

Altivar Process ATV6100

Variable Speed Drives

Installation Manual

BRU15995.06

10/2025



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Safety Information

Important Information

Read these instructions carefully, and look at the equipment to become familiar with the device before trying to install, operate, service, or maintain it. The following special messages may appear throughout this documentation or on the equipment to warn of potential hazards or to call attention to information that clarifies or simplifies a procedure.



The addition of this symbol to a “Danger” or “Warning” safety label indicates that an electrical hazard exists which will result in personal injury if the instructions are not followed.



This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

⚠ DANGER
DANGER indicates a hazardous situation which, if not avoided, will result in death or serious injury.

⚠ WARNING
WARNING indicates a hazardous situation which, if not avoided, could result in death or serious injury.

⚠ CAUTION
CAUTION indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

NOTICE
NOTICE is used to address practices not related to physical injury.

Please Note

Electrical equipment should be installed, operated, serviced, and maintained only by qualified personnel. No responsibility is assumed by Schneider Electric for any consequences arising out of the use of this material.

A qualified person is one who has skills and knowledge related to the construction and operation of electrical equipment and its installation, and has received safety training to recognize and avoid the hazards involved.

Qualification Of Personnel

Only appropriately trained persons who are familiar with and understand the contents of this manual and all other pertinent product documentation are authorized to work on and with this product. In addition, these persons must have received safety training to recognize and avoid hazards involved. These persons must have sufficient technical training, knowledge and experience and be able to foresee and detect potential hazards that may be caused by using the product, by changing the settings and by the mechanical, electrical and electronic equipment of the entire system in which the product is used. All persons working on and with the product must be fully familiar with all applicable standards, directives, and accident prevention regulations when performing such work.

Intended Use

This product is a drive for three-phase synchronous, asynchronous motors and intended for industrial use according to this manual.

The product may only be used in compliance with all applicable safety standard and local regulations and directives, the specified requirements and the technical data. The product must be installed outside the hazardous ATEX zone. Prior to using the product, you must perform a risk assessment in view of the planned application. Based on the results, the appropriate safety measures must be implemented. Since the product is used as a component in an entire system, you must ensure the safety of persons by means of the design of this entire system (for example, machine design). Any use other than the use explicitly permitted is prohibited and can result in hazards.

Product Related Information

Read and understand these instructions before performing any procedure with this drive.

DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION OR ARC FLASH

Before performing work on the drive system:

- Follow the instructions given in the section "Complete drive system power Off procedure" of the installation manual.

Before applying voltage to the drive system:

- Verify that the work has been completed and that the entire installation cannot cause hazards.
- Remove the ground and the short circuits on the mains input terminals and the motor output terminals.
- Verify proper grounding of all equipment.
- Verify that all protective equipment such as covers, doors, grids is installed and/or closed.

Failure to follow these instructions will result in death or serious injury.

⚠️⚠️ DANGER**HAZARD OF ELECTRIC SHOCK, EXPLOSION OR ARC FLASH**

- Only appropriately trained persons who are familiar with and fully understand the contents of the present manual and all other pertinent product documentation and who have received all necessary training to recognize and avoid hazards involved are authorized to work on and with this drive system.
- Installation, adjustment, repair and maintenance must be performed by qualified personnel.
- Verify compliance with all local and national electrical code requirements as well as all other applicable regulations with respect to grounding of all equipment.
- Only use properly rated, electrically insulated tools and measuring equipment.
- Do not touch unshielded components or terminals with voltage present.
- Prior to performing any type of work on the drive system, block the motor shaft to prevent rotation.
- Insulate both ends of unused conductors of the motor cable
- Do not create short circuits across the DC bus terminals or the DC bus capacitors.

Failure to follow these instructions will result in death or serious injury.

Damaged products or accessories may cause electric shock or unanticipated equipment operation.

⚠️⚠️ DANGER**ELECTRIC SHOCK OR UNANTICIPATED EQUIPMENT OPERATION**

Do not use damaged products or accessories.

Failure to follow these instructions will result in death or serious injury.

Contact your local Schneider Electric sales office if you detect any damage whatsoever.

This equipment has been designed to operate outside of any hazardous location. Only install this equipment in zones known to be free of a hazardous atmosphere.

⚠️ DANGER**POTENTIAL FOR EXPLOSION**

Install and use this equipment in non-hazardous locations only.

Failure to follow these instructions will result in death or serious injury.

Product may perform unexpected movements because of incorrect wiring, incorrect settings, incorrect data or other errors.

⚠️ WARNING**UNANTICIPATED EQUIPMENT OPERATION**

- Carefully install the wiring in accordance with the EMC requirements.
- Do not operate the product with unknown or unsuitable settings or data.
- Perform a comprehensive commissioning test.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

▲ WARNING**LOSS OF CONTROL**

- The designer of any control scheme must consider the potential failure modes of control paths and, for critical control functions, provide a means to achieve a safe state during and after a path failure. Examples of critical control functions are emergency stop, overtravel stop, power outage and restart.
- Separate or redundant control paths must be provided for critical control functions.
- System control paths may include communication links. Consideration must be given to the implications of unanticipated transmission delays or failures of the link.
- Observe all accident prevention regulations and local safety guidelines (1).
- Each implementation of the product must be individually and thoroughly tested for proper operation before being placed into service.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

(1) For USA: Additional information, refer to NEMA ICS 1.1 (latest edition), Safety Guidelines for the Application, Installation, and Maintenance of Solid State Control and to NEMA ICS 7.1 (latest edition), Safety Standards for Construction and Guide for Selection, Installation and Operation of Adjustable-Speed Drive Systems.

▲ WARNING**LOSS OF CONTROL**

Perform a comprehensive commissioning test to verify that communication monitoring properly detects communication interruptions.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

NOTICE**DESTRUCTION DUE TO INCORRECT MAINS VOLTAGE**

Before switching on and configuring the product, verify that it is approved for the mains voltage.

Failure to follow these instructions can result in equipment damage.

MV Power On & Off Process For LV Pre-charge

Power On

Step	Description
1	Close all ATV6100 MV cubicle doors.
2	Put all K1 keys into the key box and lock them.
3	Unlock key K0 and take it to MV breaker [QF1]
4	Lock K0 into MV breaker [QF1] to open the ground switch.
5	Unlock key K0' and take it to ATV6100.
6	Insert K0' into ATV6100 and don't rotate it.

Power On (Continued)

7	Rotate the LV breaker [QF91] to close it.
8	Push the "Energize" button after "Ready to Energize" displayed on HMI; or Send "Remote Energize" command after receive "Ready to Energize" signal. After energize is finished, ATV6100 is ready and can be started.

Power Off

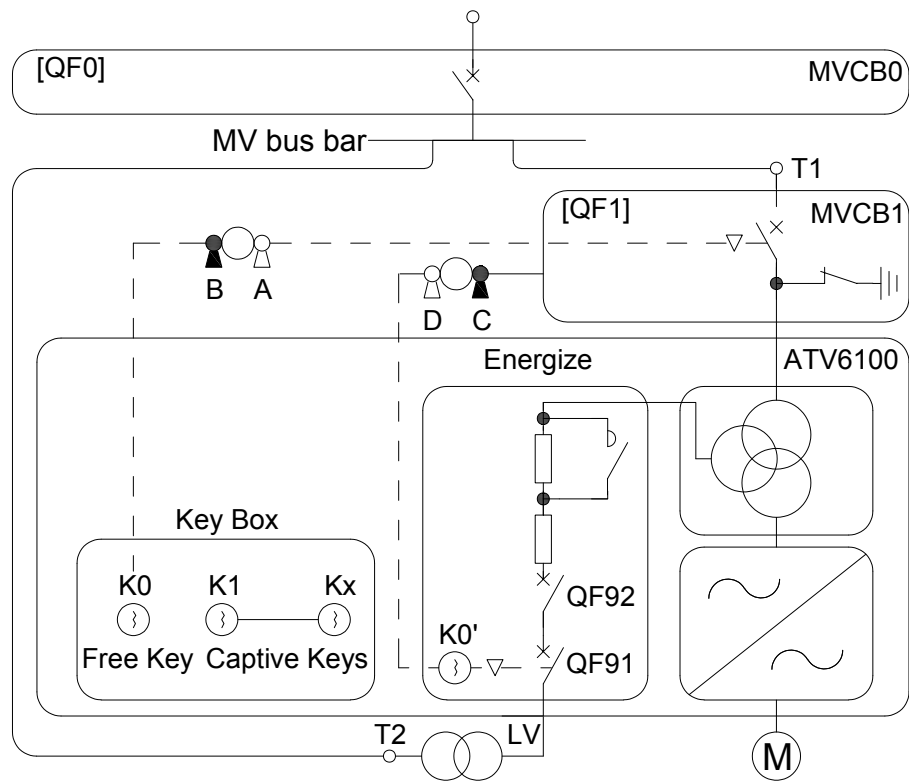
Step	Description
1	Turn off MV breaker [QF1].
2	Turn off LV breaker [QF91].
3	Pull out K0' and take it to the MV breaker [QF1].
4	Lock K0' into MV breaker [QF1] to close the ground switch.
5	Unlock key K0 and take it to the ATV6100.
6	Put key K0 into the key box and lock it.
7	Keys K1 can now be unlocked. Use keys K1 to open the ATV6100 MV cubicle doors only after following the instructions provided on the safety label located on the MV cubicle doors.

⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

The input terminals of QF1 (T1) and the input terminals of the MV/LV transformer (T2) which is used to supply the LV precharge circuit (via QF91) must only be connected to the same MV busbar.

Failure to follow these instructions will result in death or serious injury.



- ⓘ A: only removeable if CB QF1 is grounded
- ⓘ B: only removeable if K1...Kx are in the keys box
- ⓘ C: only removeable if CB QF1 is in operating position
- ⓘ D: only removeable if QF91 is open

Complete Drive System Power Off Procedure

Perform the following actions to verify the absence of voltage

Step	Description
1	Only appropriately trained persons who are familiar with and understand the contents of this manual and all other pertinent product documentation and who have received safety training to recognize and avoid hazards involved are authorized to work on and with this drive system. Installation, adjustment, repair, and maintenance must be performed by qualified personnel.
2	Wear appropriate personal protective equipment (PPE). e.g. Arc flash protection, helmet & visor, Insulation gloves.
3	Before disconnecting mains voltage, verify that the red LEDs of all power cells are ON by checking the LED state via the openings in the cabinet doors. If one or more of the red LEDs of the power cells are OFF, do not perform any further work, but contact your local Schneider Electric representative.
4	Switch OFF all main power supply and ground the mains breaker. Switch OFF all external auxiliary power supply (230V / 400V / ...) and lock them in off position.
5	Lock the grounding switch of the mains breaker with your personal lock and place a "Do Not Turn On" label on the medium voltage circuit breaker.
6	Wait 20 minutes to allow the DC bus capacitors to discharge. The DC bus LEDs located on each power cell are not an indicator of the absence of DC bus voltage.
7	Verify that the red LEDs on all power cells are OFF. If one or more of the red LEDs of the power cells remain ON for 20 minutes after the mains voltage has been disconnected, do not perform any further work, but contact your local Schneider Electric representative.
8	Remove free key K0 from the medium voltage circuit breaker of the drive system and release the keys to open the cabinet doors.
9	Open the transformer cabinet doors and verify the absence of voltage with a properly rated voltage sensing device on the mains terminals and motor terminals.
10	If there is no voltage detected on the mains terminals, short circuit the input terminals to ground using a properly rated grounding equipment.
11	If there is no voltage detected on the motor terminals, short circuit the terminal to ground using a properly rated grounding equipment.
12	Verify that no other voltage is present in the drive system.

About the Book

Document Scope

The purpose of this document is to:

- give you mechanical and electrical information related to the ATV6100 drive.
- show you how to install and wire this drive.

Validity Note

The information in this manual is merely informative and maybe subject to modification.

Original instructions and information given in this manual have been written in English (before optional translation).

All pictures shown are for 3D illustration purpose only. Depending on the product chosen, product layout may vary.

This documentation is valid for the Altivar Process ATV6100 Medium Voltage Drives.

The asterisks (*) available to this document is linked to the following information: Based on previous data. This is not a guarantee of future performance or performance in your particular circumstances.

The technical characteristics of the devices described in the present document also appear online. To access the information online, go to the Schneider Electric home page www.se.com/ww/en/download/.

The characteristics of the products described in this document are intended to match the characteristics that are available on www.se.com. As part of our corporate strategy for constant improvement, we may revise the content over time to enhance clarity and accuracy. If you see a difference between the characteristics in this document and the characteristics on www.se.com, consider www.se.com to contain the latest information.

Related Documents

Use your tablet or your PC to quickly access detailed and comprehensive information on all our products on www.se.com.

The internet site provides the information you need for products and solutions:

- The Handbook for detailed characteristics and selection guides,
- The CAD files to help design your installation,
- All software and firmware to maintain your installation up to date,
- Additional documents for better understanding of drive systems and applications,
- And finally all the User Guides related to your drive, listed below:

Title of Documentation	Reference number
ATV6100 Handbook	BRU16010 (English)
ATV6100 Installation Manual	BRU15995 (English)
ATV6100 Programming manual	BRU16021 (English)
Recommended Cybersecurity Best Practices	CS-Best-Practices-2019-340 (English)

You can download these technical publications and other technical information from our website at www.se.com/en/download

Terminology

The technical terms, terminology, and the corresponding descriptions in this manual normally use the terms or definitions in the relevant standards.

In the area of drive systems this includes, but is not limited to, terms such as **error**, **error message**, **failure**, **fault**, **fault reset**, **protection**, **safe state**, **safety function**, **warning**, **warning message**, and so on.

Among others, these standards include:

- IEC 61800 series: Adjustable speed electrical power drive systems
- IEC 61508 Ed.2 series: Functional safety of electrical/electronic/programmable electronic safety-related
- ISO 13849-1 & 2 Safety of machinery - Safety related parts of control systems
- IEC 61158 series: Industrial communication networks - Fieldbus specifications
- IEC 61784 series: Industrial communication networks - Profiles
- IEC 60204-1: Safety of machinery - Electrical equipment of machines – Part 1: General requirements

In addition, the term **zone of operation** is used in conjunction with the description of specific hazards, and is defined as it is for a **hazard zone** or **danger zone** in the EC Machinery Directive (2006/42/EC) and in ISO 12100-1.

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Technical Data and Features

General Technical Data

Input	18-54 pulse diode rectifier bridge
Output	Multilevel PWM with 2 level low-voltage IGBT inverter cells
Input voltage	<ul style="list-style-type: none"> • 2.4 kV, 3.3 kV, 4.16 kV, 5.5 kV, 6.0 kV, 6.3 kV, 6.6 kV, 10 kV, 11 kV • 13.8 kV on request • Variation: $\pm 10\%$ (according to IEC61800)
Allowable voltage fluctuation	The drive is subject to derating operation when the voltage drop of power supply is within -35 %.
Input frequency	50/60 Hz $\pm 5\%$
Incoming short circuit withstand	31.5 kA for 150 ms, option 40 kA/1s
Inrush current	<p>The Multilevel topology implies that the input transformer is designed with the primary coil at the inner side at the opposite of usual distribution transformers. For that reason, the inrush current has a higher amplitude but is shorter in time.</p> <p>Typical values for ATV6100 are $\hat{I}_{inrush} = [3 \text{ to } 4] \times \sqrt{2} \times I_{input_RMS}$ with a time constant limited to 40 to 100 ms.</p> <p>The amplitude increases when the supply short circuit power increases or the transformer power rating increases. The time constant increases when the transformer power rating increases.</p>
Overload capability	<ul style="list-style-type: none"> • Normal duty: 120 % 60 s/10 min and 150 % 3 s/10 min • Heavy duty: 150 % 60 s/10 min, 185 % 3 s/10 min
Total harmonics THD(i)	Comply with the requirements of power quality standard of IEEE519 - 2022. (When supplied by balanced network without preexisting pollution. For more details please contact Schneider Electric.)
Input power factor	≥ 0.96 from 20 % to 100 % of load
Cable entry	Bottom, top entry as option by gland plate
Frequency resolution	0.01 Hz
Power cells command signals transmission	Fiber optic transmission
Efficiency at rated power	Inverter efficiency is $\geq 98.5\%$. Drive efficiency including input transformer is 96 %, 96.5% as option depending on product.
Type of motor	Asynchronous motor, external exited synchronous motor, permanent magnet motor (Surface / Interior magnet).
Three-phase output voltage for motor connection	0 to respective output voltage.
Output frequency	0.1 to 120 Hz for U/f 0.1 to 60 Hz for vector control
Input transformer	Indoor type integrated in the frequency variable device, the dry phase-shifting transformer can be supplied for 18-54 pulse rectifier.
Control power supply	<p>100...240 Vac $\pm 10\%$ (47.5...63 Hz), 124 - 370 Vdc, sinusoidal waveform. Capacity for Low Voltage Pre-Charge : 1.8 kVA Capacity for Medium Voltage Pre-Charge : 1.4 kVA (nominal input current $\leq 420A$); 2.3 kVA (nominal input current $> 420A$).</p> <p>Other AC and DC voltage on request</p>
Low Voltage Pre-Charge Power Supply	The capacity value is determined by the drive rating. Refer to the Technical Data section of the Handbook for detailed specifications.
Auxiliary power supply	230 Vac $\pm 10\%$, 50/60Hz, 1kVA capacity for standard configuration, value depending on auxiliary options used, others as option.
Cooling fan power supply	400 VAC $\pm 10\%$, 50 Hz, capacity depending on drive reference. Other voltage on request
Communication protocols	Modbus serial and Modbus TCP as standard (one can be used for EAA, see EcostruXure Asset Advisor) .

HMI	10 inch, color graphic, touch screen, multi-languages
Control interface	11 DI (24 Vdc); 8 DI (24 Vdc for MV Pre-charge) 12 DO relay (250 Vac); 10 DO relay (250 Vac for MV Pre-charge) 2 AI (4-20 mA) 2 AO (4-20 mA) (more I/Os on request)
Degree of protection (cabinet)	<ul style="list-style-type: none"> Standard: IP 41, IP 21 for air exhaust Option: IP 42, IP 22 for air exhaust
Paint	RAL 7035
Panel thickness	2 mm Cabinet, 1.5 mm doors, 1.2 mm for fixed panel
Cooling	Forced air ventilation
EMC	EN IEC 61800-3 environment 2 category C4 for power, C3 for control
Reference standard	EN IEC 61800-3, EN IEC 61800-5-1, IEC 60529, IEEE 519
Product certification	CE
Environment features	
Storage temperature	-10 °C to 60 °C
Transportation temperature	-20 °C to 60 °C
Working temperature	0 to 40 °C, up to 50°C possible with derating ⁽¹⁾ .
Relative humidity	Up to 90% (without condensation) Optional: maximum up to 95% (without condensation)
Altitude	≤1000 m, up to 2000 m possible with derating. Above 2000 m case by case (up to 5000 m, 10 kV) ⁽²⁾ .
Noise level	75/80/85 dB(A) depending on size
Over Voltage Category	IEC 61800 (Adjustable speed electrical power drive systems - Part 5-1: Safety requirements - Electrical, thermal and energy)
<ul style="list-style-type: none"> Drive line side Drive motor side Secures Control power supply Auxiliary and fan power supply 	<ul style="list-style-type: none"> Category III Category II Category III Category III
Pollution in accordance with IEC 61800-5-1	Pollution degree 2
Environmental parameters (operation)	Refer to IEC 60721-3-3: 2019
<ul style="list-style-type: none"> Climatic conditions Mechanical conditions Biological conditions Mechanically active substances Chemical conditions 	<ul style="list-style-type: none"> 3K22 3M11 3B1 3S6 C4 (ISO 9223)
<p>(1): Derating must be applied on the drive system and the value of the derating is defined by Schneider Services depending on the customer application and the local environment conditions.</p> <p>(2): For more details, please contact Schneider Electric</p>	

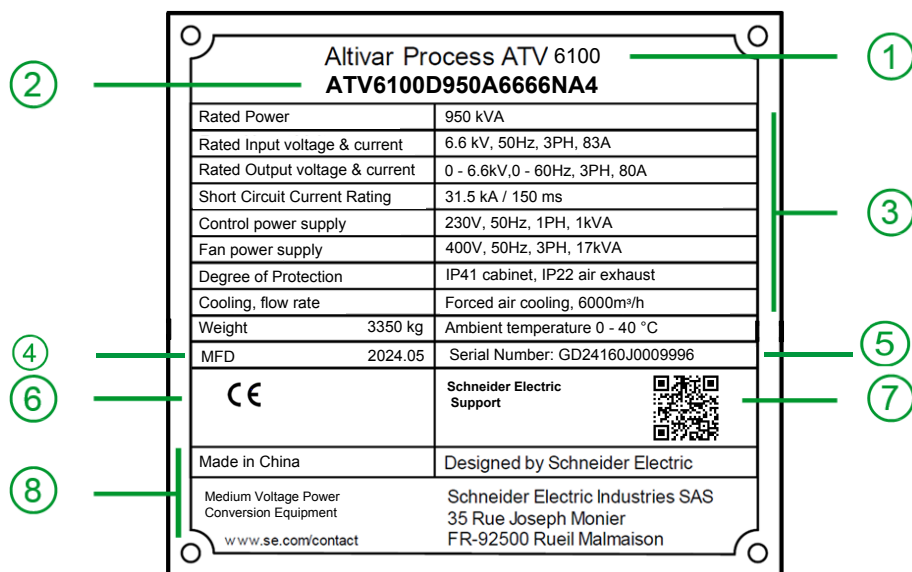
Type designation

The product designation of the ATV6100 consists of several points of reference (characters and figures). The meaning of each point is illustrated in the following example.

	ATV6100	D	470	A	66	66	N	A	4
Product Range ATV 6100									
Factor for power rating D x 1 kVA C x 10 kVA M x 100 kVA									
Transformer rating 470 470 kVA									
Cooling Type A Air cooled R Redundant fan									
Input voltage 24 2.4 kV 33 3.3 kV 42 4.16 kV 55 5.5 kV 60 6.0 kV 63 6.3 kV 66 6.6 kV 10 10 kV 11 11 kV									
Output voltage 24 2.4 kV ... Same as input voltage 11 11 kV									
Style N No Bypass B Powercell bypass C Powercell bypass n+1									
Standard A CE Standard efficiency B CE High efficiency C CE Adapted efficiency									
IP rating; Inrush 4 IP41; Inrush limitation MV 5 IP42; Inrush limitation MV 6 IP41; Inrush limitation LV 7 IP42; Inrush limitation LV									

Nameplate Example

The nameplate contains the following data:



Legend

Marking	Description	Marking	Description
①	Product Type	②	Product reference
③	Technical data	④	Manufacturing date
⑤	Serial number	⑥	Certifications
⑦	QR code	⑧	Legal information

NOTE: Use the nameplate to validate that the product characteristics are compatible with your local installation.

Selection and ordering data

Voltage class 2.4 kV

Power specifications for output voltage 2.4 kV, 9 power cells, 18 input pulses											
Model	Transformer rating (1)	Normal duty				Heavy duty				Power cell	
		Maximum motor shaft power (2)		Nominal continuous current	120% overload 1 min/10 mins	Maximum motor shaft power (2)		Nominal continuous current	150% overload 1 min/10 mins	Individual power cell rating	Max overload 3 sec/10 mins
		kVA	kW	HP	A	A	kW	HP	A	A	A
Voltage class: 2.4 kV (3)											
ATV6100D188A2424...	188	150	201	43	52	120	160	34	52	43	64.5
ATV6100D213A2424...	213	170	228	49	59	139	186	40	60	50	75
ATV6100D250A2424...	250	200	268	58	69	181	242	52	78	65	97.5
ATV6100D281A2424...	281	225	302	65	78	181	242	52	78	65	97.5
ATV6100D300A2424...	300	240	322	69	83	195	261	56	84	70	105
ATV6100D344A2424...	344	275	369	79	95	222	298	64	96	80	120
ATV6100D410A2424...	410	330	442	95	114	264	354	76	114	95	143
ATV6100D450A2424...	450	360	482	104	124	320	428	92	138	115	173
ATV6100D500A2424...	500	400	536	115	138	320	428	92	138	115	173
ATV6100D540A2424...	540	430	576	124	148	348	466	100	150	125	188
ATV6100D610A2424...	610	487	653	140	168	389	522	112	168	140	210
ATV6100D690A2424...	690	550	737	158	190	514	689	148	222	185	278
ATV6100D800A2424...	800	640	858	184	221	514	689	148	222	185	278
ATV6100D910A2424...	910	730	978	210	252	584	782	168	252	210	315
ATV6100C102A2424...	1,020	815	1,092	235	281	653	875	188	282	235	353
ATV6100C104A2424...	1,040	830	1,112	239	287	667	894	192	288	240	360
ATV6100C121A2424...	1,210	970	1,300	279	335	778	1,043	224	336	280	420
ATV6100C141A2424...	1,410	1,130	1,514	325	390	904	1,211	260	390	325	488
ATV6100C161A2424...	1,610	1,285	1,722	370	444	1,029	1,378	296	444	370	555
ATV6100C171A2424...	1,710	1,370	1,836	394	473	1,098	1,472	316	474	395	593
ATV6100C202A2424...	2,020	1,615	2,164	465	558	1,293	1,732	372	558	465	698
ATV6100C221A2424...	2,210	1,770	2,372	509	611	1,418	1,900	408	612	510	765
ATV6100C243A2424...	2,430	1,945	2,606	560	672	1,557	2,086	448	672	560	840
<p>1. For higher drive power please contact Schneider Electric.</p> <p>2. Values valid for synchronous motor and asynchronous motor. The specifications for the maximum motor shaft power is based on a motor efficiency of 95%, and power factor 0.88.</p> <p>3. Please contact Schneider Electric for other combinations of input and output voltage.</p> <p>NOTE: For dimensions and outline drawings please refer to Handbook Technical Data chapter.</p>											

Voltage class 3.3 kV

Power specifications for output voltage 3.3 kV, 9 power cells, 18 input pulses											
Model	Transformer rating (1)	Normal duty				Heavy duty				Power cell	
		Maximum motor shaft power (2)		Nominal continuous current	120% overload 1 min/10 mins	Maximum motor shaft power (2)		Nominal continuous current	150% overload 1 min/10 mins	Individual power cell rating	Max overload 3 sec/10 mins
		kVA	kW	HP	A	A	kW	HP	A	A	A
Voltage class: 3.3 kV (3)											
ATV6100D250A3333***	250	200	268	42	50	164	220	34	52	43	64.5
ATV6100D300A3333***	300	240	322	50	60	191	256	40	60	50	75
ATV6100D338A3333***	338	270	362	57	68	248	333	52	78	65	97.5
ATV6100D388A3333***	388	310	415	65	78	248	333	52	78	65	97.5
ATV6100D413A3333***	413	330	442	69	83	268	359	56	84	70	105
ATV6100D475A3333***	475	380	509	80	95	306	410	64	96	80	120
ATV6100D560A3333***	560	450	603	94	113	363	487	76	114	95	143
ATV6100D630A3333***	630	500	670	105	126	440	589	92	138	115	173
ATV6100D690A3333***	690	550	737	115	138	440	589	92	138	115	173
ATV6100D740A3333***	740	595	797	125	149	478	640	100	150	125	188
ATV6100D840A3333***	840	670	898	140	168	535	717	112	168	140	210
ATV6100D960A3333***	960	770	1,032	161	193	707	948	148	222	185	278
ATV6100C110A3333***	1,100	880	1,179	184	221	707	948	148	222	185	278
ATV6100C125A3333***	1,250	1,000	1,340	209	251	803	1,076	168	252	210	315
ATV6100C140A3333***	1,400	1,120	1,501	234	281	898	1,204	188	282	235	353
ATV6100C143A3333***	1,430	1,145	1,534	240	288	917	1,229	192	288	240	360
ATV6100C166A3333***	1,660	1,330	1,782	278	334	1,070	1,434	224	336	280	420
ATV6100C194A3333***	1,940	1,550	2,077	324	389	1,242	1,665	260	390	325	488
ATV6100C221A3333***	2,210	1,765	2,365	369	443	1,414	1,895	296	444	370	555
ATV6100C236A3333***	2,360	1,885	2,526	394	473	1,510	2,023	316	474	395	593
ATV6100C278A3333***	2,780	2,220	2,975	465	558	1,778	2,382	372	558	465	698
ATV6100C304A3333***	3,040	2,435	3,263	510	612	1,950	2,612	408	612	510	765
ATV6100C334A3333***	3,340	2,675	3,585	560	672	2,141	2,869	448	672	560	840
1. For higher drive power please contact Schneider Electric. 2. Values valid for synchronous motor and asynchronous motor. The specifications for the maximum motor shaft power is based on a motor efficiency of 95%, and power factor 0.88. 3. Please contact Schneider Electric for other combinations of input and output voltage. NOTE: For dimensions and outline drawings please refer to Handbook Technical Data chapter.											

Voltage class 4.16 kV

Power specifications for output voltage 4.16 kV, 12 power cells, 24 input pulses											
Model	Transformer rating (1)	Normal duty				Heavy duty				Power cell	
		Maximum motor shaft power (2)		Nominal continuous current	120% overload 1 min/10 mins	Maximum motor shaft power (2)		Nominal continuous current	150% overload 1 min/10 mins	Individual power cell rating	Max overload 3 sec/10 mins
	kVA	kW	HP	A	A	kW	HP	A	A	A	A
Voltage class: 4.16 kV (3)											
ATV6100D313A4242...	313	250	335	42	50	207	278	34	52	43	64.5
ATV6100D375A4242...	375	300	402	50	60	241	323	40	60	50	75
ATV6100D438A4242...	438	350	469	58	70	313	420	52	78	65	97.5
ATV6100D488A4242...	488	390	523	65	78	313	420	52	78	65	97.5
ATV6100D525A4242...	525	420	563	70	84	337	452	56	84	70	105
ATV6100D600A4242...	600	480	643	80	96	386	517	64	96	80	120
ATV6100D710A4242...	710	570	764	95	114	458	613	76	114	95	143
ATV6100D790A4242...	790	630	844	105	126	554	743	92	138	115	173
ATV6100D860A4242...	860	690	925	115	137	554	743	92	138	115	173
ATV6100D940A4242...	940	750	1,005	125	149	602	807	100	150	125	188
ATV6100C105A4242...	1,050	840	1,126	139	167	675	904	112	168	140	210
ATV6100C121A4242...	1,210	970	1,300	161	193	892	1,195	148	222	185	278
ATV6100C139A4242...	1,390	1,110	1,487	184	221	892	1,195	148	222	185	278
ATV6100C158A4242...	1,580	1,260	1,688	209	251	1,012	1,356	168	252	210	315
ATV6100C176A4242...	1,760	1,410	1,889	234	281	1,132	1,517	188	282	235	353
ATV6100C180A4242...	1,800	1,440	1,930	239	287	1,157	1,550	192	288	240	360
ATV6100C211A4242...	2,110	1,685	2,258	280	336	1,349	1,808	224	336	280	420
ATV6100C245A4242...	2,450	1,960	2,626	325	390	1,566	2,099	260	390	325	488
ATV6100C279A4242...	2,790	2,230	2,988	370	444	1,783	2,389	296	444	370	555
ATV6100C298A4242...	2,980	2,380	3,189	395	474	1,903	2,551	316	474	395	593
ATV6100C350A4242...	3,500	2,800	3,752	465	558	2,241	3,003	372	558	465	698
ATV6100C384A4242...	3,840	3,070	4,114	510	612	2,458	3,293	408	612	510	765
ATV6100C421A4242...	4,210	3,370	4,516	559	671	2,699	3,616	448	672	560	840
1. For higher drive power please contact Schneider Electric. 2. Values valid for synchronous motor and asynchronous motor. The specifications for the maximum motor shaft power is based on a motor efficiency of 95%, and power factor 0.88. 3. Please contact Schneider Electric for other combinations of input and output voltage. NOTE: For dimensions and outline drawings please refer to Handbook Technical Data chapter.											

Voltage class 6 kV

Power specifications for output voltage 6 kV, 15 power cells, 30 input pulses											
Model	Transformer rating (1)	Normal duty				Heavy duty				Power cell	
		Maximum motor shaft power (2)		Nominal continuous current	120% overload 1 min/10 mins	Maximum motor shaft power (2)		Nominal continuous current	150% overload 1 min/10 mins	Individual power cell rating	Max overload 3 sec/10 mins
	kVA	kW	HP	A	A	kW	HP	A	A	A	A
Voltage class: 6 kV (3)											
ATV6100D445A6060***	445	356	477	41	49	299	400	34	52	43	64.5
ATV6100D500A6060***	500	400	536	46	55	348	466	40	60	50	75
ATV6100D600A6060***	600	480	643	55	66	452	605	52	78	65	97.5
ATV6100D700A6060***	700	560	750	64	77	452	605	52	78	65	97.5
ATV6100D760A6060***	760	608	815	70	84	487	652	56	84	70	105
ATV6100D870A6060***	870	696	933	80	96	556	745	64	96	80	120
ATV6100C100A6060***	1,000	800	1,072	92	110	660	885	76	114	95	143
ATV6100C113A6060***	1,130	904	1,211	104	125	799	1,071	92	138	115	173
ATV6100C125A6060***	1,250	1,000	1,340	115	138	799	1,071	92	138	115	173
ATV6100C136A6060***	1,360	1,088	1,458	125	150	869	1,164	100	150	125	188
ATV6100C140A6060***	1,400	1,120	1,501	129	155	973	1,304	112	168	140	210
ATV6100C175A6060***	1,750	1,400	1,876	161	193	1,286	1,723	148	222	185	278
ATV6100C200A6060***	2,000	1,600	2,144	184	221	1,286	1,723	148	222	185	278
ATV6100C225A6060***	2,250	1,800	2,412	207	249	1,460	1,956	168	252	210	315
ATV6100C250A6060***	2,500	2,000	2,680	230	276	1,633	2,189	188	282	235	353
ATV6100C261A6060***	2,610	2,088	2,798	240	288	1,668	2,235	192	288	240	360
ATV6100C280A6060***	2,800	2,240	3,002	258	309	1,946	2,608	224	336	280	420
ATV6100C350A6060***	3,500	2,800	3,752	322	387	2,259	3,027	260	390	325	488
ATV6100C394A6060***	3,940	3,152	4,224	363	435	2,572	3,446	296	444	370	555
ATV6100C419A6060***	4,190	3,352	4,492	386	463	2,745	3,679	316	474	395	593
ATV6100C500A6060***	5,000	4,000	5,360	460	552	3,232	4,331	372	558	465	698
ATV6100C525A6060***	5,250	4,200	5,628	483	580	3,545	4,750	408	612	510	765
ATV6100C600A6060***	6,000	4,800	6,432	552	663	3,892	5,216	448	672	560	840

1. For higher drive power please contact Schneider Electric.
 2. Values valid for synchronous motor and asynchronous motor. The specifications for the maximum motor shaft power is based on a motor efficiency of 95%, and power factor 0.88.
 3. Please contact Schneider Electric for other combinations of input and output voltage.

NOTE: For dimensions and outline drawings please refer to Handbook Technical Data chapter.

Voltage class 6.6 kV

Power specifications for output voltage 6.6 kV, 15 power cells, 30 input pulses											
Model	Transformer rating (1)	Normal duty				Heavy duty				Power cell	
		Maximum motor shaft power (2)		Nominal continuous current	120% overload 1 min/10 mins	Maximum motor shaft power (2)		Nominal continuous current	150% overload 1 min/10 mins	Individual power cell rating	Max overload 3 sec/10 mins
		kVA	kW	HP	A	A	kW	HP	A	A	A
Voltage class: 6.6 kV (3)											
ATV6100D394A6666...	394	315	422	33	40	296	397	31	47	43	64.5
ATV6100D450A6666...	450	360	482	38	45	329	441	34	52	43	64.5
ATV6100D513A6666...	513	410	549	43	51	329	441	34	52	43	64.5
ATV6100D588A6666...	588	470	630	49	59	382	512	40	60	50	75
ATV6100D688A6666...	688	550	737	58	69	497	666	52	78	65	97.5
ATV6100D775A6666...	775	620	831	65	78	497	666	52	78	65	97.5
ATV6100D825A6666...	825	660	884	69	83	535	717	56	84	70	105
ATV6100D950A6666...	950	760	1,018	80	95	612	820	64	96	80	120
ATV6100C113A6666...	1,130	900	1,206	94	113	726	973	76	114	95	143
ATV6100C125A6666...	1,250	1,000	1,340	105	126	879	1,178	92	138	115	173
ATV6100C138A6666...	1,380	1,100	1,474	115	138	879	1,178	92	138	115	173
ATV6100C149A6666...	1,490	1,195	1,601	125	150	956	1,281	100	150	125	188
ATV6100C168A6666...	1,680	1,340	1,796	140	168	1,070	1,434	112	168	140	210
ATV6100C188A6666...	1,880	1,500	2,010	157	188	1,414	1,895	148	222	185	278
ATV6100C221A6666...	2,210	1,770	2,372	185	222	1,414	1,895	148	222	185	278
ATV6100C251A6666...	2,510	2,010	2,693	210	252	1,606	2,151	168	252	210	315
ATV6100C281A6666...	2,810	2,250	3,015	235	283	1,797	2,408	188	282	235	353
ATV6100C286A6666...	2,860	2,290	3,069	240	288	1,835	2,459	192	288	240	360
ATV6100C335A6666...	3,350	2,680	3,591	280	337	2,141	2,869	224	336	280	420
ATV6100C389A6666...	3,890	3,110	4,167	325	391	2,485	3,330	260	390	325	488
ATV6100C441A6666...	4,410	3,530	4,730	369	443	2,829	3,791	296	444	370	555
ATV6100C471A6666...	4,710	3,770	5,052	394	473	3,020	4,047	316	474	395	593
ATV6100C555A6666...	5,550	4,440	5,950	465	558	3,555	4,764	372	558	465	698
ATV6100C609A6666...	6,090	4,870	6,526	510	612	3,899	5,225	408	612	510	765
ATV6100C669A6666...	6,690	5,350	7,169	560	672	4,281	5,737	448	672	560	840
1. For higher drive power please contact Schneider Electric. 2. Values valid for synchronous motor and asynchronous motor. The specifications for the maximum motor shaft power is based on a motor efficiency of 95%, and power factor 0.88. 3. Please contact Schneider Electric for other combinations of input and output voltage. NOTE: For dimensions and outline drawings please refer to Handbook Technical Data chapter.											

Voltage class 10 kV

Power specifications for output voltage 10 kV, 24 power cells, 48 input pulses											
Model	Transformer rating (1)	Normal duty				Heavy duty				Power cell	
		Maximum motor shaft power (2)		Nominal continuous current	120% overload 1 min/10 mins	Maximum motor shaft power (2)		Nominal continuous current	150% overload 1 min/10 mins	Individual power cell rating	Max overload 3 sec/10 mins
		kVA	kW	HP	A	A	kW	HP	A	A	A
Voltage class: 10 kV (3)											
ATV6100D395A1010...	395	315	422	22	26	266	357	18	28	23	34.5
ATV6100D500A1010...	500	400	536	28	33	376	504	26	39	43	64.5
ATV6100D625A1010...	625	500	670	35	41	478	640	33	50	43	64.5
ATV6100D700A1010...	700	560	750	39	46	498	667	34	52	43	64.5
ATV6100D775A1010...	775	620	831	43	51	498	667	34	52	43	64.5
ATV6100D890A1010...	890	710	951	49	59	579	776	40	60	50	75
ATV6100C100A1010...	1,000	800	1,072	55	66	753	1,009	52	78	65	97.5
ATV6100C113A1010...	1,130	904	1,211	62	75	753	1,009	52	78	65	97.5
ATV6100C125A1010...	1,250	1,000	1,340	69	83	811	1,087	56	84	70	105
ATV6100C140A1010...	1,400	1,120	1,501	77	93	927	1,242	64	96	80	120
ATV6100C172A1010...	1,720	1,376	1,844	95	114	1,100	1,475	76	114	95	143
ATV6100C200A1010...	2,000	1,600	2,144	110	133	1,332	1,785	92	138	115	173
ATV6100C225A1010...	2,250	1,800	2,412	124	149	1,448	1,940	100	150	125	188
ATV6100C250A1010...	2,500	2,000	2,680	138	166	1,622	2,173	112	168	140	210
ATV6100C280A1010...	2,800	2,240	3,002	155	186	2,143	2,872	148	222	185	278
ATV6100C313A1010...	3,130	2,504	3,355	173	208	2,143	2,872	148	222	185	278
ATV6100C350A1010...	3,500	2,800	3,752	193	232	2,433	3,260	168	252	210	315
ATV6100C419A1010...	4,190	3,350	4,489	231	278	2,722	3,648	188	282	235	353
ATV6100C434A1010...	4,340	3,470	4,650	240	288	2,780	3,725	192	288	240	360
ATV6100C500A1010...	5,000	4,000	5,360	276	331	3,244	4,346	224	336	280	420
ATV6100C563A1010...	5,630	4,504	6,035	311	373	3,765	5,045	260	390	325	488
ATV6100C625A1010...	6,250	5,000	6,700	345	414	4,286	5,743	296	444	370	555
ATV6100C700A1010...	7,000	5,600	7,504	387	464	4,576	6,131	316	474	395	593
ATV6100C788A1010...	7,880	6,304	8,447	435	522	5,387	7,218	372	558	465	698
ATV6100C888A1010...	8,880	7,104	9,519	491	589	5,908	7,916	408	612	510	765
ATV6100M100A1010...	10,000	8,000	10,720	552	663	6,487	8,693	448	672	560	840

1. For higher drive power please contact Schneider Electric.

2. Values valid for synchronous motor and asynchronous motor. The specifications for the maximum motor shaft power is based on a motor efficiency of 95%, and power factor 0.88.

3. Please contact Schneider Electric for other combinations of input and output voltage.

NOTE: For dimensions and outline drawings please refer to Handbook Technical Data chapter.

Voltage class 11 kV

Power specifications for output voltage 11 kV, 27 power cells, 54 input pulses											
Model	Transformer rating (1)	Normal duty				Heavy duty				Power cell	
		Maximum motor shaft power (2)		Nominal continuous current	120% overload 1 min/10 mins	Maximum motor shaft power (2)		Nominal continuous current	150% overload 1 min/10 mins	Individual power cell rating	Max overload 3 sec/10 mins
		kVA	kW	HP	A	A	kW	HP	A	A	A
Voltage class: 11 kV (3)											
ATV6100D456A1111***	456	365	489	23	27	293	393	18	28	23	34.5
ATV6100D563A1111***	563	450	603	28	34	430	576	27	41	43	64.5
ATV6100D688A1111***	688	550	737	35	41	526	704	33	50	43	64.5
ATV6100D856A1111***	856	685	918	43	52	548	734	34	52	43	64.5
ATV6100D994A1111***	994	795	1,065	50	60	637	854	40	60	50	75
ATV6100C113A1111***	1,130	904	1,211	57	68	828	1,110	52	78	65	97.5
ATV6100C129A1111***	1,290	1,032	1,383	65	78	828	1,110	52	78	65	97.5
ATV6100C139A1111***	1,390	1,112	1,490	70	84	892	1,195	56	84	70	105
ATV6100C159A1111***	1,590	1,272	1,704	80	96	1,019	1,366	64	96	80	120
ATV6100C189A1111***	1,890	1,510	2,023	95	114	1,211	1,622	76	114	95	143
ATV6100C206A1111***	2,060	1,650	2,211	104	124	1,465	1,964	92	138	115	173
ATV6100C229A1111***	2,290	1,830	2,452	115	138	1,465	1,964	92	138	115	173
ATV6100C249A1111***	2,490	1,990	2,667	125	150	1,593	2,134	100	150	125	188
ATV6100C279A1111***	2,790	2,230	2,988	140	168	1,784	2,390	112	168	140	210
ATV6100C319A1111***	3,190	2,550	3,417	160	192	2,357	3,159	148	222	185	278
ATV6100C369A1111***	3,690	2,950	3,953	185	222	2,357	3,159	148	222	185	278
ATV6100C419A1111***	4,190	3,350	4,489	210	252	2,676	3,586	168	252	210	315
ATV6100C468A1111***	4,680	3,740	5,012	235	282	2,994	4,013	188	282	235	353
ATV6100C478A1111***	4,780	3,820	5,119	240	288	3,058	4,098	192	288	240	360
ATV6100C558A1111***	5,580	4,460	5,976	280	336	3,568	4,781	224	336	280	420
ATV6100C648A1111***	6,480	5,180	6,941	325	390	4,141	5,549	260	390	325	488
ATV6100C736A1111***	7,360	5,890	7,893	370	444	4,715	6,318	296	444	370	555
ATV6100C786A1111***	7,860	6,290	8,429	395	474	5,033	6,745	316	474	395	593
ATV6100C925A1111***	9,250	7,400	9,916	465	558	5,925	7,940	372	558	465	698
ATV6100M101A1111***	10,100	8,080	10,827	507	609	6,499	8,708	408	612	510	765
ATV6100M111A1111***	11,100	8,880	11,899	558	669	7,136	9,562	448	672	560	840
<p>1. For higher drive power please contact Schneider Electric.</p> <p>2. Values valid for synchronous motor and asynchronous motor. The specifications for the maximum motor shaft power is based on a motor efficiency of 95%, and power factor 0.88.</p> <p>3. Please contact Schneider Electric for other combinations of input and output voltage.</p> <p>NOTE: For dimensions and outline drawings please refer to Handbook Technical Data chapter.</p> <p>NOTE: N+1 power cell configuration is not available for 11kV.</p>											

Key Interlock System

Main Features

Key interlock system is used to help to prevent opening a door when the mains supply is present and also helps to prevent powering on the drive system when a door is still unlocked. (Only the control cabinet is unlocked when the mains supply is applied).

Key box is used to mechanically lock electrical installations. The basic functionalities are:

- The lock only can work with special key.
- The lock must self- lock (i.e. cannot rotate) without special key.
- The key can not be pulled out when it is rotated to locked position.
- The lock can not popup the key automatically. Hereafter, a 2 keys product example.

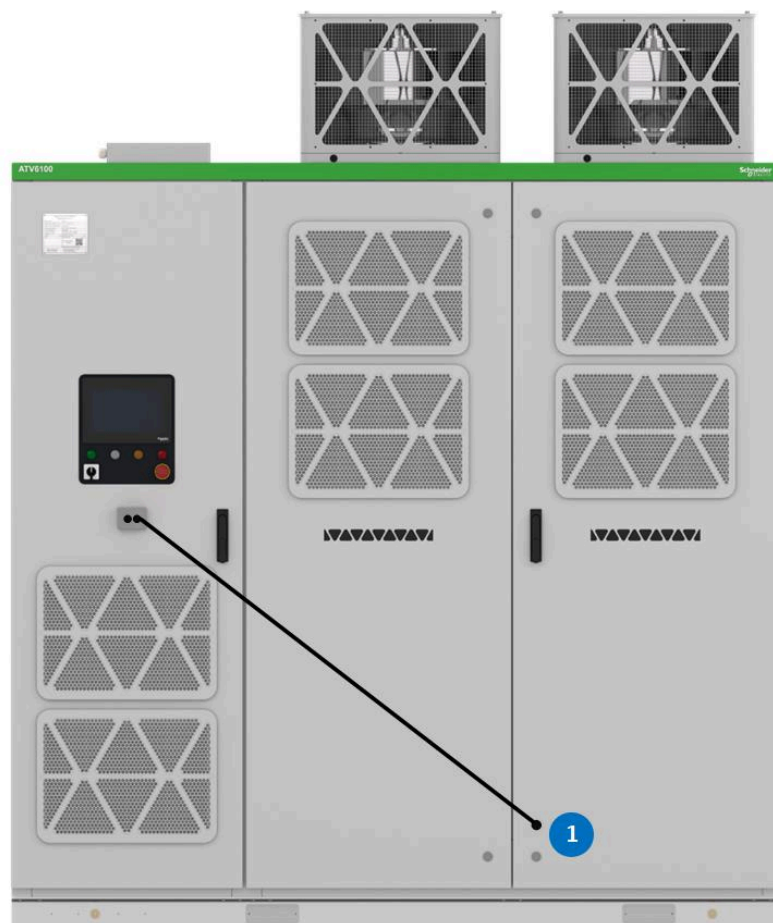


Figure 1-1

NOTE: the keys for interlock system are located in a file box inside the control cabinet.

Description

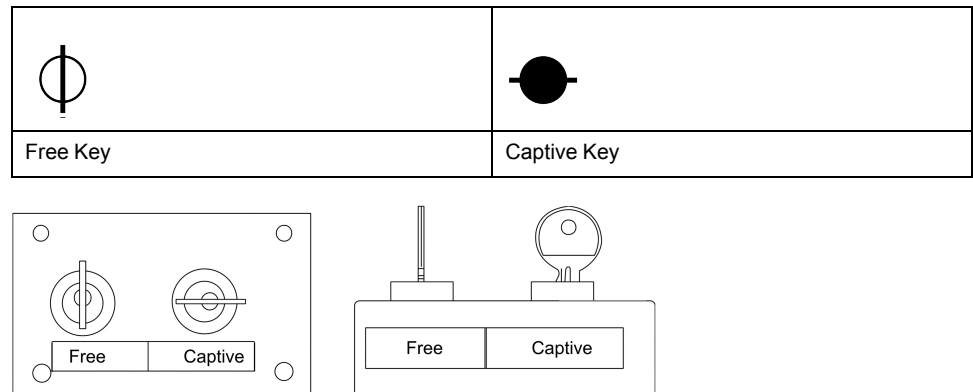
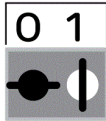


Figure 1-2

Power on Procedure

Step	Action
1	<p>Once installation is completed, close all the doors and take the captive key out of each door.</p> <p>Closed door:</p> <p>Figure 1-3</p> <p>The free key 0 only can be released when the captive keys 1 has been turned to captive position.</p>
2	Put the keys from all the doors into the key box then turn to captive position (control compartment is not part of the interlock system).
3	Take the free key out after all the captive keys are in the captive position.
4	Switch off the grounded switch of the QF1 Medium Voltage Circuit Breaker (QF1 MVCB), interlock the free key with QF1 MVCB.
5	Get authorization from the person(s) in charge to work on and with this equipment to Power On.

Power off Procedure (for Maintenance)

Step	Action
1	Switch the QF1 MVCB off then switch on its grounding switch.
2	Take the free key out the QF1 MVCB.
3	Put the free key into the key box and turn to captive position.
4	Turn the captive keys to free position and then take them out to open the corresponding door for maintenance. Opened door:  Figure 1-4 The captive keys 1 may be released when the free key 0 has been turned to the captive position.

NOTE: If the free key K0 we provide cannot be used as the Key for the QF1 MVCB cabinet, it's mandatory to attach the both keys together on a permanent manner (Free Key k0 and MVCB Key) to forbid to use them separately.

An interlock compatible box can be provided as an option.

The standard brand of mechanical locks provided for the ATV6100 is STI. In case the key of the QF1 Medium Voltage Circuit Breaker (QF1 MVCB) and the key K0 of the VSD cannot be attached together, it is possible to supply a QF1 MVCB compatible box if brands such as Fortress or others are used on site. The interlock compatible box has a dual cylinder lock system: one cylinder for the QF1 MVCB's brand and the other is a "Free key" lock, from the brand STI.

- Once the QF1 MVCB's brand and key identification code of lock cylinder is provided, a QF1 MVCB interlock compatible box such as the picture can be provided.
- The QF1 MVCB's key can only be released when the "Free key" (K0) is inserted into the compatible box and turned to the captive position.
- Switch off the grounded switch of the QF1 MVCB; lock the QF1 MVCB with the QF1 MVCB's key.

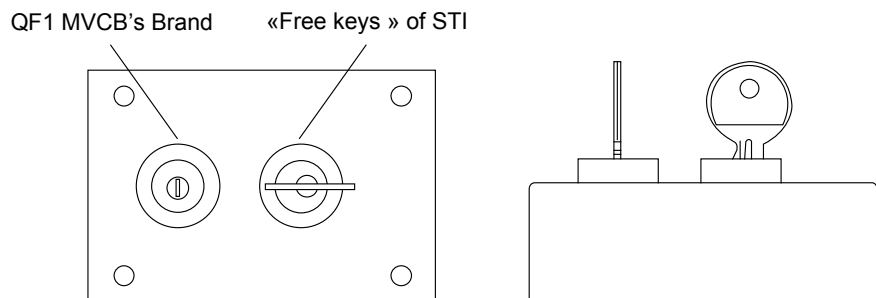


Figure 1-5

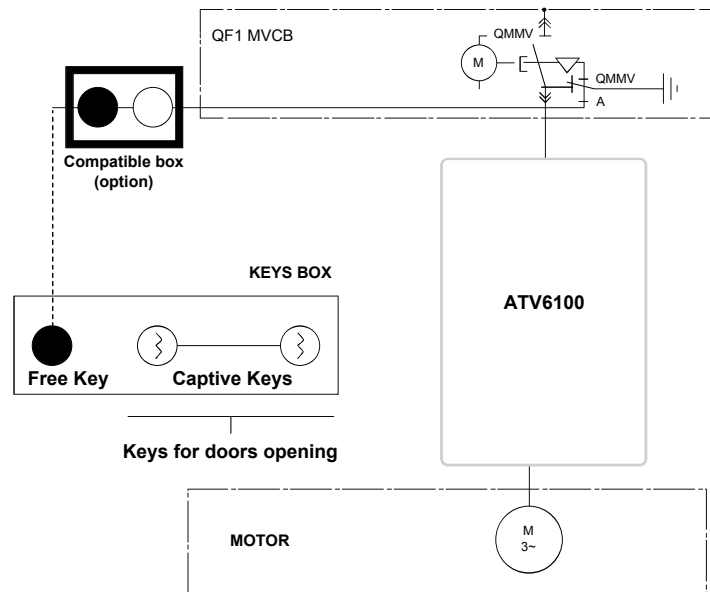
Dash Blocks (out of supply scope)

Figure 1-6

Mechanical Interlock with QF1 Medium Voltage Circuit Breaker (QF1 MCVB)

The QF1 MCVB can be switched on only if the free key “K0” is taken out from the key box and interlocked with the QF1 MCVB. Once the QF1 MCVB is powered on, the free key is trapped and cannot be taken out, so that the doors cannot be opened.

To open the doors for maintenance purposes, the free key can be removed from the QF1 MCVB only if the QF1 MCVB is grounded. If any door is opened, the QF1 MCVB cannot be powered on.

Steps for Setting Up

Procedure

1. Receive and inspect the drive

Check that the part number printed on the label is the same as that on the purchase order. Remove the drive from its packaging and check that it has not been damaged.

2. Verify the supply voltage

Verify that the supply voltage is compatible with the voltage range of the drive.

3. Mount the drive

Mount the drive in accordance with the instructions in this document.
Install any internal and external option.

Steps 1 to 4 must be performed with the power off.



4. Wire the drive

Connect the line supply, ensuring that the drive is grounded whilst the power supply is off.
Connect the motor, ensuring that its connections correspond to the voltage. Connect the control wires according to the drawing.

5. Commissioning and programming

Contact your local Schneider Electric representative.

Transportation, Storage and Disposal

Transport and Storage Conditions

The product should be protected from rain and excessive sun exposure. The room where the drive is stored should be well dry and ventilated, ensure that there is no corrosive gas in the storage room.

The following temperature range is permissible during transportation and storage:

- Transportation temperature: -20°C to 60°C (-4°F to 140°F)
- Storage temperature: -10°C to 60°C (14°F to 140°F)

The following relative humidity is permissible during transportation and storage:

- Relative humidity: up to 90%(without condensate)

If the product is stored for more than six months, the oxidation and aging of cabinets and components of ATV6100 must be inspected completely.

Long Time Storage for the Drive or Power Cell (as spare parts)

If the drive or the power cell (as spare parts) were not connected to mains for an extended period of time, the capacitors must be restored to their full performance before the motor is started.

NOTICE

REDUCED CAPACITOR PERFORMANCE

- Apply mains voltage to the drive for one hour before starting the motor if the drive has not been connected to mains for 12 months.
- Verify that no Run command can be applied before the period of one hour has elapsed.

Failure to follow these instructions can result in equipment damage.

If the specified procedure cannot be performed without a Run command because of internal mains contactor control, perform this procedure with the power stage enabled, but the motor being at standstill so that there is no appreciable mains current in the capacitors.

Long Time Storage for the Optional Internal UPS

If UPS does not work for a long time, it must be charged and discharged completely once every 6 months to help ensure the service life of the battery.

Storage and Handling Instructions for Spare Parts

NOTICE

RISK OF COMPONENT DAMAGE DUE TO INCORRECT HANDLING AND STORAGE

- Apply static-free precautions when handling these components.
- Do not touch components without wearing a wrist grounding strap.
- Put the component on a grounded working surface to help protect against electrostatic discharges.
- Take components only at their edges.
- The storage conditions and the packaging must be checked regularly.
- Any damage that occurs during the storage period must be repaired immediately.
- Follow the “storage place requirements” described below.

Failure to follow these instructions can result in equipment damage.

Storage place requirements:

- Protected against vibration and shocks.
- Free from dust, sand, vermin, and insects.
- Free from corrosive gases, salt mist, and others that could damage electronic equipment.
- Keep dry; relative air humidity up to 90% without condensation.
- Keep spare parts in their original packaging.
- Store printed circuit board assembly in anti-static bags or boxes.
- Storage temperature range: -10°C to 60°C (14°F to 140°F).

Damaged products or accessories may cause electric shock or unanticipated equipment operation.

DANGER

ELECTRIC SHOCK OR UNANTICIPATED EQUIPMENT OPERATION

Do not use damaged products or accessories.

Failure to follow these instructions will result in death or serious injury.

Contact your local Schneider Electric sales office if you detect any damage whatsoever.

Unpacking and Inspection

Proceed as follows:

Step	Action
1	Remove all packaging material carefully. Do not use sharp tools.
2	Check if drive and spare parts are not damaged.
3	Check if deliveries are consistent with the purchase order and the packing list.
4	Contact your local Schneider Electric sales office if you detect any damage whatsoever. The user must record any damage in detail, obtain a confirmation signature from the carrier, take photos.

▲ CAUTION

INCORRECT UNPACKING

Do not use sharp tools to open the packaging.

Failure to follow these instructions can result in injury or equipment damage.

End of Life / Disposal

The components of the product consist of different materials which can be recycled and which must be disposed of separately.

- Dispose of the packaging in compliance with all applicable regulations.
- Dispose of the components of the product in compliance with all applicable regulations.

Lifting and Transport

Verify the size and weight of ATV6100 to choose proper lifting equipment. It is required to have the general layout drawing which contains relevant dimensions and weight information of the product before it is transported.

▲ WARNING
<p>INCORRECT LIFTING AND HANDLING</p> <ul style="list-style-type: none"> • Lifting and handling must be performed by qualified personnel in accordance with the requirements of the site and in compliance with all pertinent regulations. • Use lifting and handling equipment appropriate for the load and take all necessary measures to avoid swinging, inclination, toppling and any other potentially hazardous conditions. • Verify that there are no persons or obstructions in the area of operation of the lifting and handling equipment. • Use a cross spreader to lift and handle the product. • To prevent possible damage to the frame of equipment from excessive compressive forces by lifting belts, ensure the angle is not less than 30°, additional spreader beams need be equipped if necessary. • During lifting and handling, do not exceed an acceleration of 0.1 m/s² and a speed of 6m/min. • Load swinging must be less than 6°. <p>Failure to follow these instructions can result in death, serious injury, or equipment damage.</p>

▲ WARNING
<p>FALLING EQUIPMENT</p> <ul style="list-style-type: none"> • Check the dimension and maximum gross weight of goods, select complaint and suitable lifting equipment. • Use lifting belts for lifting, prohibit the use of steel wire ropes, and use soft materials to protect and avoid damage to the shell during lifting. • Hoisting should be carried out in accordance with the requirements, and it is strictly prohibited to use the lifting belts directly or through the lifting holes to lift the cabinet body. • Pass lifting belts through the lifting rod respectively, and the horizontal angle α is not less than 30° during the work. • Lift the cabinet body 200 - 300 mm above the ground for trial lifting. Low height, short stroke trial lifting, and then smooth hoisting after no problem is found. • Do not stand near the equipment during lifting. <p>Failure to follow these instructions can result in death, serious injury, or equipment damage.</p>

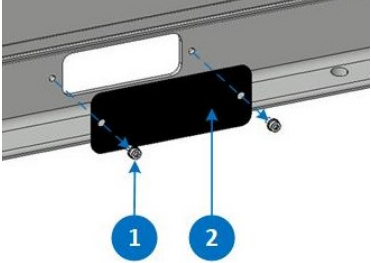
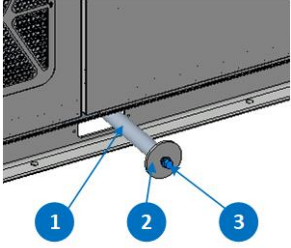
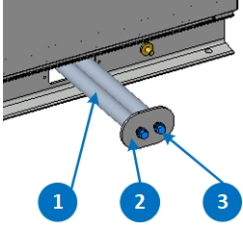
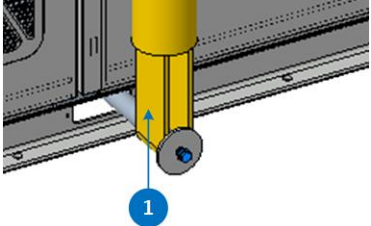
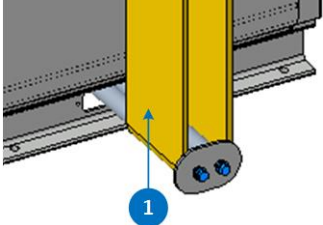
For the 11kV Size 5 drive transformer cabinet:

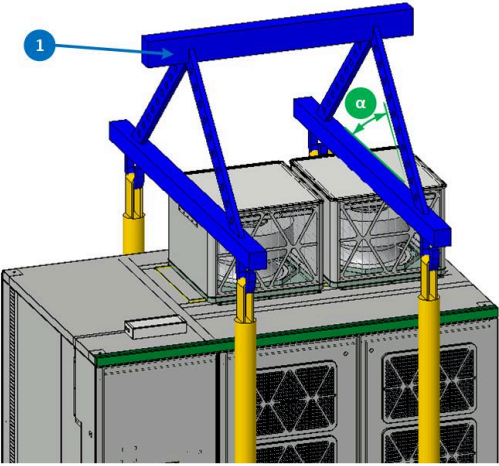

▲ WARNING
<p>TIP OVER HAZARD</p> <p>Never use a forklift to move the product.</p> <p>Failure to follow these instructions can result in death, serious injury, or equipment damage.</p>

Cabinet Lifting

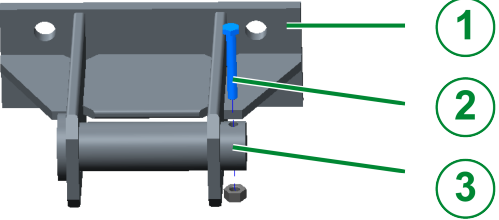
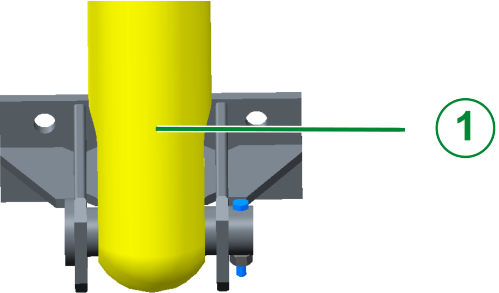
Lifting equipment and lifting belts are not part of the delivery and must be provided by the customer.

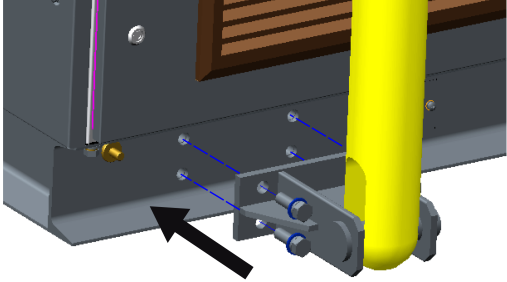
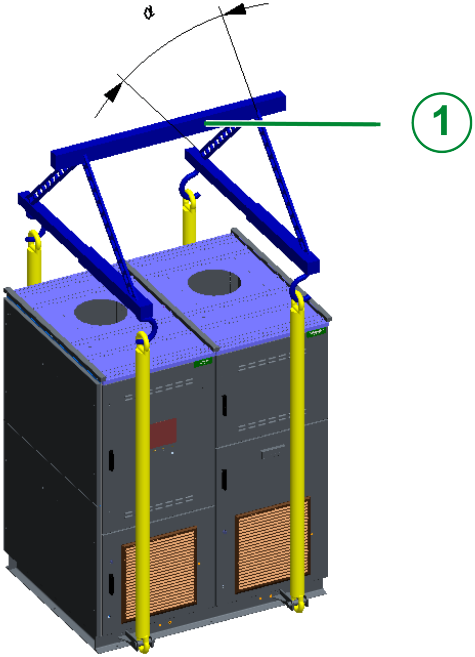

Scenario 1:

Mounting steps	Key points	Illustration
<p>Unscrew 2 * M6 screws from each lifting cover, remove all lifting covers from cabinet.</p>	<p>The screws and lifting covers must be kept for future installation.</p>	 <p>1 M6 screw 2 lifting cover</p>
<p>Insert the lifting rod, install lifting rod baffle with M16 screws. Refer to the tightening torque given in the Table 5-1, page 50.</p>	<p>Case 1: suitable for lifting objects less than 10t. Case 2: suitable for lifting objects greater than 10t and less than 20t.</p> <p>NOTE: Lifting device is packed in drive package.</p>	<p>Case 1: Single lifting device</p>  <p>Case 2: Double lifting device</p>  <p>1 Lifting rod (keep same distance between lifting rod baffle and base frame in the rear and the front side) 2 Lifting rod baffle 3 M16 screw</p>
<p>Install lifting belt.</p>	<p>Hoisting rod baffle is packed in drive package.</p>	<p>Case 1: Single lifting device</p>  <p>Case 2: Double lifting device</p> 

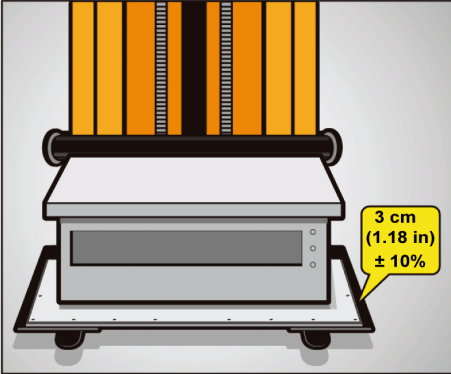
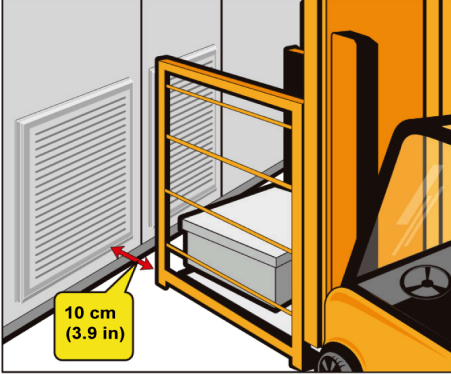
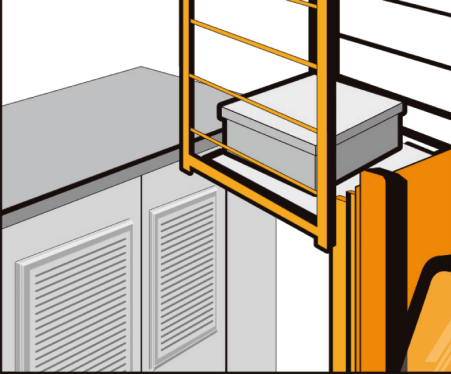
Mounting steps	Key points	Illustration
<p>Use 4 lifting belts to lift the cabinet to the final position.</p>	<p>The load bearing of each lifting must not be less than 20 tons of load capacity.</p>	<p>1 Lifting belt</p>  <p>α angle $\geq 30^\circ$</p> <p>1 lifting equipment</p>
<p>Take out the lifting belts and remove the lifting device, then reassemble lifting hole cover on the base frame.</p>		

Scenario 2:

Mounting steps	Key points	Illustration
<p>Unscrew the M8 screw, pull out the clevis pin.</p>	<p>4 lifting lugs is packed in drive package.</p> <p>NOTE: There are two sizes of lifting lugs : $\leq 10t$ and $\geq 10t$.</p>	 <p>1 Lifting lugs</p> <p>2 M8 screw</p> <p>3 Clevis pin</p>
<p>Insert the clevis pin within the lifting belt, secure the clevis pin with the M8 screw and nuts. Refer to the torque setting table</p>		 <p>1 Lifting belt</p>

Mounting steps	Key points	Illustration
<p>Remove the screws from base frame, assemble the lifting lugs on the base frame then tighten the screws. Refer to the torque setting table</p>	<p>M16 bolt for the drive which weight less than 10 tons, M20 for the drive which weight more than 10 tons.</p>	
<p>Use 4 lifting belts to lift the cabinet to the final position.</p>	<p>The load bearing of each lifting must not be less than 20 tons of load capacity.</p>	 <p>α: angle $\geq 30^\circ$</p> <p>1: lifting equipment</p>
<p>Remove the lifting lugs and take out the lifting belts, then reassemble the screws on the base frame.</p>		

Cooling Fan Lifting

Mounting steps	Key points	Illustration
<p>Move the assembled cooling fan on the forklift.</p>	<p>The distance must be more than 3 cm±10% between each outer side of forklift arm and the side edge of the fan.</p>	
<p>Transport the cooling fan to the cabinet using the forklift, forklift arms facing the front of the cabinet.</p>	<p>Keep the forklift front ends at least 10 cm from the cabinet.</p>	
<p>Lift the forklift arms to the same height as the cabinet top; stop the forklift, and then the worker on the cabinet top may move the cooling fan to the top of the cabinet.</p> <p>NOTE: Take appropriate measure to secure the position of the worker in compliance with your national and local safety regulations.</p>	<ol style="list-style-type: none"> 1. The lifting height of the forklift arms shall be at the same level of the cabinet top. 2. The worker can move the cooling fan only after the forklift has stopped. 	
<p>See cooling fan installation procedure Cooling Fan Installation, page 44</p>		

Mechanical Installation

General Notes on Mechanical Installation

Overview of Installation

NOTE: All pictures shown are for 3D illustration purpose only. Depending on the product chosen, product layout may vary.

Conductive foreign objects may cause parasitic voltage.

DANGER

ELECTRIC SHOCK AND/OR UNANTICIPATED EQUIPMENT OPERATION

- Keep foreign objects such as chips, screws or wire clippings from getting into the product.
- Verify correct seat of seals and cable entries in order to avoid deposits and humidity.

Failure to follow these instructions will result in death or serious injury.

Dimensions

Refer to the general layout drawing shipped with the drive for information on:

- Cabinet dimensions
- Maintenance space
- Foundation plan

Cabinet Surface

DANGER

ELECTRIC SHOCK

- Do not install any foreign device inside and outside the cabinet.
- Do not create any openings on the surface of the cabinet.

Failure to follow these instructions will result in death or serious injury.

Cabinets Fixed

Verify the drive cabinets are reliably fixed, the base of ATV6100 must be connected to the embedded channel steel by spot - welding.

Foundation Requirements

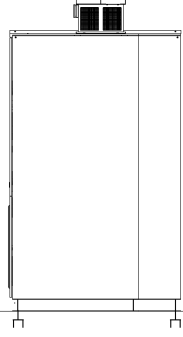
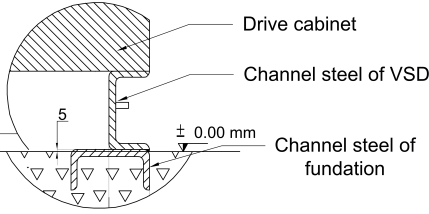
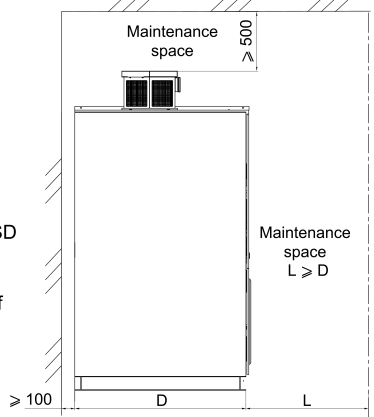
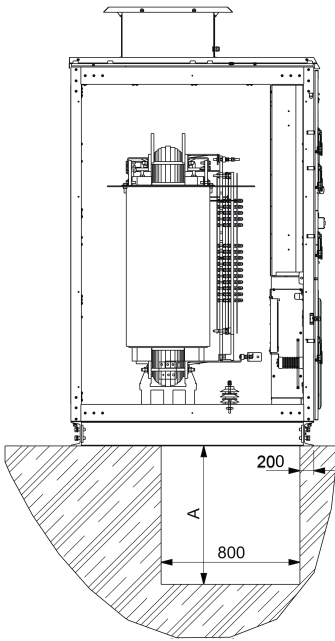
Foundation Requirements

Before installation, the foundation for positioning must be prepared by the user. The floor must be made of non-flammable material, with smooth and non-abrasive surface, protected against humidity diffusion, level, and able to support the cabinet.

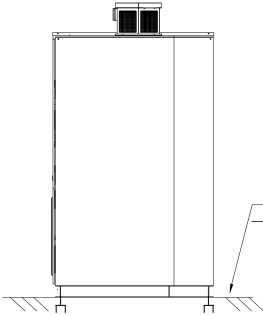
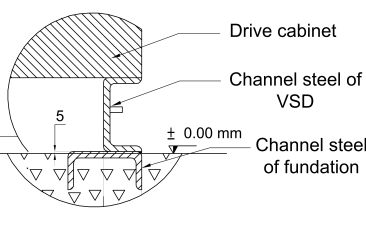
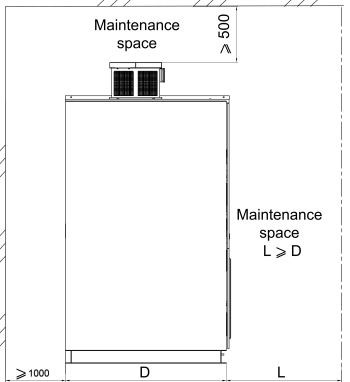
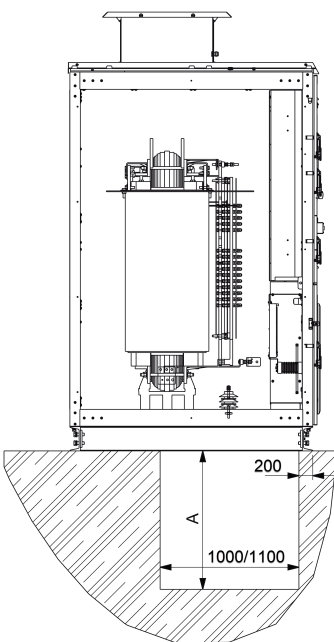
The suggestions for the foundation depend on your configuration.

NOTE: Cable trench has to be prepared for bottom-in cable connection.

Front access:

<p>1</p>	<p>The embedded channel steel must be 5 mm higher than the ground. In order to increase the stress area, the length of the embedded channel steel must be 400 mm longer than the base of the ATV6100 (200 mm longer for left and right sides respectively), the quality of the embedded channel steel installation must be guaranteed.</p> <p>Unit: mm</p> <div style="display: flex; justify-content: space-around;"> <div data-bbox="223 392 510 795"> <p>Right side</p>  </div> <div data-bbox="526 481 957 750"> <p>Detail of foundation</p>  </div> <div data-bbox="941 313 1316 795"> <p>Left Side</p>  </div> </div> <p>Figures 4-1 Foundation plan</p> <p>NOTE: The channel steel of VSD must be aligned with channel steel of foundation.</p>
<p>2</p>	<p>Cable ducts should be of non-flammable material and of a non-abrasive surface. All cable entries and exits should be protected against dust, humidity, and animals entering into the drive. Suitable fire protection measures should be applied to prevent fire from the drive.</p>
<p>3</p>	<p>Cable trench considerations</p> <p>Standard design of ATV6100 is for cable entry from bottom (cable entry from top is available as option).</p> <p>Therefore a corresponding cable trench has to be prepared for appropriate cable connection.</p> <p>Unit: mm</p> <div style="text-align: center;">  </div> <p>A) The depth of cable trench is depending on the required bending radius of the used cable type and cross section.</p>

Front & Rear access:

<p>1</p>	<p>Depending on the model, the drive may require a 600 mm rear access for maintenance.</p> <p>The embedded channel steel must be 5 mm higher than the ground. In order to increase the stress area, the length of the embedded channel steel must be 400 mm longer than the base of the ATV6100 (200 mm longer for left and right sides respectively), the quality of the embedded channel steel installation must be guaranteed.</p> <p>Unit: mm</p> <div style="display: flex; justify-content: space-around;"> <div data-bbox="247 425 510 806"> <p>Right side</p>  </div> <div data-bbox="526 515 893 806"> <p>Detail of foundation</p>  </div> <div data-bbox="925 358 1276 806"> <p>Left Side</p>  </div> </div> <p>Figures 4-2 Foundation plan</p> <p>NOTE: The channel steel of VSD must be aligned with channel steel of foundation.</p>
<p>2</p>	<p>Cable ducts should be of non-flammable material and of a non-abrasive surface. All cable entries and exits should be protected against dust, humidity, and animals entering into the drive. Suitable fire protection measures should be applied to prevent fire from the drive.</p>
<p>3</p>	<p>Cable trench considerations</p> <p>Standard design of ATV6100 is for cable entry from bottom (cable entry from top is available as option).</p> <p>Therefore a corresponding cable trench has to be prepared for appropriate cable connection.</p> <p>Unit: mm</p> <div style="text-align: center;">  </div> <p>A) The depth of cable trench is depending on the required bending radius of the used cable type and cross section.</p>

Cabinet Installation

Typical ATV6100 consists of two cases:

- Front access drive with the whole cabinet
- Front & Rear access drive with transformer cabinet+ power cell cabinet and control cabinet

The ATV6100 is disassembled into different parts according to cabinets:

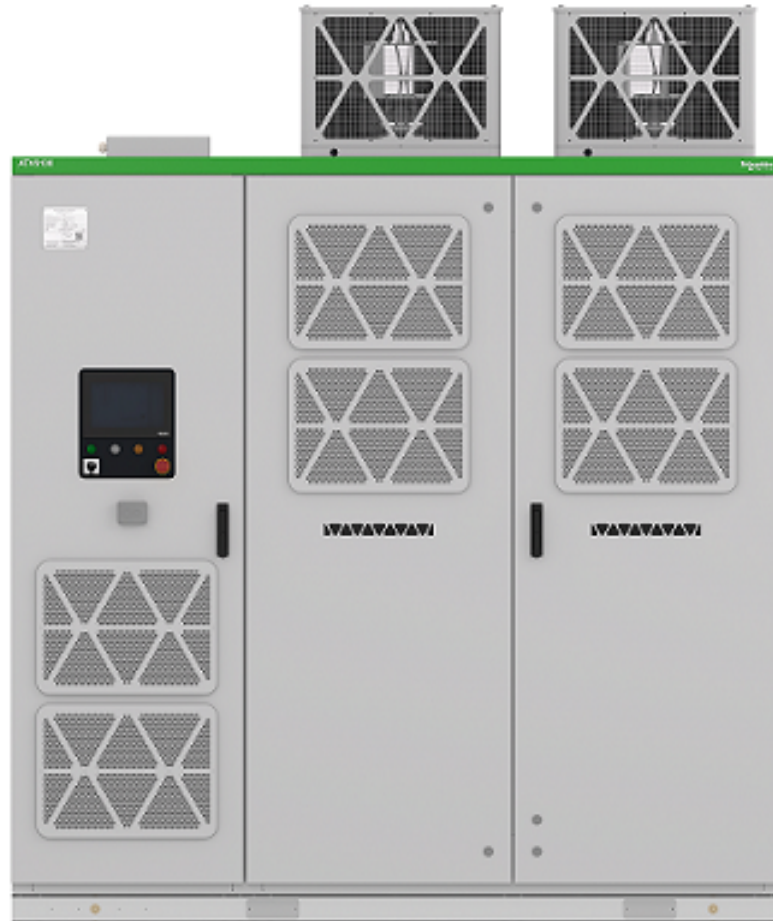


Figure 4-3 Front view of ATV6100 whole cabinet

Cabinet Combination

Before mounting the cabinets on the base by anchor bolts, the cabinets need to be combined.

⚡ ⚠ DANGER

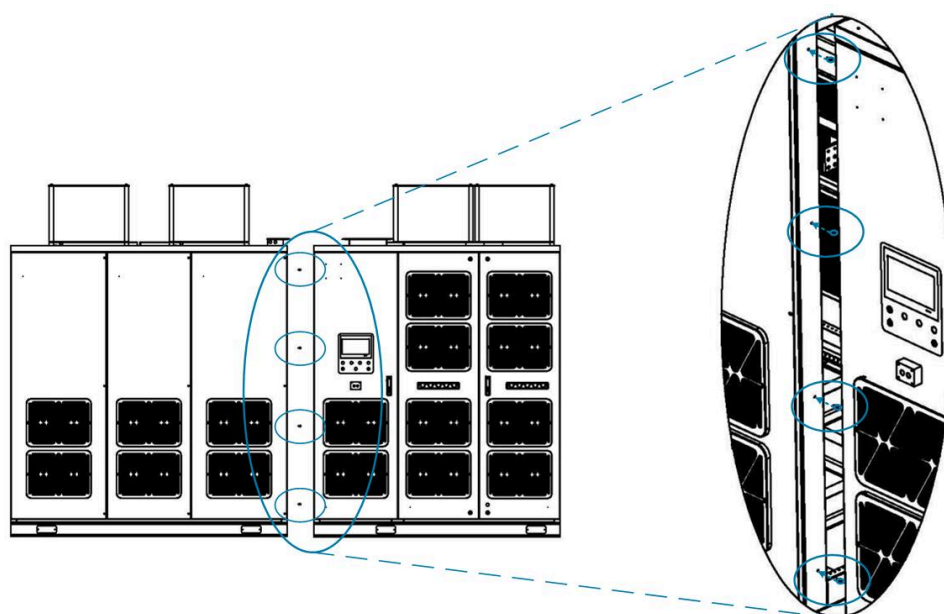
ELECTRIC SHOCK CAUSED BY INSUFFICIENT GROUNDING

- Join all cabinets by means of the bolts provided with the drive system as shown in the figures below.
- Fasten the bolts with the tightening torques specified in this document.

Failure to follow these instructions will result in death or serious injury.

The connection between transformer cabinet and power cell cabinet must be precisely adjacent to help ensure that the doors can easily be opened and closed:

Between transformer cabinet and control cabinet:



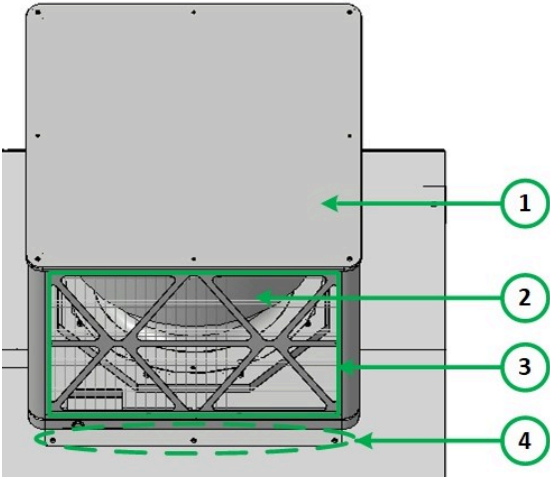
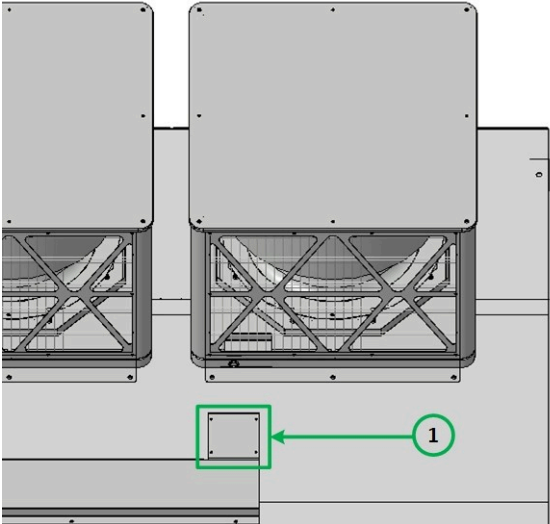
8* M8 bolts are fixed to the cabinet (half is for the back of cabinet), according to the tightening torque given in the Table 5-1, page 50.

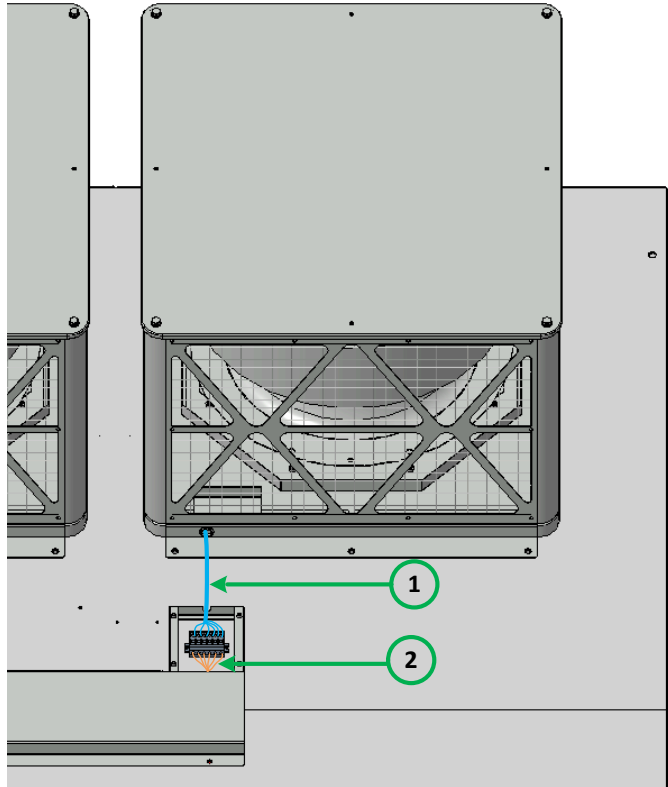
- Units must be welded to the channel steel embedded in the concrete.
- Verify that the electrical resistance of the channel steel embedded in the concrete is equal to or less than 1 Ohm.

NOTE: After taking the measurement, it was found that the cabinet door can open to an angle of up to 110 degrees, and the control frame can be set to a maximum of 100 degrees.

Cooling Fan Installation

For convenience during transportation, cooling fans (fan housing included) are packed individually. Carefully distinguish power cell cabinet cooling fans and transformer cabinet cooling fans according to drawings and labels before installing cooling fans.

Step	Action
1	<p>Mount the cooling fan on the top of cabinet:</p> <p>Use 6 * M8 bolts (contained in the spare parts box) to fasten the fan housing, according to the tightening torque given in the Table 5-1, page 50.</p>  <p>1 Fan housing 2 Cooling fan 3 Front air outlet 4 3 * M8 bolts (the other 3 bolts for rear side)</p> <p>NOTE:</p> <ul style="list-style-type: none"> • For Size 1 & Size 2, air outlet for cooling fan towards the front of the cabinet. • For Size 3 to Size 5, air outlet for cooling fan toward the back of the cabinet. <p>NOTE: To accommodate changes in the air inlet direction, rotate the fan 180°, ensuring that the cable is repositioned to the backside for wiring before the rotation to maintain its relative position.</p>
2	<p>Remove the protection cover of terminal (4* M4 bolts)from top of cabinet and keep it.</p>  <p>1 Protection cover</p>

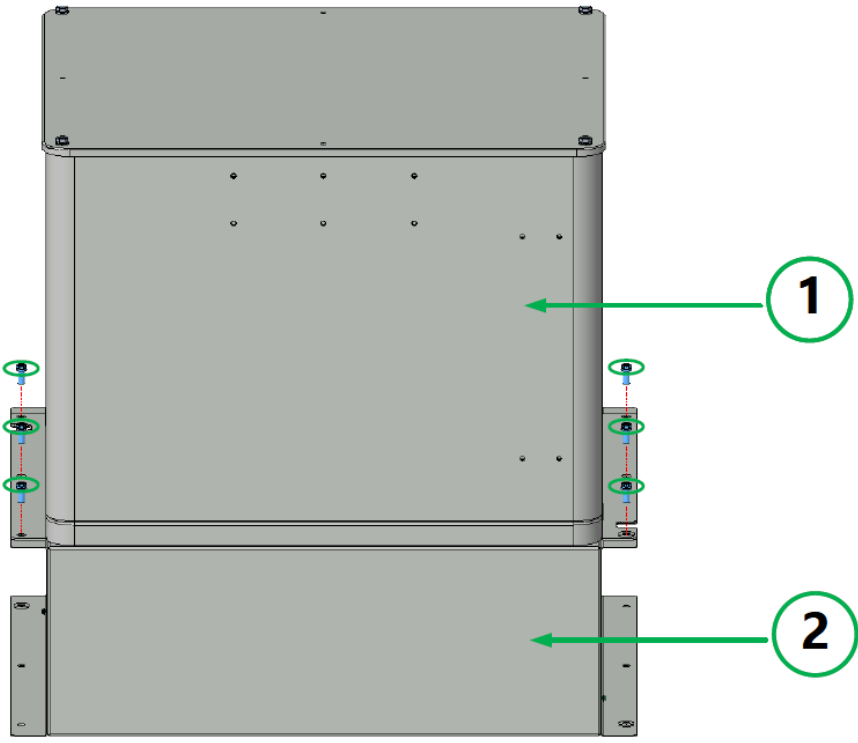
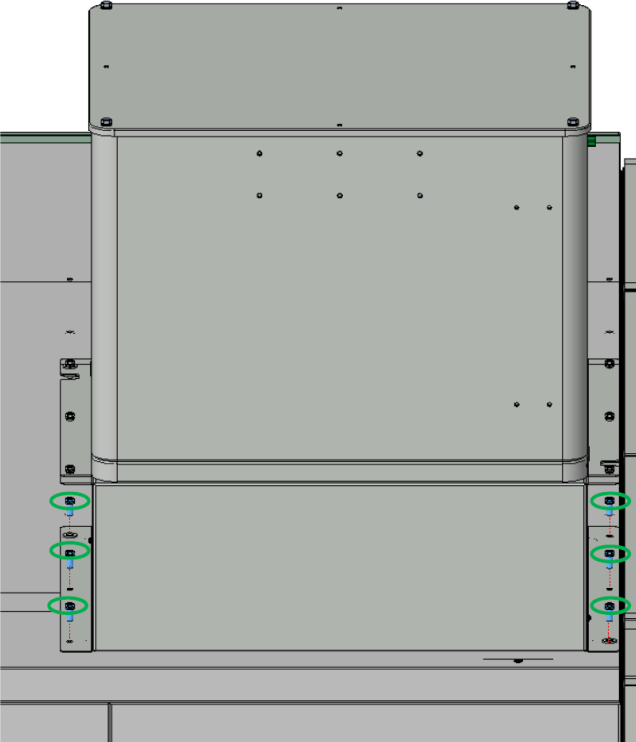
Step	Action
3	<p>Connect fan wire with terminal (the wirings according to the drawings in the drive package).</p>  <p>1 Fan wire 2 Power wire</p>
4	Reinstall the protection cover of terminal with 4* M4 bolts.

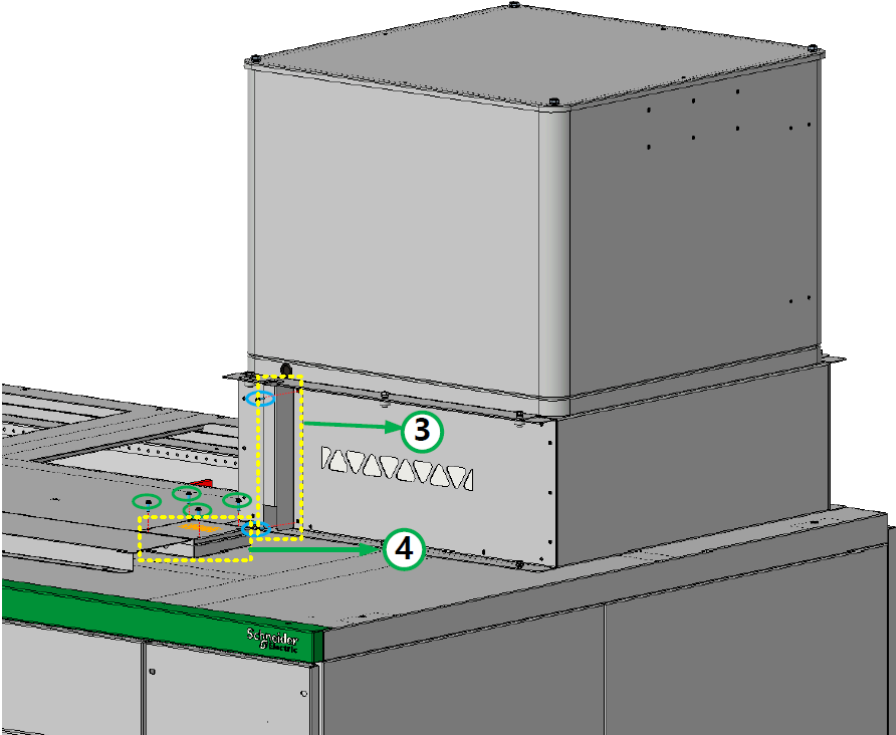
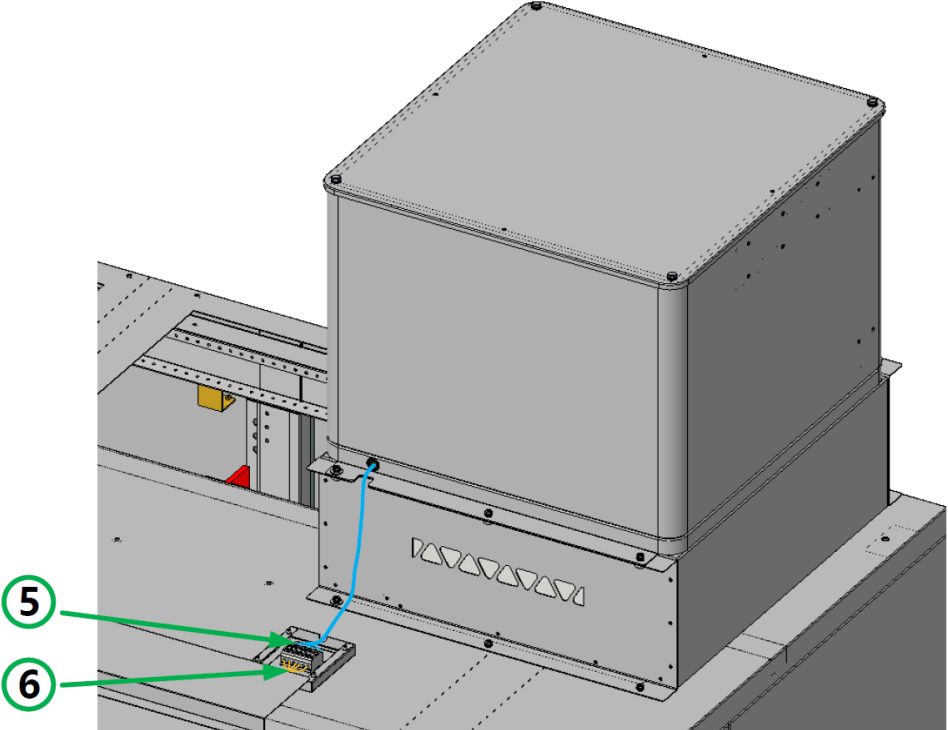
Fan Type	Size (W * H * D) mm(in)	Weight in kg (lb)
400	600 * 449 * 676 (23.62 * 17.68 * 26.61)	41(90)
450	600 * 449 * 676 (23.62 * 17.68 * 26.61)	47(103)
500	660 * 505 * 766 (25.98 * 19.88 * 30.16)	58(127)
560	660 * 505 * 766 (25.98 * 19.88 * 30.16)	59(129)

NOTE: The service life of cooling fan will be reduced if the working temperature is more than 40°C (104°F). This information can be provided by Schneider Services depending on the local environment conditions.

Fan shutter Installation

For convenience during transportation, fan shutter are packed individually.

Step	Action
1	<p>Assemble the fan and fan shutter, (6 * M8 bolts) according to the tightening torque given in the the table 5-1, page 50.</p>  <p>The diagram shows a side view of a fan house assembly. A green arrow labeled '1' points to the upper section, and another green arrow labeled '2' points to the lower section. On the left and right sides, there are vertical assemblies of bolts and nuts, with green circles highlighting the bolt heads. Red dashed lines indicate the alignment of the bolts.</p> <p>1: Fan house 2: Fan shutter</p>
2	<p>Mount the fan shutter on the top of cabinet, (6 * M8 bolts) according to the tightening torque given in the the table 5-1, page 50.</p>  <p>The diagram shows a side view of a cabinet with the fan shutter mounted on top. Green circles highlight the six M8 bolts used for mounting, arranged in two vertical columns of three on each side. Red dashed lines indicate the alignment of the bolts.</p>

Step	Action
3	<p>Remove the protection cover of terminal(4 * M4 bolts) from top of cabinet and keep it. Remove the protection cover of fan wire (2 * M5 bolts) from fan shutter and keep it.</p>  <p>3: Protection cover of terminal 4: Protection cover of fan wire</p>
4	<p>Connect fan wire with terminal (the wirings according to the drawings in the drive package).</p>  <p>5: Fan wire 6: Power wire</p>
5	<p>Reinstall the protection cover of terminal with 4 * M4 bolts. Reinstall the protection cover of fan wire with 2 * M5 bolts.</p>

Power Cell Installation

Markings Specification

NOTICE

IMPROPER CONNECTION AND LAYOUT

- The head of the optical fiber and its socket must be clean and fixed. Never pull or bend it. Bending radius no less than 50 mm.
- The Color of the optical fiber heads and sockets must be the same.

Failure to follow these instructions can result in equipment damage.

Step	Action
1	Each power cell is marked with a part reference, for example: APVa1, APVa2..., APVb1, APVb2..., APVc1, APVc2..., which indicates the location of the cell in the system: e.g. APVa1 is the marking of the first cell of L1/A phase.
2	Each power cell has 2 fuses, 2 optical fiber sockets (TX, RX) and 3 input terminals. Each terminal is marked with L1-LV, L2-LV, L3-LV, which indicates the input terminals of each phase.

Power Cell Installation

⚡⚠ DANGER

HAZARD OF FIRE OR ELECTRIC SHOCK

Tightening torques must comply with the specifications provided in this document.

Failure to follow these instructions will result in death or serious injury.

Step	Action
1	Connection between the power cells: Connect the terminal V with terminal U between two adjacent power cells using a copper bar, according to the tightening torque given in the Table 5 –1, page 50. The power cells of the same phase are connected in series. See the drawing in step 2: Figure 4-7.
2	Communication wirings connection used to connect the power cell and master controller: Insert the optical fiber cables.

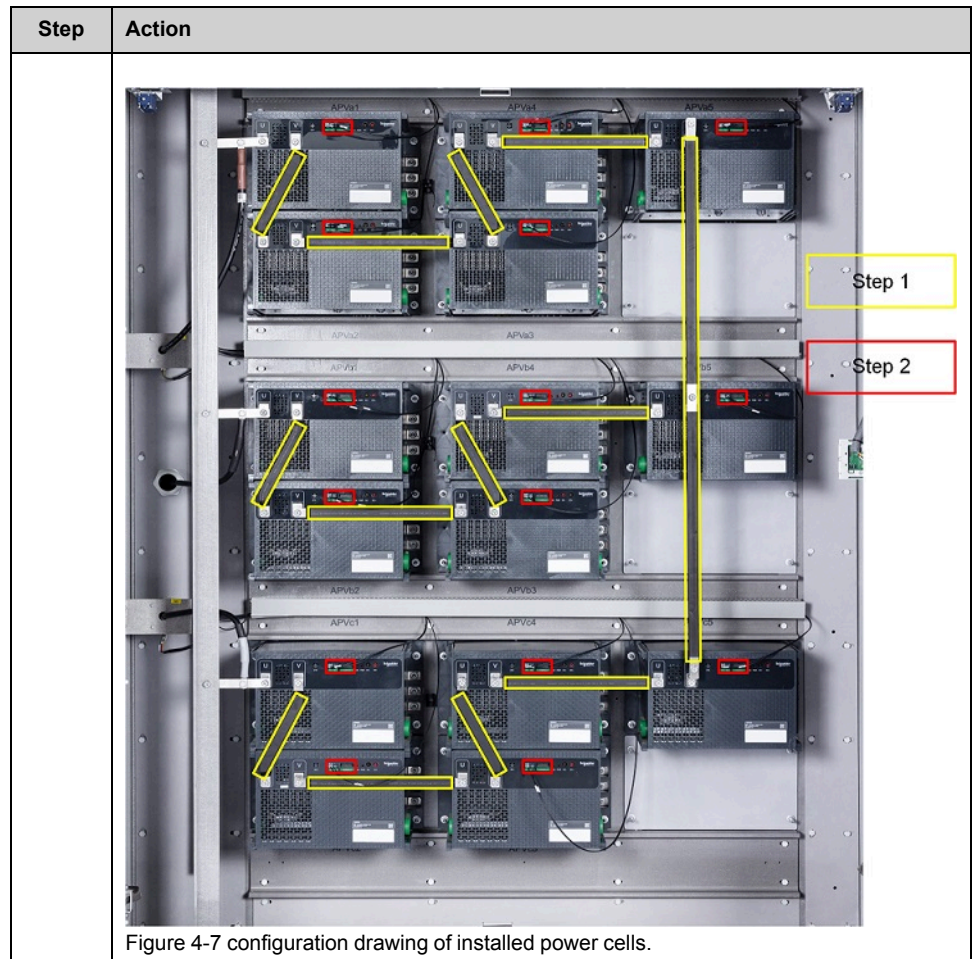
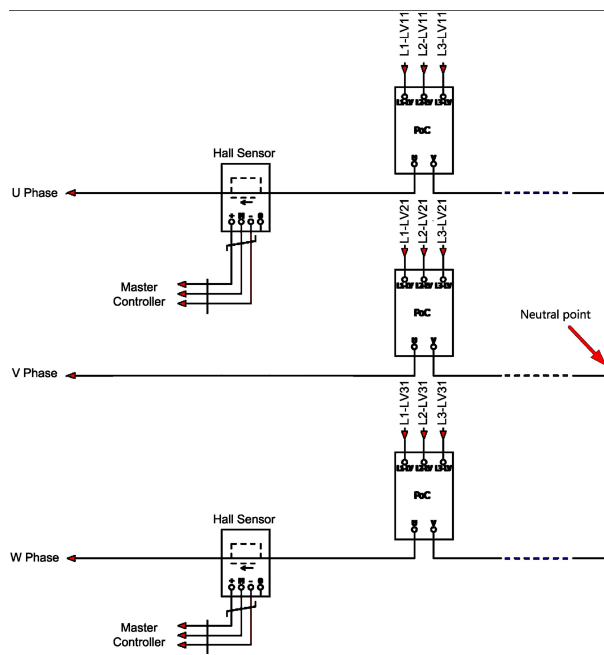


Figure 4-7 configuration drawing of installed power cells.

3 Connection between the neutral points: The output terminal V of each power cell at the end of every phase is connected at neutral point using cables or a copper bar, according to the tightening torque given in the Table 5 –1, page 50. See the drawing as below step 4.

4 Connection of output cables: Connect the terminal U of the power cells which is the first one in each phase with output cables, the hall sensor should be mounted with a cable/ copper bar passing through it. See the drawing as below.

NOTE: Plug the connectors of hall sensor to the Master controller terminal.



NOTE: For details refer to the drawing delivered in the drive package.

Electrical Installation

General Notes on Electrical Installation

Overview of Installation

NOTE: All pictures shown are for 3D illustration purpose only. Depending on the product chosen, product layout may vary.

⚡⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION OR ARC FLASH

- Read and understand the instructions in "Safety Information" chapter before performing any procedure in this chapter.
- When the electrical installation is completed, the mains and auxiliary power supply to the drive must not be switched on without the approval of the commissioning personnel.

Failure to follow these instructions will result in death or serious injury.

NOTE: Frequent power-on of the drive should be avoided. For more information, please contact your local Schneider Electric representative.

Tightening Torque on Mechanical Assembly

- Tightening torque settings (table 5-1)

Torque Setting Table		
Bolt dimension	Mechanical assembly	
	N·m	lbf·in
M3	0.8	7.1
M4	1.2	10.6
M5	3.3	29.2
M6	5.5	48.7
M8	13.5	119.5
M10	27	238.9
M12	45	398.2
M16	130	1150.4
M20	250	2212.4

NOTE:

- 1lbf.in = 0.113 N.m
- 1 N.m = 8.85 lbf.in
- The maximum deviation of the torque applied should be no more than $\pm 10\%$.

NOTE: Use torque screwdriver for tightening of terminal connections



Grounding Connection

Overview

⚡ ⚠ DANGER

ELECTRIC SHOCK CAUSED BY INSUFFICIENT GROUNDING

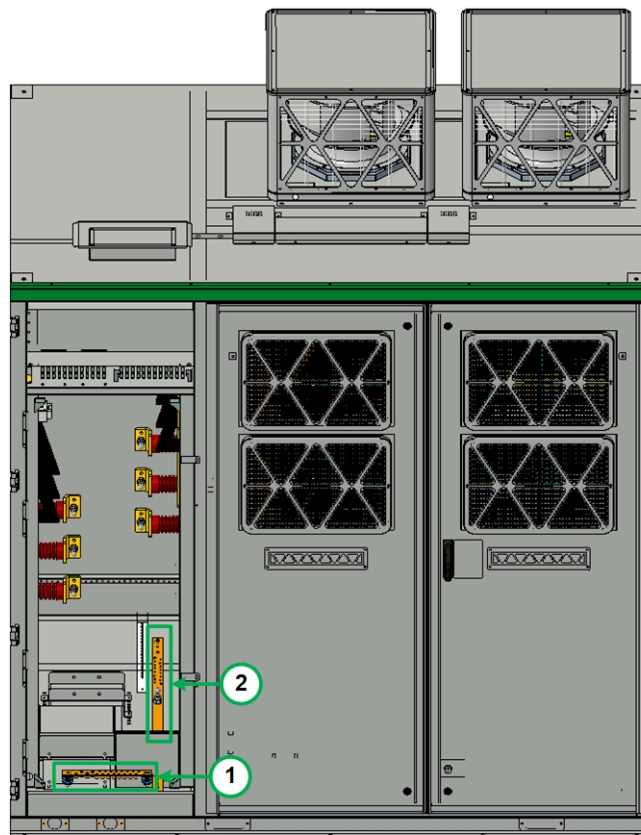
- Verify compliance with all local and national electrical code requirements as well as all other applicable regulations with respect to grounding of the entire device.
- Ground the device before applying voltage.
- The cross section of the protective ground conductor must comply with the applicable standards.
- Do not use conduits as protective ground conductors; use a protective ground conductor inside the conduit.
- Do not consider cable shields to be protective ground conductors.

Failure to follow these instructions will result in death or serious injury.

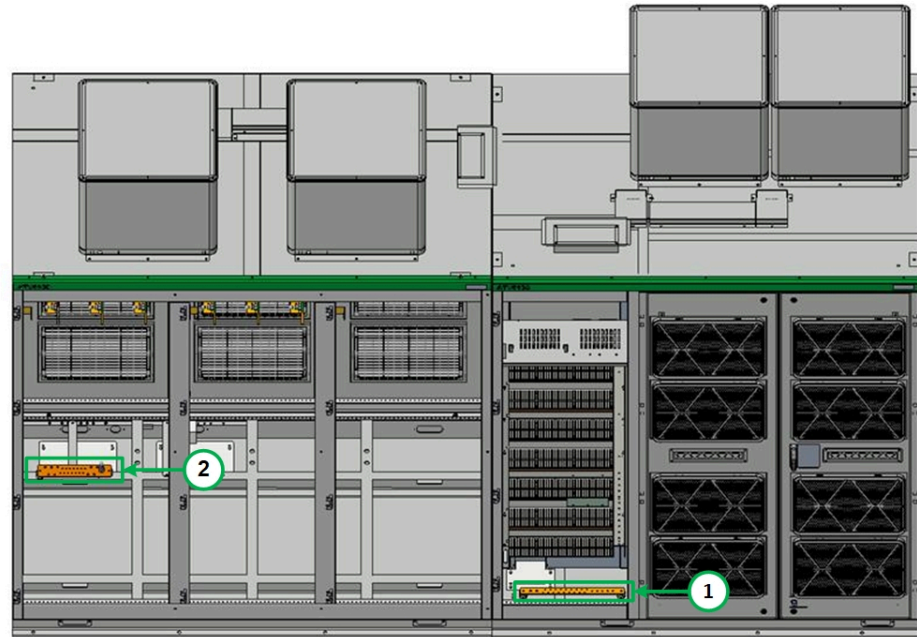
For ATV6100 cabinet, two PE bars for grounding are available as shown below. For each PE bar, there are different type terminals for customer connection, follow the tightening torque given in the Table 5 –1, page 50.

- **Control cabinet:** 7* M6 terminals
- **Transformer cabinet:** 4* M6 terminals, 5* M10 terminals

Front access drive:



PE Bar 1: inside control cabinet
PE Bar 2: inside transformer cabinet

Front & Rear access drive:

PE Bar 1: inside control cabinet

PE Bar 2: inside transformer cabinet

Protective Grounding (ground cable provided by customer)

PE Bar 1 & 2: Connect to ground electrode (customer side) by ground cable.

Use a M10 bolt to fasten the ground cable, according to the tightening torque given in the Table 5 –1, page 50.

Cross-Section:

The cross-section of the ground cable and the ground connection must be in compliance with national and local electrical codes. In addition, it needs to be meet minimum short circuit current 31.5kA/150ms:

- Cross-section of ground cable: at least half of mains cable with a minimum cross-section of ground cable of **50 mm²**.

Grounding resistance:

The grounding resistance has to be checked must be in compliance with national and local electrical codes. At least the value for the grounding resistance has to be less than 1 ohm.

Power Cable Shields Grounding

Cable shields must be connected to the PE bars.

PE bar 1:

- Connect the screen ends of the shield of mains cable

PE bar 2:

- Connect the screen ends of the shield of motor cable

External Power cabling

Overview

⚠️ ⚠️ DANGER

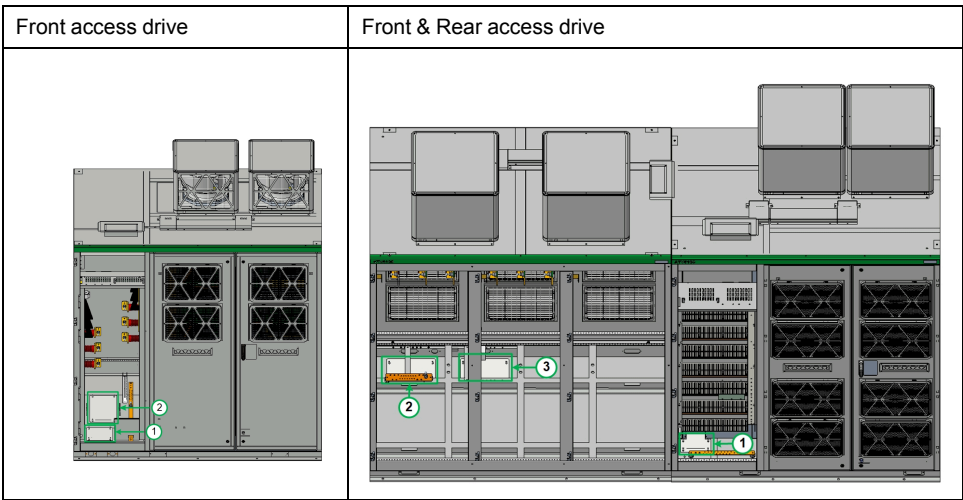
HAZARD OF ELECTRIC SHOCK OR EXPLOSION

- Before drilling the holes from the dismantable aluminum plate, make sure that the aluminum plate is separated from the cabinet.

Failure to follow these instructions will result in death or serious injury.

On the baseplate of transformer and control cabinet, there are dismantable aluminum plates for easy onsite installation.

- **Front access drive** : 2 dismantable aluminum plates
- **Front & Rear access drive** : 3 dismantable aluminum plates



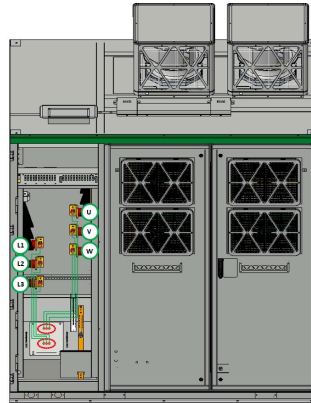
Step	Action
1	Remove the dismantable aluminum plate (4 M10 nuts) from the cabinet and keep them.
2	Drill proper size hole to fit diameter of cable gland corresponding to the cable.
3	Install suitable cable glands to achieve the corresponding degree of protection and to help avoid damaging the insulation of the cables.
4	Pass the cables through the aluminum plate.
5	Install the aluminum plate (4 M10 nuts).

NOTE: Fireproofing mud or epoxy resin is needed to seal the holes. The fireproofing mud and epoxy resin are not provided.

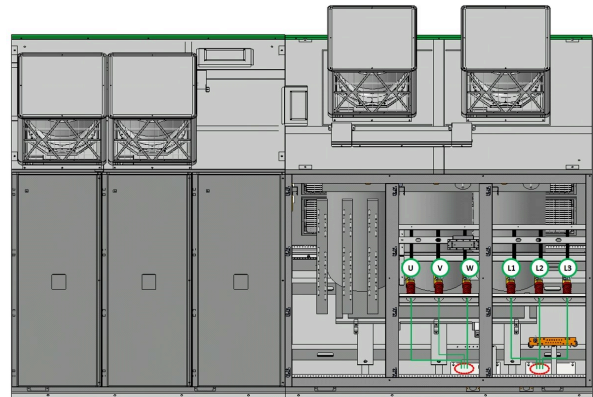
Mains cables and motor cables wiring

Standard: Bottom in/ Bottom out

Front access drive



Front & Rear access drive

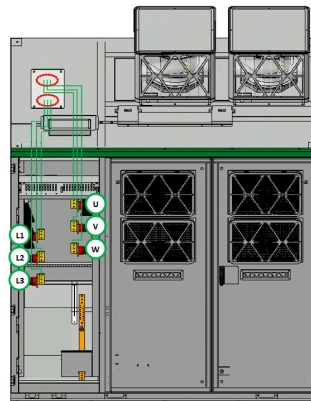


L1-L2-L3 Mains cables wiring
U-V-W Motor cables wiring

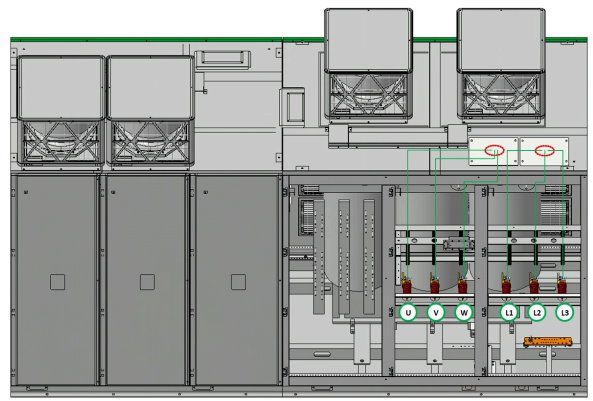
Use a M10 bolt to fasten the mains and motor cables, according to the tightening torque given in the Table 5 –1, page 50.

Option: Top in/ Top out

Front access drive



Front & Rear access drive



L1-L2-L3 Mains cables wiring
U-V-W Motor cables wiring

Use a M10 bolt to fasten the mains and motor cables, according to the tightening torque given in the Table 5 –1, page 50.

Option: Top in/ Bottom out

Front access drive

Front & Rear access drive



L1-L2-L3 Mains cables wiring
U-V-W Motor cables wiring

Use a M10 bolt to fasten the mains and motor cables, according to the tightening torque given in the Table 5 –1, page 50.

Cable preparation

Conductive foreign objects in the product may cause parasitic voltage.

⚠ ⚠ DANGER

ELECTRIC SHOCK AND/OR UNANTICIPATED EQUIPMENT OPERATION

- Keep foreign objects such as screws or wire clippings or any other type of residue from getting into the cabinet.
- Verify correct seat of seals and cable entries in order to avoid deposits and humidity.

Failure to follow these instructions will result in death or serious injury.

NOTE: For power cabling, screened cables should be used.

Cable lugs:

Mount cable lugs suitable for M10 bolts. Cables must be terminated with lugs according to the specification of the cable manufacturer. Connect the cables to their corresponding busbars:

- The mains cable wires to **L1/L2/L3** copper bar
- The motor cables to **U/V/W** copper bar

Table section for mains/motor cables – CE Standard –

Drive nominal continuous current	Minimum cross section for mains cable (3 core, armoured)		Minimum cross section for motor Cable (3 core, armoured)	
	mm ²	AWG	mm ²	AWG
100 A	95	000 (3/0)	25	4
170 A	95	000 (3/0)	35	2
205 A	95	000 (3/0)	50	0
255 A	95	000 (3/0)	70	00 (2/0)
305 A	95	000 (3/0)	95	000 (3/0)
345 A	120	0000 (4/0)	120	0000 (4/0)
410 A	185	350MCM	185	350MCM
510 A	240	500MCM	240	500MCM
700 A	120*2	2*0000	120*2	2*0000
780 A	150*2	2*300MCM	150*2	2*300MCM
885 A	185*2	2*350MCM	185*2	2*350MCM
1025 A	240*2	2*500MCM	240*2	2*500MCM
1045 A	120*3	3*0000	/	/
1175 A	150*3	3*300MCM	/	/

NOTE:

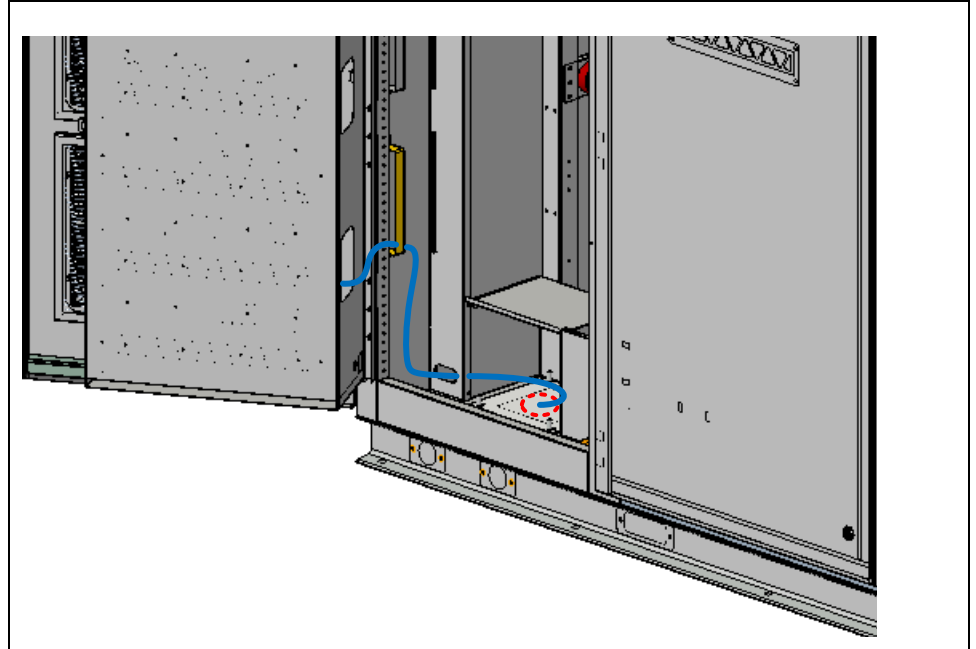
- The cross sections in the table are based on underground cabling at 20°C ambient temperature and for normal duty overload. If you have deviating conditions, the cross section must be recalculated accordingly
- For the mains cable side, the maximum short circuit capability is 31.5kA/150ms.
- Recommended cable type is Cu/XLPE/SC/SWA/PVC from Huacheng brand.
- Cross section for CSA must be dimensioned according to CSA standard and your application.

Auxiliary Power cabling

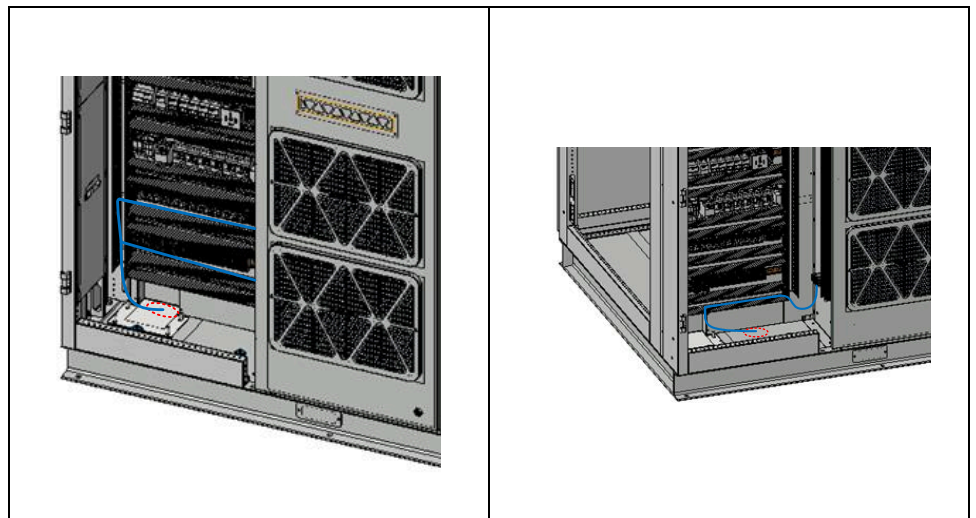
Cable Routing

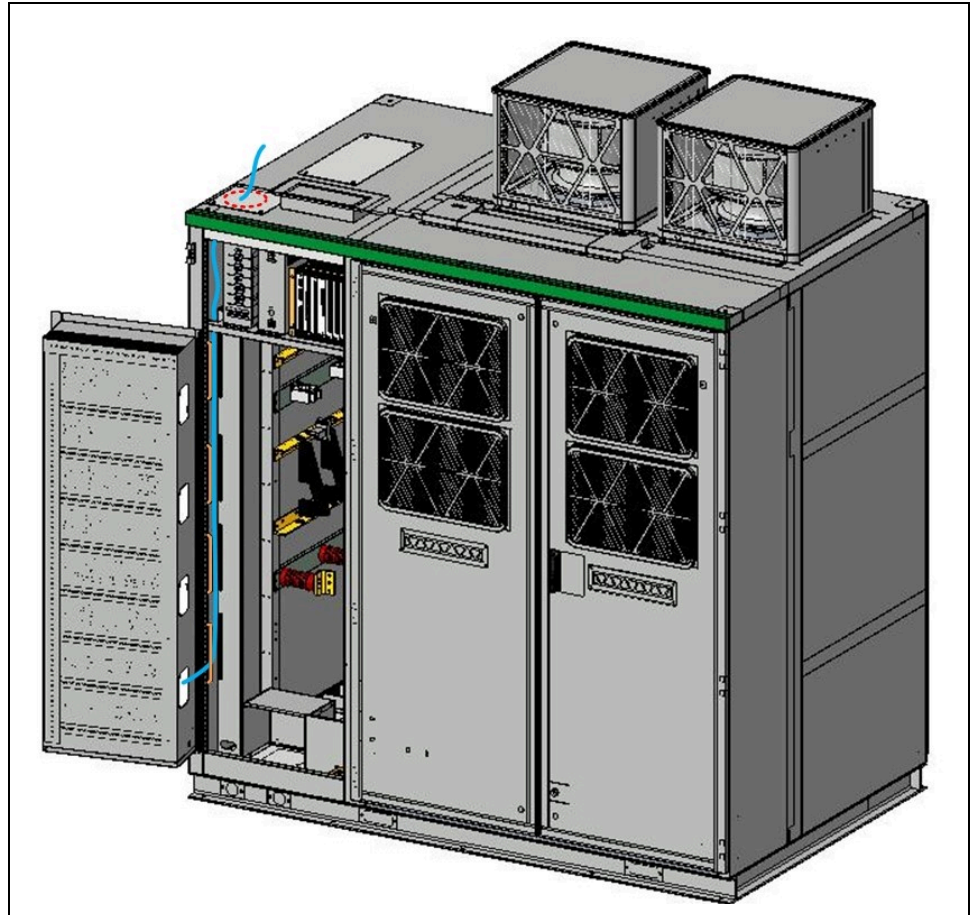
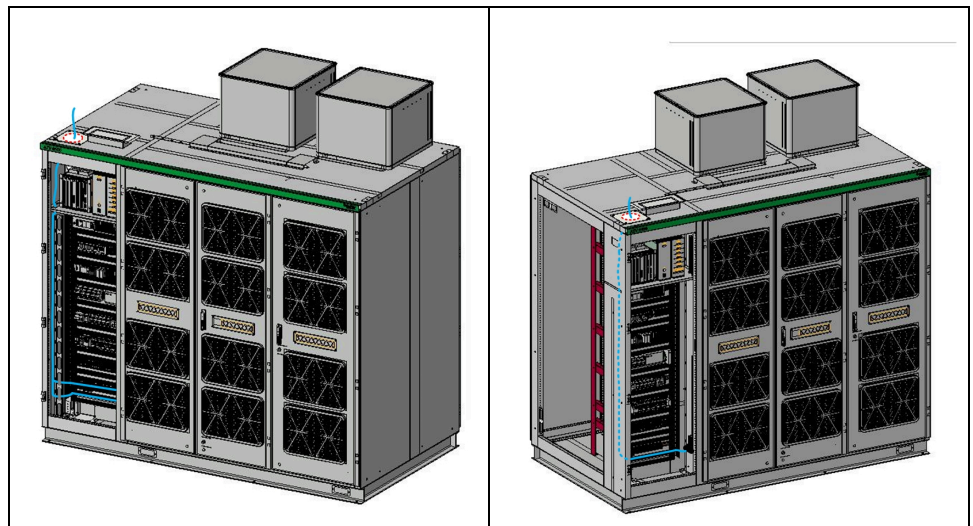
Standard: Bottom in

Front access drive



Front & Rear access drive



Option: Top in**Front access drive****Front & Rear access drive**

Determining the cable length

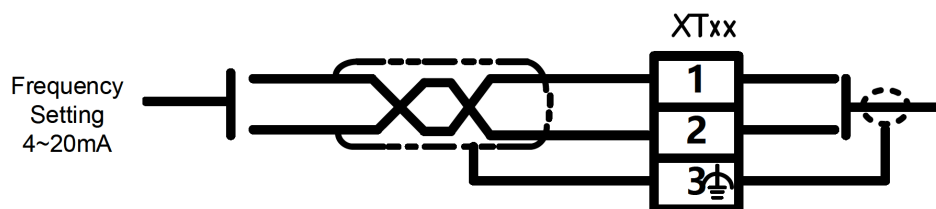
Determine the required length of a cable between the point of entry and the connection point inside the cabinet. Cut the cable to the required length before connection to avoid excess cable to be stored in the cable ducts. To open the cabinet doors more easily, an additional 15 to 20 cm should be added to the swivel frame cable length.

How to Mount Auxiliary Power Cable

Bottom entry

Step	Action
1	Remove the cover (M6 bolts) above the cable duct to facilitate cable routing.
2	Drill a proper hole from dismountable aluminum plate (refer to "External Power cabling" part).
3	Pass the cables through the aluminum plate.
4	Connect and tie the wires.
5	Install the cover with M6 bolts according to the tightening torque given in the Table 5 –1, page 50.

Shielded twisted-pair cable should be used for customer analog signal, digital input signal and fieldbus communication signal. Only one end of cable shielding should be connected to ground, either at drive side, to the nearby yellow-green ground terminal, or at customer automation system side. The diagram for customer reference signal cable connection part :



Add additional 2.5mm *2 ground terminals for customer digital input cable shielding and fieldbus communication shielding connection. Every 6 DI signals should be distributed with 1 ground terminal.

Types of Power supplies

⚡⚠ DANGER

RISK OF ELECTRIC SHOCK

- Use appropriate Residual Current Device (RCD) for auxiliary and control power supplies.
- Use only Control Power Supply Overvoltage Category III.

Failure to follow these instructions will result in death or serious injury.

Type 1: 230 V Control and Auxiliary Power Supply

1	Control Power Supply - Terminal XT10 (provided by customer, available in option)	Offer provides the uninterruptible power for all the LV control circuits.
2	Auxiliary Power Supply - Terminal XT15 (provided by customer)	Powers all cubicle lamps of cabinets and auxiliary electric device.

Type 2: 400 V Fan Power Supply

1	Fan Power Supply - Terminal XT15 (provided by customer, available in option)	Powers all fans of cabinets.
---	---	------------------------------

NOTE: If internal fan power supply option is delivered, no need for external fan power supply.

Power Supply Requirement for Customer

Type	Control Power Supply	Auxiliary Power Supply	Fan Power Supply
Voltage	100...240 Vac ± 10 % (47...63 Hz) 124 - 370Vdc	230 Vac ± 10 %	400 Vac ± 10 %
Capability	1.4kVA(nominal input current ≤420A); 2.3kVA(nominal input current > 420A).	1kVA (depends on options)	See schematic (delivered with drive)
Wire Range	Single flexible conductor with ferrule with plastic sleeve: 0.25mm ² -2.5mm ² (23 AWG - 13AWG). Single flexible conductor with ferrule without plastic sleeve: 0.25mm ² -4mm ² (23 AWG - 11 AWG).		Single flexible conductor with ferrule: 1.5mm ² -16mm ² (15 AWG - 5 AWG).

Wiring

NOTE: Refer to the drawing that will be shipped with the drive.

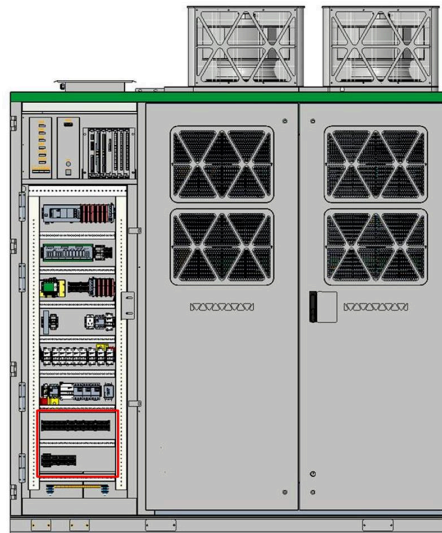
Control cabling

Control cables should not be laid in parallel to the power cables. If this cannot be avoided, a minimum distance of 30 cm must be maintained between control and power cables. Control and power cables should be crossed at an angle of 90°.

Input / Output Connection

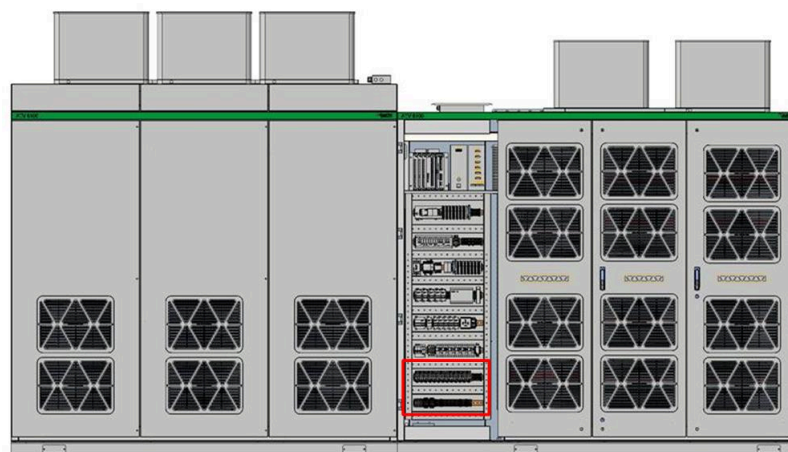
It is located in the control cabinet of drive.

Front access drive



NOTE: The cable routing same with Auxiliary power cabling part, page 57 More details refer to the drawing that will be shipped with the drive.

Front & Rear access drive



NOTE: The cable routing same with Auxiliary power cabling part, page 57 More details refer to the drawing that will be shipped with the drive.

Control Terminals Electrical Data

Characteristics of Terminals

NOTE:

- For a description of the terminal arrangement, refer to the Interface Diagram
- For factory setting I/O assignment, refer to the Programming manual.
- For tightening torque refer to the Table 5 –1, page 50.

LV Pre-charge:

Customer terminal strips	Terminal	Description	I/O Type	Electrical characteristics
X10:1	L	External secured control power supply	I	External secured control power supply <ul style="list-style-type: none"> • single phase • 100~240 Vac \pm 10 % • 1.8 kVA capacity, depending on drive reference
X10:2				
X10:3				
X10:4				
X10:5	PE			
X11:1	L	External auxiliary power supply	I	External auxiliary power supply <ul style="list-style-type: none"> • single phase • 230Vac\pm10% • 1 kVA capacity for standard configuration
X11:2				
X11:3				
X11:4				
X11:5	PE			
X15:1	L1	External energize / fan power supply	I	External energize / fan power supply <ul style="list-style-type: none"> • three phase • 400Vac\pm10% • capacity depending on drive reference
X15:2	L2			
X15:3	L3			
X15:4	PE			
X16:1	I15	Digital input	I	9 programmable logic inputs 24 Vdc, comply with EN IEC 61131-2 logic type 1 <ul style="list-style-type: none"> • Positive logic (Sink): State 0 if \leq 5 Vdc or logic input not wired, state 1 if \geq 15 Vdc • Impedance 4.7 kΩ • Maximum voltage: 28.8 Vdc
X16:2	I16			
X16:3	I17			
X16:4	I18			
X16:5	I19			
X16:6	I21			
X16:7	I22			
X16:11	I23			
X16:21	I9			
X16:22	I4			
X16:12	+24V			Output supply for digital inputs
X16:13				
X16:14				
X16:15				
X16:16				

Customer terminal strips	Terminal	Description	I/O Type	Electrical characteristics
X16:17				
X16:18				
X16:19	+24V	POE input	I	Customer power output enable input
X16:20	PLCD7			
X16:8	Customer mains power off	Customer mains power off input	I	Customer mains power off input It is connected in series with the mains power off button on the cabinet door.
X16:9				
X16:10				
X12:1	Q5/K1	NO contact of relay	O	Output Relay <ul style="list-style-type: none"> Maximum switching current on resistive load: ($\cos \phi = 1$): 5 A for 250 Vac and 3A for 30 Vdc Refresh time: ≤ 10 ms Service life: 100,000 operations at maximum switching current
X12:2				
X12:5	Q6/K2	NO contact of relay		
X12:6				
X12:7	Q7/K3	NO contact of relay		
X12:8				
X12:9	Q9/K4	2 NO contact of relay		
X12:10				
X12:11	Q9/K4			
X12:12				
X12:13	Q8/K5	NO contact of relay		
X12:14				
X12:15	Q10/K6	NO contact of relay		
X12:16				
X12:17	Q11/K7	NO contact of relay		
X12:18				
X12:19	Q15/K10	NO contact of relay		
X12:20				
X12:23	Q3/K14	2 NO contact of relay		
X12:24				
X12:25	Q3/K14			
X12:26				
X12:31	Q4/K23	NO contact of relay		
X12:32				
X17:1	Q12/K8	NO contact of relay	O	Output Relay <ul style="list-style-type: none"> Maximum switching current on resistive load: ($\cos \phi = 1$): 6 A for 250 Vac (NO), 5 A for 250 Vac (NC) and 3A for 28 Vdc Refresh time: ≤ 5 ms Service life: 30,000 operations at maximum switching current
X17:2				
X17:3				
X17:5	Q13/K9	NC contact of relay		
X17:6		Common point contact of relay		
X17:7				
X17:8		NO contact of relay		
X17:9	Mains Power Off Signal to Customer	NO contact of relay		
X17:10				
				Mains power off signal output to customer <ul style="list-style-type: none"> Circuits shall be connected to non-mains supply Rated operational current: 6 A for 28 Vdc

Customer terminal strips	Terminal	Description	I/O Type	Electrical characteristics
				<ul style="list-style-type: none"> Refresh time: ≤ 20 ms Service life: 100,000 operations at maximum switching current
X13:1	Q0+	Analog output	O	Analog output <ul style="list-style-type: none"> Analogue output type <ul style="list-style-type: none"> Current 4...20 mA Current 0...20 mA *) Voltage 0...10 V *) Voltage - 10...10 V *) *) : option Load impedance <ul style="list-style-type: none"> 1 kOhm voltage 300 Ohm current Resolution :12 bits <ul style="list-style-type: none"> 11 bits + sign Absolute accuracy error <ul style="list-style-type: none"> +/- 1 % of full scale +/- 0.2 % of full scale at 25 °C (77 °F) Non-linearity : +/- 0.2 %FS
X13:2	Q0-			
X13:3	PE			
X13:4	Q1+			
X13:5	Q1-			
X13:6	PE			
X14:1	I0+	Analog input	I	Analog input <ul style="list-style-type: none"> Analogue input type <ul style="list-style-type: none"> Current 4...20 mA Current 0...20 mA *) Voltage 0...10 V *) Voltage - 10...10 V *) *) : option Input impedance <ul style="list-style-type: none"> ≤ 50 Ohm current ≥ 1 MOhm voltage Sampling duration: 1 ms <ul style="list-style-type: none"> 10 ms Resolution :12 bits <ul style="list-style-type: none"> 11 bits + sign Absolute accuracy error <ul style="list-style-type: none"> +/- 1 % of full scale +/- 0.2 % of full scale at 25 °C (77 °F) Non-linearity : +/- 0.2 %FS
X14:2	I0-			
X14:3	PE			
X14:4	I1+			
X14:5	I1-			
X14:6	PE			

MV Pre-charge:

Customer terminal strips	Terminal	Description	I/O Type	Electrical characteristics	
X10:1	L	External secured control power supply	I	External secured control power supply <ul style="list-style-type: none"> single phase 100~240 Vac ± 10 % 1.4 kVA or 2.3 kVA capacity, depending on drive reference 	
X10:2					
X10:3					N
X10:4					
X10:5	PE				
X11:1	L	External auxiliary power supply	I	External auxiliary power supply <ul style="list-style-type: none"> single phase 230Vac± 10% 1 kVA capacity for standard configuration 	
X11:2					
X11:3	N				
X11:4					
X11:5	PE				

Customer terminal strips	Terminal	Description	I/O Type	Electrical characteristics	
X15:1	L1	External fan power supply	I	External fan power supply <ul style="list-style-type: none"> three phase 400Vac±10% capacity depending on drive reference 	
X15:2	L2				
X15:3	L3				
X15:4	PE				
X16:1	I15	Digital input	I	8 programmable logic inputs 24 Vdc, comply with EN IEC 61131-2 logic type 1 <ul style="list-style-type: none"> Positive logic (Sink): State 0 if ≤ 5 Vdc or logic input not wired, state 1 if ≥ 15 Vdc Impedance 4.7 kΩ Maximum voltage: 28.8 Vdc 	
X16:2	I16				
X16:3	I17				
X16:4	I18				
X16:5	I19				
X16:6	I21				
X16:7	I22				
X16:11	I23				
X16:12	+24V	Output supply for digital inputs	O	Output supply for digital inputs: <ul style="list-style-type: none"> 24 Vdc $\pm 2\%$ Current ≤ 150 mA 	
X16:13					
X16:14					
X16:15					
X16:16					
X16:17					
X16:18					
X16:19	+24V	POE input	I	Customer power output enable input	
X16:20	PLCD7				
X16:8	Customer mains power off	Customer mains power off input	I	Customer mains power off input It is connected in series with the mains power off button on the cabinet door.	
X16:9					
X16:10					
X12:1	Q5/K1	NO contact of relay	O	Output Relay <ul style="list-style-type: none"> Maximum switching current on resistive load: ($\cos \phi = 1$): 5 A for 250 Vac and 3A for 30 Vdc Refresh time: ≤ 10 ms Service life: 100,000 operations at maximum switching current 	
X12:2					
X12:5	Q6/K2	NO contact of relay			
X12:6					
X12:7	Q7/K3	NO contact of relay			
X12:8					
X12:9	Q9/K4	2NO contact of relay			Output Relay <ul style="list-style-type: none"> Maximum switching current on resistive load: ($\cos \phi = 1$): 5 A for 250 Vac and 2A for 28 Vdc Refresh time: ≤ 5 ms Service life: 30,000 operations at maximum switching current
X12:10					
X12:11	Q9/K4				
X12:12					
X12:13	Q8/K5	NO contact of relay		Output Relay <ul style="list-style-type: none"> Maximum switching current on resistive load: ($\cos \phi = 1$): 5 A for 250 Vac and 3A for 30 Vdc Refresh time: ≤ 10 ms Service life: 100,000 operations at maximum switching current 	
X12:14					
X12:15	Q10/K6	NO contact of relay			
X12:16					
X12:17	Q11/K7	NO contact of relay			
X12:18					
X12:19	Q15/K10	NO contact of relay		Output Relay <ul style="list-style-type: none"> Maximum switching current on resistive load: ($\cos \phi = 1$): 6 A for 250 Vac (NO), 5 A for 250 Vac (NC) and 3A for 28 Vdc Refresh time: ≤ 5 ms Service life: 30,000 operations at maximum switching current 	
X12:20					
X17:1	Q12/K8	NO contact of relay	O	Output Relay	

Customer terminal strips	Terminal	Description	I/O Type	Electrical characteristics
X17:2	Q13/K9	NC contact of relay		<ul style="list-style-type: none"> Maximum switching current on resistive load: ($\cos \varphi = 1$): 6 A for 250 Vac (NO), 5 A for 250 Vac (NC) and 3A for 28 Vdc Refresh time: ≤ 5 ms Service life: 30,000 operations at maximum switching current
X17:3				
X17:5				
X17:6				
X17:7				
X17:8				
X17:9	Mains Power Off Signal to Customer	NO contact of relay		<p>Mains power off signal output to customer</p> <ul style="list-style-type: none"> Circuits shall be connected to non-mains supply Rated operational current: 6 A for 28 Vdc Refresh time: ≤ 20 ms Service life: 100,000 operations at maximum switching current
X17:10				
X13:1	Q0+	Analog output	O	<p>Analog output</p> <ul style="list-style-type: none"> Analog output type <ul style="list-style-type: none"> Current 4...20 mA Current 0...20 mA *) Voltage 0...10 V *) Voltage - 10...10 V *) *) : option Load impedance <ul style="list-style-type: none"> 1 kOhm voltage 300 Ohm current Resolution :12 bits <ul style="list-style-type: none"> 11 bits + sign Absolute accuracy error <ul style="list-style-type: none"> +/- 1 % of full scale +/- 0.2 % of full scale at 25 °C (77 °F) Non-linearity : +/- 0.2 %FS
X13:2	Q0-			
X13:3	PE			
X13:4	Q1+			
X13:5	Q1-			
X13:6	PE			
X14:1	I0+	Analog input	I	<p>Analog input</p> <ul style="list-style-type: none"> Analog input type <ul style="list-style-type: none"> Current 4...20 mA Current 0...20 mA *) Voltage 0...10 V *) Voltage - 10...10 V *) *) : option Input impedance <ul style="list-style-type: none"> ≤ 50 Ohm current ≥ 1 MOhm voltage Sampling duration: 1 ms <ul style="list-style-type: none"> 10 ms Resolution :12 bits <ul style="list-style-type: none"> 11 bits + sign Absolute accuracy error <ul style="list-style-type: none"> +/- 1 % of full scale +/- 0.2 % of full scale at 25 °C (77 °F) Non-linearity : +/- 0.2 %FS
X14:2	I0-			
X14:3	PE			
X14:4	I1+			
X14:5	I1-			
X14:6	PE			

Inspection

This section generally describes the necessary inspection before ATV6100 is powered on. Besides, review the following steps:

Step	Description	✓
1	Verify that the site power supply meets the requirement of the medium voltage drive system. The rated input voltage of the medium voltage drive system must be compatible with grid voltage.	
2	The rated output voltage of the medium voltage drive system must be compatible with rated voltage of the motor which is marked on the motor nameplate.	
3	The control power supply (low voltage) must be compatible with rated voltage of control system.	
4	The rated power of the ATV6100 must be compatible with the power of motor.	
5	Verify that the ATV6100 is connected to ground securely, and its grounding resistance must be lower than 4 Ω . The control system with a separate ground bus-bar and its resistance must be lower than 1 Ω .	
6	Verify the insulation of all cables and terminals is not damaged.	
7	Verify all terminals, components mounting, and other parts are marked or labeled, or contact your local manufacturer representative.	
8	Verify that control power supply and main power supply are correctly connected and follow all local and national electrical code requirements as well as all other applicable regulations.	
9	Verify that all wiring is tightly and correctly connected.	
10	Verify whether the isolating switches in bypass cabinet (optional) are installed tightly and that the mechanical interlock of the isolation switches operate normally. Verify that isolation switches is well contacted.	
11	Verify that the input and output medium voltage cables are connected correctly.	
12	Verify that all electrical connections of the transformer are tight including input, output, and auxiliary windings (option).	
13	Verify that the temperature sensors are installed appropriately.	
14	Verify that cooling fans on the top of cabinet are connected correctly and tightly, and can rotate freely in the correct direction.	
15	Verify that all bolts used for connecting transformer input, output and auxiliary cables (option) are tightly connected.	
16	Verify that the optical fiber connections are correct (Colour and wire number), optical fiber and the fiber terminal connections are correct, fiber terminal and fiber connection must be clean with good connections. The fiber length must be correct so that there is no pulling or bending	
17	All cables must be fastened. PCBAs in the control box must be plugged into the right place. The boards and control boxes must be fastened tightly by screws.	
18	Verify that frequency setting signal is a 0(4) - 20 mA or 0-10 V source signal.	
19	Verify that the control wiring is separated from power wiring.	
20	Verify that transformer auxiliary winding fixed well.	

NOTE: If any inspection result is abnormal, please contact your local manufacturer representative.

Routine Maintenance

Service and Maintenance

Overview

DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION OR ARC FLASH

Read and understand the instructions in **Product Related Information** chapter before performing any procedure in this chapter.

Failure to follow these instructions will result in death or serious injury.

Visual Inspection and Cleaning

Inspection

The Variable Speed Drive (VSD) must be regularly inspected and cleaned in accordance to regulations and maintenance schedule. (note that antistatic cleaning equipment must be used, and chemical cleaners, alcohol, and other solvents should not be used.)

Step	Action	✓
1	Verify that VSD exterior and interior as well as the surrounding area are free of dust, sand, vermin, and insects. Electrical components such as wiring and circuit boards are prone to overheating and being inoperative due to accumulation of dust or moisture.	
2	Verify that VSD exterior and interior has not been affected by corrosive elements such as corrosive gases, salt, or other impurities that can damage electrical equipment, structural integrity of VSD or the insulation of cabling.	
3	Verify that there are no signs of over-heating of elements and components (circuit boards, wiring connections etc...), and that cooling fans are correctly mounted and functioning. Verify that filters are not damaged and free of dust and grime. If necessary, replace filters.	
4	Verify that cables are correctly and tightly fastened as well as all other screws, bolts, and wiring.	
5	Verify that the area is dry and free of condensation and at suitable relative air humidity level.	

Wiring Inspection

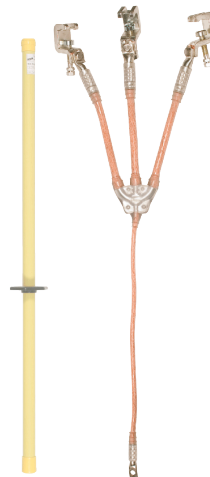
- The Variable Speed Drive (VSD) is prone to vibration during running, which may lead to loss connection. It is essential to regularly check that plugs, sockets, screws, bolts, and cabling of the entire VSD and to ensure that connection or fastening are reliable.
- After being put into operation, thorough cleaning and insulation inspection of the transformer must be done at least once a year. Inspection and tightening of bolts, screws, and wiring must be conducted every 2 years.
- Staff responsible for operation and maintenance must regularly measure and record temperature and humidity. Pay particular attention to temperature of the transformer windings. End user to ensure electrical room's temperature remains below the maximum value according to drive's temperature (40 °C to 50 °C).

Grounding Cable for Maintenance (Option)

The Variable Speed Drive (VSD) can be equipped with grounding cable for maintenance. The grounding cable and stick is a 3 poles grounding and short circuiting device in accordance with IEC61230.

The grounding cable:

- Provides personal and equipment protection during maintenance
- Discharges the residual voltage of power supply operation system.



Short-circuit rating of fixed ball points:

	Maximum permissible I _k for...				
	0.5 s	1 s	2 s	5 s	10 s
VSD Output	33.5 kA	23.7 kA	16.7 kA	10.6 kA	7.5 kA
VSD Input	19.5 kA	13.8 kA	9.8 kA	6.2 kA	4.4 kA

Cleaning and Replacement of Filters

Pollution or clogging of the filters of the cabinet doors can result in overtemperature.

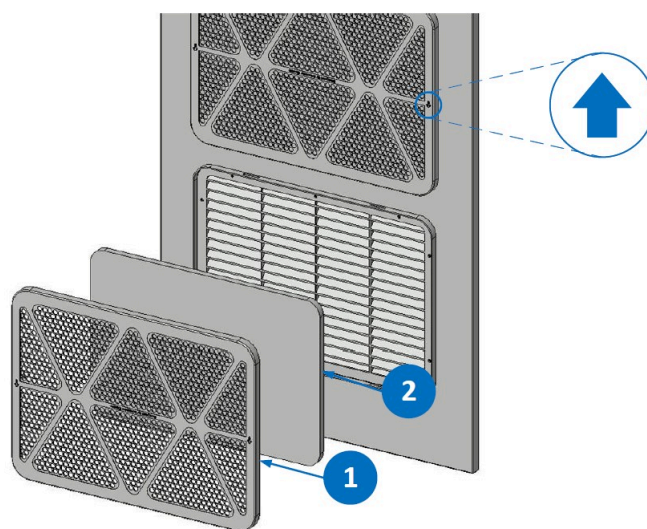
NOTICE

OVERHEATING

- Inspect and clean the filters at regular intervals.
- Adapt the intervals between maintenance to the environmental conditions.
- Replace the filters at the intervals specified in this manual.

Failure to follow these instructions can result in equipment damage.

Location



- 1 Ventilation window
- 2 Filter mat

Uninstall Filters

Step	Action
1	Lift the ventilation window according to the direction of the arrow and draw it out.
2	Pull down the filter mat.

The process for filter mat replacement should be continuous, in case of foreign objects entering the drive.

Dimensions

References	Description
VZ3V60003	ATV6100 filter mat: 545 mm * 615 mm (21.5 in * 24.2 in)

Scheduled Servicing

⚠ WARNING

INSUFFICIENT MAINTENANCE

Verify that the maintenance activities described below are performed at the specified intervals.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

Adherence to the environmental conditions must be ensured during operation of the device. In addition, during maintenance, verify and, if appropriate, correct all factors that may have an impact on the environmental conditions.

Task / Description	Interval* [years]																			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Inspection **																				
Input/output terminals tightness		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓
Remote/Local/Panel - Switch	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Transformer visual check	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Fiber optic cables visual check	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Relay contacts						✓						✓						✓		
Power cell connections		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓
Transformer secondary windings connection		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓
Plug-in connections		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓
Master controller cooling fan		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓
Cubicle roof cooling fans		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓
Oxidation, corrosion, rust	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Environmental conditions	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
UPS function (available as option)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Door gaskets	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Spare parts (storage/damage)				✓				✓				✓				✓				✓
Heat sink pollution (check and clean) ***	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Recorded faults analysis	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Space heater (cubicle & motor)		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓
Function of emergency stop button	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Function of door switches		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓
Completeness of walls and covers	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Task / Description	Interval* [years]																			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Replace																				
Door filter mats ***	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Master controller cooling fans ***				✓				✓				✓				✓				✓
Cubicle roof cooling fans ***				✓				✓				✓				✓				✓
PLC Backup battery				✓				✓				✓				✓				✓
UPS battery				✓				✓				✓				✓				✓
Power Cell												✓								
Local service																				
General cleaning ***	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Parameter/PLC-software backup				✓				✓				✓				✓				✓
Current symmetry measurement				✓				✓				✓				✓				✓
Capacitor reforming (if power cells on stock)				✓				✓				✓				✓				✓
Capacitor condition check				✓				✓				✓				✓				✓
Fiber optic cable measurement				✓				✓				✓				✓				✓
<p>*) Maximum maintenance intervals from the date of commissioning. Reduce the intervals between maintenance to adapt maintenance to the environmental conditions, the operating conditions of the drive, and to any other factor that may influence the operation and/ or maintenance requirements of the drive.</p> <p>**) Recommended after each repair.</p> <p>***) Depends on the environmental conditions</p>																				

Shorter intervals must be considered while VSD under non-operational operating conditions. For drives which serve over 12 years, additional spare parts on site are highly recommended.

Spares and Repairs

Serviceable product. Please contact your Customer Care Center on:

www.se.com/CCC.

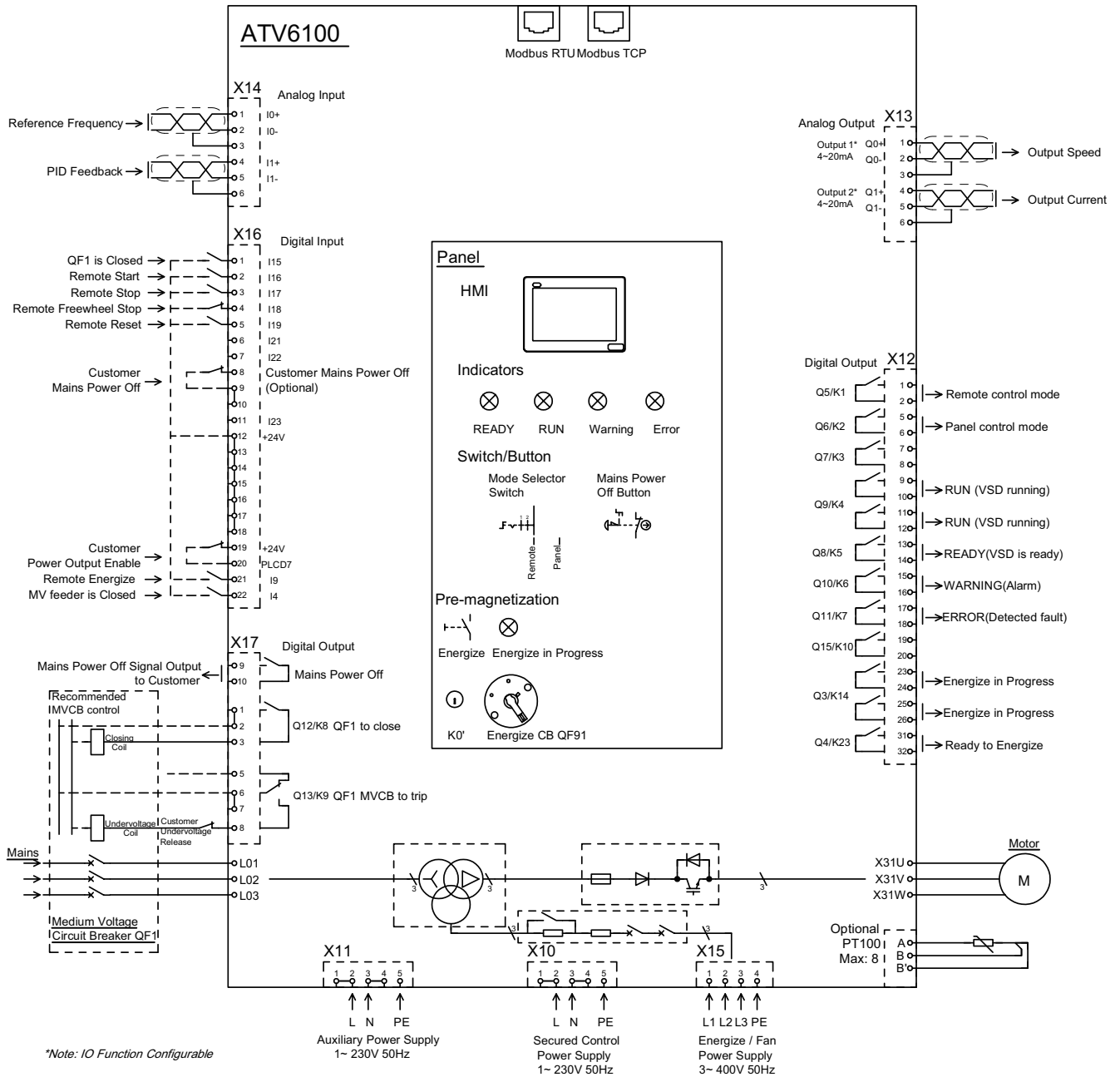
Customer Care Center

For additional support, you can contact our Customer Care Center on:

www.se.com/CCC.

ATV6100 Drive System I/O Interface Diagram

Standard Configuration (LV Pre-charge)



Operating Environment Maintenance of VSD

Operating Environment Maintenance of Variable Speed Drive (VSD)

	Type of Cooling		
	Air-conditioning Cooling System	Air-water Cooling System	Air-duct Cooling System
Requirements for supporting facilities	The room must be well sealed, windows and doors must be closed. The emergency vents must have shutters that are kept closed.	A dehumidifier must be used (dehumidifier model shall be determined by the dehumidifier manufacturer). The room must be well sealed, windows and doors must be closed. The emergency vents must have shutters that are kept closed.	The air inlet must be larger than or equal to the dust filter area of VSD cabinet door. Dust filter must be used. Dehumidifier must be installed in the room.
Maintenance	The air conditioners shall be checked and maintained regularly. The VSD must keep running in dehumidifying mode during downtime.	The cooler shall be cleaned regularly, check the valve of waterway and duct filter, and air duct shall be checked and maintained to verify there's no damage. The dehumidifier should keep running after VSD has stopped running.	Air duct should be checked regularly. Seal the air inlet and outlet of the room when VSD stop running, and the dehumidifier should be working.
Preparation for power-on	The indoor humidity of VSD cabinet shall be less than 50% and the insulation resistance of the transformer shall be higher than 100MΩ. Under these conditions, it can be powered on directly. If the indoor humidity is higher than 50% or the transformer insulation resistance is lower than 100MΩ, additional dehumidification and drying are required.		If the indoor humidity of VSD cabinet has been less than 50% for 48 hours without condensation and transformer insulation resistance is higher than 100MΩ, the VSD can be powered on directly. If the indoor humidity is higher than 50% or the transformer insulation resistance is lower than 100MΩ, additional dehumidification and drying are required.
Running	Hygrometer must be installed in the room next to the drive to monitor indoor humidity. End user to ensure room's humidity stays below the maximum value according to drive's declaration(90 or 95%). A dehumidifier must be added in the room in case of high humidity(If the temperature in VSD room is higher than 35 °C, air conditioning must be installed). The outlet of air conditioner should not be directed towards the drive to avoid condensation inside the cabinet.	Hygrometer must be installed in the room next to the drive to monitor indoor humidity. End user to ensure room's humidity stays below the maximum value according to drive's declaration(90 or 95%). A dehumidifier must be added in the room in case of high humidity(If the temperature in VSD room is higher than 35 °C, then air conditioning must be installed), the dehumidifier should work during VSD running.	Hygrometer must be installed in the room next to the drive to monitor indoor humidity. End user to ensure room's humidity stays below the maximum value according to drive's declaration(90 or 95%). If condensation is present, it is necessary to shut down the system and start the dryer until the room humidity falls below 70%. If the humidity level reaches 70% but there is no condensation, the running frequency of VSD should be maintained at higher than 35Hz, until the indoor humidity falls below 70%.

NOTE: For users using **air-duct cooling system**: it is possible that there is conductive dust near the drive load, especially in the summer when the temperature and humidity are much higher in most countries. In order to help to protect VSD and help to ensure operation, It is advisable to modify the VSD room by using air conditioning cooling system or air-water cooling system.

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