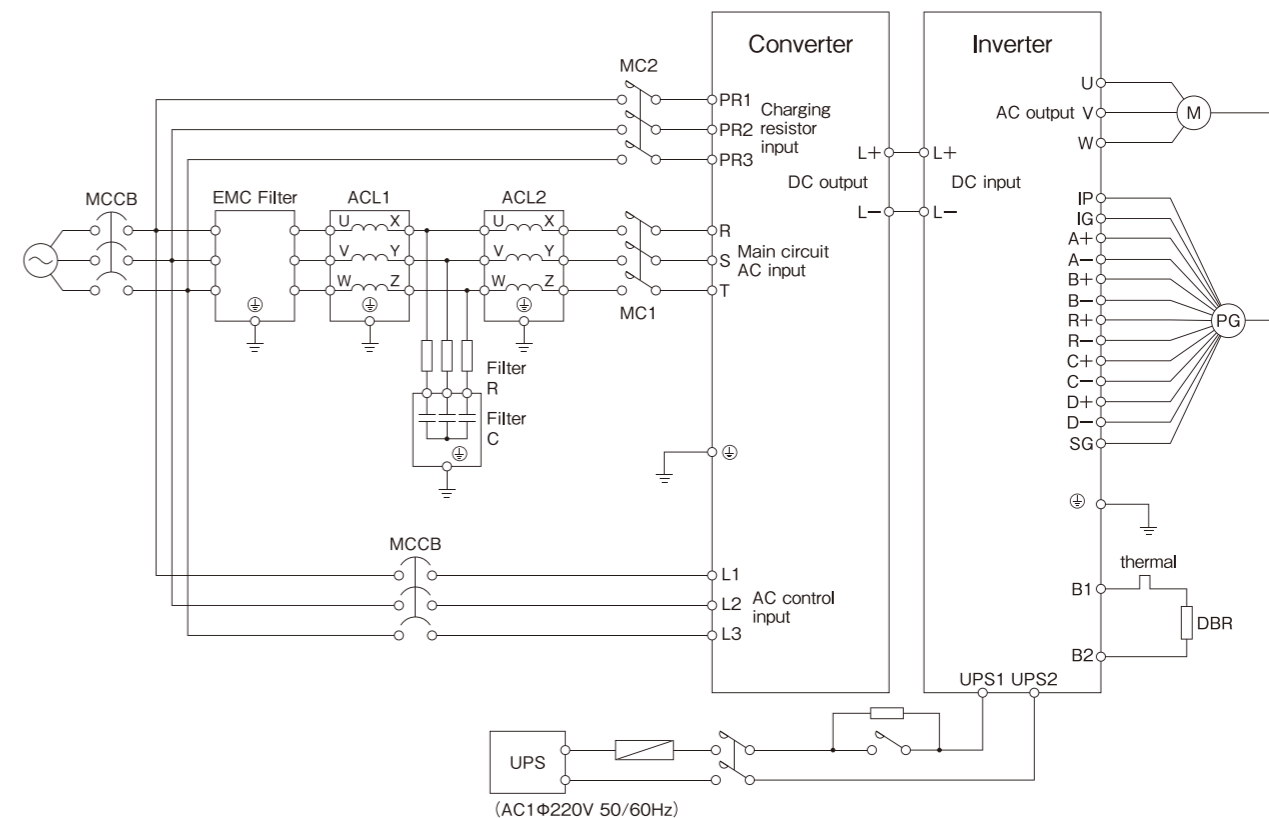
This maintenance tool is connected with the connector on the control PCB of VT850H unit through a straight-connection type UTP cable. This tool is used by pulling it out of the unit. Connections can be made without any problem even when the VT850H main body remains powered.



Adjustment supporting software

This PC software can offer functions for ON-line/OFF-line monitoring and fault indications for parameter setting, reference, and operation. In the monitoring function, it is possible to give 8 types of numerical displays in one window and types of graphic displays in bit indications. The PC and the VT800 are connected through a connector on the control PCB and a UTP cable of the straight connection type.

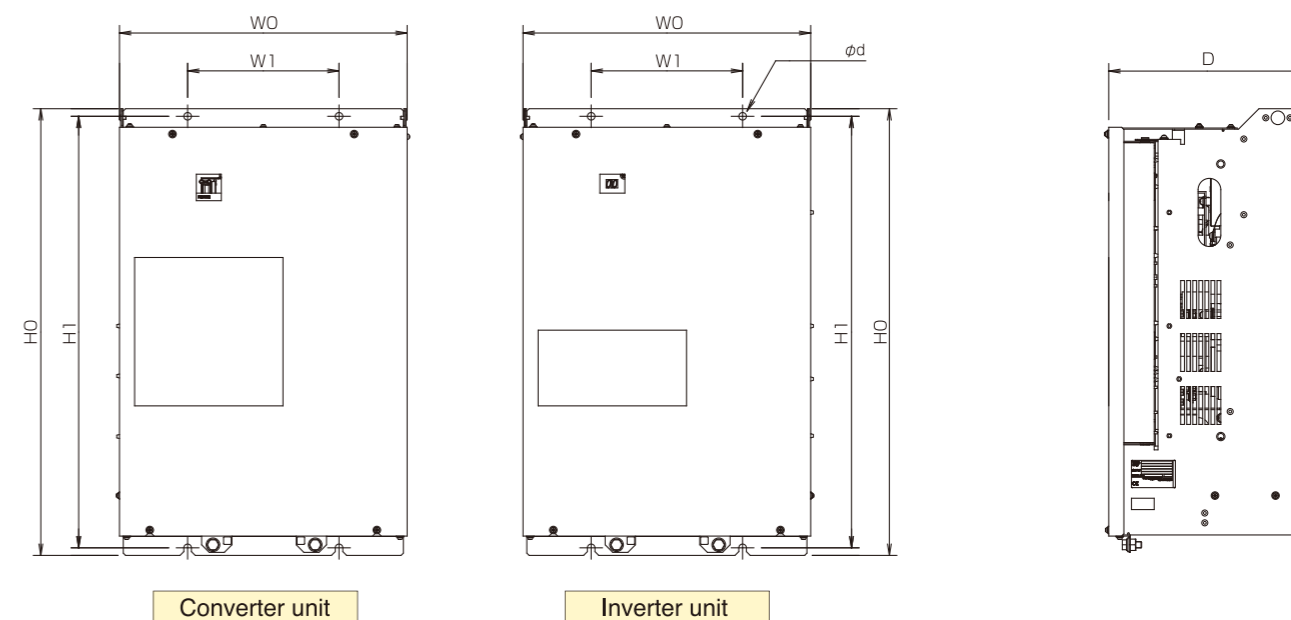
Example of connections



Main circuit options

The following items are available as the main-circuit options:
Input filters (ACL1, ACL2, Filter C, Filter R), EMC filter

External dimensions



Application table (for one unit)

Type	Dimension (mm)						Mass (kg)
	W0	W1	H0	H1	D	φd	
5130	380	200	590	570	260	10	25
5160							

Flat PM3T machine



Load capacity
450~1000kg

Lifting speed
45~105m/min

Type description
KTD3G1 - ZFPSBD - 30 - C

3T Series	Symbol	Load capacity (kg)	30-minute rating
1		450~600	
2		750~1000	

Standard specifications

Lifting speed (m/min)	Rated rotational speed (min ⁻¹) Note 1	KTD3G1-ZFPSBD		KTD3G2-ZFPSBD		
		Output (kW)				
105	167	4.9	6.5	8.1	9.7	11.0
90	143	4.2	5.6	6.9	8.3	9.2
60	95	2.8	3.7	4.6	5.6	6.2
45	72	2.1	2.8	3.5	4.2	4.6
Load capacity (kg)		450	600	750	900	1000
Sheave diameter (mm) Note 2		400				
Roping		2 : 1				
System		Permanent magnet type synchronous motor				
No. of poles		32				
Time rating		30 minutes				
Insulation		Class F				
Rotational direction		Forward rotation in counterclockwise direction as seen from sheave mounting side				
Construction	Protection system	IP42				
	Cooling system	IC400 (Self-cooled)				
	Mounting system	Wall mounting				
Environment	Ambient temperature	-10~+40°C				
	Relative humidity	90% RH or below (No dew condensation)				
	Installation place	Indoors				
	Altitude	1000m or below				
Atmospheric conditions		Freedom from corrosive or flammable gases				
Brake		No-excitation action type DC brake				
Encoder		Complementary output (8192P/R) Phase A,B,Z				
Color of coating		Munsell 5B5/0.5				
Accessories		Shaft end key, thermo-guard, encoder cable (Standard 10m)				

Notes: 1. Rated revolving speed is applicable when the sheave diameter is 400mm.
2. The sheaves are not included in Meiden supplies.

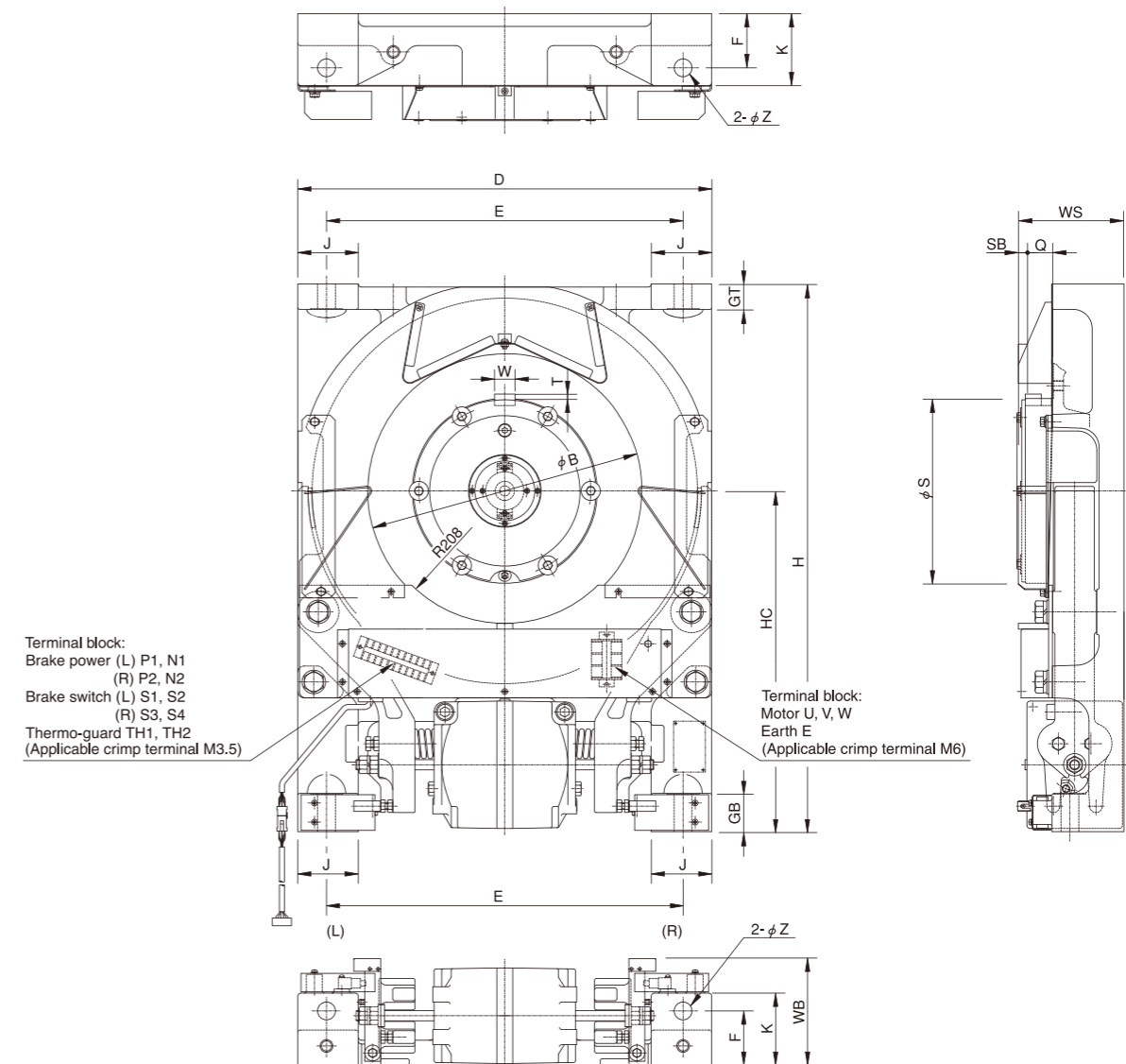
Applicable inverters

Lifting speed (m/min)	VT240EL				
	<200V class at upper stage; 400V class at lower stage>				
105	2050	2080	2100	2100	2100
	4040	4040	4052	4052	4052
90	2050	2080	2100	2100	2100
	4040	4040	4052	4052	4052
60	2040	2040	2050	2050	2080
	4020	4020	4030	4030	4040
45	2040	2040	2050	2050	2080
	4020	4020	4030	4030	4040
Load capacity (kg)	450	600	750	900	1000

Lifting speed (m/min)	VT800				
	<200V class at upper stage; 400V class at lower stage>				
105	206	208	208	210	210
	404	404	405	405	405
90	206	208	208	210	210
	404	404	405	405	405
60	204	204	206	206	208
	403	403	403	404	404
45	204	204	206	206	208
	403	403	403	404	404
Load capacity (kg)	450	600	750	900	1000

Note: The specified capacity is applicable when an applicable inverter is used with the standard specifications and mechanical efficiency. Please inquire when selecting the capacity.

External dimensions



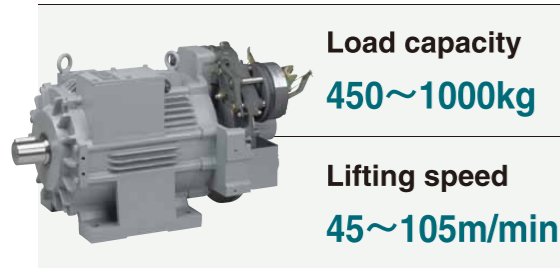
Load capacity (kg)	DC magnetic brake specifications (One side)		
	Coil resistance (Ω) at 20°C	Voltage (V)	
		During attraction (1 second)	During holding
450, 600	30.7±2	DC100V±10%	DC45V±10%
750, 900, 1000	36.3±2		

Load capacity (kg)	Motor dimensions (mm)													Shaft dimensions (mm)					Approx. mass (kg)	
	B	D	E	F	GB	GT	H	HC	J	K	WB	WS	Z	Q	S	SB	T	W		
450	430	650	560	85	60	40	860	535	95	113	168	168	28	44	290	13	7	32	310	
600																				
750																				
900	430	650	560	110	60	40	910	585	95	143	212	214	35	60	290	13	7	32	420	
1000																				

Notes: 1. Sizes are subject to change. Please inquire in the case of designing usage.
2. The shaft end keys and keyways shall conform to the parallel keys and keyways of JISB1301 (Sunk Keys and Their Corresponding Keyways).

Machines

PM3T machine



Load capacity
450~1000kg

Lifting speed
45~105m/min

Type description	ZR3K1 - ZFPS - 30 - C			
3T Series	Symbol	Load capacity (kg)	Brake disk (mm)	30-minute rating
	1	450~750	390	
	2	900~1000	450	

Standard specifications

Lifting speed (m/min)	Rated revolving speed (min ⁻¹) Note 1	ZR3K1-ZFPS			ZR3K2-ZFPS	
		Output (kW)				
105	167	4.9	6.5	8.1	9.7	11.0
90	143	4.2	5.6	6.9	8.3	9.2
60	95	2.8	3.7	4.6	5.6	6.2
45	72	2.1	2.8	3.5	4.2	4.6
Load capacity (kg)		450	600	750	900	1000
Sheave diameter (mm) Note 2		400				
Roping		2 : 1				
System		Permanent magnet type synchronous motor				
No. of poles		16				
Time rating		30 minutes				
Insulation		Class F				
Rotational direction		Forward rotation in counterclockwise direction as seen from sheave mounting side				
Construction	Protection system	IP55 (Except encoder and brake blocks)				
	Cooling system	IC400 (Self-cooled)				
	Mounting system	Leg mounting				
Environment	Ambient temperature	-20~+40°C				
	Relative humidity	90% RH or below (No dew condensation)				
	Installation place	Indoors				
	Altitude	1000m or below				
	Atmospheric conditions	Freedom from corrosive or flammable gases				
Encoder		Complementary output (8192P/R) Phase A,B,Z				
Color of coating		Munsell 5B5/0.5				
Accessories		Shaft end key, thermo-guard, encoder cable (Standard 10m)				

Notes: 1. Rated revolving speed is applicable when the sheave diameter is 400mm.
2. The sheaves are not included in Meiden supplies.

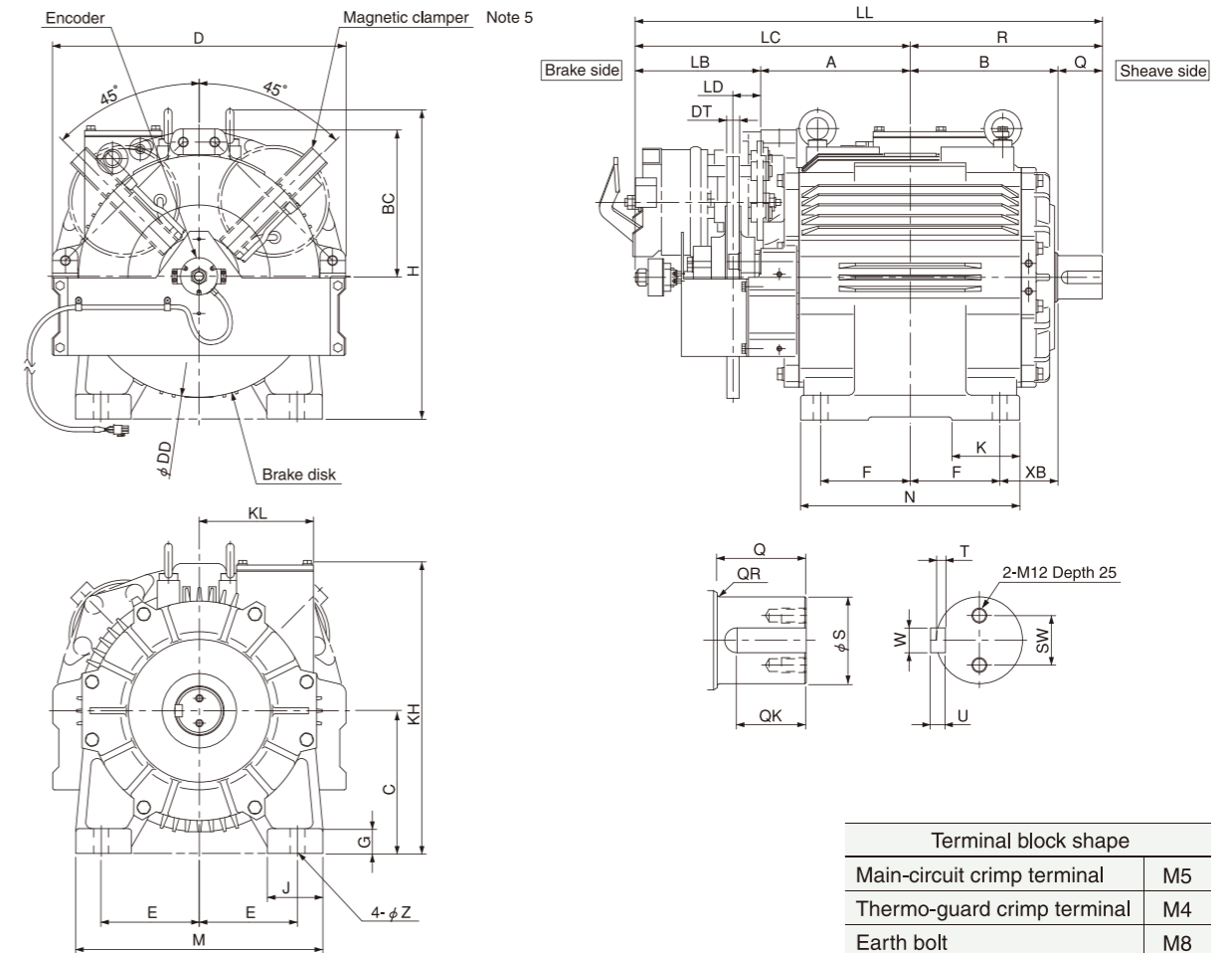
Applicable inverters

Lifting speed (m/min)	VT240EL					
	<200V class at upper stage; 400V class at lower stage>					
105	2050	2080	2080	2100	2100	
	4040	4040	4040	4052	4052	
90	2050	2080	2080	2100	2100	
	4040	4040	4040	4052	4052	
60	2040	2040	2050	2050	2080	
	4020	4020	4030	4030	4040	
45	2040	2040	2050	2050	2080	
	4020	4020	4030	4030	4040	
Load capacity (kg)		450	600	750	900	1000

Lifting speed (m/min)	VT800					
	<200V class at upper stage; 400V class at lower stage>					
105	206	208	208	210	210	
	404	404	405	405	405	
90	206	208	208	210	210	
	404	404	405	405	405	
60	204	204	206	206	208	
	403	403	403	404	404	
45	204	204	206	206	208	
	403	403	403	404	404	
Load capacity (kg)		450	600	750	900	1000

Note: The specified capacity is applicable when an applicable inverter is used with the standard specifications and mechanical efficiency. Please inquire when selecting the capacity.

External dimensions



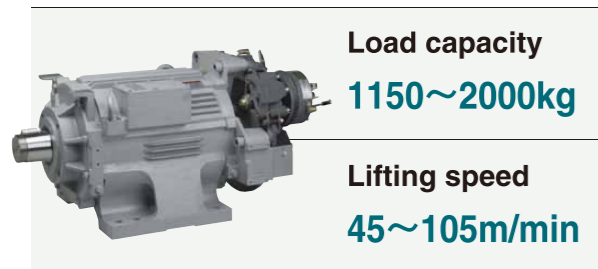
Load capacity (kg)	Motor dimensions (mm)																
	A	B	C	D	E	F	G	H	J	K	LB	LC	LD	LL	M	N	R
450																	
600	242	239	230	475	159	145	40	500	90	110	203	445	45	756	400	355	311
750																	
900	282	239	230	515	159	145	40	500	90	110	203	485	45	796	400	355	311
1000																	

Load capacity (kg)	Motor dimensions (mm)							Shaft dimensions (mm)							Approx. mass (kg)	
	BC	KH	KL	Z	XB	DD	DT	Q	S	T	U	W	SW	QK		QR
450																
600	237.5	473	185	24	94	390	20	72	70	7.5	12	20	40	56	2	330
750																
900	257.5	473	185	24	94	450	20	72	70	7.5	12	20	40	56	2	410
1000																

Notes: 1. Sizes are subject to change. Please inquire in the case of designing usage.
2. Tolerance for Size S shall be of m6 according to JISB0401 (System of Limits and Fits).
3. Tolerance for Size C shall be 0/-0.5.
4. The shaft end keys and keyways shall conform to the parallel keys and keyways of JISB1301 (Keys and Their Corresponding Keyways).
5. The magnetic clamber and its mounting molts plus the protective cover and its mounting molts are not included in Meiden supplies.
6. The protective cover for encoder, the terminal stand and terminal box for brake are optional.

Machines

PM5T machine



Type description

ZQ5K1 - ZFPS - 30 - C

5T Series 30-minute rating

Standard specifications

Lifting speed (m/min)	Rated revolving speed (min ⁻¹) Note 1	ZQ5K1-ZFPS				
		Output (kW)				
105	134	13.0	15.0	18.0	—	—
90	115	11.0	13.0	15.0	—	—
60	76	7.1	8.3	9.9	11.0	13.0
45	57	5.3	6.2	7.4	8.3	9.2
Load capacity (kg)		1150	1350	1600	1800	2000
Sheave diameter (mm) Note 2		500				
Roping		2 : 1				
System		Permanent magnet type synchronous motor				
No. of poles		16				
Time rating		30 minutes				
Insulation		Class F				
Rotational direction		Forward rotation in counterclockwise direction as seen from sheave mounting side				
Construction	Protection system	IP57 (Except encoder and brake blocks)				
	Cooling system	IC400 (Self-cooled)				
	Mounting system	Leg mounting				
Environment	Ambient temperature	-20~+40°C				
	Relative humidity	90% RH or below (No dew condensation)				
	Installation place	Indoors				
	Altitude	1000m or below				
	Atmospheric conditions	Freedom from corrosive or flammable gases				
Encoder		Complementary output (8192P/R) Phase A,B,Z				
Color of coating		Munsell 5B5/0.5				
Accessories		Shaft end key, thermo-guard, encoder cable (Standard 10m)				

Notes: 1. Rated revolving speed is applicable when the sheave diameter is 500mm.
2. The sheaves are not included in Meiden supplies.

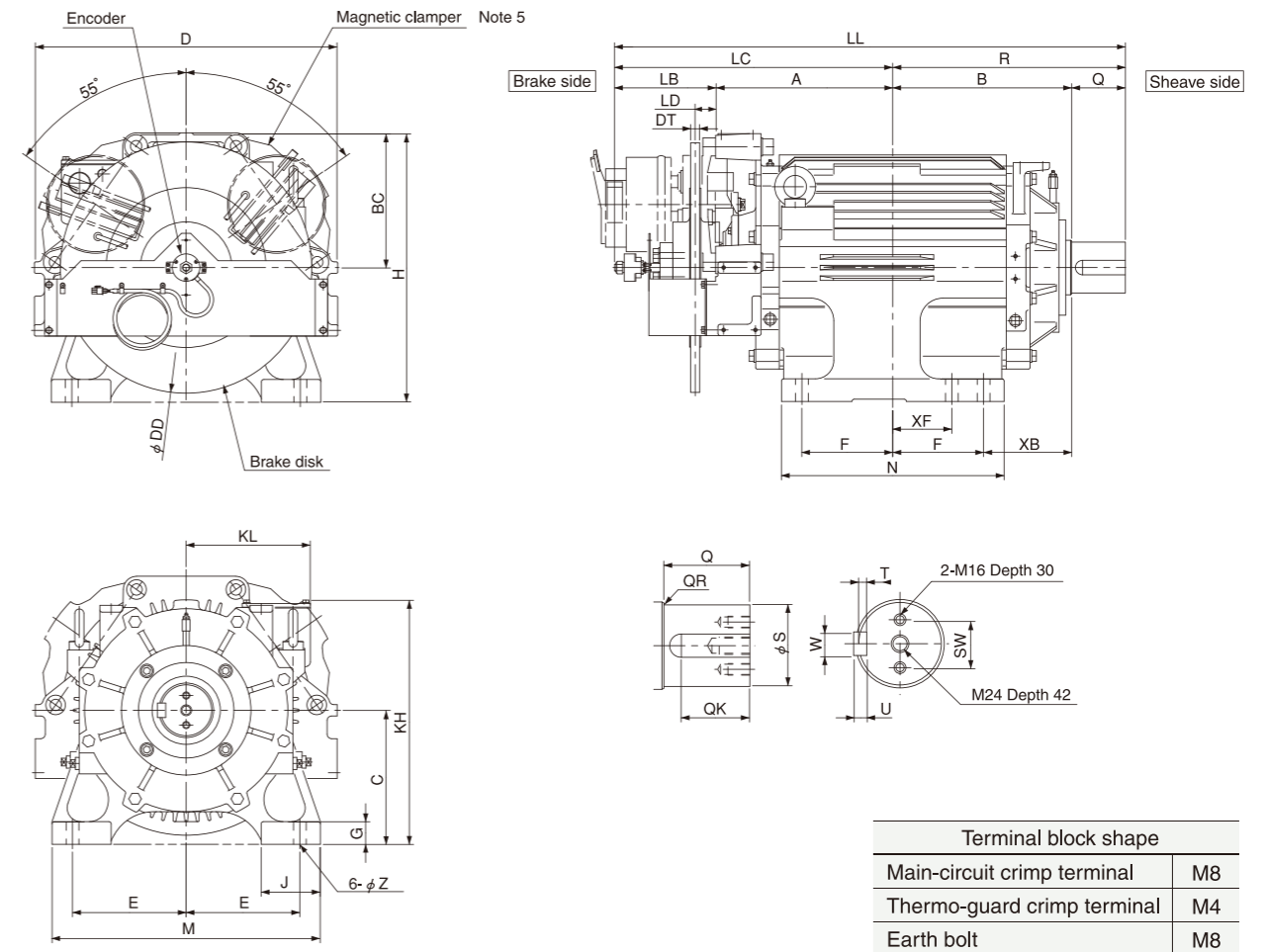
Applicable inverters

Lifting speed (m/min)	VT240EL					
	<200V class at upper stage; 400V class at lower stage>					
105	2130	2130	2150	—	—	
	4060	4060	4070	—	—	
90	2130	2130	2150	—	—	
	4060	4060	4070	—	—	
60	2080	2080	2100	2100	2130	
	4040	4040	4052	4052	4060	
45	2080	2080	2100	2100	2130	
	4040	4040	4052	4052	4060	
Load capacity (kg)		1150	1350	1600	1800	2000

Lifting speed (m/min)	VT800					
	<200V class at upper stage; 400V class at lower stage>					
105	218	218	218	—	—	
	409	409	409	—	—	
90	218	218	218	—	—	
	409	409	409	—	—	
60	208	208	210	210	218	
	404	404	405	405	409	
45	208	208	210	210	218	
	404	404	405	405	409	
Load capacity (kg)		1150	1350	1600	1800	2000

Note: The specified capacity is applicable when an applicable inverter is used with the standard specifications and mechanical efficiency. Please inquire when selecting the capacity.

External dimensions



Terminal block shape	
Main-circuit crimp terminal	M8
Thermo-guard crimp terminal	M4
Earth bolt	M8

Load capacity (kg)	Motor dimensions (mm)															
	A	B	C	D	E	F	G	H	J	LB	LC	LD	LL	M	N	R
1150																
1350																
1600	390	394	295	664	250	200	50	590	130	222	612	45	1124	590	490	512
1800																
2000																

Load capacity (kg)	Motor dimensions (mm)								Shaft dimensions (mm)								Approx. mass (kg)
	BC	KH	KL	Z	XB	XF	DD	DT	Q	S	T	U	W	SW	QK	QR	
1150																	
1350																	
1600	295	538	273	28	194	130	550	20	118	112	11	18	32	65	94	1	
1800																	
2000																	

Notes: 1. Sizes are subject to change. Please inquire in the case of designing usage.
2. Tolerance for Size S shall be of m6 according to JISB0401 (System of Limits and Fits).
3. Tolerance for Size C shall be 0/-0.5.
4. The shaft end keys and keyways shall conform to the parallel keys and keyways of JISB1301 (Sunk Keys and Their Corresponding Keyways).
5. The magnetic clumper and its mounting molts plus the protective cover and its mounting molts are not included in Meiden supplies.
6. The protective cover for encoder, the terminal stand and terminal box for brake are optional.

For improvements PM3.5T / 5.2T machine



Load capacity
450~1000kg

Lifting speed
45~105m/min

Type description

T3.5 - ZFPSBD - 30 - C

3.5 : 3.5T Series
5.2 : 5.2T Series

30-minute rating

Standard specifications

Lifting speed (m/min)	Rated revolving speed (min ⁻¹) <small>Note 1</small>	T3.5-ZFPSBD			T5.2-ZFPSBD	
		Output (kW)				
105	60	4.9	6.5	8.1	9.7	11.0
90	51	4.2	5.6	6.9	8.3	9.2
60	34	2.8	3.7	4.6	5.6	6.2
45	26	2.1	2.8	3.5	4.2	4.6
Load capacity (kg)		450	600	750	900	1000
Sheave diameter (mm) <small>Note 2</small>		560				
Roping		1 : 1				
System		PM type synchronous motor				
No. of poles		40				
Time rating		S2-30min				
Insulation		155 (F)				
Rotational direction		Forward revolution in counterclockwise direction as seen from the sheave mounting side				
Construction	Protection system	IP30				
	Cooling system	IC400 (self-cooled)				
	Mounting system	Foot mounting				
Environment	Ambient temperature	-10 ~ +40°C				
	Relative humidity	90%RH or below (no dew condensation)				
	Installation place	Indoor				
	Altitude	1000m or below				
Atmospheric conditions		Freedom from corrosive and flammable gases				
Brake		Unexcited action type DC brake				
Encoder		Complementary output (8192P/R) Phase A, B, Z				
Color of coating		Munsell Notation 5B5/0.5				
Accessories		Shaft-end key, encoder cable (Standard: 10m)				

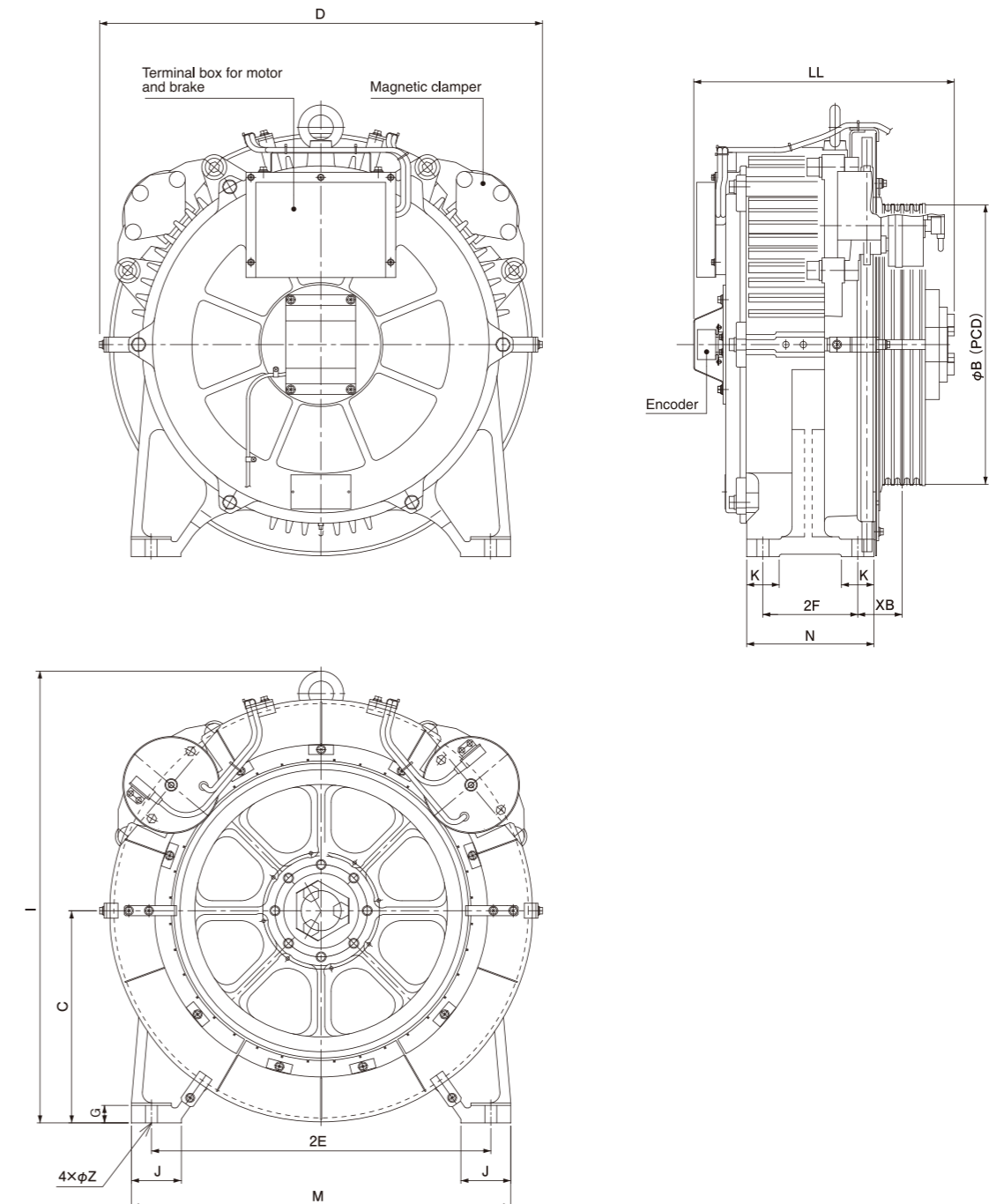
Notes: 1. Rated revolving speed is applicable when the sheave diameter is 560mm.

Applicable inverters

Lifting speed (m/min)	VT240EL					
	<200V class at upper stage; 400V class at lower stage>					
105	2050	2080	2100	2100	2130	
	4030	4040	4052	4052	4060	
90	2050	2080	2080	2100	2100	
	4020	4030	4040	4052	4052	
60	2040	2040	2050	2050	2080	
	4020	4020	4030	4030	4040	
45	2020	2040	2040	2050	2050	
	4015	4020	4020	4020	4030	
Load capacity (kg)		450	600	750	900	1000

Lifting speed (m/min)	VT800					
	<200V class at upper stage; 400V class at lower stage>					
105	206	208	210	210	210	
	403	404	405	405	405	
90	206	206	208	208	210	
	403	404	404	404	405	
60	204	204	206	204	208	
	403	403	403	404	404	
45	204	204	204	204	206	
	403	403	403	403	403	
Load capacity (kg)		450	600	750	900	1000

External dimensions



Type	Dimension (mm)														Approx.mass (kg)	
	B	C	D	2E	2F	G	I	J	K	LL	M	N	XB	Z	Note 2	Motor main body
3.5T	560	425	887.2	680	125	35	905	100	65	522	760	255	89	24	635	450
5.2T	560	425	987.2	680	165	35	905	100	65	611	760	295	108	24	725	525

Notes: 1. Dimensions are subject to change. Please consult us if you are going to adopt it for designing.
2. Motor main body, sheave, electromagnetic brake, cover, and some associated parts are included.

PM13T / 15T machine



Load capacity
900~2000kg

Lifting speed
120~240m/min

Type description

T13 - ZFPSBD - 60 - C

T: Totally enclosed type 13-ZFPSBD : 13T Series 60-minute rating
E: protection type 15-ZFPS : 15T Series

Standard specifications

Lifting speed (m/min)	Rated revolving speed (min ⁻¹) Note 1		T13-ZFPSBD					E15-ZFPS		
	13T	15T	Output (kW)							
240	288	255	22.0	25.0	29.0	33.0	40.0	45.0	49.0	
210	252	223	20.0	22.0	25.0	29.0	35.0	39.0	43.0	
180	216	191	17.0	19.0	22.0	25.0	30.0	34.0	37.0	
150	180	159	14.0	16.0	18.0	21.0	25.0	28.0	31.0	
120	144	128	11.0	13.0	14.0	17.0	20.0	23.0	25.0	
Load capacity (kg)			900	1000	1150	1350	1600	1800	2000	
Sheave diameter (mm)			530					600		Note 2
Roping			2 : 1 (Double lap joint)							
System			PM type synchronous motor							
No. of poles			20					24		
Time rating			S2-60min							
Insulation			155 (F)							
Rotational direction			Forward revolution in counterclockwise direction as seen from the sheave mounting side							
Construction	Protection system	IP41					IP30			
	Cooling system	IC400 (self-cooled)					IC00 (Self-ventilation)			
	Mounting system	Foot mounting								
Environment	Ambient temperature	-10~+40°C								
	Relative humidity	90%RH or below (no dew condensation)								
	Installation place	Indoor								
	Altitude	1000m or below								
	Atmospheric conditions	Freedom from corrosive and flammable gases								
Brake			Unexcited action type DC brake					-		
Encoder			Complementary output 2048P/R Phase A, B, C, D, Z							
Color of coating			Munsell Notation 5B5/0.5							
Accessories			Shaft-end key, encoder cable (Standard: 10m)							

Notes: 1. 13T is applicable to the rated revolving speed for a sheave diameter of 530mm and 15T to that for a sheave diameter of 600mm.
2. The 15T sheave, the electromagnetic clamper, and the protection cover are not furnished from us.

Applicable inverters

Lifting speed (m/min)	VT850H <400V system (Rated hoist voltage: 513V)>							
	240	5130	5130	5130	5130	5130	5130	5160
210	5130	5130	5130	5130	5130	5130	5160	
180	5130	5130	5130	5130	5130	5130	5130	
150	5130	5130	5130	5130	5130	5130	5130	
120	5130	5130	5130	5130	5130	5130	5130	
Load capacity (kg)		900	1000	1150	1350	1600	1800	2000

External dimensions

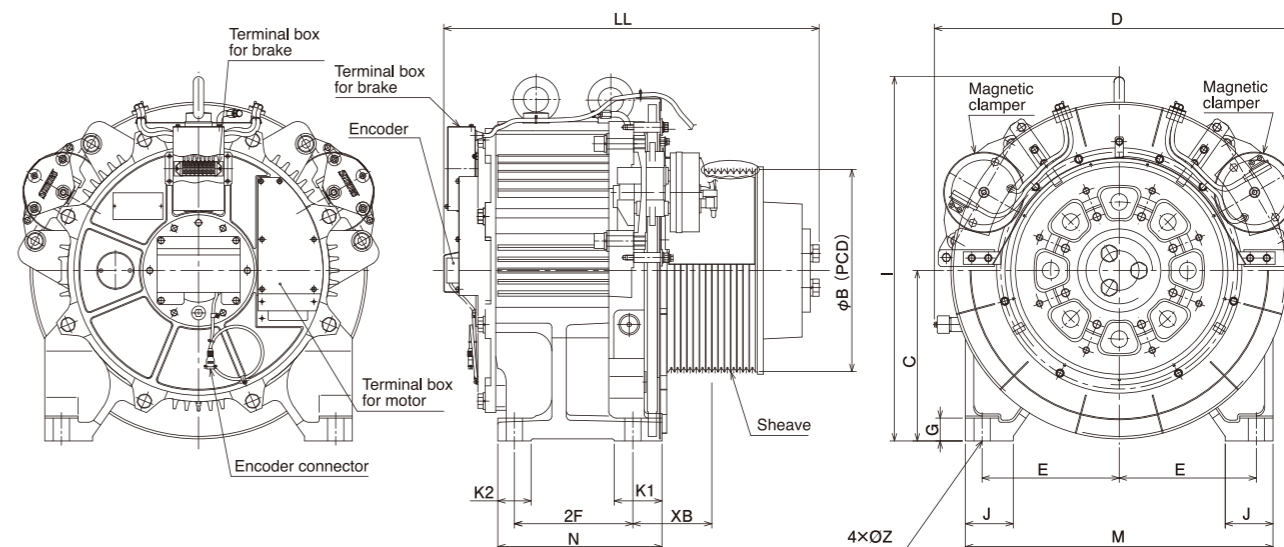


Fig. 1

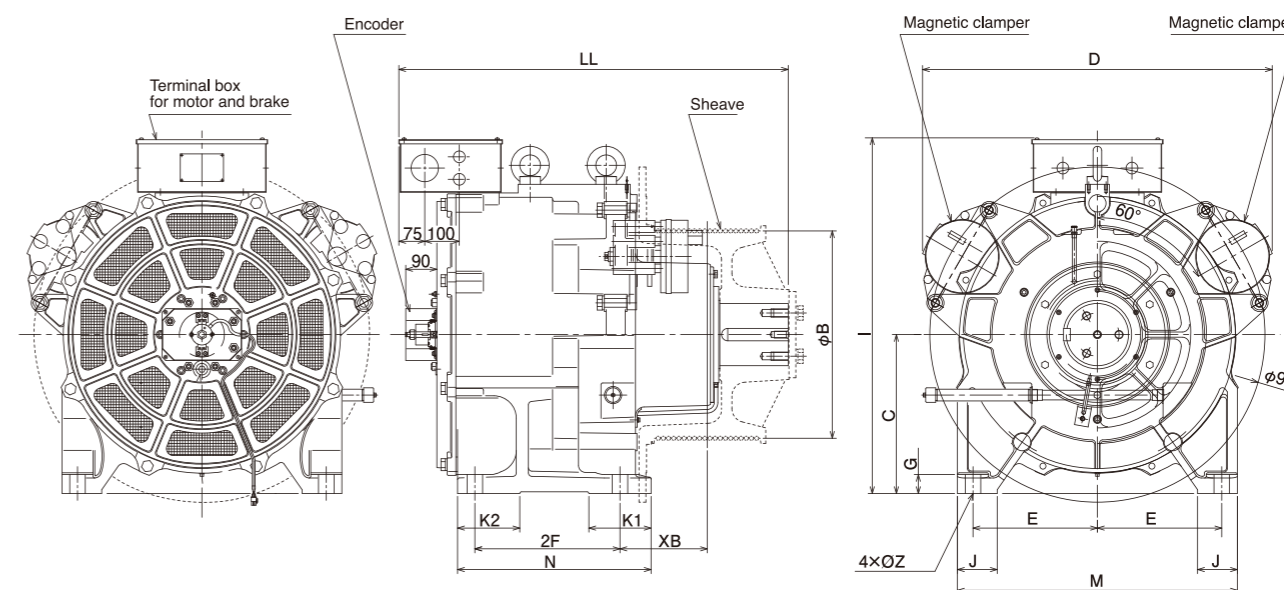



Fig. 2

Type	Dimension (mm)																Approx. mass (kg)		Fig.
	B	C	D	E	2F	G	I	J	K1	K2	LL	M	N	XB	Z	Overall	Motor main body		
13T	530	410	880	330	200	55	877	115	115	80	903	740	395	100	39	1210	920	Fig.1	
15T	600	460	1012	360	420	55	1030	115	180	180	1127	810	560	253	45	-	1220	Fig.2	

Notes: 1. Dimensions are subject to change. Please consult us if you are going to adopt it for designing.
2. Magnetic clampers and mounting bolts are not furnished from us.

High-capacity, high-speed PM37T machine



Load capacity
1150~3600kg

Lifting speed
240~480m/min

Type description

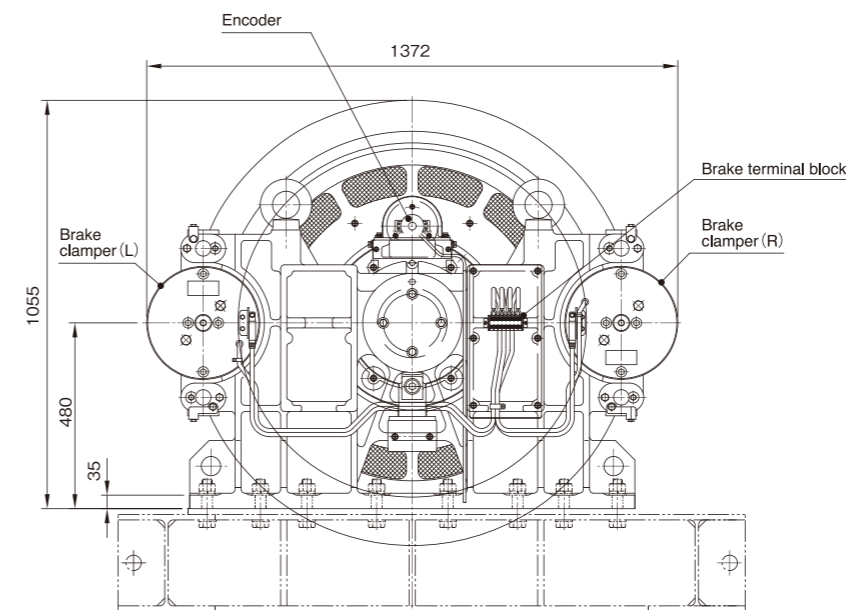
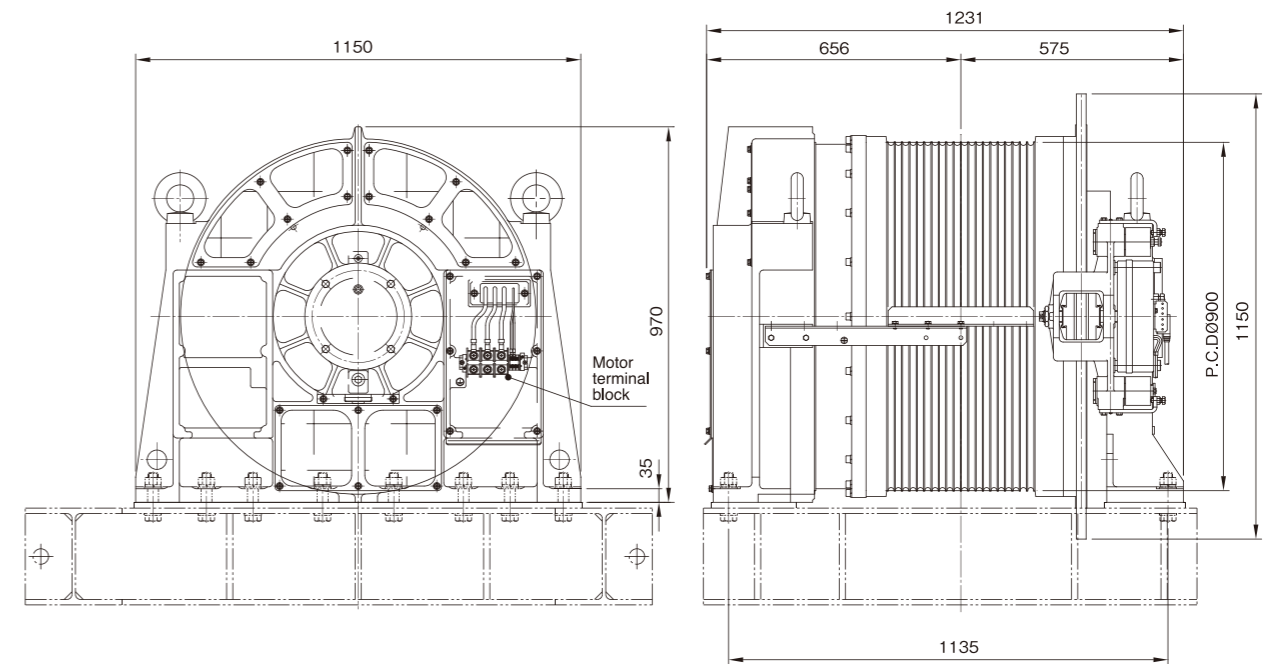
E37 - ZFPSBD

37T Series

■ Standard specifications

		E37-ZFPSBD	
Maximum load (kg)		1800	3600
Lifting speed (m/min)		480	240
Sheave diameter (mm)		900	
Roping		1 : 1 Roping double wrap	2 : 1 Roping double wrap
System		PM type synchronous motor	
Output (kW)		90	
No. of poles		40	
Time rating		S2-60min	
Insulation		155 (F)	
Rotational direction		Forward revolution in counterclockwise direction as seen from the sheave mounting side	
Construction	Protection system	IP21	
	Cooling system	IC01	
	Mounting system	Foot mounting	
Environment	Ambient temperature	-10 ~ +40°C	
	Relative humidity	90%RH or below (no dew condensation)	
	Installation place	Indoor	
	Altitude	1000m or below	
	Atmospheric conditions	Freedom from corrosive and flammable gases	
Brake		Unexcited action type DC brake	
Encoder		Line driver	
Color of coating		Munsell Notation 5B5/0.5	
Accessories		Thermo-guard	

■ External dimensions



A mechanical bed mounting bolt is outside our scope of supply.

Information required at the time of ordering

Specify the matters below when you make an order.

You can specify the models of PM motors and inverters according to this catalog.

No.	Specification items	Specified matters	Remarks
1	Model designation	PM3T machine (Sheave diameter: 0.4m)	※ Essential: Encircle any one of these.
		PM5T machine (Sheave diameter: 0.5m)	
		Flat PM3T machine (Sheave diameter: 0.4m)	
		For improvements PM3.5T machine(Sheave diameter: 0.56m)	
		For improvements PM5.2T machine(Sheave diameter: 0.56m)	
		PM13T machine(Sheave diameter: 0.48m)	
		PM15T machine(Sheave diameter: 0.6m)	
2	Power supply	200V class	※ Essential: Encircle any one of these.
		400V class	
3	Mechanical data	Rated load capacity (kg)	※ Essential
		Car mass (kg)	※ Essential
		Counterweight mass (kg)	(Rated load capacity /2+Car mass) is the standard.
		Rope mass (kg)	Specify rope weight or lifting length.
		Lifting length (m)	
		Presence of compensatory rope	※ Essential
		Roping	※ Essential
Elevator machines are excluded.GD ² of the mechanical system (kg·m ²) converted to Machine shaft.	Specify if calculation is possible.		
4	Operating conditions	Car speed (m/min)	※ Essential
		Mechanical efficiency of elevator	0.80 is the standard.
		Acceleration (m/s ²)	The following values are the standard: Car speed: 45m/min 0.5m/s ² Car speed: 60m/min 0.6m/s ² Car speed: 90, 105m/min 0.7m/s ²
		Max. torque during acceleration (kgf·m)	Specify if calculation is possible.
		Rated torque at constant speed (kgf·m)	Specify if calculation is possible.
5	Operational duty	Starting frequency (SPH)	
		Utilization time rate (%ED)	

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