

TOSHIBA

TOSHIBA INTERNATIONAL CORPORATION

ADJUSTABLE SPEED DRIVES

AS3



**LOW
VOLTAGE**

HARNESSING THE POWER OF BUILT-IN COMMUNICATIONS

Toshiba's AS3 adjustable speed drive is designed with an emphasis on built-in communications, allowing end-users to access real-time data and refined controls to maximize system performance.



Industry 4.0/IoT (Internet of Things)	Industry 4.0 is the evolution of manufacturing, empowering businesses to learn and adjust from data available through connected manufacturing.
Dual Port Ethernet IP	Enables simple connection of multiple AS3s together on one network while simplifying cable management.
Embedded Web Server	Allows for quick access to Ethernet IP setup, parameters and real-time monitoring for diagnostics. Accessible through standard web browsers on PC, tablets, and smart phones.
Built-in LCD Display & Advanced Keypad	Multi-language LCD display, remote mounting, IP65 rated, transfer/save parameters, real-time clock for fault logging, and calendar functionality.
QR Codes	Displayed when troubleshooting faults or alarms, providing immediate access to a dedicated web link for maintenance and support.
STO Terminal	Detachable terminal strip meets IEC directives for safety with full implementation of Safe Torque Off, which quickly shuts down the system in the event of an emergency stop.
Permanent Magnet Motor Control	For control of permanent magnet (PM) motors with higher torque and efficiency values.
Pump Control	Multi-PID control with sleep function and the ability to autonomously control booster pumps based on system demands or operating a secondary PID control loop.
ASD Pro Software	Toshiba's programming software, which allows the user to utilize logic-type programming without the expense of a micro PLC.

COMMUNICATION OPTIONS

In addition to the built-in dual port Ethernet, the AS3 can make use of a wide array of easily installed option boards. These boards allow the user to communicate with a wide variety of systems when installed cassette style. Options include:

- Ethernet/IP (Embedded)
- Modbus TCP (Embedded)
- Modbus RTU (Embedded)
- PROFINET
- EtherCAT
- PROFIBUS-DP
- DeviceNET
- CAN open

ADDITIONAL OPTIONS

The AS3 can be supplied with additional options to expand control, allow greater flexibility, and provide better protection for a user's application. Options include:

- AC Line Reactors
- DV/DT Long-Lead Filters
- Extended Terminal Cards
- Encoder Feedback Cards
- Harmonic Filters
- Remote-Mountable Keypads
- Dynamic Braking Resistor
- Flange Kit
- Conduit Boxes
- Safety Module (SS1, SOS, SS1, SBS, SLS, SDI)

OTHER SPECIAL FEATURES

- Broad Range of Compliances
- NEC 2005 Motor Overload Retention (No External Motor Overloads Required)
- NEMA 1 Enclosure
- UL Listed & Labeled
- Optional IP55 Enclosure

INDUSTRIES SERVED

- Oil & Gas
- Mining & Minerals
- Chemical
- Water & Wastewater

APPLICATIONS

- Pumps
- Fans
- Compressors
- Centrifuges
- Conveyors
- Mixers
- Pump Jacks
- Crushers
- Cranes
- Hoists



1. Dual Port Ethernet IP
2. RS485 Communication Port
3. Up to 3 Embedded Option Card Slots
4. Safe Torque Off Terminals
5. 3 Digital Output Relays
6. 3 Analog Inputs
7. 2 Analog Outputs
8. 8 Digital Inputs



APPLICABLE MOTOR (HP)

Heavy Duty (HD)	0.5	1	2	3	5	7.5	10	15	20	25	30	40	50	60	75	100	125	150	200	250	300	350	450
Normal Duty (ND)	1	2	3	5	7.5	10	15	20	25	30	40	50	60	75	100	125	150	200	250	350	400	450	500

RATED OUTPUT CURRENT (A)

200 V Class HD	3.3	4.6	8	11.2	18.7	25.4	32.7	46.8	63.4	78.4	92.6	123	149	176	211	-	-	-	-	-	-	-	-
200 V Class ND	4.6	8	11.2	18.7	25.4	32.7	46.8	63.4	78.4	92.6	123	149	176	211	282	-	-	-	-	-	-	-	-
400 V Class HD	1.5	2.2	4	5.6	9.3	12.7	16.5	23.5	31.7	39.2	46.3	61.5	74.5	88	106	145	173	211	250	314	387	427	550
400 V Class ND	2.2	4	5.6	9.3	12.7	16.5	23.5	31.7	39.2	46.3	61.5	74.5	88	106	145	173	211	250	302	427	481	550	616
600 V Class HD	-	-	3.1	4.2	7.2	9.5	13.5	18	24	29	34	5	55	66	83	-	-	-	-	-	-	-	-
600 V Class ND	-	-	4.2	5.4	9.5	13.5	18	24	29	34	45	55	66	83	108	-	-	-	-	-	-	-	-

VOLTAGE/FREQUENCY

200 V Class	Three-Phase 200 to 240 V, 50/60 Hz (Voltage +10%, -15%, Frequency ±5%)
400 V Class	Three-Phase 380 to 480 V, 50/60 Hz (Voltage +10%, -15%, Frequency ±5%)
600 V Class	Three Phase 575 to 690 V, 50/60 Hz (Voltage +10%, -15%, Frequency +/-5%)

OUTPUT VOLTAGE

200 V Class	Three-Phase 200 to 240 V (Maximum Output Voltage is Equal to the Input Supply Voltage)
400 V Class	Three-Phase 380 to 480 V (Maximum Output Voltage is Equal to the Input Supply Voltage)
600 V Class	Three Phase 575 to 690 V (Maximum Output Voltage is Equal to the Input Supply Voltage)

OVERLOAD CURRENT RATING

HD	150% for One Minute, 180% for Two Seconds
ND	120% for One Minute, 135% for Two Seconds

OUTPUT FREQUENCY RANGE

Setting Between 0.01 to 590 Hz; Adjustable at 0.01 Hz Increments; Default Maximum Frequency is Set to 0.01 to 80 Hz; Maximum Frequency Adjustment (30 to 590 Hz)

DC REACTOR

200/400 V Class 0.5 to 200 HP (HD) Built-in; 400 V Class 250 to 450 HP (HD) Attached; 600 V Class 2 to 75 Hp (HD) Built-in

ENCLOSURE

200 V Class 0.5 to 50 HP (HD) & 400 V Class 0.5 to 100 HP (HD) NEMA 1/IP20 Built-in; 200 V Class 60 to 75 HP (HD), 400 V Class 125 to 450 HP (HD) NEMA 1/IP20 with Optional Conduit Box & 600 V Class all ratings NEMA 1/IP20 with Optional Conduit Box

AMBIENT TEMPERATURE

-10° to +60° C (Remove the Upper Cover if 50° C or More; Max 60° C)

TERMINAL STRIP I/O

Eight DI, Three DO (One Form C, Two Form A Relays), Three AI (0 to 10 VDC, -10 to +10 VDC, 0 to 20 mADC), Two AO (0 to 10 VDC or 0 to 20 mADC), STO (Safe Torque Off)

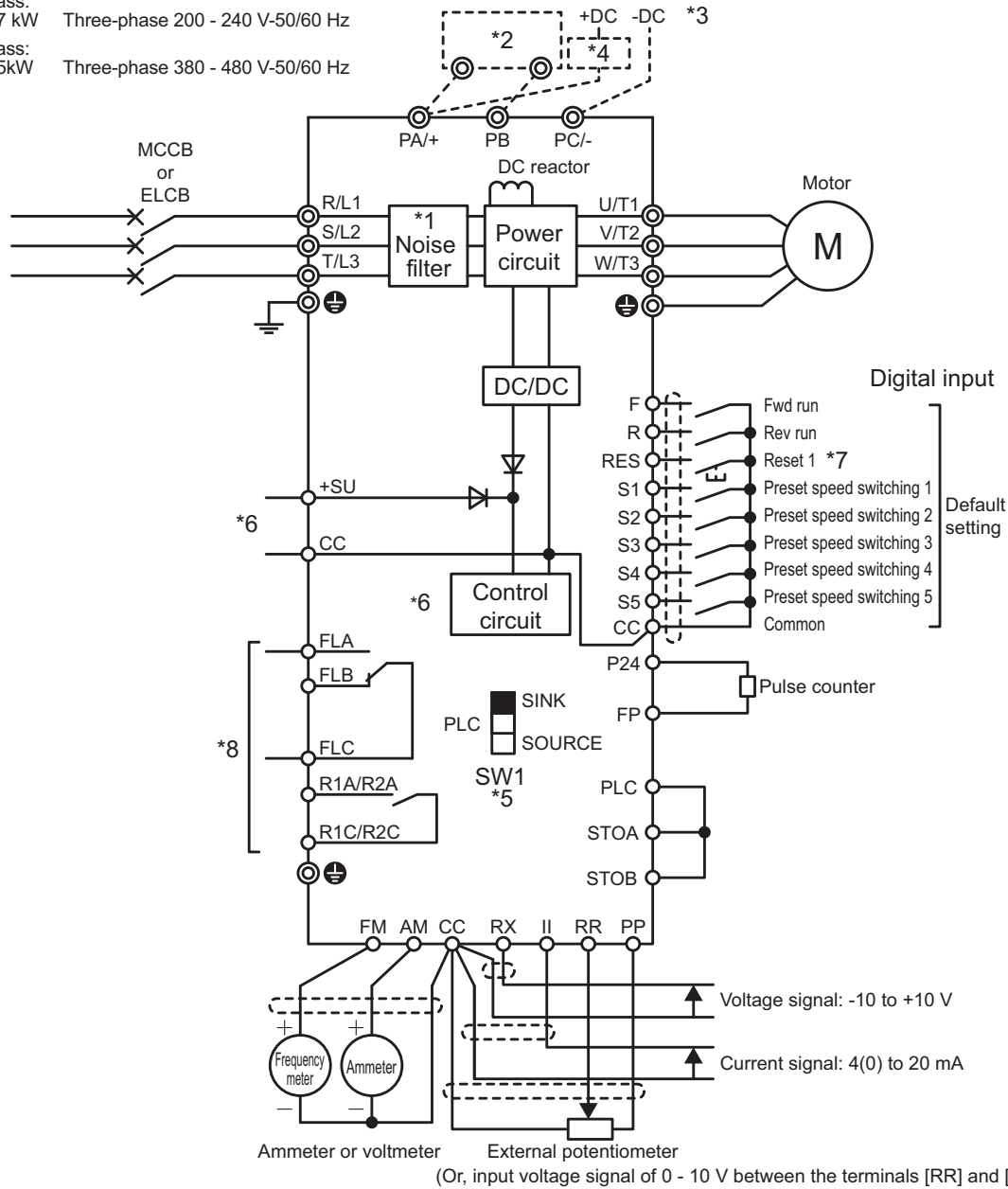


[Standard connection diagram - Sink]

This diagram shows an example of a standard connection for 240 V class, 0.4 to 37kW and 480 V class, 0.4 to 75kW (frame size A1 to A5).

Power supply

- 240 V class: Three-phase 200 - 240 V-50/60 Hz
- 0.4 - 37 kW
- 480 V class: Three-phase 380 - 480 V-50/60 Hz
- 0.4 - 75kW



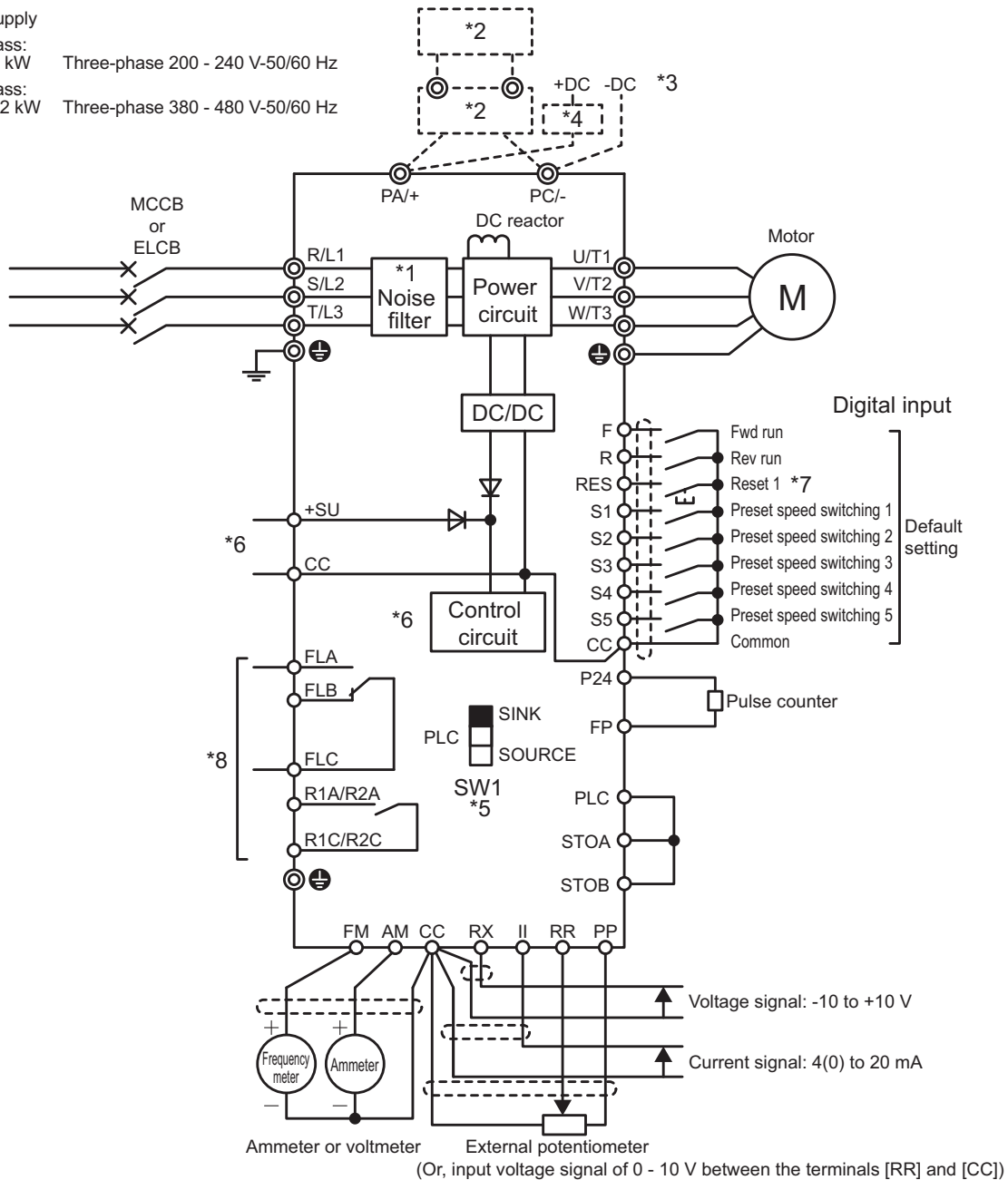
- *1 EMC filter is built in 480 V class.
- *2 External braking resistor (option).
- *3 To supply DC power, connect it to the terminals [PA/+] and [PC/-].
- *4 When your inverter is VFAS3-2110P to VFAS3-2370P or VFAS3-4220PC to VFAS3-4750PC with DC power supply, a circuit to suppress an inrush current is required. For detail, refer to application manual "DC power supply connect to inverter" (E6582156).
- *5 For the switch function, refer to [2. 3. 5].
- *6 To supply control power from an external power supply for backing up the control power supplied from the inverter, an optional control power supply unit (CPS002Z) is required. In this case, it is used in conjunction with the inverter internal power supply. Set <F647: Control power option failure detection> to back up the control power supply. For details, refer to [6. 30. 20].
- *7 The reset signal is activated by ON→OFF trigger input.
- *8 Connect to power to comply with OVC2 (Over Voltage Category 2). Isolation transformer is necessary when connecting to power supply (OVC3).

[Standard connection diagram - Sink]

This diagram shows an example of a standard connection for 240 V class, 45 - 55 kW and 480 V class, 90 - 132 kW **frame size A6**.

Power supply
 240 V class:
 45 - 55 kW Three-phase 200 - 240 V-50/60 Hz
 480 V class:
 90 - 132 kW Three-phase 380 - 480 V-50/60 Hz

2



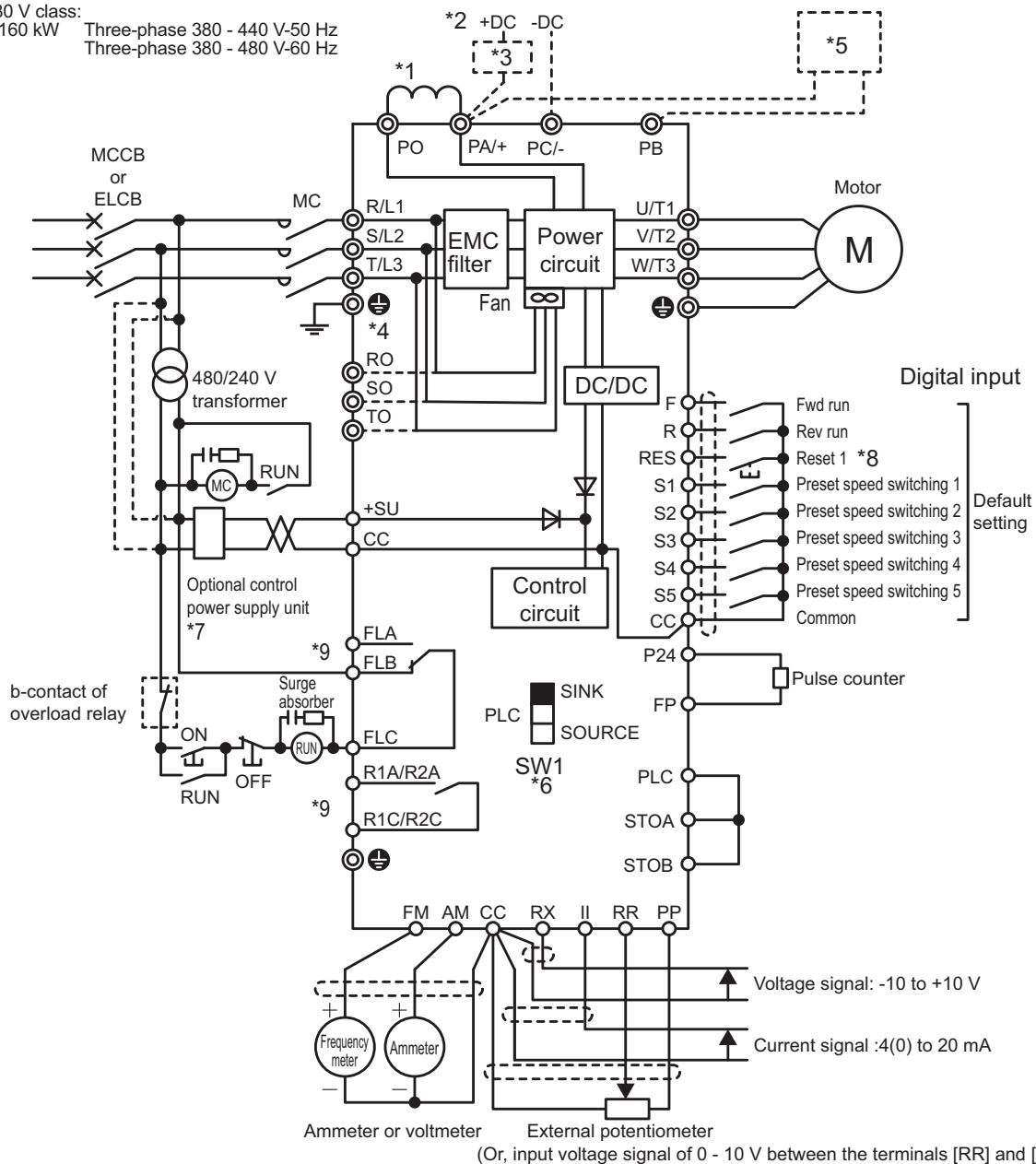
- *1 EMC filter is built in 480 V class.
- *2 When a braking resistor (optional) is mounted, a braking unit (optional) is also required.
- *3 To supply DC power, connect it to the terminals [PA/+] and [PC/-].
- *4 When the inverter is used with a DC power supply, a circuit to suppress an inrush current should be required. For detail, refer to application manual "DC power supply connect to inverter" (E6582156).
- *5 For the switch function, refer to [2. 3. 5].
- *6 To supply control power from an external power supply for backing up the control power supplied from the inverter, an optional control power supply unit (CPS002Z) is required. In this case, it is used in conjunction with the inverter internal power supply. Set <F647: Control power option failure detection> to back up the control power supply. For details, refer to [6. 30. 20].
- *7 The reset signal is activated by ON→OFF trigger input.
- *8 Connect to power to comply with OVC2 (Over Voltage Category 2). Isolation transformer is necessary when connecting to power supply (OVC3).

[Standard connection diagram - Sink]

This diagram shows an example of a standard connection for 480 V class, 160 kW (frame size A7).

Power supply

480 V class:
160 kW Three-phase 380 - 440 V-50 Hz
Three-phase 380 - 480 V-60 Hz



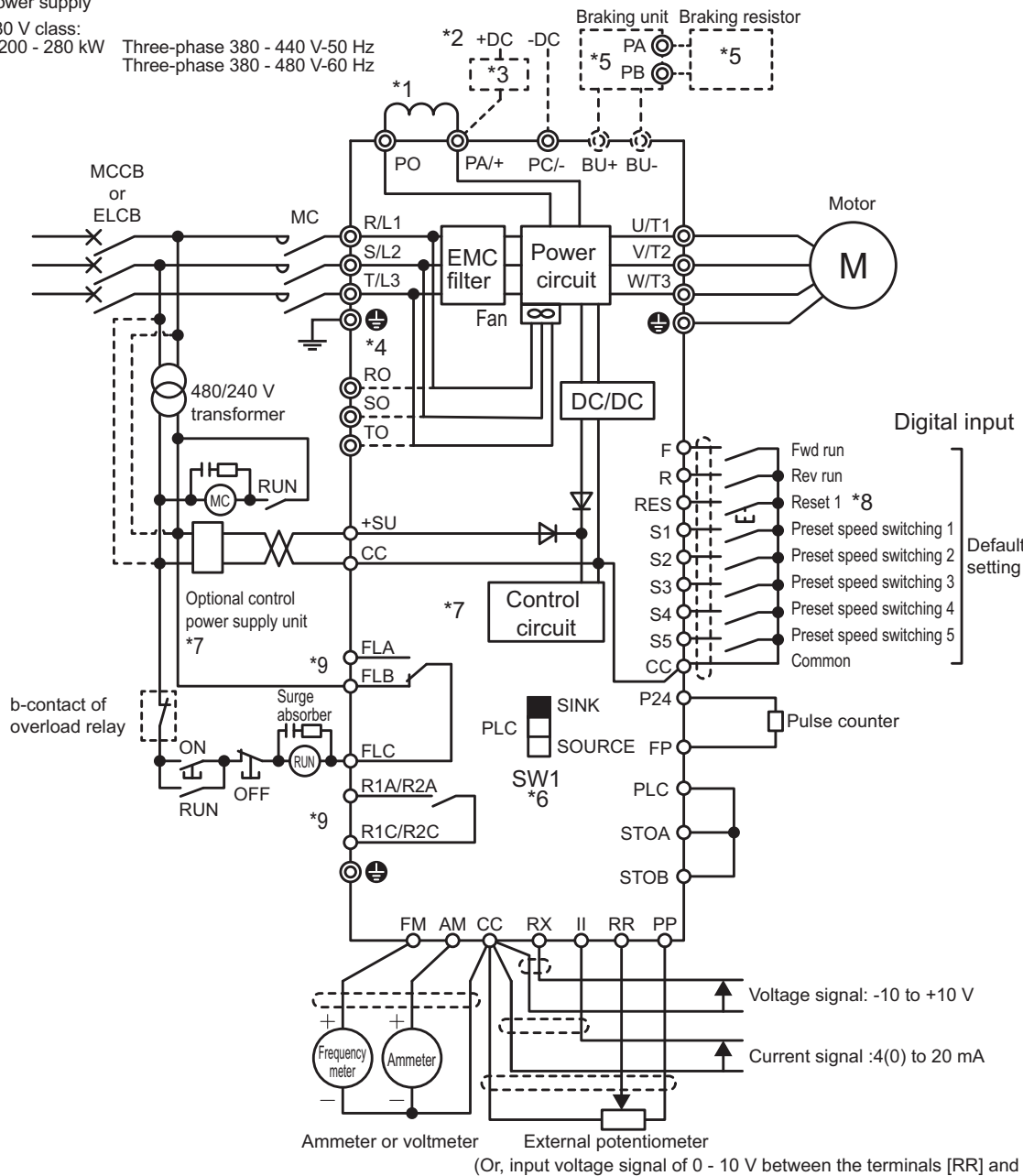
- *1 Be sure to mount the attached DC reactor between the terminals [P0] and [PA+].
- *2 To supply DC power, connect it to the terminals [PA+] and [PC-]. In this case, DC reactor is not required.
- *3 When the inverter is used with a DC power, a circuit to suppress an inrush current should be required. For detail, refer to application manual "DC power supply connect to inverter" (E6582156).
- *4 When the inverter is used with a DC power supply, three-phase power input for cooling fan driving is required separately. For details, refer to application manual "DC power supply connect to inverter" (E6582156).
- *5 External braking resistor (option)
- *6 For the switch function, refer to [2. 3. 5].
- *7 To supply control power from an external power supply for backing up the control power supplied from the inverter, an optional control power supply unit (CPS002Z) is required. In this case, it is used in conjunction with the inverter internal power supply. Set <F647: Control power option failure detection> to back up the control power supply. For details, refer to [6. 30. 20].
- *8 The reset signal is activated by ON→OFF trigger input.
- *9 Connect to power to comply with OVC2 (Over Voltage Category 2). Isolation transformer is necessary when connecting to power supply (OVC3).

[Standard connection diagram - Sink]

This diagram shows an example of a standard connection for 480 V class, 200 to 280 kW (frame size A8).

Power supply

480 V class:
200 - 280 kW Three-phase 380 - 440 V-50 Hz
Three-phase 380 - 480 V-60 Hz



- *1 Be sure to mount the attached DC reactor between the terminals [P0] and [PA/+].
- *2 To supply DC power, connect it to the terminals [PA/+] and [PC/-]. In this case, DC reactor is not required.
- *3 When the inverter is used with a DC power supply, a circuit to suppress an inrush current is required. For detail, refer to application manual "DC power supply connect to inverter" (E6582156).
- *4 When the inverter is used with a DC power supply, three-phase power input for cooling fan driving is required separately. For details, refer to application manual "DC power supply connect to inverter" (E6582156).
- *5 When a braking resistor (optional) is mounted, a braking unit (optional) is also required.
- *6 For the switch function, refer to [2. 3. 5].
- *7 To supply control power from an external power supply for backing up the control power supplied from the inverter, an optional control power supply unit (CPS002Z) is required. In this case, it is used in conjunction with the inverter internal power supply. Set <F647: Control power option failure detection> to back up the control power supply. For details, refer to [6. 30. 20].
- *8 The reset signal is activated by ON→OFF trigger input.
- *9 Connect to power to comply with OVC2 (Over Voltage Category 2). Isolation transformer is necessary when connecting to power supply (OVC3).

2

■ Standard connection diagram

This diagram shows a standard wiring of the power circuit and control circuit.

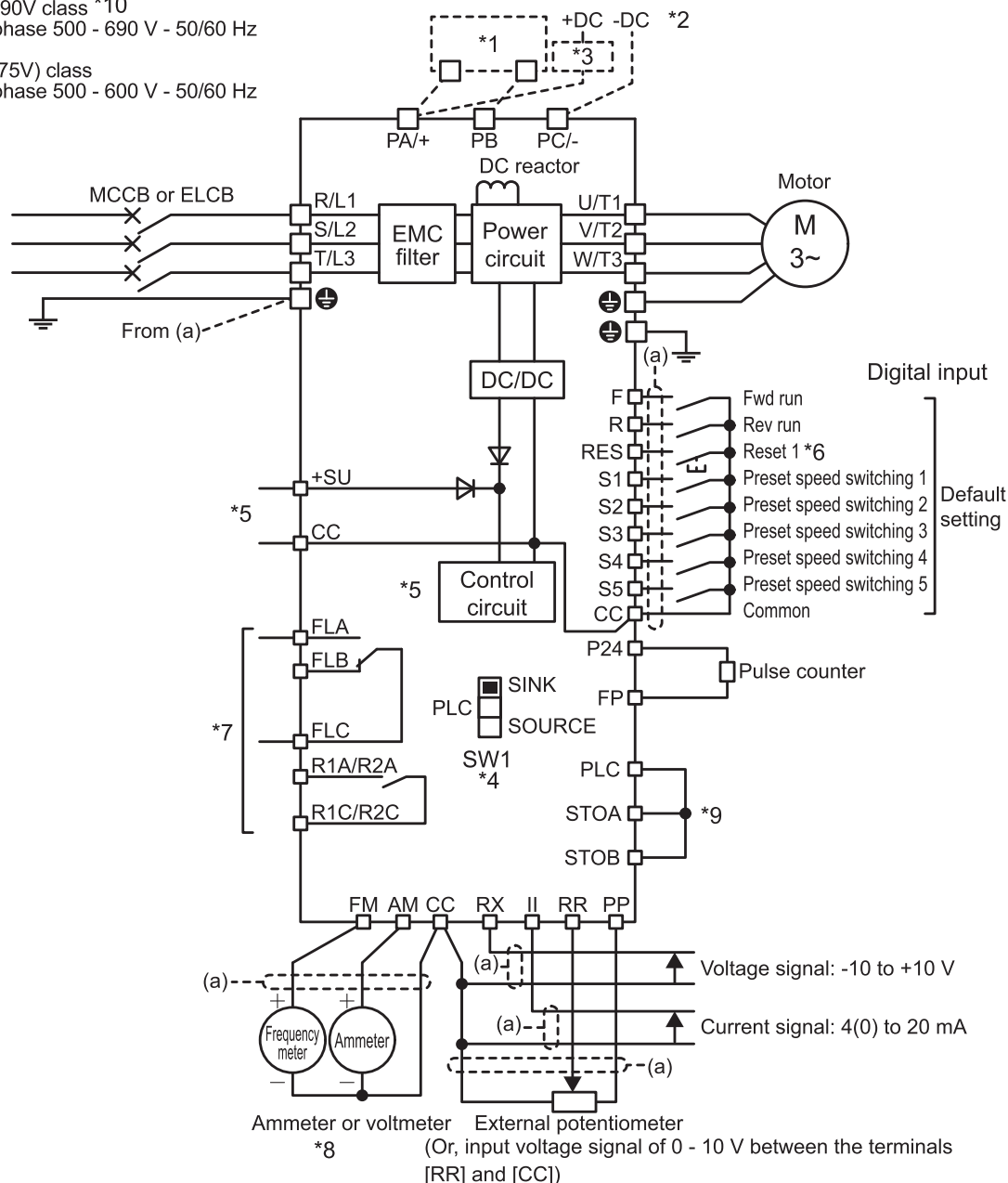
[Standard connection diagram – sink logic]

This diagram shows an example of a standard connection.

Power supply

500V, 690V class *10
Three-phase 500 - 690 V - 50/60 Hz

600V(575V) class
Three-phase 500 - 600 V - 50/60 Hz



*1 External braking resistor (option).

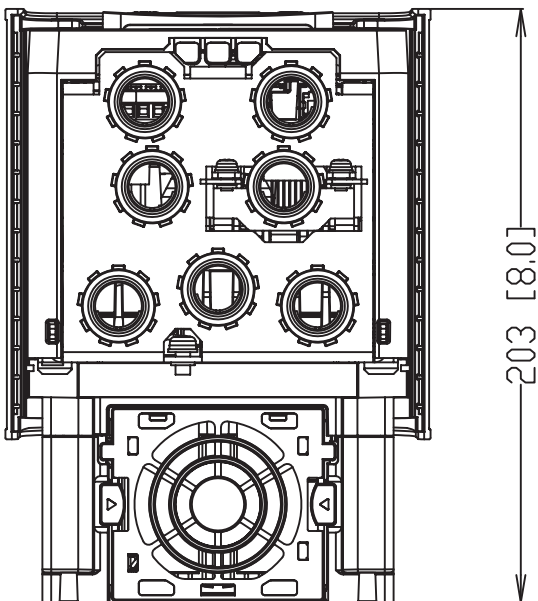
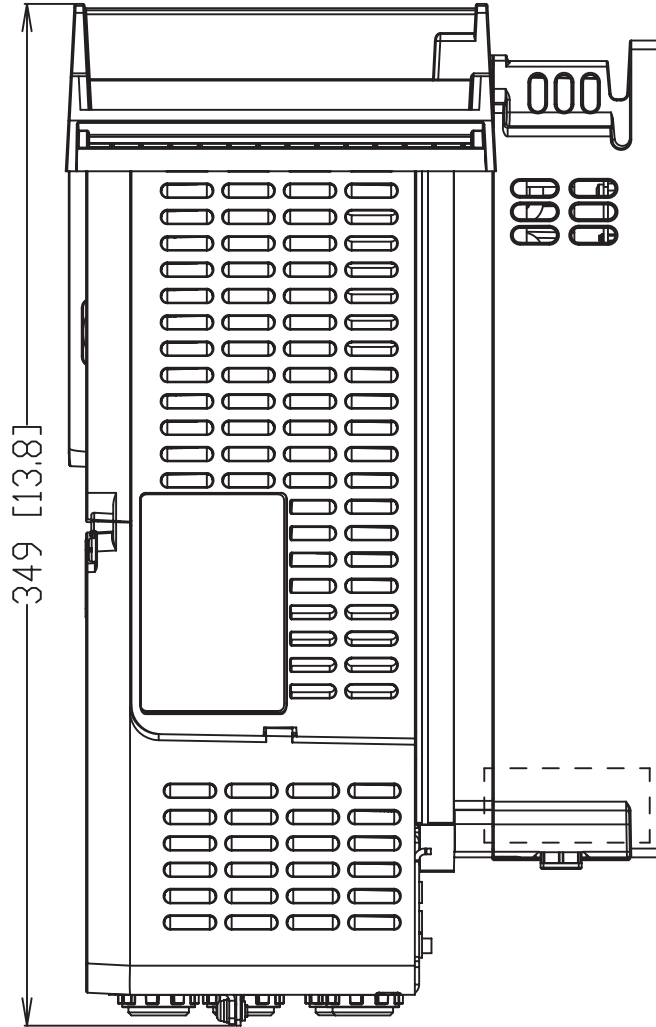
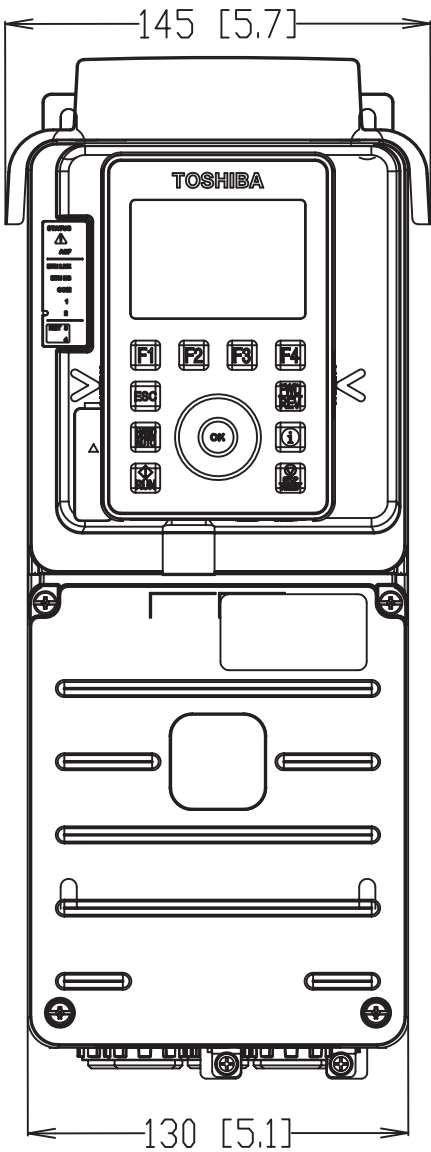
*2 To supply DC power, connect the inverter between the terminals [PA/+] and [PC/-].

*3 In case of connecting a DC power supply, a circuit to suppress an inrush current is required. For detail, refer to application manual "DC power supply connect to inverter" (E6582156).

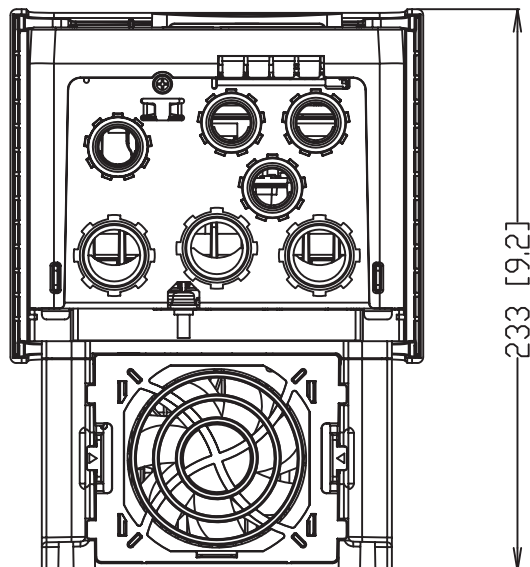
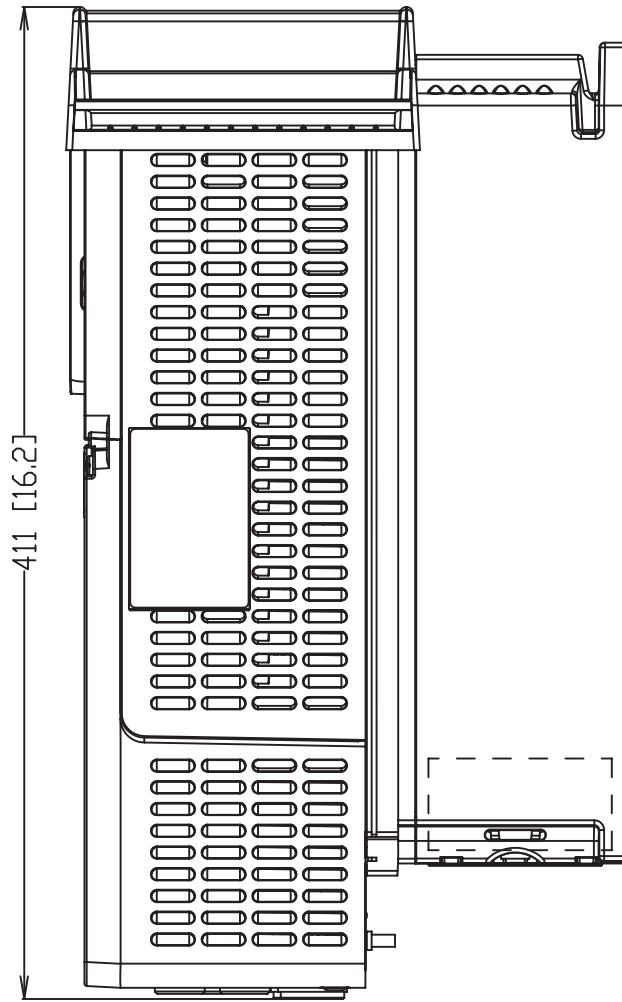
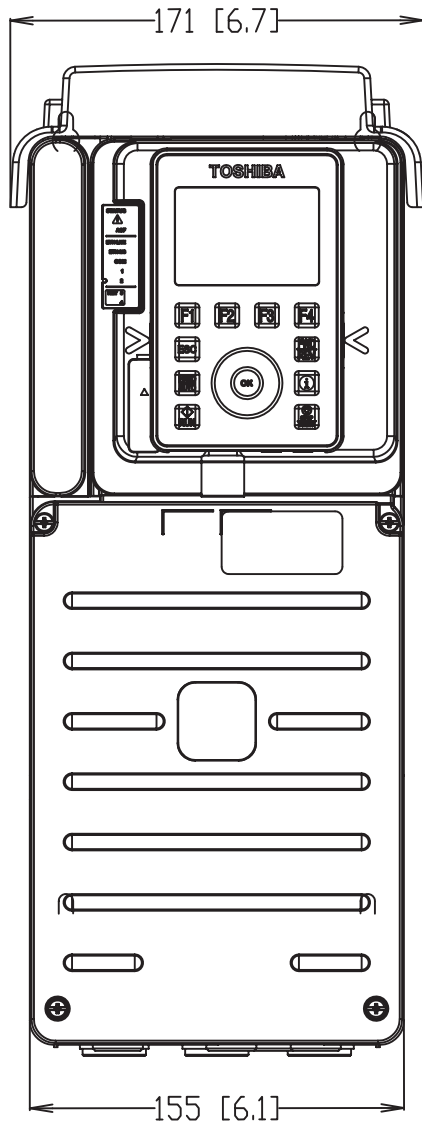
*4 For the switch function, refer to [2. 3. 5] of "VF-AS3 instruction manual" (E6582062) in CD-ROM.

*5 To supply control power from an external power supply for backing up the control power supplied from the inverter, it needs DC power supply (24V-1A). In this case, it is used in conjunction with the inverter internal power supply.

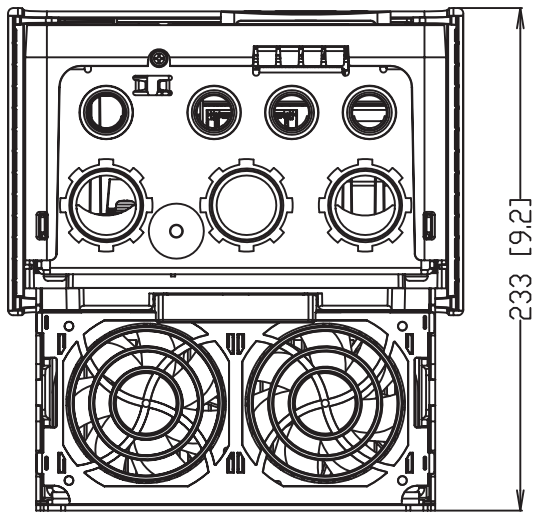
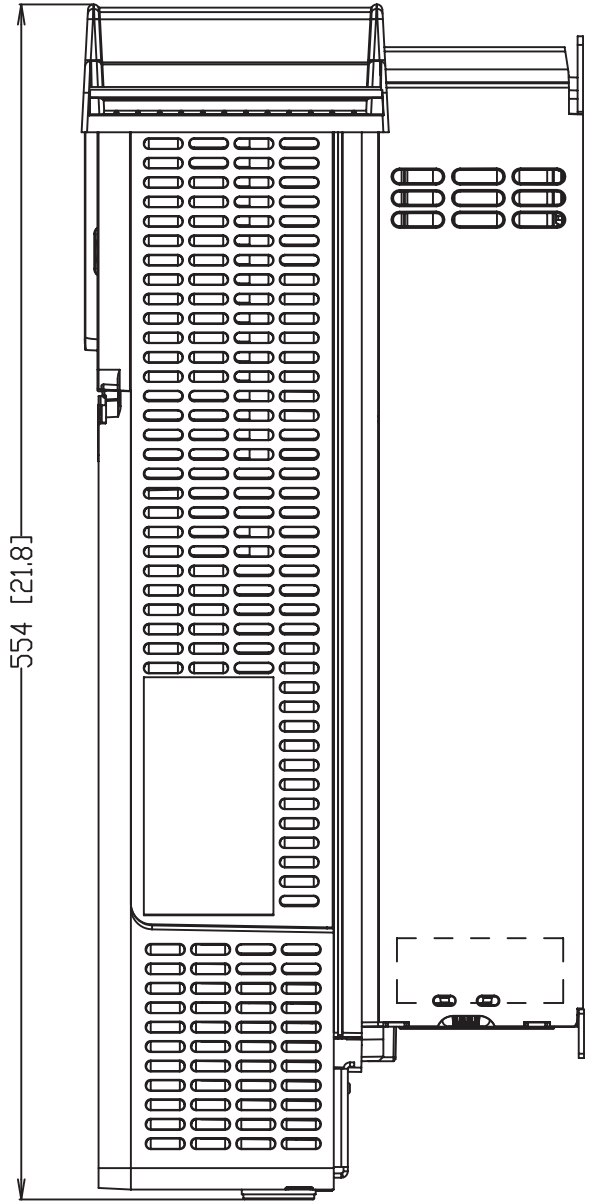
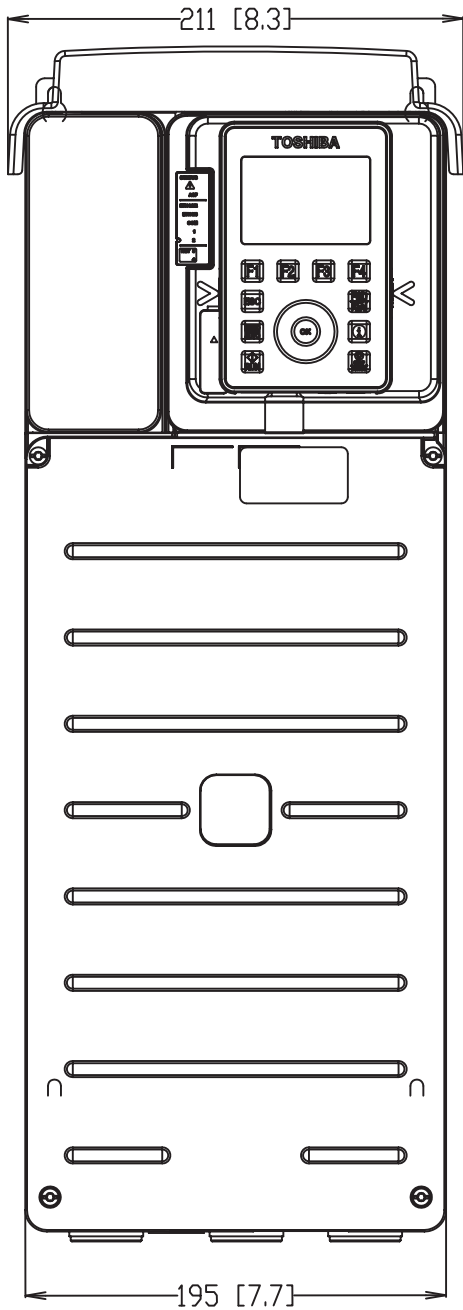
*6 The reset signal is activated by ON→OFF trigger input.



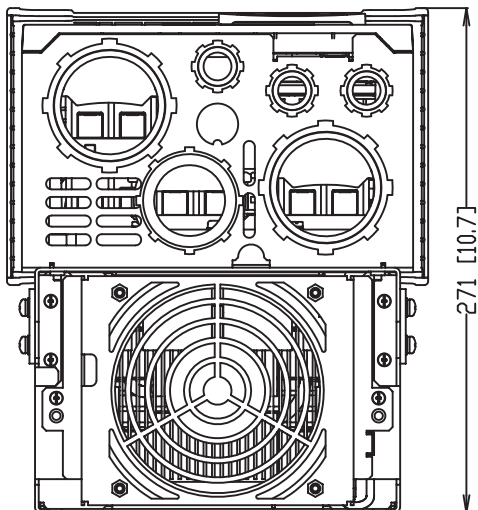
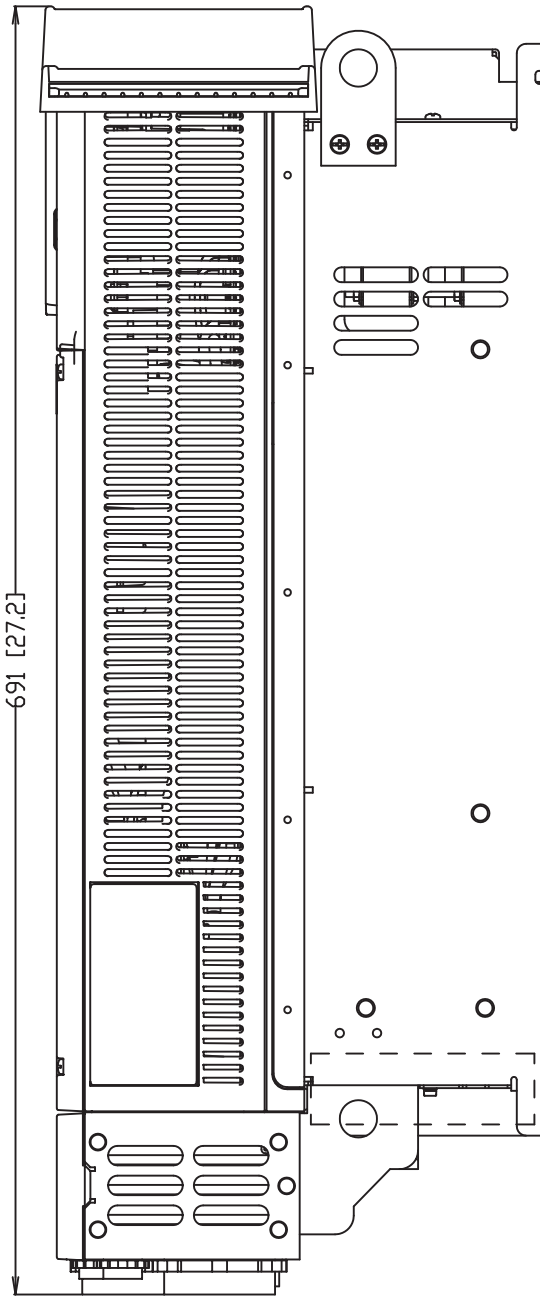
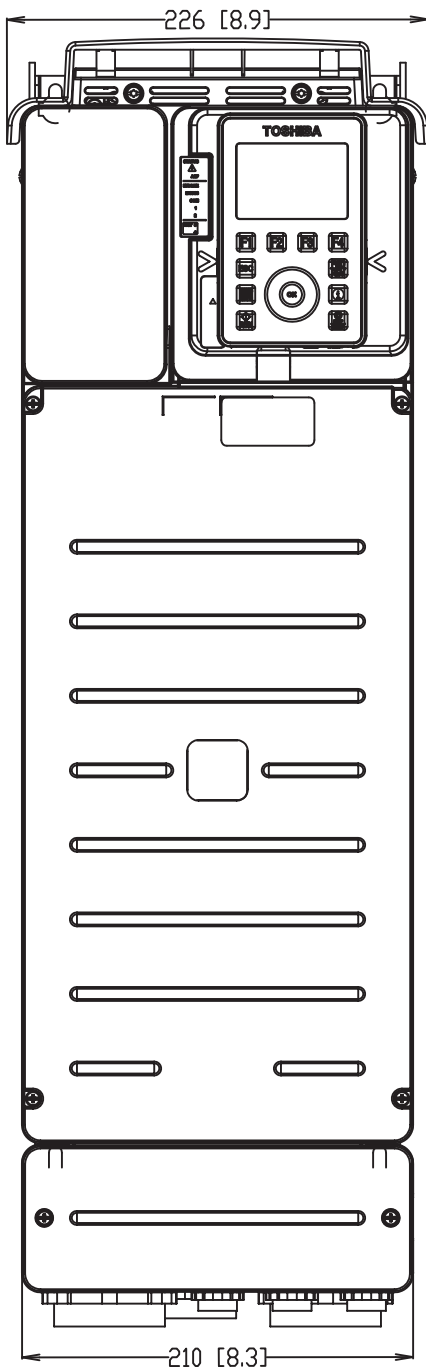
AS3 Frame A1			
Model Number	HP Rating HD	HP Rating ND	Estimated Weight (lbs.)
VFAS3-2004P	0.5	1	9.5
VFAS3-2007P	1	2	9.5
VFAS3-2015P	2	3	9.9
VFAS3-2022P	3	5	10.1
VFAS3-4004PC	0.5	1	9.9
VFAS3-4007PC	1	2	9.9
VFAS3-4015PC	2	3	9.9
VFAS3-4022PC	3	5	10.1
VFAS3-4037PC	5	7.5	10.1



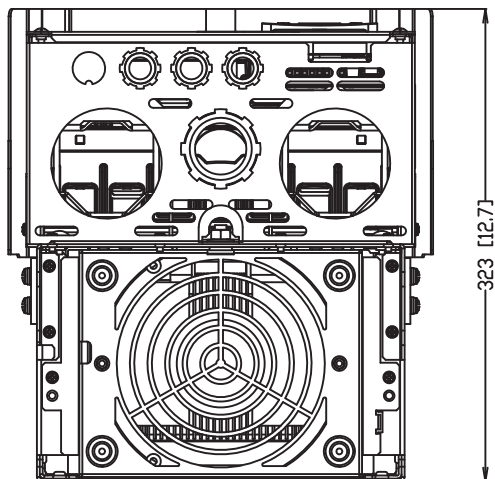
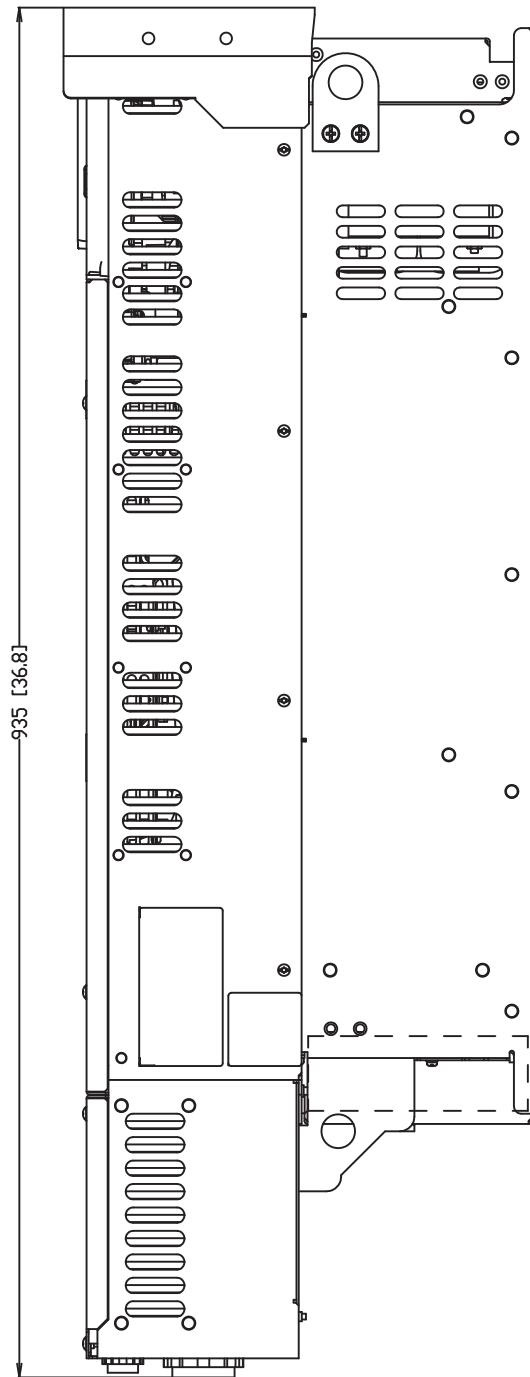
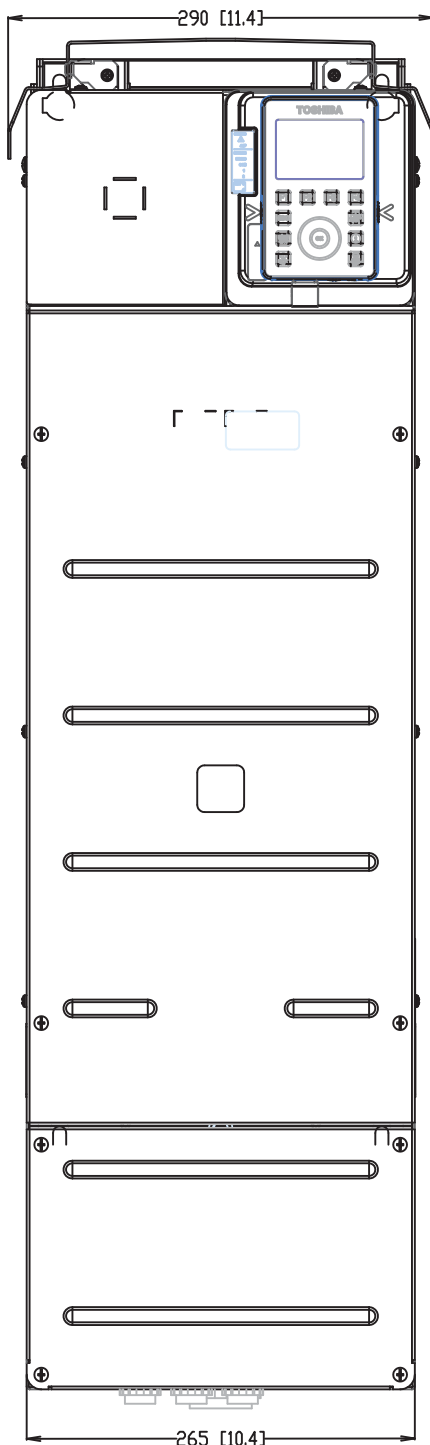
AS3 Frame A2			
Model Number	HP Rating HD	HP Rating ND	Estimated Weight (lbs.)
VFAS3-2037P	5	7.5	17.0
VFAS3-4055PC	7.5	10	17.0
VFAS3-4075PC	10	15	17.0



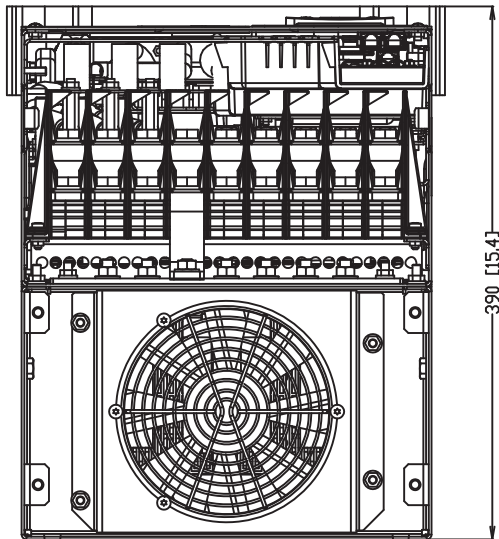
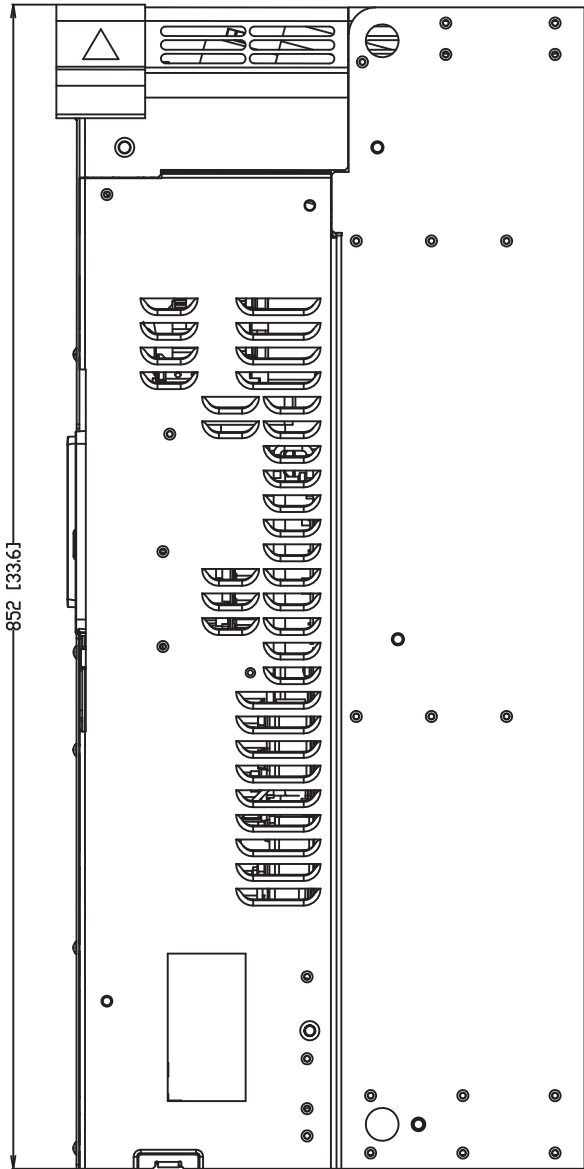
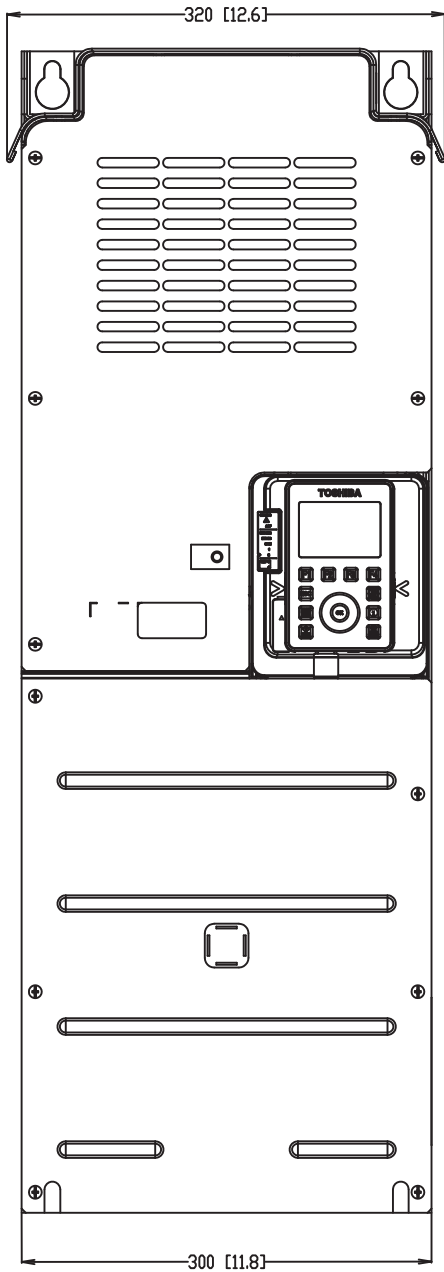
AS3 Frame A3			
Model Number	HP Rating HD	HP Rating ND	Estimated Weight (lbs.)
VFAS3-2055P	7.5	10	30.4
VFAS3-2075P	10	15	30.4
VFAS3-4110PC	15	20	30.0
VFAS3-4150PC	20	25	31.3
VFAS3-4185PC	25	30	31.5



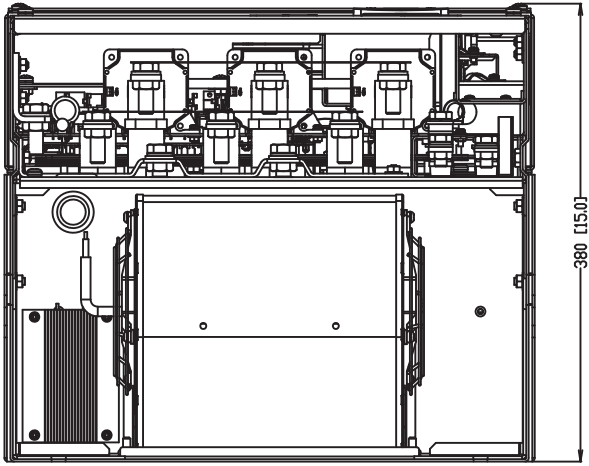
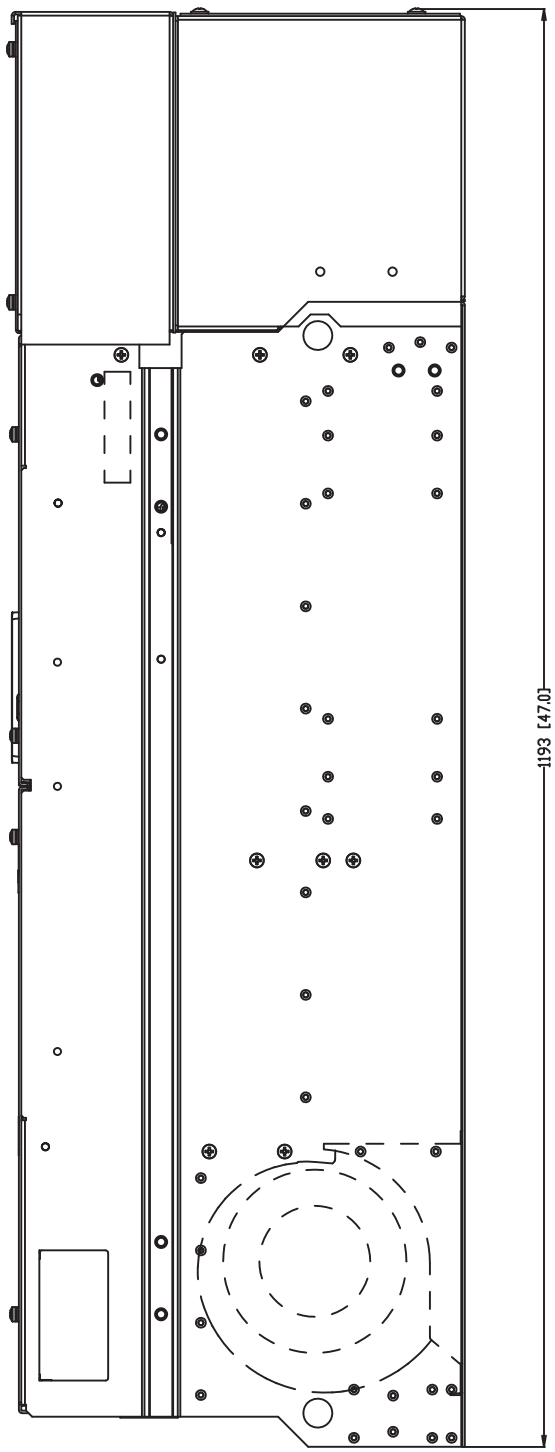
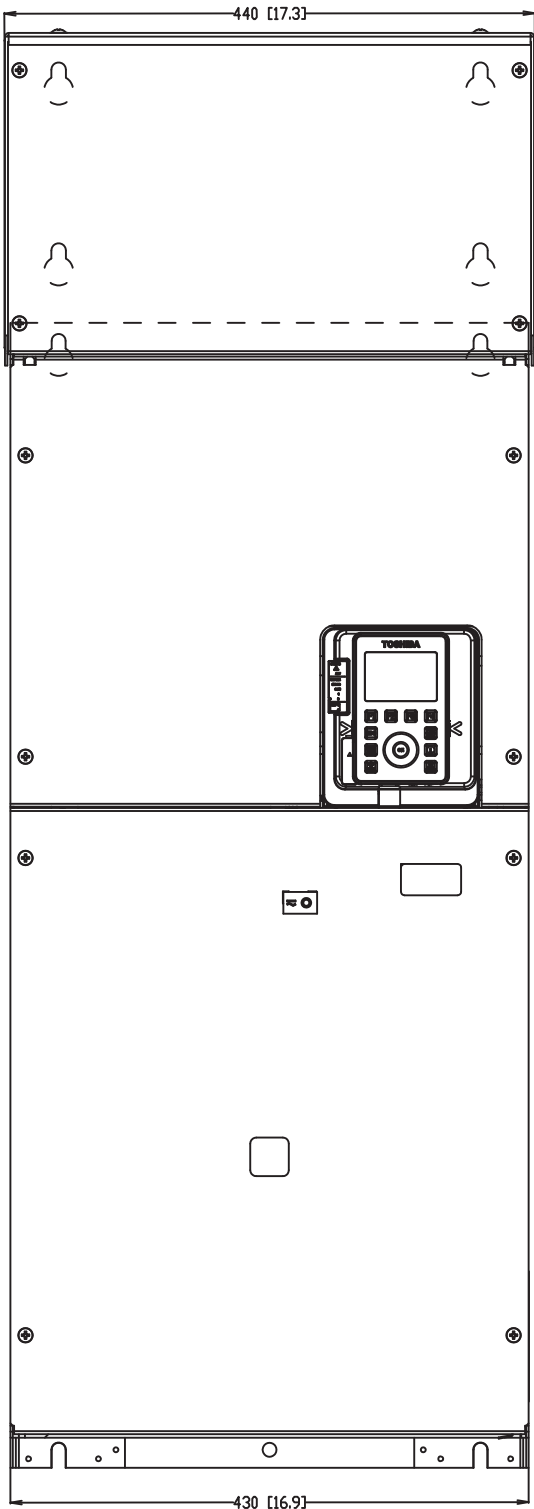
AS3 Frame A4			
Model Number	HP Rating HD	HP Rating ND	Estimated Weight (lbs.)
VFAS3-2110P	15	20	60.2
VFAS3-2150P	20	25	60.2
VFAS3-2185P	25	30	60.2
VFAS3-4220PC	30	40	61.7
VFAS3-4300PC	40	50	62.2
VFAS3-4370PC	50	60	63.3



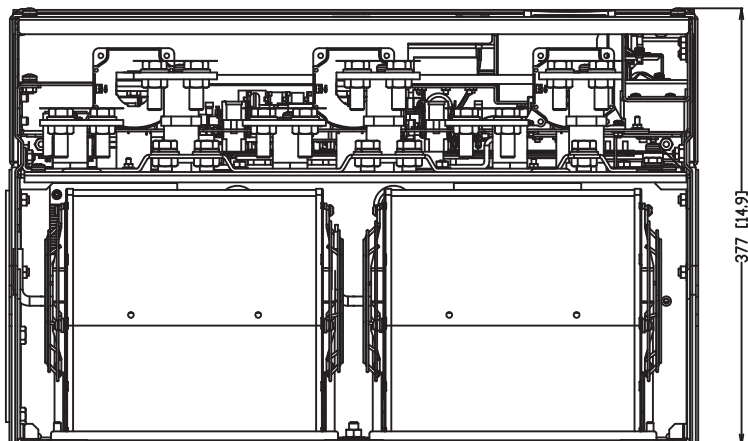
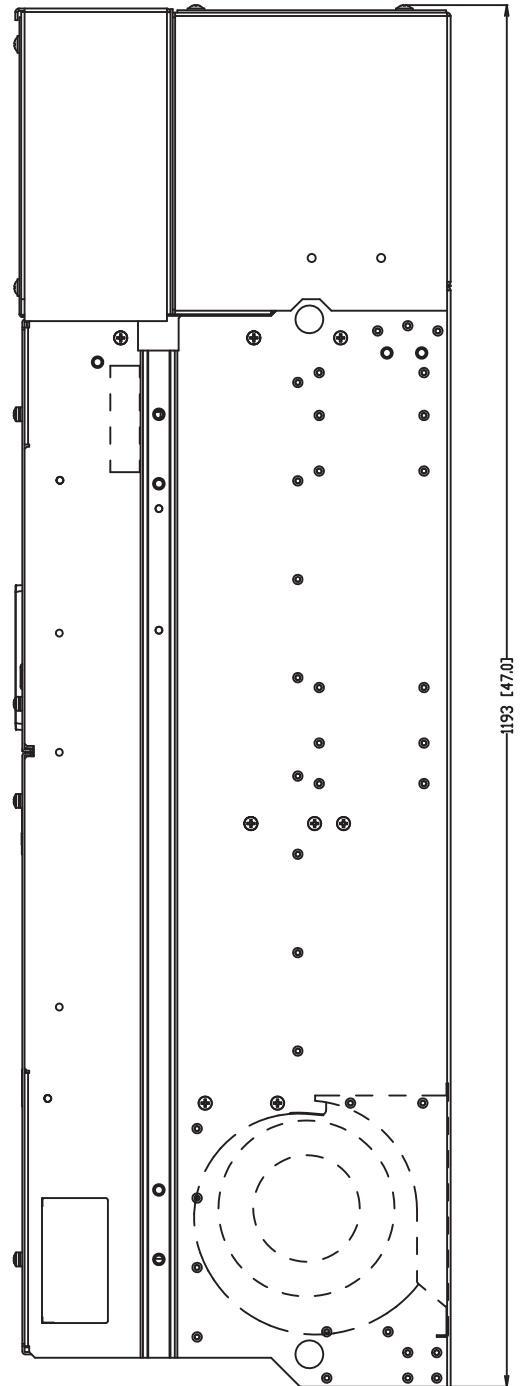
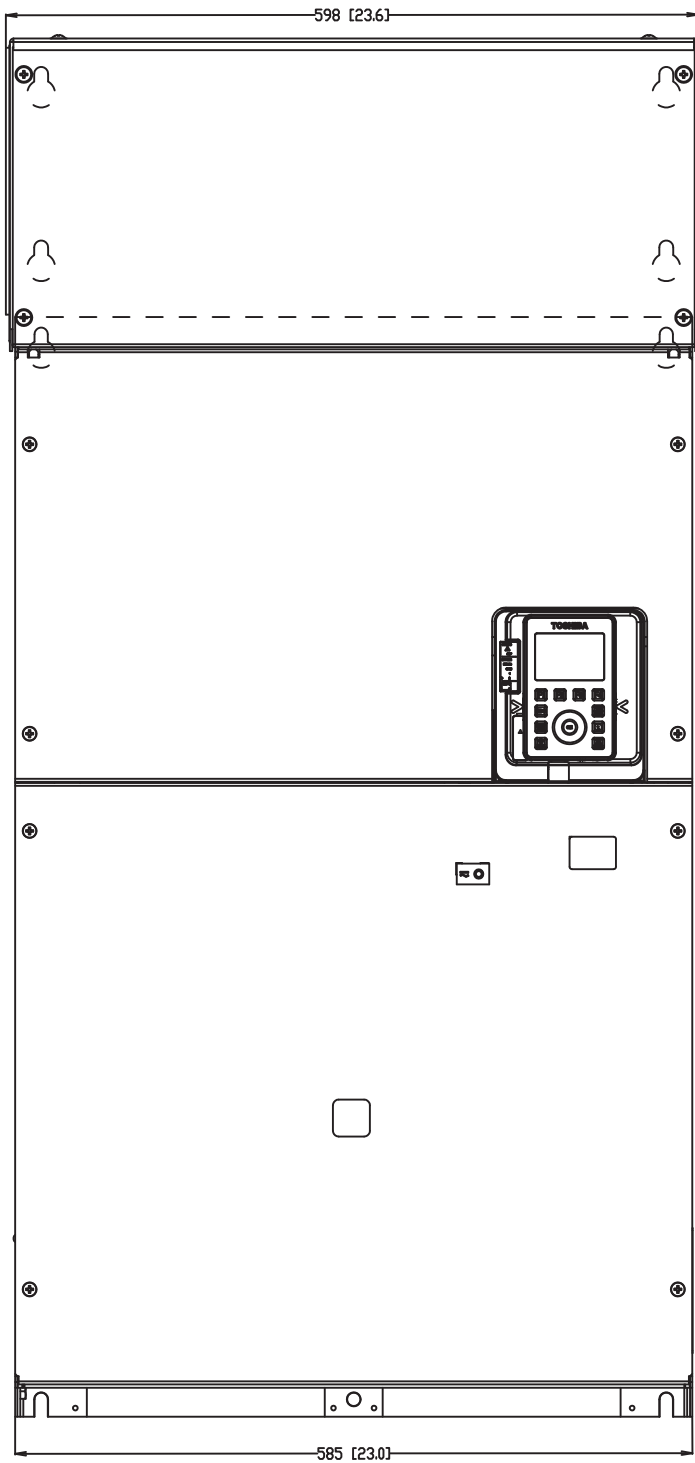
AS3 Frame A5			
Model Number	HP Rating HD	HP Rating ND	Estimated Weight (lbs.)
VFAS3-2220P	30	40	127
VFAS3-2300P	40	50	127
VFAS3-2370P	50	60	127
VFAS3-4450PC	60	75	127
VFAS3-4550PC	75	100	130
VFAS3-4750PC	100	125	131



AS3 Frame A6			
Model Number	HP Rating HD	HP Rating ND	Estimated Weight (lbs.)
VFAS3-2450P	60	75	181
VFAS3-2550P	75	100	181
VFAS3-4900PC	125	150	181
VFAS3-4110KPC	150	200	181
VFAS3-4132KPC	200	250	181



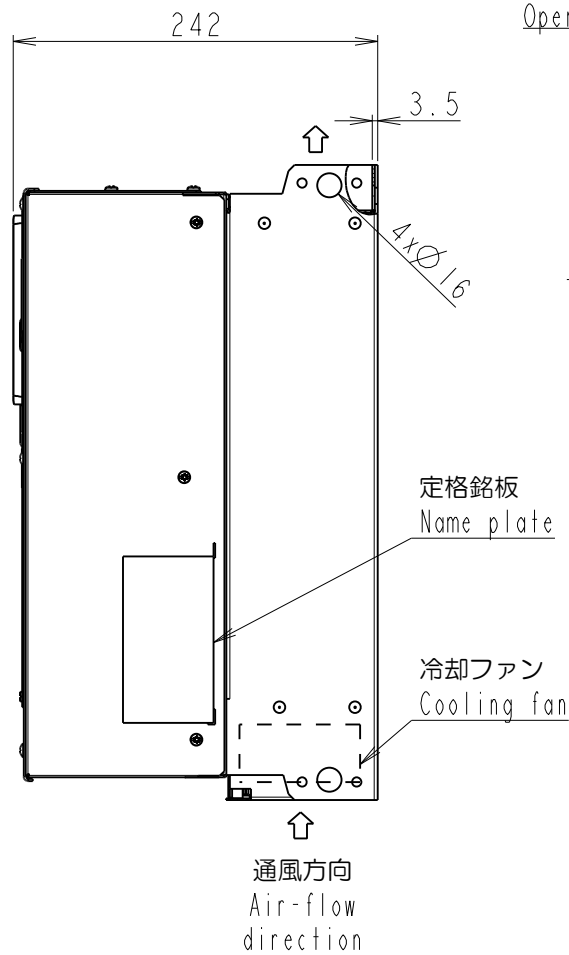
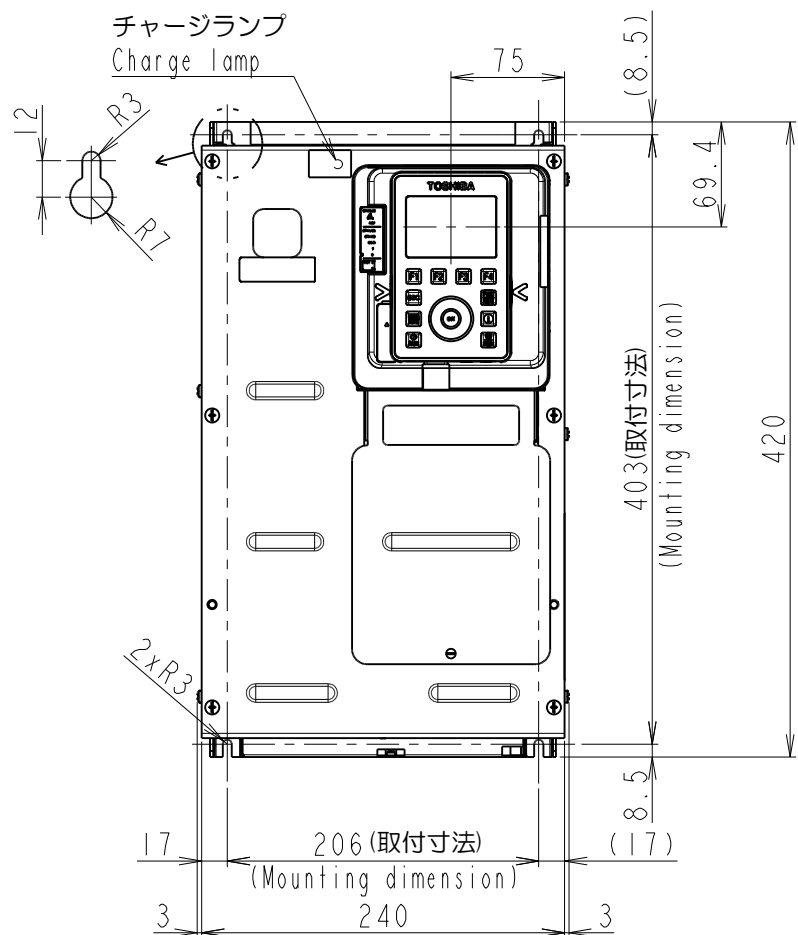
AS3 Frame A7			
Model Number	HP Rating HD	HP Rating ND	Estimated Weight (lbs.)
VFAS3-4132KPC	250	350	366



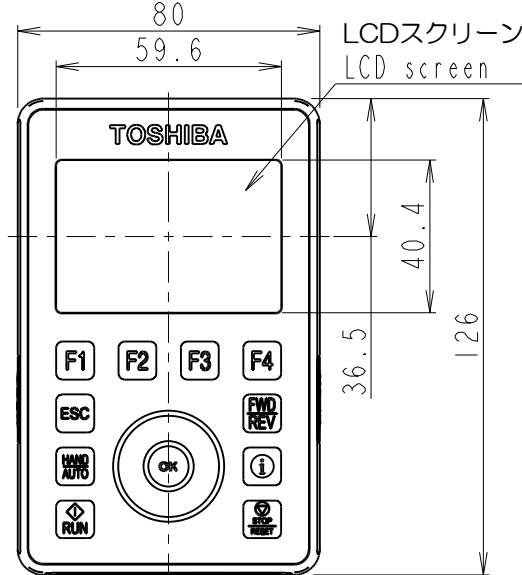
AS3 Frame A8			
Model Number	HP Rating HD	HP Rating ND	Estimated Weight (lbs.)
VFAS3-4200KPC	300	400	428
VFAS3-4220KPC	350	450	450
VFAS3-4280KPC	450	500	450

図面番号 DRAWING NO.
M0721165

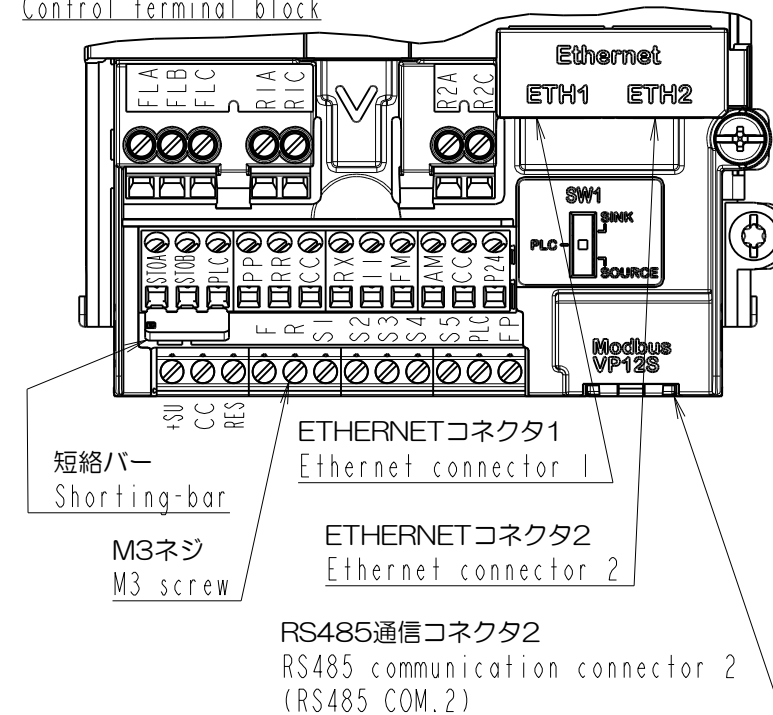
変更記号 REV. MARK



操作パネル
Operation panel

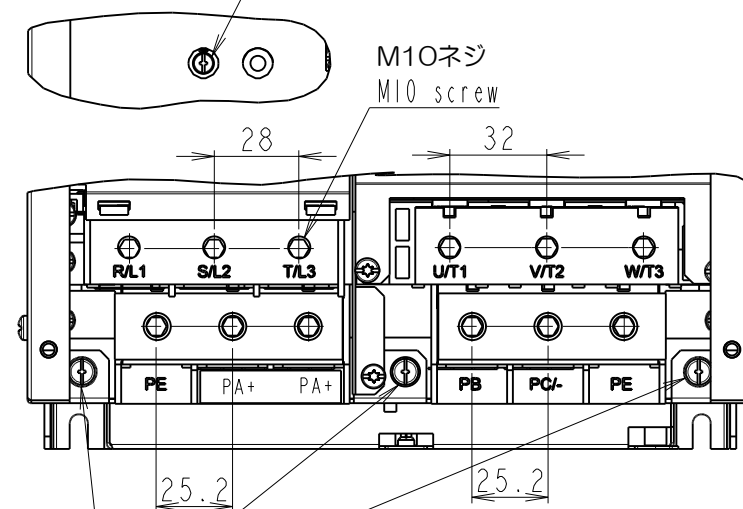


制御端子台
Control terminal block



主回路端子台
Power circuit terminal block

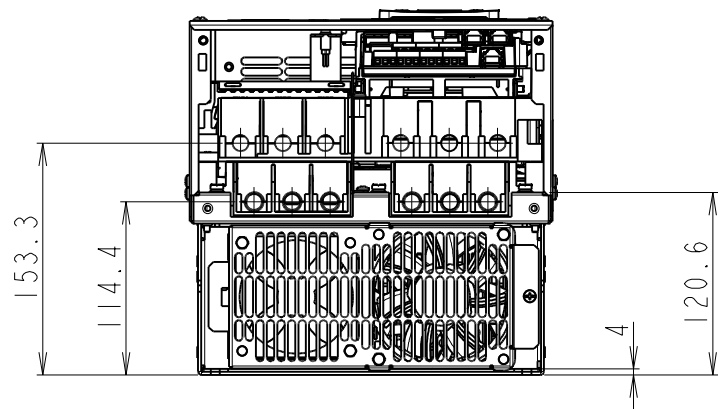
接地コンデンサ切換えネジ(M4)
Grounding capacitor switching screw(M4)



接地端子(M5ネジ)
Grounding terminal (M5 screw)

本体色: RAL7016(グレー)
Box color: RAL7016(Grey)

形式 Inverter model	概略質量(kg) Approx. mass
VFAS3-6022PC	21.6
VFAS3-6030PC	21.6
VFAS3-6040PC	21.6
VFAS3-6055PC	21.6
VFAS3-6075PC	21.6
VFAS3-6110PC	21.6
VFAS3-6150PC	21.6
VFAS3-6185PC	21.6
VFAS3-6220PC	21.6



INVERTER	VFAS3	6022PC, 6030PC, 6040PC, 6055PC, 6075PC, 6110PC, 6150PC, 6185PC, 6220PC
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器具名称 APPARATUS	形 TYPE	式 FORM
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承認 APPROVED BY I. Ichio 26.Oct.2021	検図 CHECKED BY M. Takeuchi 26.Oct.2021	名称 TITLE
設計 DESIGNED BY T. Iwata 26.Oct.2021	製図 DRAWN BY T. Iwata 26.Oct.2021	

インバータ外形図
OUTLINE OF INVERTER

TOSVERT VF-AS3 SERIES

記号 MARK
年月日 DATE
承認 APPROVED BY
変更者 REVISED BY
記事 CONTENTS
保管 REGISTERED

変更 REVISIONS

尺度 SCALE
単位 UNITS
mm

TOSHIBA

東芝シュネデール・インバータ株式会社
Toshiba Schneider Inverter Corporation

図面番号 DRAWING NO.

M0721165

変更記号 REV. MARK

保管 REGISTERED

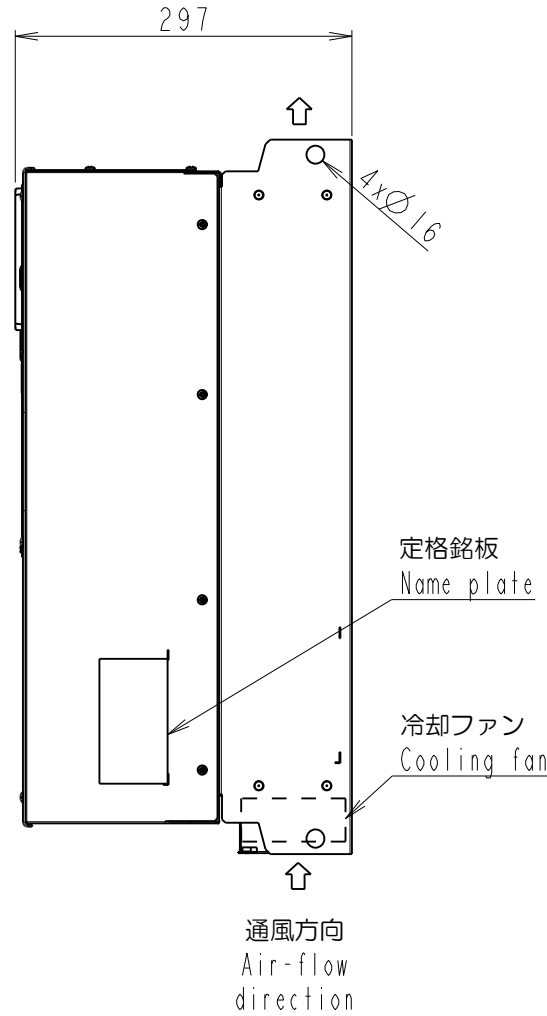
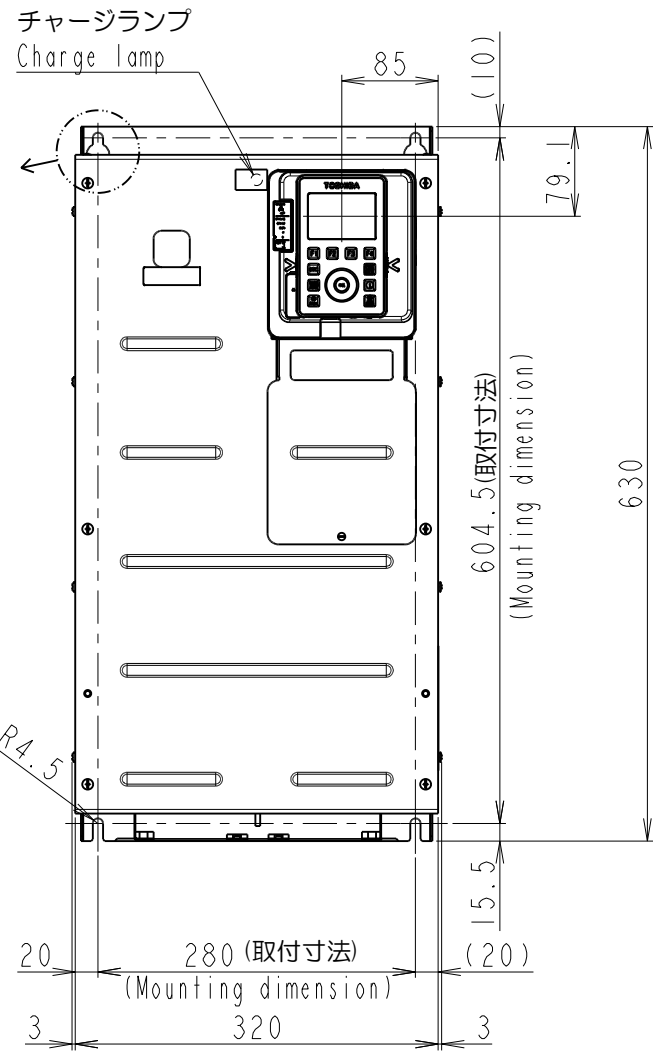
配布先
PRESENT TO



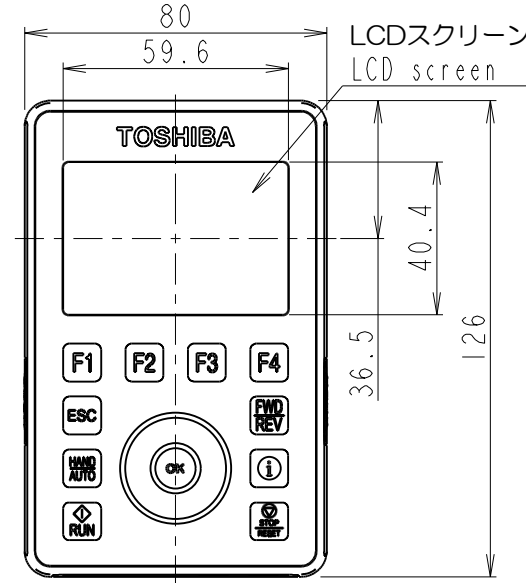
8

図面番号 DRAWING NO.
M0721166

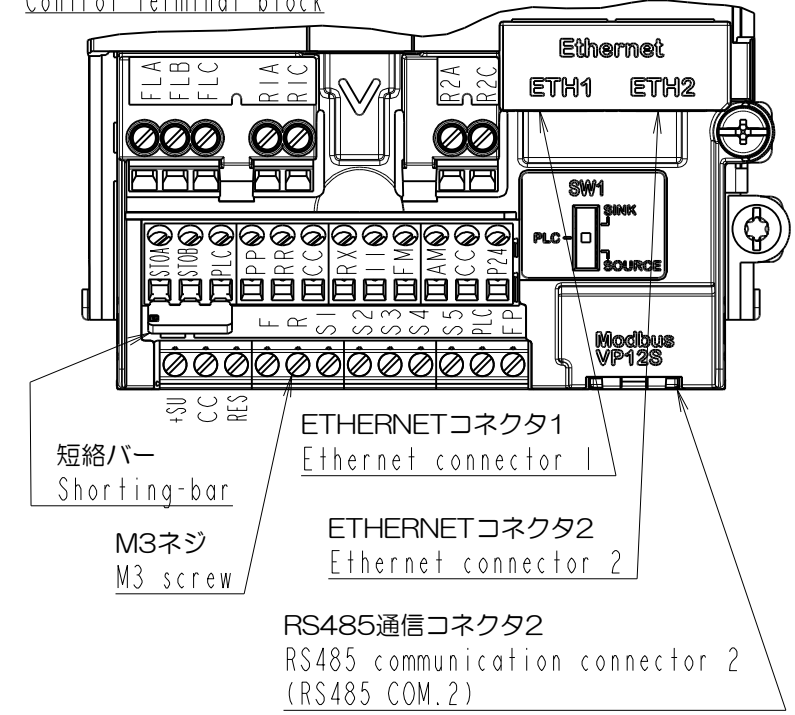
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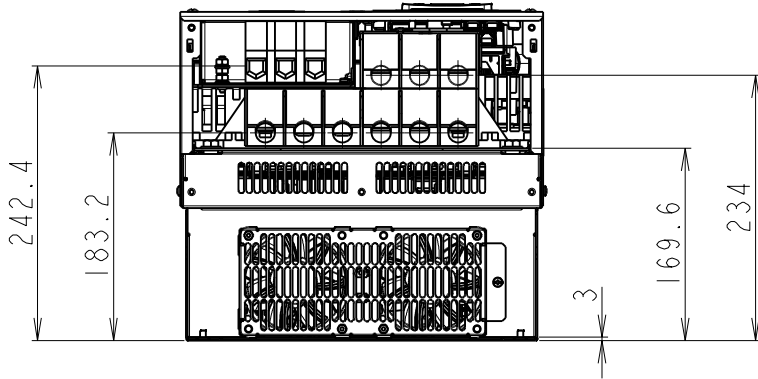
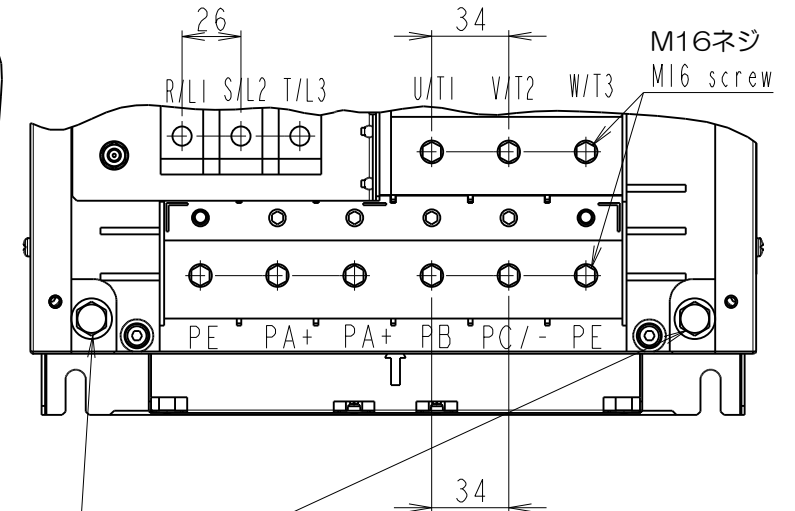
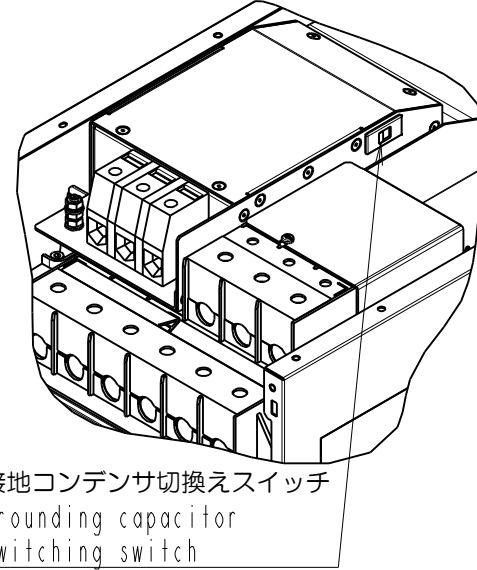
操作パネル
Operation panel



制御端子台
Control terminal block



主回路端子台
Power circuit terminal block



本体色 : RAL7016(グレー)
Box color : RAL7016(Grey)

形式 Inverter model	概略質量(kg) Approx. mass
VFAS3-6300PC	51.9
VFAS3-6370PC	51.9
VFAS3-6450PC	51.9
VFAS3-6550PC	52.5
VFAS3-6750PC	52.5

接地端子 (M8ネジ)
Grounding terminal (M8 screw)

INVERTER	VFAS3	6300PC, 6370PC, 6450PC, 6550PC, 6750PC
器具名称 APPARATUS	形 TYPE	式 FORM

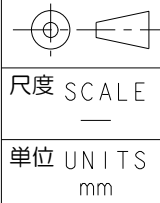
承認 APPROVED BY I. Ichio 26.Oct.2021	検図 CHECKED BY M. Takeuchi 26.Oct.2021	名称 TITLE
設計 DESIGNED BY T. lwata 26.Oct.2021	製図 DRAWN BY T. lwata 26.Oct.2021	

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