Altivar Process ATV600/ATV900

Variable Speed Drives for Asynchronous and Synchronous Motors

ATV61/ATV71 to ATV600/ATV900 Migration Manual

[06/2019]

EAV64336-01

Schneider Electric

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All pertinent state, regional, and local safety regulations must be observed when installing and using this product. For reasons of safety and to help ensure compliance with documented system data, only the manufacturer should perform repairs to components.

When devices are used for applications with technical safety requirements, the relevant instructions must be followed. Failure to use Schneider Electric software or approved software with our hardware products may result in injury, harm, or improper operating results.

Failure to observe this information can result in injury or equipment damage.

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Table of Contents

Safety Information

Important Information

NOTICE

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

The addition of this symbol to a Danger 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 an imminently hazardous situation which, if not avoided, **results in** death or serious injury**.**

⚠ WARNING

WARNING indicates a potentially hazardous situation which, if not avoided, **can result in** death or serious injury.

⚠ CAUTION

CAUTION indicates a potentially hazardous situation which, if not avoided, **can 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

- 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.
- The system integrator is responsible for compliance with all local and national electrical code requirements as well as all other applicable regulations with respect to grounding of all equipment.
- Many components of the product, including the printed circuit boards, operate with mains voltage. Do not touch.
- Only use properly rated, electrically insulated tools and measuring equipment.
- Do not touch unshielded components or terminals with voltage present.
- Motors can generate voltage when the shaft is rotated. Prior to performing any type of work on the drive system, block the motor shaft to prevent rotation.
- AC voltage can couple voltage to unused conductors in the motor cable. Insulate both ends of unused conductors of the motor cable.
- Do not short across the DC bus terminals or the DC bus capacitors or the braking resistor terminals.
- Before performing work on the drive system:
  - Disconnect all power, including external control power that may be present.
  - Place a **Do Not Turn On** label on all power switches related to the drive system.
  - Lock all power switches in the open position.
  - Wait 15 minutes to allow the DC bus capacitors to discharge.
  - Follow the instructions given in the chapter "Verifying the Absence of Voltage" in the installation manual of the product.
- Before applying voltage to the drive system:
  - Verify that the work has been completed and that the entire installation cannot cause hazards.
  - If the mains input terminals and the motor output terminals have been grounded and short-circuited, 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.

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 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.

Your application consists of a whole range of different interrelated mechanical, electrical, and electronic components, the drive being just one part of the application. The drive by itself is neither intended to nor capable of providing the entire functionality to meet all safety-related requirements that apply to your application. Depending on the application and the corresponding risk assessment to be conducted by you, a whole variety of additional equipment is required such as, but not limited to, external encoders, external brakes, external monitoring devices, guards, etc.

As a designer/manufacturer of machines, you must be familiar with and observe all standards that apply to your machine. You must conduct a risk assessment and determine the appropriate Performance Level (PL) and/or Safety Integrity Level (SIL) and design and build your machine in compliance with all applicable standards. In doing so, you must consider the interrelation of all components of the machine. In addition, you must provide instructions for use that enable the user of your machine to perform any type of work on and with the machine such as operation and maintenance in a safe manner.

The present document assumes that you are fully aware of all normative standards and requirements that apply to your application. Since the drive cannot provide all safety-related functionality for your entire application, you must ensure that the required Performance Level and/or Safety Integrity Level is reached by installing all necessary additional equipment.

⚠ WARNING

INSUFFICIENT PERFORMANCE LEVEL/SAFETY INTEGRITY LEVEL AND/OR UNINTENDED EQUIPMENT OPERATION

- Conduct a risk assessment according to EN ISO 12100 and all other standards that apply to your application.
- Use redundant components and/or control paths for all critical control functions identified in your risk assessment.
- If moving loads can result in hazards, for example, slipping or falling loads, operate the drive in closed loop mode.
- Verify that the service life of all individual components used in your application is sufficient for the intended service life of your overall application.
- Perform extensive commissioning tests for all potential error situations to verify the effectiveness of the safety-related functions and monitoring functions implemented, for example, but not limited to, speed monitoring by means of encoders, short circuit monitoring for all connected equipment, correct operation of brakes and guards.
- Perform extensive commissioning tests for all potential error situations to verify that the load can be brought to a safe stop under all conditions.

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

Drive systems 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.

Machines, controllers, and related equipment are usually integrated into networks. Unauthorized persons and malware may gain access to the machine as well as to other devices on the network/fieldbus of the machine and connected networks via insufficiently secure access to software and networks.

⚠ WARNING

UNAUTHORIZED ACCESS TO THE MACHINE VIA SOFTWARE AND NETWORKS

- In your hazard and risk analysis, consider all hazards that result from access to and operation on the network/fieldbus and develop an appropriate cyber security concept.
- Verify that the hardware infrastructure and the software infrastructure into which the machine is integrated as well as all organizational measures and rules covering access to this infrastructure consider the results of the hazard and risk analysis and are implemented according to best practices and standards covering IT security and cyber security (such as: ISO/IEC 27000 series, Common
- Criteria for Information Technology Security Evaluation, ISO/ IEC 15408, IEC 62351, ISA/IEC 62443, NIST Cybersecurity Framework, Information Security Forum - Standard of Good Practice for Information Security).
- Verify the effectiveness of your IT security and cyber security systems using appropriate, proven methods.

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

⚠ 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.

About the Book

At a Glance

Document Scope

The document provides information about:

- migration from ATV61 to ATV630 or ATV650.
- migration from ATV71 to ATV930 or ATV950.

This information ranges from product selection according to the existing installation, technical differences between the product ranges, product frame size, wiring information or available options.

Validity Note

This documentation is valid for ATV630/650 or ATV930/950 products.

The technical characteristics of the devices described in this document also appear online. To access this information online:

Step	Action
1	Go to the Schneider Electric home page www.schneider-electric.com
2	In the Search box type the reference of the product or the name of a product range. • Do not include blank spaces in the reference or product range. • To get information on grouping similar modules, use asterisks (*).
3	If you entered a reference, go to the Product Datasheets search results and click on the reference that interests you. If you entered the name of a product range, go to the Product Ranges search results and click on the product range that interests you.
4	If more than one reference appears in the Products search results, click on the reference that interests you.
5	Depending on the size of your screen, you may need to scroll down to see the data sheet.
6	To save or print a data sheet as a .pdf file, click **Download XXX** product datasheet.

The characteristics that are presented in this manual should be the same as those characteristics that appear online. In line with our policy of constant improvement, we may revise content over time to improve clarity and accuracy. If you see a difference between the manual and online information, use the online information as your reference.

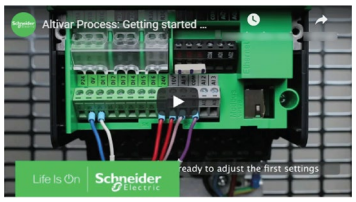
Related Documents

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

The Internet site provides the information you need for products and solutions

- The whole catalog for detailed characteristics and selection guides
- The CAD files to help design your installation, available in over 20 different file formats

- All software and firmware to maintain your installation up to date
- A large quantity of White Papers, Environment documents, Application solutions, Specifications... to gain a better understanding of our electrical systems and equipment or automation
- And finally all the User Guides related to your drive, listed below:

Title of Documentation	Catalog Number
Catalog: Altivar Process ATV600 variable speed drives	DIA2ED2140502EN (English), DIA2ED2140502FR (French)
ATV600 Getting Started - Video	FAQ FA364431 (English) 
ATV600 Getting Started	EAV63253 (English), EAV63254 (French), EAV63255 (German), EAV63256 (Spanish), EAV63257 (Italian), EAV64298 (Chinese), EAV63253PT (Portuguese), EAV63253TR (Turkish)
ATV600 Getting Started Annex (SCCR)	EAV64300 (English)
ATV630, ATV650 Installation Manual	EAV64301 (English), EAV64302 (French), EAV64306 (German), EAV64307 (Spanish), EAV64310 (Italian), EAV64317 (Chinese), EAV64301PT (Portuguese), EAV64301TR (Turkish)
ATV600 Programming Manual	EAV64318 (English), EAV64320 (French), EAV64321 (German), EAV64322 (Spanish), EAV64323 (Italian), EAV64324 (Chinese), EAV64318PT (Portuguese), EAV64318TR (Turkish)
ATV600 Modbus Serial Link Manual (Embedded)	EAV64325 (English)
ATV600 Ethernet Manual (Embedded)	EAV64327 (English)
ATV600 Ethernet IP - Modbus TCP Manual (VW3A3720, 721)	EAV64328 (English)
ATV600 BACnet MS/TP Manual (VW3A3725)	QGH66984 (English)
ATV600 PROFIBUS DP manual (VW3A3607)	EAV64329 (English)
ATV600 DeviceNet manual (VW3A3609)	EAV64330 (English)
ATV600 PROFINET manual (VW3A3627)	EAV64331 (English)
ATV600 CANopen Manual (VW3A3608, 618, 628)	EAV64333 (English)
ATV600 POWERLINK manual (VW3A3619)	PHA99690 (English)
ATV600 Communication Parameters	EAV64332 (English)
ATV600 Embedded Safety Function manual	EAV64334 (English)
Altivar Process Drive Systems Installation manual (ATV660, ATV680, ATV960, ATV980)	NHA37119 (English), NHA37121 (French), NHA37118 (German), NHA37122 (Spanish), NHA37123 (Italian), NHA37130 (Chinese), NHA37124 (Dutch), NHA37126 (Polish), NHA37127 (Portuguese), NHA37129 (Turkish)
ATV660 Handbook	NHA37111 (English), NHA37110 (German)

Title of Documentation	Catalog Number
ATV680 Handbook	*NHA37113* (English), *NHA37112* (German)
ATV600F, ATV900F Installation Instruction sheet	*NVE57369* (English)
ATV600, ATV900 ATEX manual	*NVE42416* (English)
SoMove: FDT	*SoMove_FDT* (English, French, German, Spanish, Italian, Chinese)
ATV600: DTM	*ATV6xx_DTM_Library_EN* (English - to be installed first), *ATV6xx_DTM_Lang_FR* (French), *ATV6xx_DTM_Lang_DE* (German), *ATV6xx_DTM_Lang_SP* (Spanish), *ATV6xx_DTM_Lang_IT* (Italian), *ATV6xx_DTM_Lang_CN* (Chinese)
Application Note: ATV600 Multi-Drives Booster Control Optimized	*QGH36060* (English)
Application Note: ATV600 Multi-Masters Booster Control Pressure Feedback with Service Continuity	*QGH36061* (English)
Application Note: ATV600 Multi-Drives Standard Level Control	*QGH36059* (English)
Application Note: ATV600 Multi-Masters with Optimized Level Control	*EAV64367* (English)
Catalog: Variable speed drives Altivar Process ATV900	DIA2ED2150601EN *(English)*, DIA2ED2150601FR *(French)*
ATV930, ATV950 Getting Started	NHA61578 *(English)*, NHA61579 *(French)*, NHA61580 *(German)*, NHA61581 *(Spanish)*, NHA61724 *(Italian)*, NHA61582 *(Chinese)*, NHA61578PT *(Portuguese)*, NHA61578TR *(Turkish)*
ATV900 Getting Started Annex (SCCR)	NHA61583 *(English)*
ATV930, ATV950 Installation manual	NHA80932 *(English)*, NHA80933 *(French)*, NHA80934 *(German)*, NHA80935 *(Spanish)*, NHA80936 *(Italian)*, NHA80937 *(Chinese)*, NHA80932PT *(Portuguese)*, NHA80932TR *(Turkish)*
ATV600F, ATV900F Installation Instruction sheet	NVE57369 *(English)*
ATV900 Programming manual	NHA80757 *(English)*, NHA80758 *(French)*, NHA80759 *(German)*, NHA80760 *(Spanish)*, NHA80761 *(Italian)*, NHA80762 *(Chinese)*, NHA80757PT *(Portuguese)*, NHA80757TR *(Turkish)*
ATV900 Embedded Modbus Serial Link manual	NHA80939 *(English)*
ATV900 Embedded Ethernet manual	NHA80940 *(English)*
ATV900 PROFIBUS DP manual (VW3A3607)	NHA80941 *(English)*
ATV900 DeviceNet manual (VW3A3609)	NHA80942 *(English)*
ATV900 PROFINET manual (VW3A3627)	NHA80943 *(English)*
ATV900 CANopen manual (VW3A3608, 618, 628)	NHA80945 *(English)*

Title of Documentation	Catalog Number
ATV900 EtherCAT manual (VW3A3601)	NHA80946 *(English)*
ATV900 POWERLINK manual (VW3A3619)	PHA99693 *(English)*
ATV900 Communication Parameters addresses	NHA80944 *(English)*
ATV900 Embedded Safety Function manual	NHA80947 *(English)*
ATV900 Safety Module Manual (VW3A3802) Upcoming commercialization	NVE64209 *(English)*, NVE64210 *(French)*, NVE64211 *(German)*, NVE64212 *(Spanish)*, NVE64213 *(Italian)*, NVE64214 *(Chinese)*
Drive Systems ATV960 handbook	NHA37115 *(English)*, NHA37114 *(German)*
Drive Systems ATV980 handbook	NHA37117 *(English)*, NHA37116 *(German)*
Drive Systems ATV990 handbook Multidrive Systems	NHA37145 *(English)*, NHA37143 *(German)*
ATV991, ATV992 Supply units, Programming manual	QGH33275 *(English)*
Drive Systems ATV960, ATV980 Installation manual	NHA37118 *(German)*, NHA37119 *(English)*, NHA37121 *(French)*, NHA37122 *(Spanish)*, NHA37123 *(Italian)*, NHA37124 *(Dutch)*, NHA37126 *(Polish)*, NHA37127 *(Portuguese)*, NHA37129 *(Turkish)*, NHA37130 *(Chinese)*
SoMove: FDT	SoMove_FDT *(English, French, German, Spanish, Italian, Chinese)*
ATV900: DTM	ATV9xx_DTM_Library_EN *(English - to be installed first)*, ATV9xx_DTM_Lang_FR *(French)*, ATV9xx_DTM_Lang_DE *(German)*, ATV9xx_DTM_Lang_SP *(Spanish)*, ATV9xx_DTM_Lang_IT *(Italian)*, ATV9xx_DTM_Lang_CN *(Chinese)*
ATV61-71 to ATV600-900 Migration Manual	EAV64336 *(English)*
Altivar Application Note for Hoisting	NHA80973 *(English)*

Part I
Current Installation Check-list

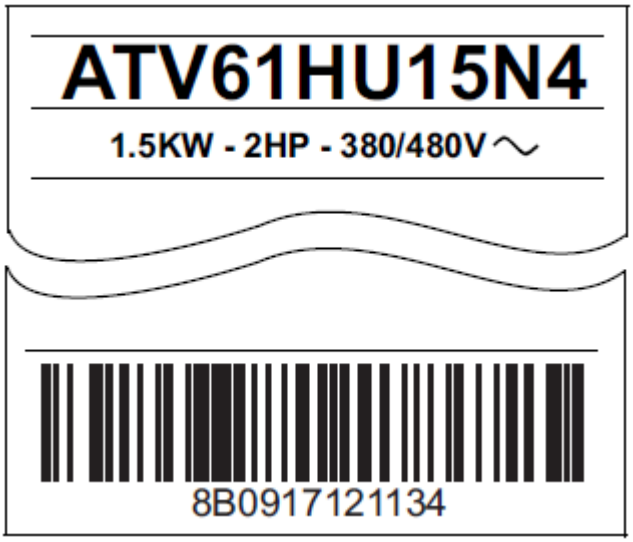
What is in This Part?

This part contains the following chapters:

Drive reference

Finding the drive reference

The drive reference, main characteristics and Serial Number can be found on its nameplate label:



Write them down as a reference to select the most adequate reference in the Altivar Process range Options

Option check-list

Use the table below to list all your drives as well as all the options that you are currently using for each one in order to list all the options you will need to order with the new drives

Drive Reference	Existing Option	Option to order

Motor Characteristics

Motor check-list

Use the table below to list all Motor characteristics that will help you select the right drive for your application

Motor Reference	Motor Type	Motor Frequency	Nominal Motor Power	Nominal Motor Voltage	Nominal Motor Current	Nominal Motor Speed
_____	☐ Asynchronous ☐ Synchronous	___Hz	___kW / ___HP	___Vac	___A	___rpm
_____	☐ Asynchronous ☐ Synchronous	___Hz	___kW / ___HP	___Vac	___A	___rpm
_____	☐ Asynchronous ☐ Synchronous	___Hz	___kW / ___HP	___Vac	___A	___rpm
_____	☐ Asynchronous ☐ Synchronous	___Hz	___kW / ___HP	___Vac	___A	___rpm

Part II
Drive Selection

What is in This Part?

This part contains the following chapters:

Drive Range and Reference

Finding the right product reference

Drives are designed according to the targeted application and the output power needed for a specific motor/application. Consequently, there are a number of parameters to take into account when selecting the right product reference:

- The output current levels of the drive that must match the ones needed by the motor used.
- The targeted application and corresponding needs/constraints and whether this application requires normal or heavy duty products.

Indeed, Altivar Process variable speed drives are designed for use in two operating modes that can optimize the drive nominal rating according to the system constraints.

These two modes are:

- **Normal duty (ND):** Dedicated mode for applications requiring a slight overload (See table below) with a motor power no higher than the drive nominal power
- **Heavy duty (HD):** Dedicated mode for applications requiring a significant overload (See table below) with a motor power no higher than the drive nominal power derated by one rating

	ATV61	**ATV71**	**ATV630/650**	**ATV930/950**
Normal Duty overload	Up to 120%	Not available	Up to 110%	Up to 120%
Heavy Duty overload	Not available	Up to 150%	Up to 150%	Up to 150%

Typical applications for **normal duty** include (but are not limited to):

- **Water and wastewater applications:**
  - Pumping
  - Drilling
  - Suction
  - Dosing
  - Odor control
  - Ventilation
  - Gas compression
  - Sludge removal
- **Oil&Gas:**
  - Hydrocarbon production:
    - Drilling
    - Offshore and onshore extraction
    - Water treatment and re-injection
    - Crude oil storage
    - Separation
    - Pipeline pumping
    - Storage
    - Refining
    - DOF (digital oil field)
- **Food&Beverage applications:**
  - Pumping
  - Drying fans

Typical applications for **heavy duty** include (but are not limited to):

- **Mining, Mineral and Metal (MMM):**
  - Open-pit or underground mining
  - Stockpiling/homogenization
  - Concentration/mineral separation
  - Solid-liquid separation
  - Final handling/transport
  - Clinker production
  - Cement production

- **Hoisting:**
  - Special cranes (Gantry cranes - Grab cranes)
  - Ship loaders
- **Food & Beverage:**
  - Mixing
  - Centrifuge machines
  - Hot drying

To select a specific product reference, determine:

- Whether the application requires normal duty or heavy duty
- The corresponding reference using the tables below

NOTE: For any application requiring braking functions, ATV61 products must be substituted by ATV930 products

Normal Duty

ATV61 to ATV630

200…240V Three Phase Drives				
kW	**ATV61**	**Frame size**	**Altivar Process ATV630**	**Frame Size**
0,75	ATV61H075M3	2	ATV630U07M3	1
1,5	ATV61HU15M3	2	ATV630U15M3	1
2,2	ATV61HU22M3	3	ATV630U22M3	1
3	ATV61HU30M3	3	ATV630U30M3	1
4	ATV61HU40M3	3	ATV630U40M3	1
5,5	ATV61HU55M3	4	ATV630U55M3	2
7,5	ATV61HU75M3	5A	ATV630U75M3	3
11	ATV61HD11M3X	5B	ATV630D11M3	3
15	ATV61HD15M3X	5B	ATV630D15M3	4
18	ATV61HD18M3X	6	ATV630D18M3	4
22	ATV61HD22M3X	6	ATV630D22M3	4
30	ATV61HD30M3X	7B	ATV630D30M3	5
37	ATV61HD37M3X	7B	ATV630D37M3	5
45	ATV61HD45M3X	7B	ATV630D45M3	5
55	ATV61HD55M3X	9	ATV630D55M3	6
75	ATV61HD75M3X	9	ATV630D75M3	6
380…480V Three Phase Drives				
kW	**ATV61**	**Frame size**	**Altivar Process ATV630**	**Frame Size**
0,75	ATV61H075N4	2	ATV630U07N4	1
1,5	ATV61HU15N4	2	ATV630U15N4	1
2,2	ATV61HU22N4	2	ATV630U22N4	1
3	ATV61HU30N4	3	ATV630U30N4	1
4	ATV61HU40N4	3	ATV630U40N4	1
5,5	ATV61HU55N4	4	ATV630U55N4	1
7,5	ATV61HU75N4	4	ATV630U75N4	2
11	ATV61HD11N4	5A	ATV630D11N4	2
15	ATV61HD15N4	5B	ATV630D15N4	3
18	ATV61HD18N4	5B	ATV630D18N4	3
22	ATV61HD22N4	6	ATV630D22N4	3
30	ATV61HD30N4	7A	ATV630D30N4	4
37	ATV61HD37N4	7A	ATV630D37N4	4
45	ATV61HD45N4	8	ATV630D45N4	4
55	ATV61HD55N4	8	ATV630D55N4	5
75	ATV61HD75N4	8	ATV630D75N4	5
90	ATV61HD90N4	9	ATV630D90N4	5
110	ATV61HC11N4	9	ATV630C11N4	6
130	ATV61HC13N4	10	ATV630C13N4	6
160	ATV61HC16N4	11	ATV630C16N4	6
200	ATV61HC22N4	12	ATV630C22N4	7A
220	ATV61HC22N4	12	ATV630C22N4	7A
250	ATV61HC25N4	13A	ATV630C25N4	7B
280	ATV61HC31N4	13B	ATV630C31N4	7B

Heavy Duty

ATV 71 to ATV●30

200…240V Three Phase Drives				
kW	**ATV71**	**Frame size**	**Altivar Process ATV●30**	**Frame Size**
0,75	ATV71H075M3	2	ATV●30U15M3	1
1,5	ATV71HU15M3	2	ATV●30U22M3	1
2,2	ATV71HU22M3	3	ATV●30U30M3	1
3	ATV71HU30M3	3	ATV●30U40M3	1
4	ATV71HU40M3	3	ATV●30U55M3	2
5,5	ATV71HU55M3	4	ATV●30U75M3	3
7,5	ATV71HU75M3	5A	ATV●30D11M3	3
11	ATV71HD11M3X	5B	ATV●30D15M3	4
15	ATV71HD15M3X	5B	ATV●30D18M3	4
18	ATV71HD18M3X	6	ATV●30D22M3	4
22	ATV71HD22M3X	6	ATV●30D30M3/M3C	5
30	ATV71HD30M3X	7B	ATV●30D37M3/M3C	5
37	ATV71HD37M3X	7B	ATV●30D45M3/M3C	5
45	ATV71HD45M3X	7B	ATV●30D55M3/M3C	6
55	ATV71HD55M3X	9	ATV●30D75M3/M3C	6
380…480V Three Phase Drives				
kW	**ATV71**	**Frame size**	**Altivar Process ATV.30**	**Frame Size**
0,75	ATV71H075N4	2	ATV●30U15N4	1
1,5	ATV71HU15N4	2	ATV●30U22N4	1
2,2	ATV71HU22N4	2	ATV●30U30N4	1
3	ATV71HU30N4	3	ATV●30U40N4	1
4	ATV71HU40N4	3	ATV●30U55N4	1
5,5	ATV71HU55N4	4	ATV●30U75N4	2
7,5	ATV71HU75N4	4	ATV●30D11N4	2
11	ATV71HD11N4	5A	ATV●30D15N4	3
15	ATV71HD15N4	5B	ATV●30D18N4	3
18	ATV71HD18N4	5B	ATV●30D22N4	3
22	ATV71HD22N4	6	ATV●30D30N4	4
30	ATV71HD30N4	7A	ATV●30D37N4	4
37	ATV71HD37N4	7A	ATV●30D45N4/N4C	4
45	ATV71HD45N4	8	ATV●30D55N4/N4C	5
55	ATV71HD55N4	8	ATV●30D75N4/N4C	5
75	ATV71HD75N4	8	ATV●30D90N4/N4C	5
90	ATV71HD90N4	9	ATV●30C11N4C	6
110	ATV71HC11N4	10	ATV●30C13N4C	6
130	ATV71HC13N4	11	ATV●30C16N4C	6
160	ATV71HC16N4	12	ATV●30C22N4/N4C	7A
200	ATV71HC20N4	13A	ATV●30C22N4/N4C	7A
220	ATV71HC25N4	13B	ATV●30C25N4C	7B
250	ATV71HC25N4	13B	ATV●30C31N4C	7B
280	ATV71HC28N4	13C	ATV●30C31N4C	7B

ATV61 and ATV71 Z range

ATV 61 and ATV71 “Z” references are products (up to 75kW) available without display terminal (but with a 7-segment display). The closest equivalent Altivar Process product range is the Cabinet Integration range (without any display).

NOTE: ATV61/71 display terminal cannot be used on Altivar Process products

The following table lists all existing product references in this range

380…480V Three Phase Drives		
kW	**Reference**	**Frame Size**
0.75	ATV●30U07N4Z	1
1.5	ATV●30U15N4Z	1
2.2	ATV●30U22N4Z	1
3	ATV●30U30N4Z	1
4	ATV●30U40N4Z	1
5.5	ATV●30U55N4Z	1
7.5	ATV●30U75N4Z	2
11	ATV●30D11N4Z	2
15	ATV●30D15N4Z	3
18.5	ATV●30D18N4Z	3
22	ATV●30D22N4Z	3
30	ATV●30D30N4Z	4
37	ATV●30D37N4Z	4
45	ATV●30D45N4Z	4
55	ATV●30D55N4Z	5
75	ATV●30D75N4Z	5
90	ATV●30D90N4Z	5

Dimensions Comparison

The following table can be used to compare the physical dimensions of the drives.

ATV61/71				ATV Process Wall-mounting				ATV Process cabinet Integration			
Frame size	**W mm**	**H mm**	**D mm**	**Frame Size**	**W mm**	**H mm**	**D mm**	**Frame Size**	**W mm**	**H mm**	**D mm**
2	130	230	175	1	144	350	203	1	130	284	196
3	155	260	187	1	144	350	203	1	130	284	196
4	175	295	187	1	144	350	203	1	130	284	196
4	175	295	187	2	171	409	233	2	155	345	225
5A	210	295	213	2	171	409	233	2	155	345	225
5A	210	295	213	3	211	545.9	232	3	195	480	225.5
5B	230	400	213	3	211	545.9	232	3	195	480	225.5
5B	230	400	213	4	226	673	271	4	210	597	262
6	240	420	236	3	211	545.9	232	3	195	480	225.5
6	240	420	236	4	226	673	271	4	210	597	262
7A	240	550	266	4	226	673	271	4	210	597	262
7B	320	550	266	5	290	922	323	5	265	748	307
8	320	630	290	4	226	673	271	4	210	597	262
8	320	630	290	5	290	922	323	5	265	748	307
9	320	920	377	5	290	922	323	5	265	748	307
9	320	920	377	6	320	852	390	N/A	N/A	N/A	N/A
10	360	1022	377	6	320	852	390	N/A	N/A	N/A	N/A
11	340	1190	377	6	320	852	390	N/A	N/A	N/A	N/A
12	440	1190	377	6	320	852	390	N/A	N/A	N/A	N/A
12	440	1190	377	7A	440	1195	380	N/A	N/A	N/A	N/A
13A	595	1190	377	7A	440	1195	380	N/A	N/A	N/A	N/A
13A	595	1190	377	7B	598	1195	380	N/A	N/A	N/A	N/A
13B	595	1190	377	7A	440	1195	380	N/A	N/A	N/A	N/A
13B	595	1190	377	7B	598	1195	380	N/A	N/A	N/A	N/A
13C	595	1190	377	7B	598	1195	380	N/A	N/A	N/A	N/A

Electrical Data - Upstream Protective Device

Overview

The Short Circuit Protective Device (SCPD) used for ATV61/71 may not be suitable for use on ATV630 and ATV930. Appropriate information is given in the Upstream Protection Device section of the Installation Manual.

⚠ ⚠ DANGER

INSUFFICIENT PROTECTION AGAINST OVERCURRENTS CAN CAUSE FIRE OR EXPLOSION

- Use properly rated overcurrent protection devices.
- Use the fuses/circuit breakers specified.
- Do not connect the product to a supply mains whose prospective short circuit current rating (current that flows during a short circuit) exceeds the specified maximum permissible value.
- When rating the upstream mains fuses and the cross sections as well as the lengths of the mains cables, take into account the minimum required prospective short-circuit current (Isc). Refer to the Upstream Protection Device section of the Installation Manual.
- If the minimum required prospective short-circuit current (Isc) is not available, apply the instructions given in the Upstream Protection Device section of the Installation Manual.

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

General

- The Short Circuit Protective Device (SCPD) rated to the drive will help protect the upstream installation in case of a short-circuit internal to the drive and mitigate the damage to the drive and its surrounding area.
- The SCPD rated to the drive is mandatory to help ensuring the safety of the Power Drive System. It comes in addition to the upstream branch circuit protection which is in compliance with the local regulation for electrical installation.
- The SCPD shall mitigate the damage in case of detected error condition such as an internal short-circuit of the drive.
- The SCPD must take into account both following characteristics...
  - a maximum prospective short-circuit current
  - a minimum required prospective short-circuit current (Isc).

If the minimum required prospective short-circuit current (Isc) is not available, increase the power of the transformer or decrease the length of the cables

In other cases, contact your Schneider Electric Customer Care Center (CCC) http://www.se.com/CCC for specific selection of Short Circuit Protective Device (SCPD).

Part III
Mounting Accessories

What is in This Part?

This part contains the following chapters:

IP20, IP21/UL Type 1 and IP31 conformity kits for ATV630

IP Conformity levels for ATV630

Up to 90kW, ATV630 drives are already UL Type 1 compliant out of the box, no kit is needed. For other ranges, there are optional UL kits.

IP20 and IP21/UL Type 1 kits for ATV630

The following table lists all UL Type1 kits available for ATV630 and their reference.

IP 20 and IP 21/UL Type 1 conformity kits		
Description	**For use with**	**Reference**
IP 20/UL Type 1 conformity kit	ATV630U22Y6...D30Y6	VW3A9705
	ATV630D37Y6...D90Y6	VW3A9706
IP 21/UL Type 1 conformity kit	ATV630D55M3…D75M3 ATV630C11N4…C16N4	VW3A9704
UL Type 1 conformity kit	ATV630C22N4	VW3A9212
	ATV630C25N4 ATV630C31N4	VW3A9213

For more information on how to mount the kits, go to www.schneider-electric.com, type the kit reference in the search engine and download the corresponding Instruction sheet.

IP31 conformity kits for ATV630

The following table lists all IP31 kits available for ATV630 and their reference.

IP 31 conformity kits		
Description	**For use with**	**Reference**
IP 31 conformity kit	ATV630C22N4	VW3A9112
	ATV630C25N4 ATV630C31N4	VW3A9113

For more information on how to mount the kits, go to www.schneider-electric.com, type the kit reference in the search engine and download the corresponding Instruction sheet.

IP20, IP21/UL Type 1 and IP31 conformity kits for ATV930

IP Conformity levels for ATV930

Up to 90kW, ATV930 drives are already UL Type 1 compliant out of the box, no kit is needed. For other ranges, there are optional UL kits.

IP20 and IP21/UL Type 1 kits for ATV930

The following table lists all UL Type1 kits available for ATV930 and their reference.

IP 20 and IP 21/UL Type 1 conformity kits		
Description	**For use with**	**Reference**
IP 20/UL Type 1 conformity kit	ATV930U22Y6...D30Y6	VW3A9705
	ATV930D37Y6...D90Y6	VW3A9706
IP 21/UL Type 1 conformity kit	ATV930D55M3…D75M3 ATV930C11N4…C16N4	VW3A9704
UL Type 1 conformity kit	ATV930C22N4	VW3A9212
	ATV930C25N4 ATV930C31N4	Without braking unit: VW3A9213 With braking unit: VW3A9214

For more information on how to mount the kits, go to www.schneider-electric.com, type the kit reference in the search engine and download the corresponding Instruction sheet.

IP31 conformity kits for ATV930

The following table lists all IP31 kits available for ATV930 and their reference.

IP 31 conformity kits		
Description	**For use with**	**Reference**
IP 31 conformity kit	ATV930C22N4 ATV930C22N4C	VW3A9112
	ATV630C25N4C ATV630C31N4C	Without braking unit: VW3A9113 With braking unit: VW3A9114

For more information on how to mount the kits, go to www.schneider-electric.com, type the kit reference in the search engine and download the corresponding Instruction sheet.

Flange Mounting Kit

Flange-mounting kit description

Flange-mounting kits are used for enclosure designs where the power part of the drive is mounted outside the enclosure to reduce the power dissipated into the enclosure. Altivar Process range has flange-mounting kits and drives optimized for cabinet integration.

Flange-mounting kits for ATV630

The following table lists all accessories for flange-mounting for ATV630 and their reference.

Accessories for flange-mounting				
Description	**For use with**	**Enclosure max. height (mm/*in.*)**	**Enclosure max. width (mm/*in.*)**	**Reference**
Mounting bracket for flange-mounting kit	NSYPTDS1, NSYPTDS2, NSYPTDS3	–	–	NSYAEFPFPTD
Flange-mounting kit for separate air flow	ATV630U07M3...U40M3, ATV630U07N4...U55N4	360/*14.17*	235/*9.25*	NSYPTDS1
	ATV630U55M3, ATV630U75N4...D11N4	420/*16.54*	265/*10.43*	NSYPTDS2
	ATV630U75M3...D11M3, ATV630D15N4...D22N4	555/*21.85*	295/*11.61*	NSYPTDS3
	ATV630D15M3...D22M3, ATV630D30N4...D45N4	800/*31.50*	385/*15.16*	NSYPTDS4
	ATV630D30M3…D45M3 ATV630D55N4…D90N4	975/*38.39*	427/*16.81*	NSYPTDS5
	ATV630C11N4…C16N4 ATV630D55M3...D75M3	–		VW3A95116
	ATV630C22N4	–		VW3A9513
	ATV630C25N4 ATV630C31N4	–		VW3A9514

For more information on how to mount the kits, go to www.schneider-electric.com, type the kit reference in the search engine and download the corresponding Instruction sheet.

Flange-mounting kits for ATV930

The following table lists all accessories for flange-mounting for ATV630 and their reference.

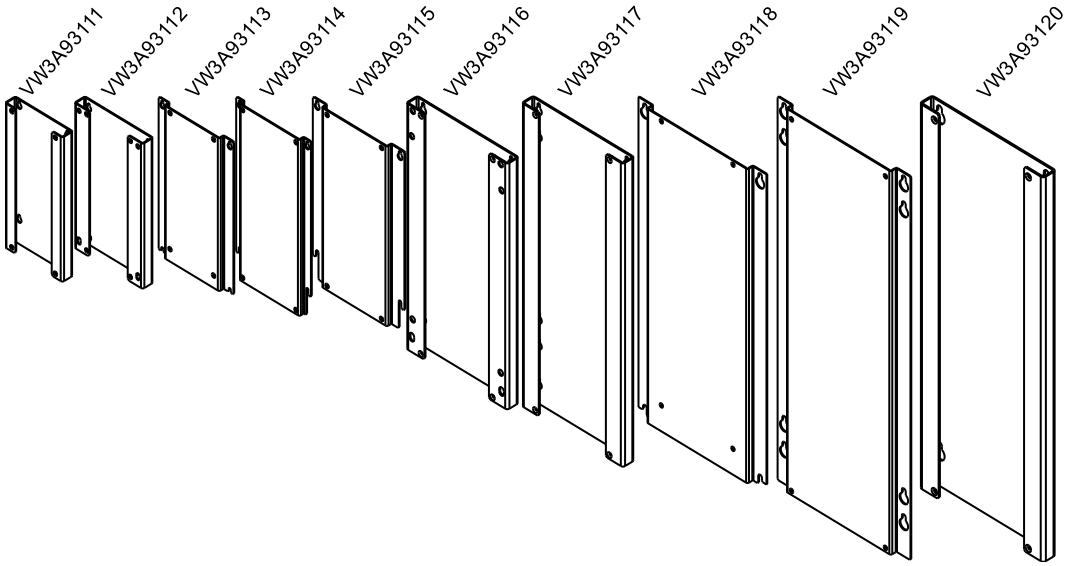
Accessories for flange-mounting					
Description	**For use with**	**Use with braking unit**	**Enclosure max. height (mm/*in.*)**	**Enclosure max. width (mm/*in.*)**	**Reference**
Mounting bracket for flange-mounting kit	NSYPTDS1, NSYPTDS2, NSYPTDS3	–	–	–	NSYAEFPFPTD
Flange-mounting kit for separate air flow	ATV930U07M3...U40M3, ATV930U07N4...U55N4	–	360/*14.17*	235/*9.25*	NSYPTDS1
	ATV930U55M3, ATV930U75N4...D11N4	–	420/*16.54*	265/*10.43*	NSYPTDS2
	ATV930U75M3...D11M3, ATV930D15N4...D22N4	–	555/*21.85*	295/*11.61*	NSYPTDS3
	ATV930D15M3...D22M3, ATV930D30N4...D45N4	–	800/*31.50*	385/*15.16*	NSYPTDS4
	ATV930D30M3…D45M3 ATV930D55N4…D90N4	–	975/*38.39*	427/*16.81*	NSYPTDS5
	ATV930C11N4…C16N4 ATV930D55M3...D75M3	–	–	–	VW3A95116
	ATV930C22N4	–	–	–	VW3A9513
	ATV930C25N4 ATV930C31N4	Without braking unit	–	–	VW3A9514
		With braking unit	–	–	VW3A9515

For more information on how to mount the kits, go to www.schneider-electric.com, type the kit reference in the search engine and download the corresponding Instruction sheet.

Mechanical Substitution kits

Mechanical Substitution Kits Description

Mechanical Substitution Kits consist of metal support plates that make it possible to re-use the same mounting holes as the ATV61/71. There are 10 kits designed for different product frame sizes.



Please note that no kit is needed for frame size 7 products as ATV61/71 and ATV630/930 product dimensions are identical.

Mechanical Substitution Kit selection

Check your current product frame size (see check-list) and refer to the table below to choose the right Mechanical Substitution Kit.

ATV61/71 Frame size	ATV630/650 ATV930/950 Frame size	Kit Catalog Number
2	1	VW3A93111
3	1	VW3A93112
4	1	VW3A93113
4	2	VW3A93114
5A	2	VW3A93115
5B	3	VW3A93116
6	3	VW3A93116
6	4	VW3A93117
7A	4	VW3A93117
8	4	VW3A93118
8	5	VW3A93119
9	5	VW3A93120

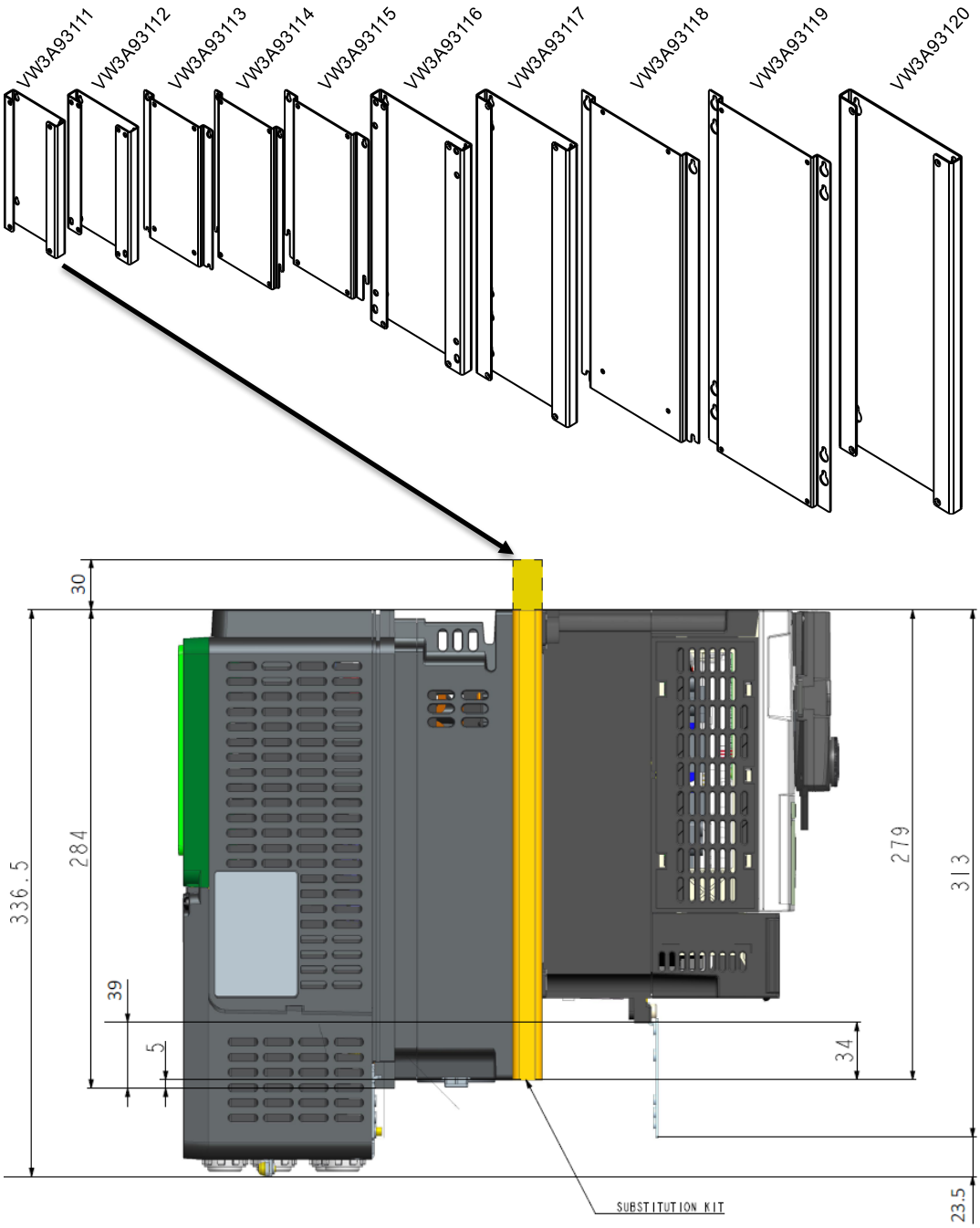
For more information on how to mount the kits, go to www.schneider-electric.com, type the kit reference in the search engine and download the corresponding Instruction sheet: MFR22528.

Product footprint comparison

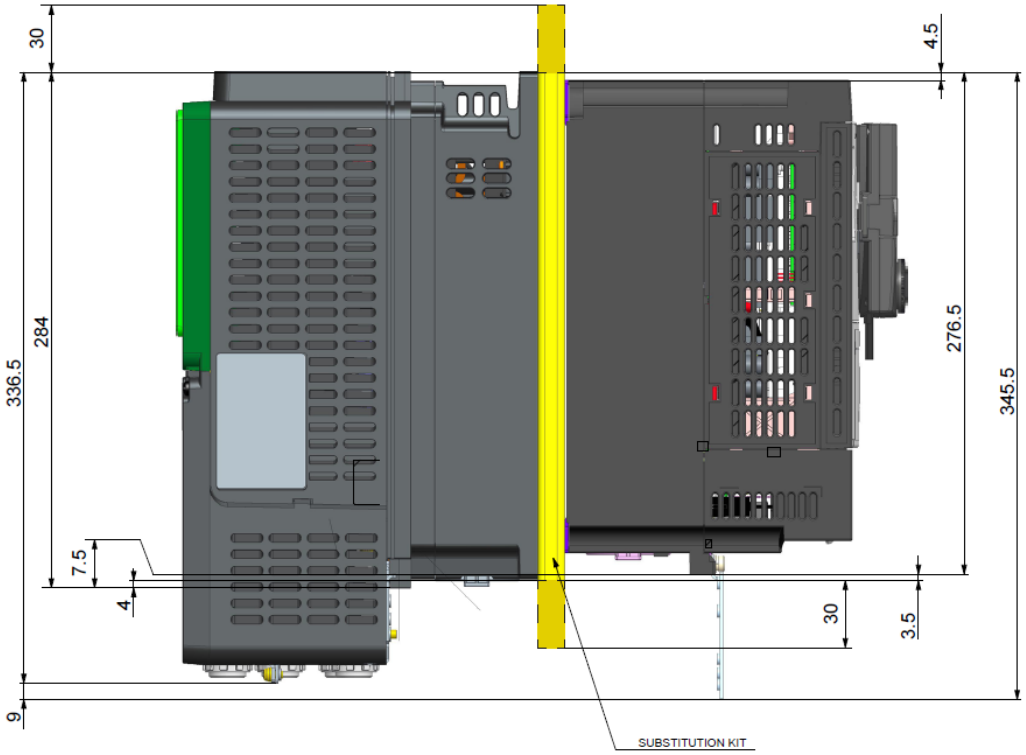
To determine how much more space you need for your Altivar Process drive, here are some size comparisons (all dimensions are in mm).

In all the following images, the Altivar Process product is on the left, the ATV61/71 product on the right and the mechanical substitution kit in the middle.

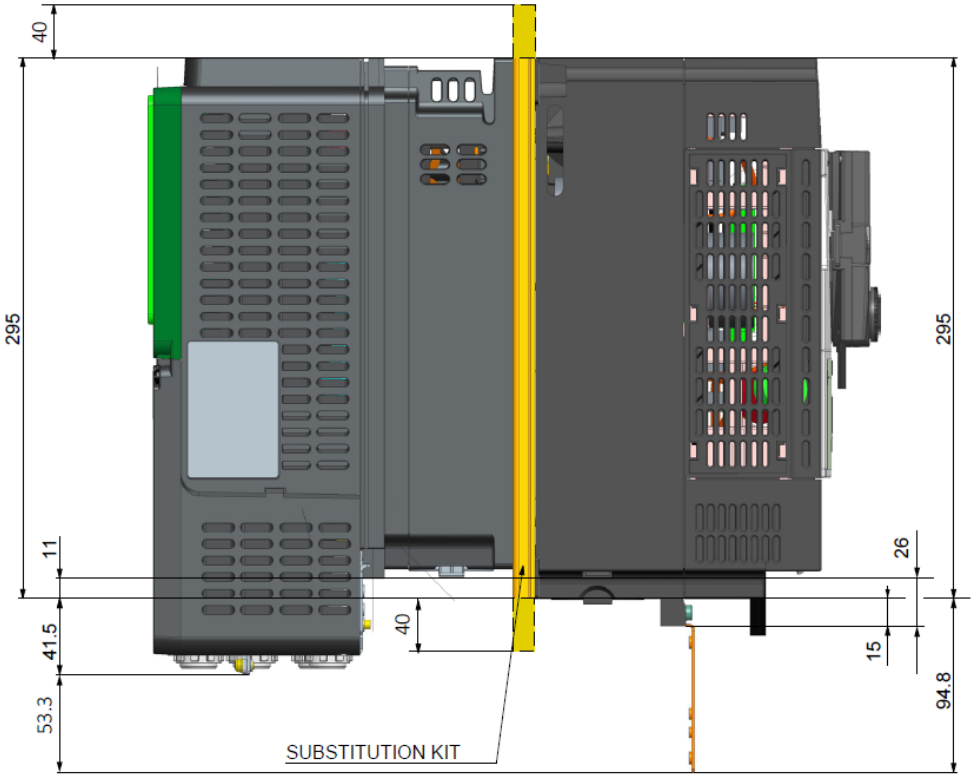
With VW3A93111 (From ATV61/71 Frame Size 2 to ATV630/930 Frame Size 1)



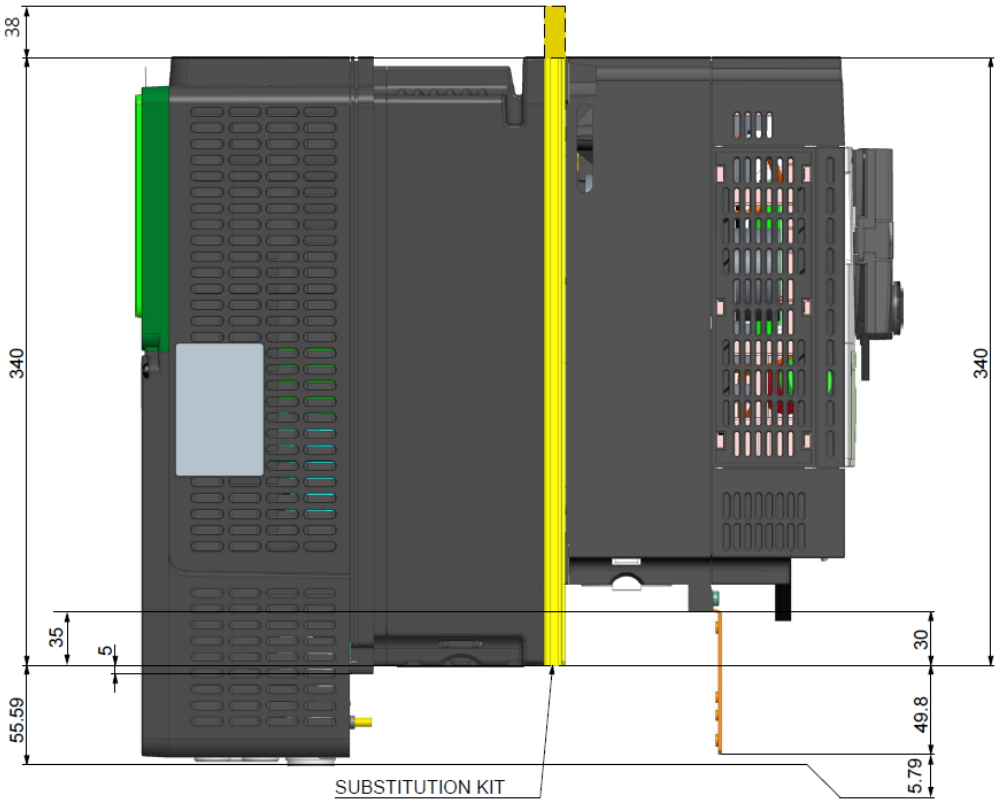
With VW3A93112 (From ATV61/71 Frame Size 3 to ATV630/930 Frame Size 1)



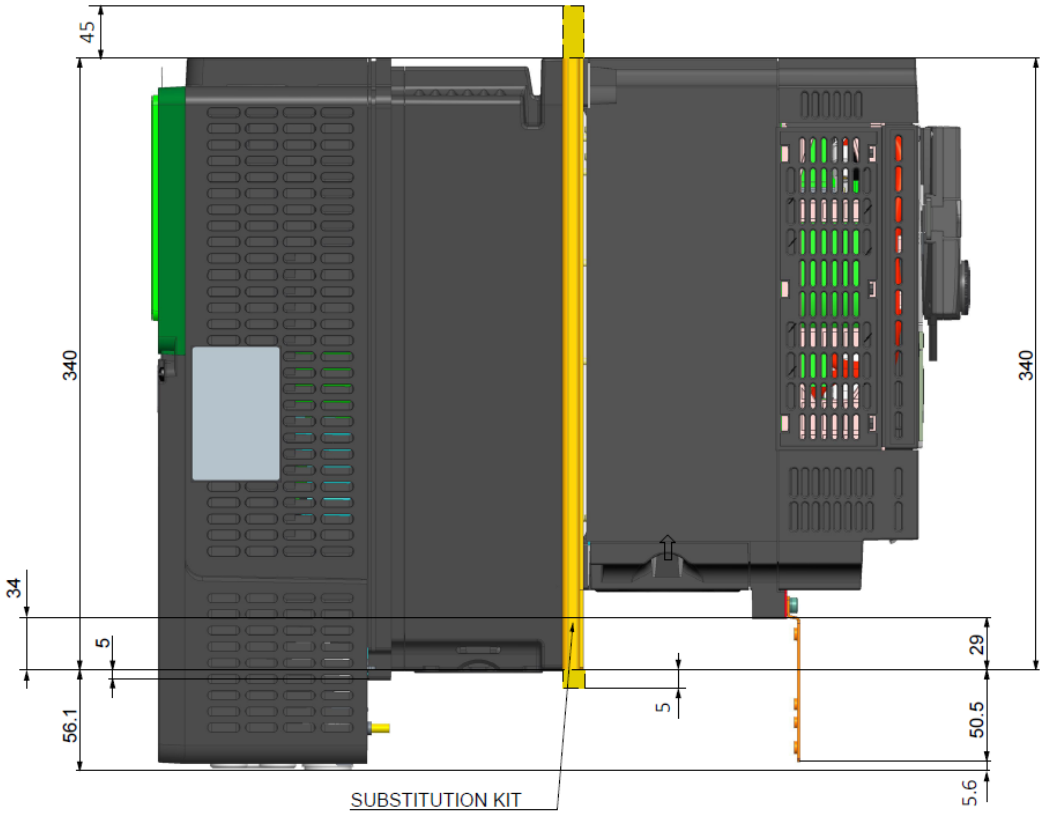
With VW3A93113 (From ATV61/71 Frame Size 4 to ATV630/930 Frame Size 1)



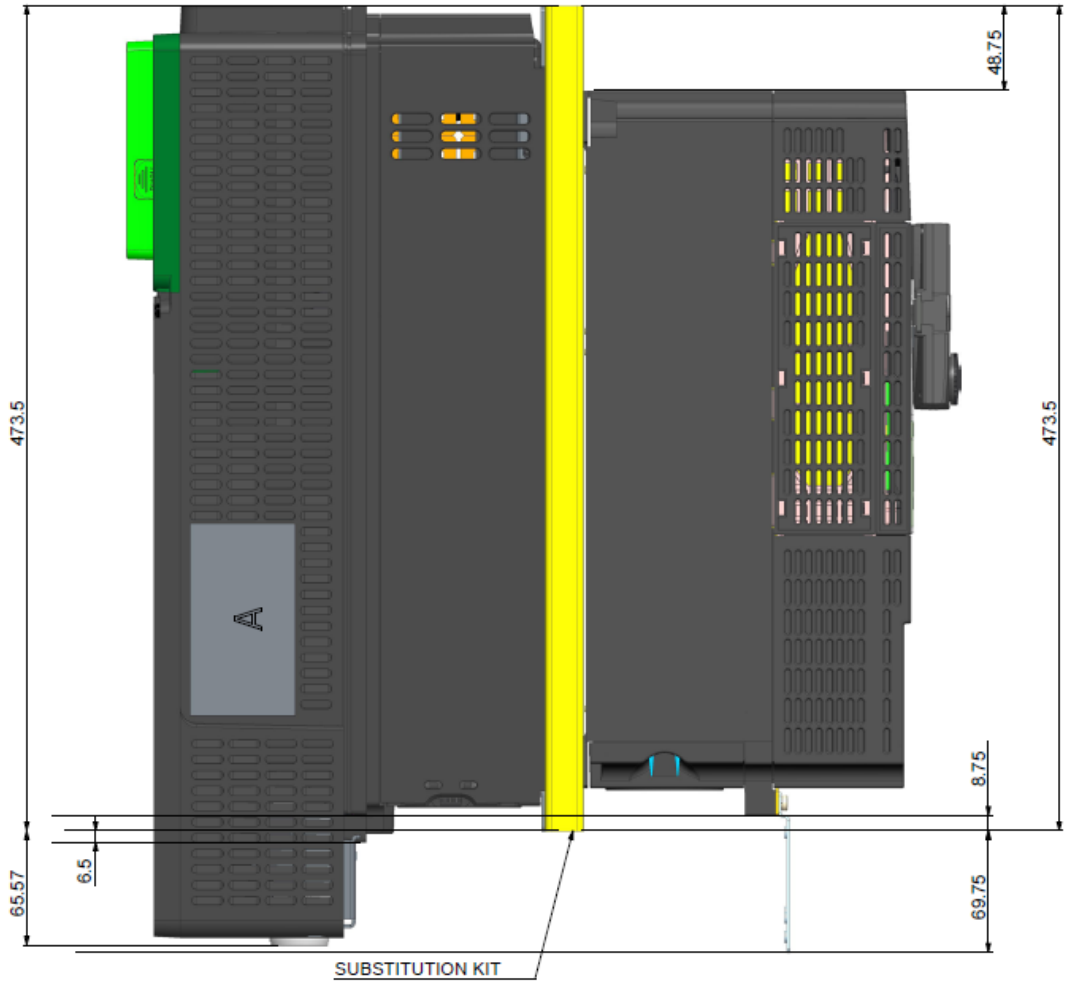
With VW3A93114 (From ATV61/71 Frame Size 4 to ATV630/930 Frame Size 2)



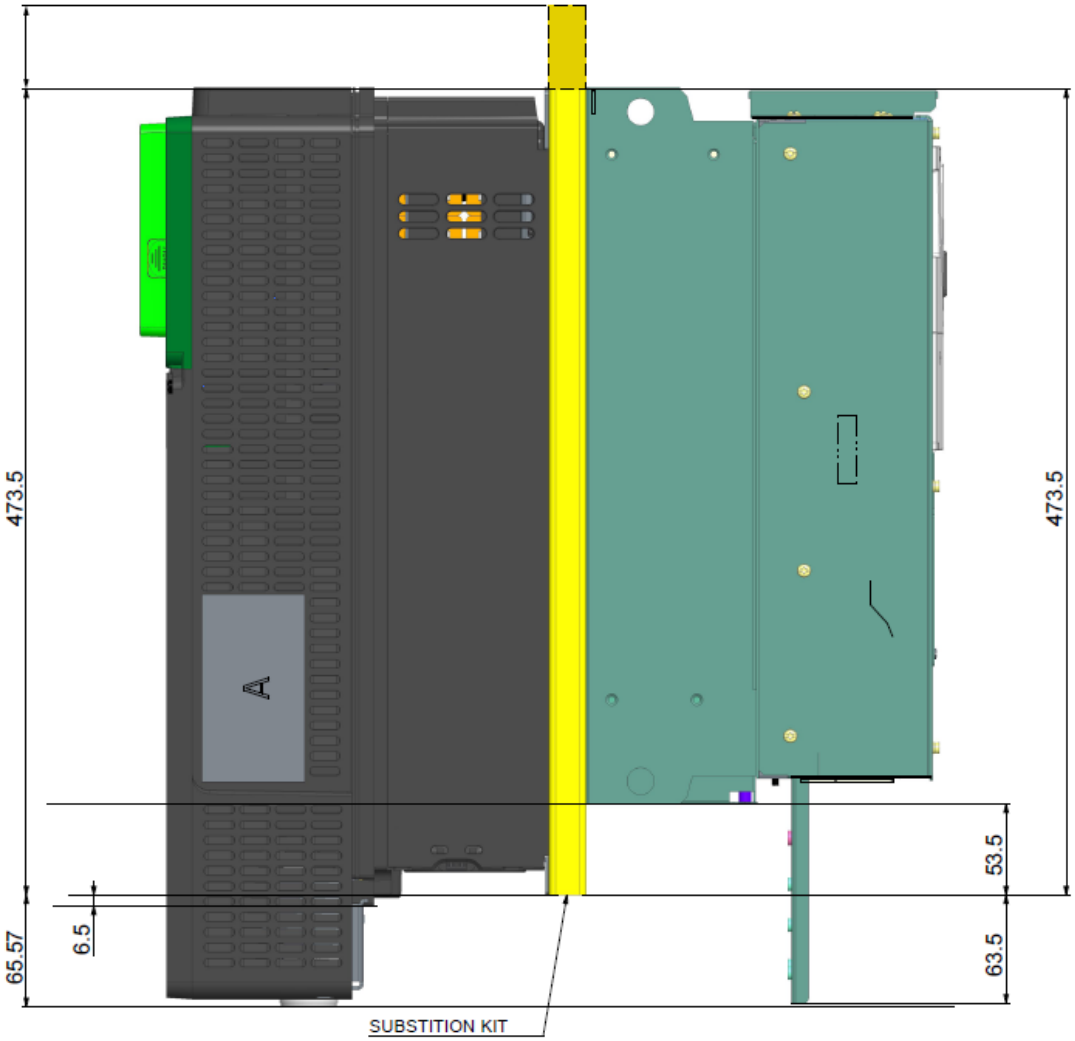
With VW3A93115 (From ATV61/71 Frame Size 5A to ATV630/930 Frame Size 2)



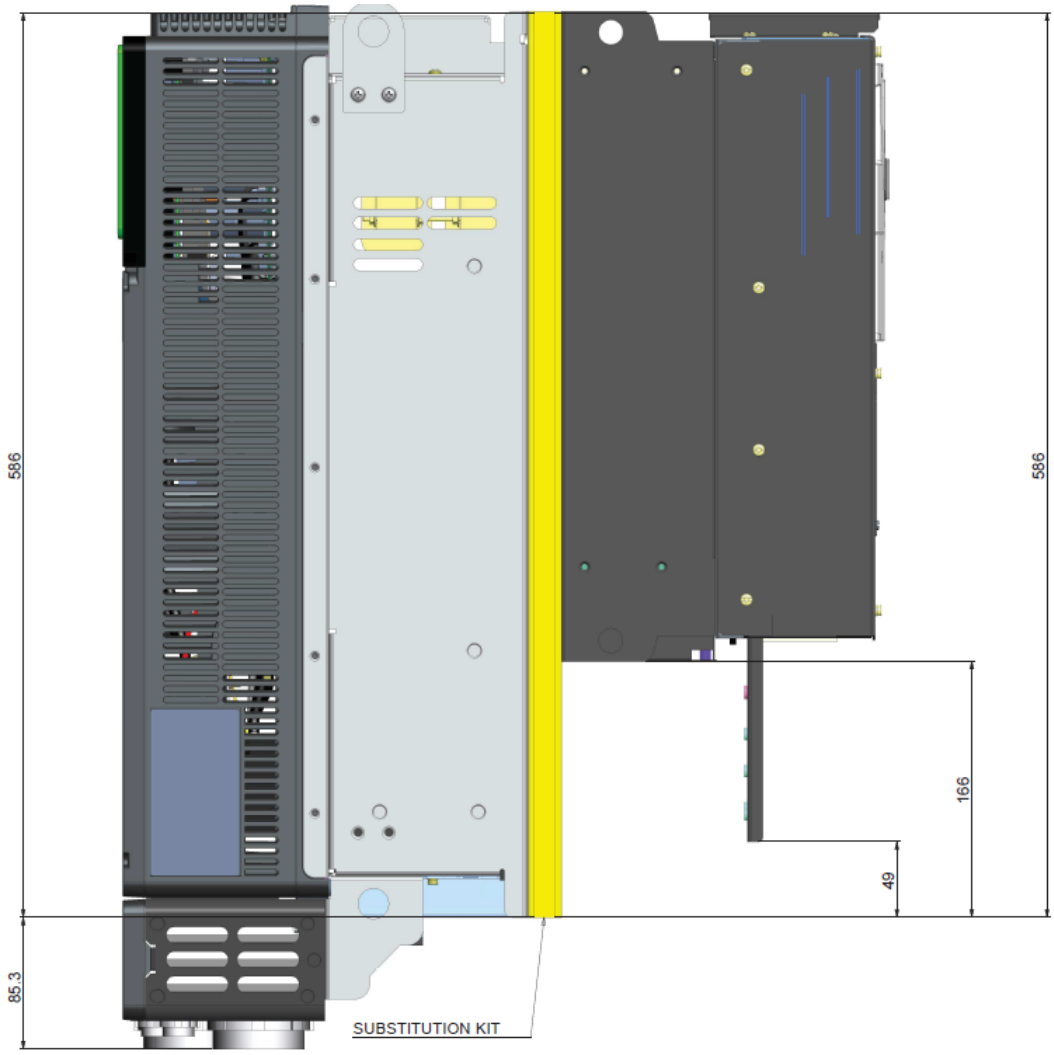
With VW3A93116 (From ATV61/71 Frame Size 5B to ATV630/930 Frame Size 3)

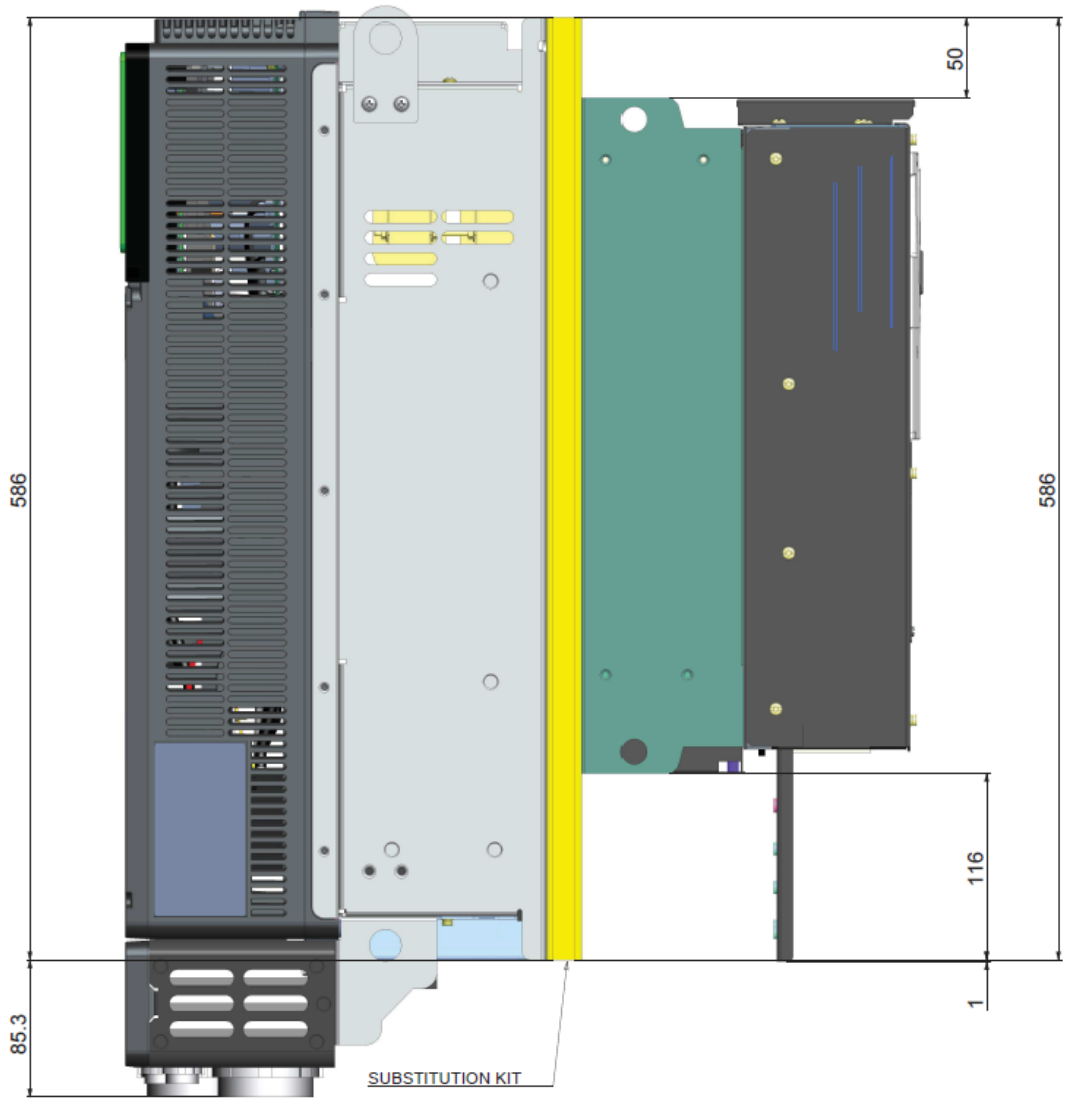


With VW3A93116 (From ATV61/71 Frame Size 6 to ATV630/930 Frame Size 3)

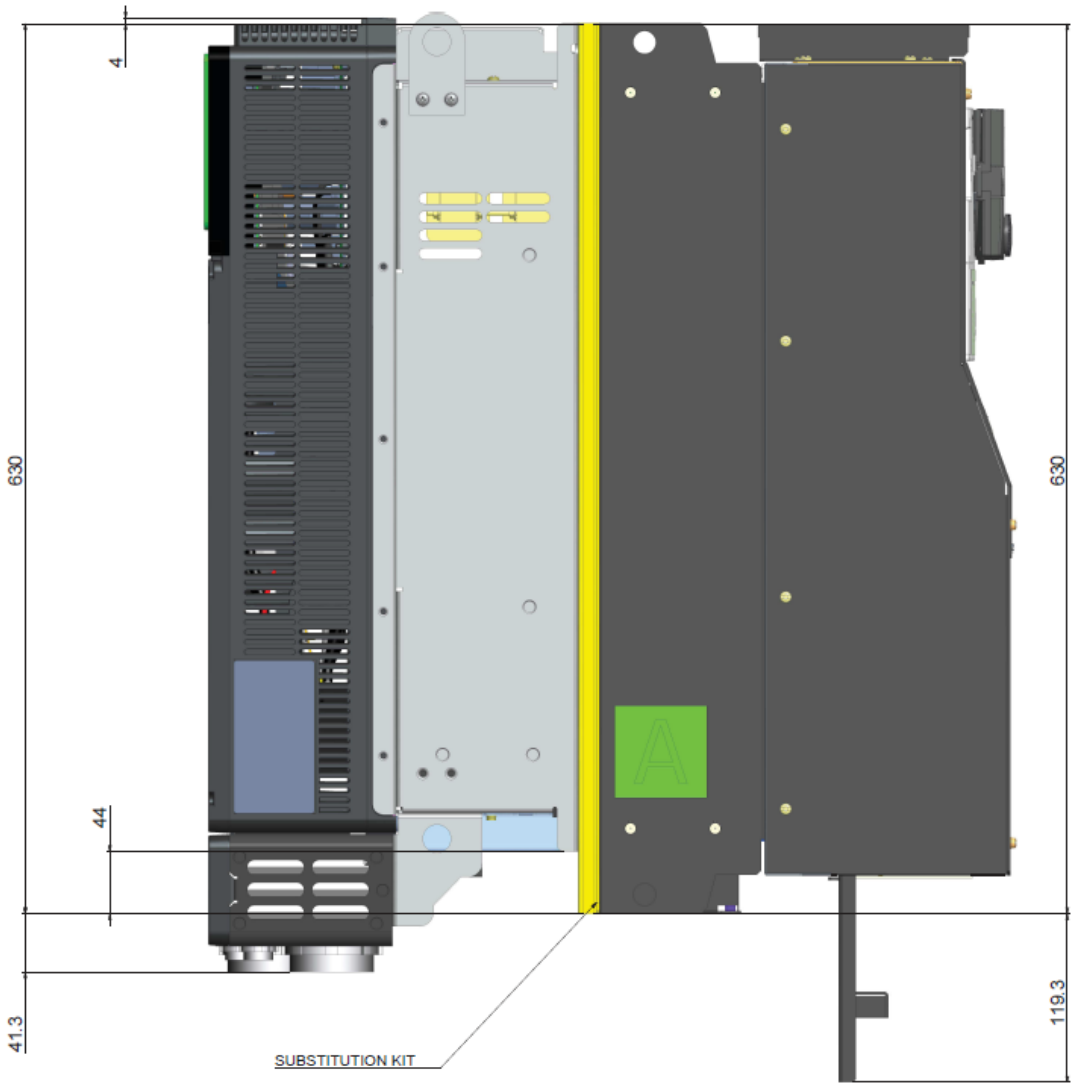


With VW3A93117 (From ATV61/71 Frame Size 6 to ATV630/930 Frame Size 4)

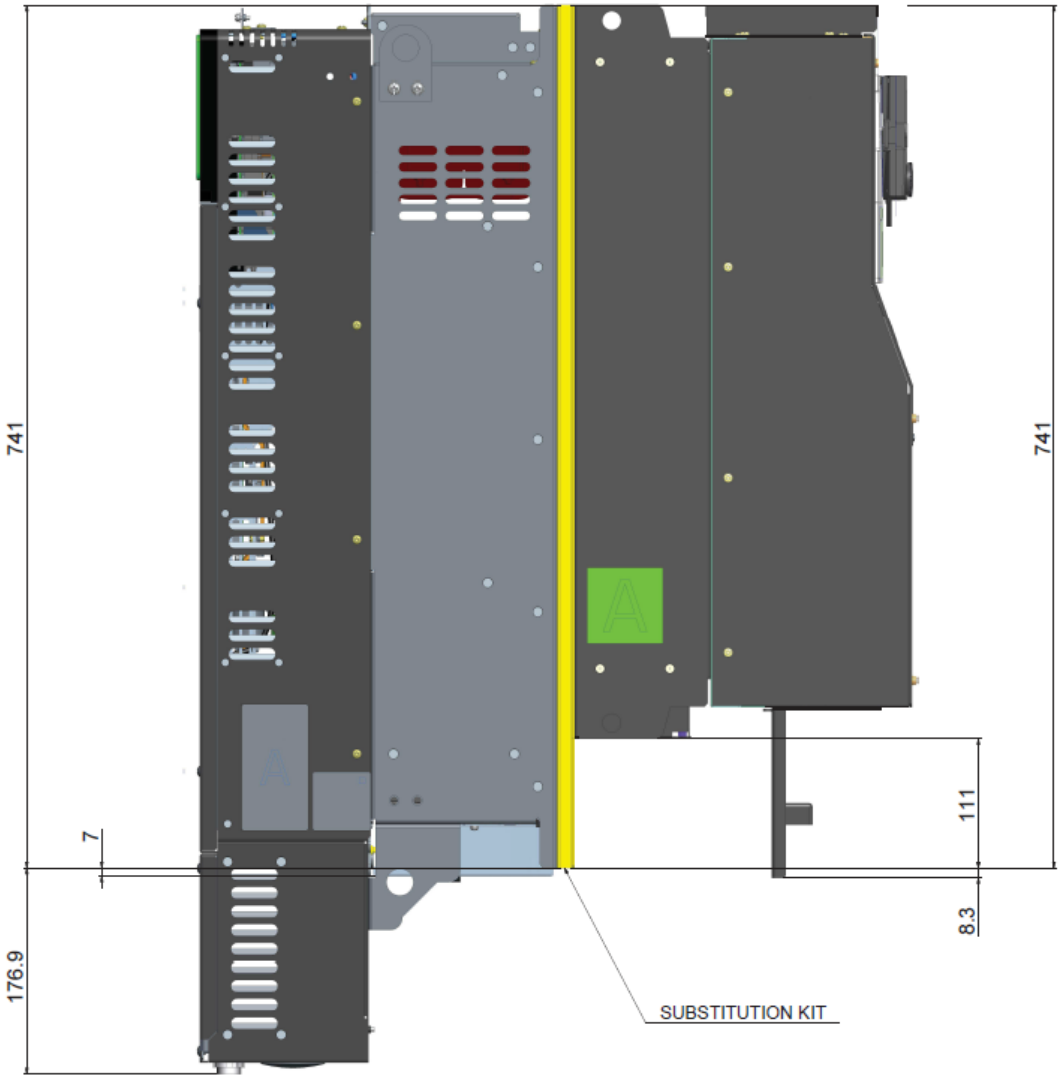



50
586
586
116
1
85.3
SUBSTITUTION KIT

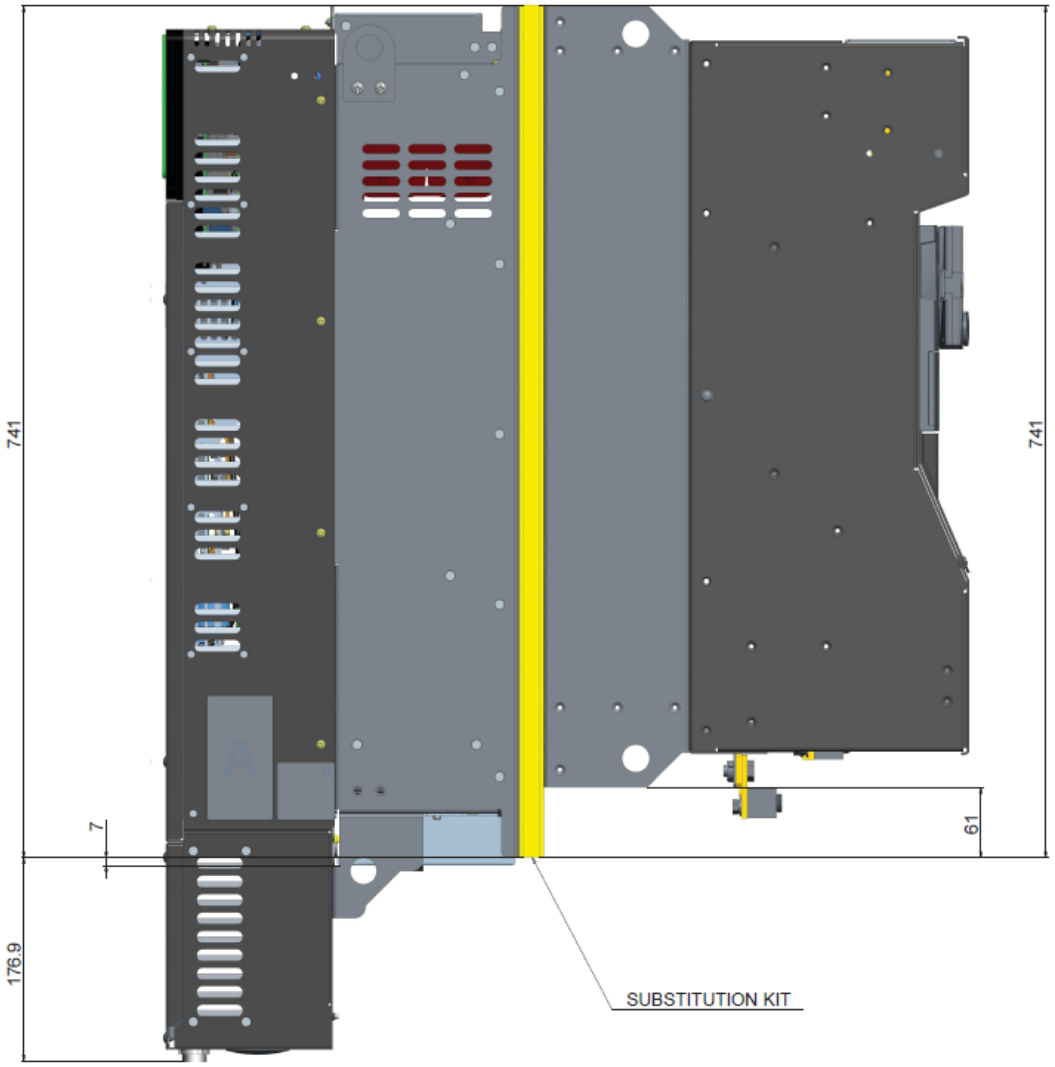
With VW3A93118 (From ATV61/71 Frame Size 8 to ATV630/930 Frame Size 4)



With VW3A93119 (From ATV61/71 Frame Size 8 to ATV630/930 Frame Size 5)



With VW3A93119 (From ATV61/71 Frame Size 9 to ATV630/930 Frame Size 5)



Remote Mounting Kit for Graphic Display Terminal

Description

The IP65 Door Mounting Kit (VW3A1112) can be used to mount the Graphic Display Terminal on enclosure doors for easier access. When the Graphic Display Terminal is removed, this kit is designed to help maintain IP65 protection against dust, water projections, etc.

Compared to the remote mounting kit available for ATV61/71 products, the remote mounting kit for Altivar Process products has the following advantages:

- Mounting the kit to the enclosure door is easier
- The hole that needs to be drilled into the enclosure door is much smaller (22.5mm / 0.89in)

Part IV
Control Inputs/Outputs and Communication

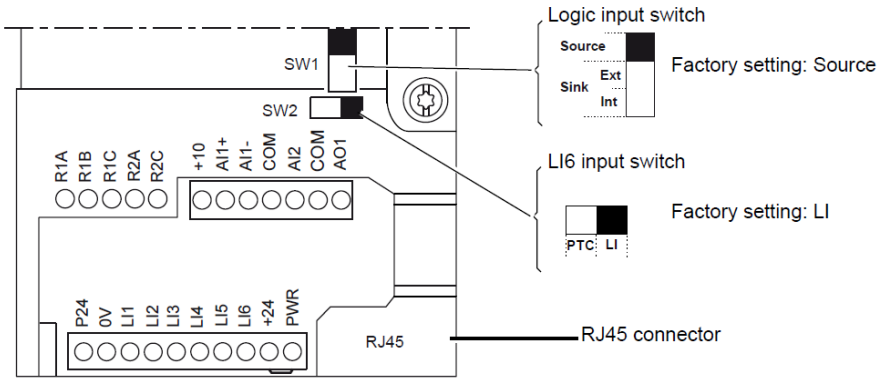
What is in This Part?

This part contains the following chapters:

Control Terminals

ATV61/71 Control Terminals

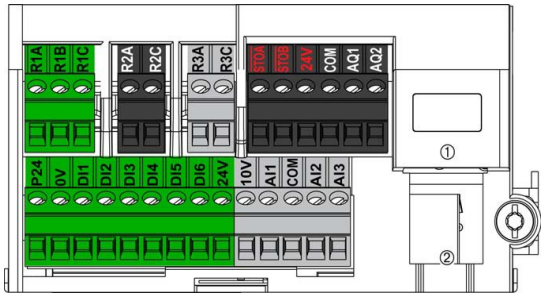
The following figure shows the ATV61/71 control terminals



NOTE: ATV61/71 are supplied with a link between the PWR and +24 terminals.

ATV630 Control Terminals

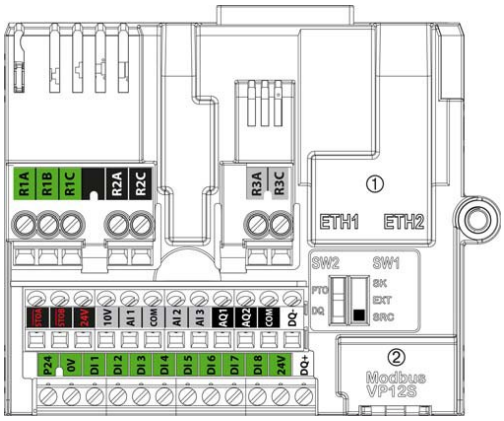
The following figure shows the ATV630 control terminals



① Ethernet Modbus TCP, ② Serial Modbus

ATV930 Control Terminals

The following figure shows the ATV930 control terminals



① Ethernet Modbus TCP, ② Serial Modbus

Digital Inputs

The following table provides the list and characteristics of Digital inputs available on ATV61/71, ATV600 and ATV900 drives

Digital Inputs			Characteristics		
ATV61/71	**ATV630**	**ATV930**	**ATV61/71**	**ATV630**	**ATV930**
LI1	DI1	DI1	• +24 V ⎓ (max. 30 V) • Impedance 3.5 kΩ • Reaction time: 2 ms ± 0.5 ms Switch SW1 Source (factory setting): • State 0 : < 5 V ⎓ • State 1: > 11 V ⎓ Switch SW1 Sink Int or Sink Ext: • State 0: > 16 V ⎓ • State 1: < 10 V ⎓	6 programmable logic inputs 24 Vdc, comply with IEC/EN 61131-2 logic type 1 • Positive logic (Source): State 0 if ≤ 5 Vdc or logic input not wired, state 1 if ≥ 11 Vdc • Negative logic (Sink):State 0 if ≥16 Vdc or logic input not wired, state 1 if ≤ 10 Vdc • Impedance 3.5 kΩ • Maximum voltage: 30 Vdc • Sampling time: 2 ms + 0.5 ms maximum Multiple assignment makes it possible to configure several functions on one input (example: DI1 assigned to forward and preset speed 2, DI3 assigned to reverse and preset speed 3).	8 programmable logic inputs 24 Vdc, comply with IEC/EN 61131-2 logic type 1 • Positive logic (Source): State 0 if ≤ 5 Vdc or logic input not wired, state 1 if ≥ 11 Vdc • Negative logic (Sink):State 0 if ≥16 Vdc or logic input not wired, state 1 if ≤ 10 Vdc • Impedance 3.5 kΩ • Maximum voltage: 30 Vdc • Sampling time: 2 ms + 0.5 ms maximum Multiple assignment makes it possible to configure several functions on one input (example: DI1 assigned to forward and preset speed 2, DI3 assigned to reverse and preset speed 3).
LI2	DI2	DI2			
LI3	DI3	DI3			
LI4	DI4	DI4			
LI5	DI5[1]	DI5			
LI6	DI6[1]	DI6	Switch SW2 on LI (factory setting): • Same characteristics as logic inputs LI1 to LI5 Or Switch SW2 on PTC: • Trip threshold 3 kΩ, reset threshold 1.8 kΩ • Short-circuit detection threshold < 50 Ω		
-	-	DI7[2]	-	-	
-	-	DI8[2]	-	-	

[1] DI5 and DI6 on ATV630 can also be used as Pulse Inputs with the following characteristics:

[2] DI7 and DI8 on ATV930 can also be used as Pulse Inputs with the following characteristics:

Digital Inputs		Characteristics
ATV630	**ATV930**	
DI5 DI6	DI7 DI8	• Programmable Pulse inputs • Comply with level 1 PLC, IEC 65A-68 standard • State 0 if < 0.6 Vdc, state 1 if > 2.5 Vdc • Pulse counter 0...30 kHz • Frequency range: 0…30 kHz • Cyclic ratio: 50 % ± 10 % • Maximum input voltage 30 Vdc, < 10 mA • Sampling time: 5 ms + 1 ms maximum

Digital Outputs

The following table provides the list and characteristics of Digital outputs available on ATV61/71, ATV600 and ATV900 drives

Digital Outputs			Characteristics		
ATV61/71	**ATV630**	**ATV930**	**ATV61/71**	**ATV630**	**ATV930**
AO1	Option Module only	DQ-	Can be configured as: • logic output: 0 to +10V or 0 to 20 mA.	-	Digital output configurable by switch • Insulated • Maximum voltage: 30 Vdc • Maximum current: 100 mA • Frequency range: 0...1 kHz • Positive/Negative logic is managed by user external wiring.
-	-	DQ+	-	-	

[1] DQ+ on ATV930 can also be used as Pulse Output with the following characteristics:

Characteristics	
ATV930	
DQ+	• Pulse train output configurable by switch • Open collector not insulated • Maximum voltage: 30 Vdc • Maximum current: 20 mA • Frequency range: 0...30 kHz

Analog Inputs

The following table provides the list and characteristics of Analog inputs available on ATV61/71, ATV600 and ATV900 drives

Digital Inputs			Characteristics		
ATV61/71	**ATV630**	**ATV930**	**ATV61/71**	**ATV630**	**ATV930**
AI1+ AI1-	AI1	AI1[2]	• -10 to +10 V ⎓ (max. safe voltage 24 V) • Reaction time: 2 ms ± 0.5 ms, 11-bit resolution + 1 sign bit • Accuracy ± 0.6% for Δ θ = 60°C (140°F), linearity ± 0.15% of max. value	Software-configurable V/A : voltage or current analog input • Voltage analog input 0...10 Vdc, impedance 30 kΩ, • Current analog input X-Y mA by programming X and Y from 0...20 mA, with impedance 250 Ω • Sampling time: 5 ms + 1 ms maximum • Resolution 12 bits • Accuracy: ± 0.6% for a temperature variation of 60°C (140°F) • Linearity ± 0.15% of maximum value	Software-configurable V/A : voltage or current analog input • Voltage analog input 0...10 Vdc, impedance 31.5 kΩ, • Current analog input X-Y mA by programming X and Y from 0...20 mA, with impedance 250 Ω • Sampling time: 1 ms + 1 ms maximum • Resolution 12 bits • Accuracy: ± 0.6% for a temperature variation of 60°C (140°F) • Linearity ± 0.15% of maximum value
AI2	AI2[1]	AI2	• Analog input 0 to +10 V ⎓ (max. safe voltage 24 V), • impedance 30 kΩ or • Analog input X - Y mA, X and Y being programmable from 0 to 20 mA • Impedance 250 Ω • Reaction time: 2 ms ± 0.5 ms • 11-bit resolution, accuracy ± 0.6% for Δ θ = 60°C (140°F), linearity ± 0.15% of max.value		Voltage bipolar analog input –10...10 Vdc, impedance 31.5 kΩ • Sampling time: 1 ms + 1 ms maximum • Resolution 12 bits • Accuracy: ± 0.6% for a temperature variation of 60°C (140°F) • Linearity ± 0.15% of maximum value

Digital Inputs			Characteristics		
ATV61/71	**ATV630**	**ATV930**	**ATV61/71**	**ATV630**	**ATV930**
-	AI3[1]	AI3[2]	-		Software-configurable V/A : voltage or current analog input • Voltage analog input 0...10 Vdc, impedance 31.5 kΩ, • Current analog input X-Y mA by programming X and Y from 0...20 mA, with impedance 250 Ω • Sampling time: 1 ms + 1 ms maximum • Resolution 12 bits • Accuracy: ± 0.6% for a temperature variation of 60°C (140°F) • Linearity ± 0.15% of maximum value
PWR	$\overline{\text{STOA}}$ $\overline{\text{STOB}}$	$\overline{\text{STOA}}$ $\overline{\text{STOB}}$	• 24 V c power supply (max. 30 V) • Impedance 1.5 kΩ • State 0 if < 2 V, state 1 if > 17 V • Reaction time: 10 ms	• Safety Function STO Inputs Refer to the Embedded Safety Function Manual (EAV64334) available on www.schneider-electric.com	• Safety Function STO Inputs Refer to the ATV900 Embedded Safety Function manual NHA80947 available on www.schneider-electric.com

[1] AI2 and AI3 on ATV630 can also be used as Sensor Inputs with the following characteristics:

[2] AI1 and AI3 on ATV930 can also be used as Sensor Inputs with the following characteristics:

Digital Inputs		Characteristics
ATV630	**ATV930**	
AI2 AI3	AI1 AI3	• Software-configurable PT100/PT1000 or KTY84 or PTC or Water level sensor • PT100 o 1 or 3 thermal sensors mounted in series (configurable by software) o Sensor current: 5 mA o Range –20...200°C (–4...392°F) o Accuracy +/– 4°C (39°F) for a temperature variation of 60°C (140°F) • PT1000 o 1 or 3 thermal sensors mounted in series (configurable by software) o Thermal sensor current: 1 mA o Range –20...200°C (–4...392°F) o Accuracy +/– 4°C (39°F) for a temperature variation of 60°C (140°F) • PTC o 6 sensors maximum mounted in series o Sensor current: 1 mA o Nominal value: < 1.5 kΩ o Overheat trigger threshold: 2.9 kΩ ± 0.2 kΩ o Overheat reset threshold: 1.575 kΩ ± 0.75 kΩ o Low impedance detection threshold: 50 Ω – 10 Ω/+20 Ω • KTYp84 o 1 thermal sensor o Thermal sensor current: 1 mA o Range –20...200°C (–4...392°F) o Accuracy +/– 4°C (39°F) for a temperature variation of 60°C (140°F) • Water Level Sensor (For ATV630 only) • Sensitivity: 0...1 MΩ, adjustable by software o Water level sensor current: 0.3 mA...1 mA maximum o Adjustable delay: 0...10 s

Analog Outputs

The following table provides the list and characteristics of Analog Outputs available on ATV61/71, ATV600 and ATV900 drives

Digital Outputs			Characteristics		
ATV61/71	**ATV630**	**ATV930**	**ATV61/71**	**ATV630**	**ATV930**
AO1	AQ1 AQ2	AQ1 AQ2	• Analog output 0 to +10 V c, load impedance greater than 50 kΩ or • Analog output X - Y mA, X and Y being programmable from 0 to 20 mA • Max. load impedance 500 Ω • 10-bit resolution, reaction time: 2 ms ± 0.5 ms • Accuracy ± 1% for Δθ = 60°C (140°F), linearity ± 0.2% of max. value or • logic output: 0 to +10V or 0 to 20 mA.	AQ: Analog output software-configurable for voltage or current • Voltage analog output 0...10 Vdc, minimum. Minimum load impedance 470 Ω, • Current analog output X-Y mA by programming X and Y from 0...20 mA, maximum load impedance 500 Ω • Sampling time: 10 ms + 1 ms maximum • Resolution 10 bits • Accuracy: ± 1% for a temperature variation of 60°C (140°F) • Linearity ± 0.2%	AQ: Analog output software-configurable for voltage or current • Voltage analog output 0...10 Vdc, minimum. Minimum load impedance 470 Ω, • Current analog output X-Y mA by programming X and Y from 0...20 mA, maximum load impedance 500 Ω • Sampling time: 5 ms + 1 ms maximum • Resolution 10 bits • Accuracy: ± 1% for a temperature variation of 60°C (140°F) • Linearity ± 0.2%

Power Supplies

The following table provides the list and characteristics of power supplies available on ATV61/71, ATV600 and ATV900 drives

Power Supplies			Characteristics		
ATV61/71	**ATV630**	**ATV930**	**ATV61/71**	**ATV630**	**ATV930**
+10	10V	10V	• +10 V ⎓ (10.5 V ± 0.5 V) • 10 mA max.	Internal supply for the analog inputs • 10.5 Vdc • Tolerance ± 5% • Current: maximum 10 mA • Short circuit protected	
P24	P24		• +24 V ⎓ (min. 19 V, max. 30 V) • Power 30 Watts	External input supply +24 Vdc • Tolerance: minimum 19 Vdc, maximum 30 Vdc • Current: maximum 0.8 A	
0V	0V	0V	0V	0 V for P24	
+24	24V	24V	Switch SW1 in Source or Sink Int position: • +24 V ⎓ power supply (min. 21 V, max. 27 V), protected against short-circuits and overloads • Max. current available for customers 200 mA Switch SW1 in Sink Ext position: • Input for external +24 V ⎓ power supply for the logic inputs	• +24 Vdc • Tolerance: minimum 20.4 Vdc, maximum 27 Vdc • Current: maximum 200 mA for both 24 Vdc terminals • Terminal protected against overload and short-circuit • In Sink Ext position, this supply is powered by external PLC supply	

Relays

The following table provides the list and characteristics of relays available on ATV61/71, ATV600 and ATV900 drives

Relays			Characteristics		
ATV61/71	**ATV630**	**ATV930**	**ATV61/71**	**ATV630**	**ATV930**
R1A R1B R1C	R1A R1B R1C	R1A R1B R1C	• Minimum switching capacity: 3 mA for 24 V ⎓ • Maximum switching capacity on resistive load: 5 A for 250 V ∿ or 30 V ⎓ • Maximum switching current on inductive load (cos ϕ = 0.4 L/R = 7 ms): 2 A for 250 V ∿ or 30 V ⎓ • Reaction time: 7 ms ± 0.5 ms • Service life: 100,000 operations at max. switching power	**Output Relay 1** • Minimum switching capacity: 5 mA for 24 Vdc • Maximum switching current on resistive load: 3 A for 250 Vac (OVC II) and 30 Vdc • Maximum switching current on inductive load: 2 A for 250 Vac (OVC II) and 30 Vdc. Inductive load must be equipped with a voltage surge suppression device according to ac or dc operation with total energy dissipation greater than the inductive energy stored in the load. Refer to sections Output Relay with Inductive AC Loads (see Installation Manual) and Output Relay with Inductive DC Loads (see Installation Manual) . • Refresh time: 5 ms ± 0.5 ms • Service life: 100,000 operations at maximum switching current	**Output Relay 1** • Minimum switching capacity: 5 mA for 24 Vdc • Maximum switching current on resistive load: • 3 A for 250 Vac (OVC II) and 30 Vdc • Maximum switching current on inductive load: 2 A for 250 Vac (OVC II) and 30 Vdc. Inductive load must be equipped with a voltage surge suppression device according to ac or dc operation with total energy dissipation greater than the inductive energy stored in the load. Refer to sections Output Relay with Inductive AC Loads (see Installation Manual) and Output Relay with Inductive DC Loads (see Installation Manual) . • Refresh time: 1 ms ± 0.25 ms • Service life: 100,000 operations at maximum switching current

Relays			Characteristics		
ATV61/71	**ATV630**	**ATV930**	**ATV61/71**	**ATV630**	**ATV930**
R2A R2C	R2A R2C	R2A R2C		**Output Relay 2** • Minimum switching capacity: 5 mA for 24 Vdc • Maximum switching current on resistive load: • 5 A for 250 Vac (OVCII) and 30 Vdc • Maximum switching current on inductive load: • 2 A for 250 Vac (OVCII) and 30 Vdc. Inductive load must be • equipped with a voltage surge suppression device according to ac or • dc operation with total energy dissipation greater than the inductive • energy stored in the load. Refer to sections Output Relay with • Inductive AC Loads (see Installation Manual) and Output Relay with Inductive • DC Loads (see Installation Manual) • Refresh time: 5 ms ± 0.5 ms • Service life: ○ 100,000 operations at maximum switching current ○ 1,000,000 operations at 0.5 A	**Output Relay 2** • Minimum switching capacity: 5 mA for 24 Vdc • Maximum switching current on resistive load: • 5 A for 250 Vac (OVCII) and 30 Vdc • Maximum switching current on inductive load: • 2 A for 250 Vac (OVCII) and 30 Vdc. Inductive load must be • equipped with a voltage surge suppression device according to ac or • dc operation with total energy dissipation greater than the inductive • energy stored in the load. Refer to sections Output Relay with • Inductive AC Loads (see Installation Manual) and Output Relay with Inductive • DC Loads (see Installation Manual) • Refresh time: 1 ms ± 0.25 ms • Service life: ○ 100,000 operations at maximum switching current ○ 1,000,000 operations at 0.5 A

Relays			Characteristics		
ATV61/71	**ATV630**	**ATV930**	**ATV61/71**	**ATV630**	**ATV930**
-	R3A R3C	R3A R3C	-	**Output Relay 3** • Minimum switching capacity: 5 mA for 24 Vdc • Maximum switching current on resistive load: • 5 A for 250 Vac (OVCII) and 30 Vdc • Maximum switching current on inductive load: • 2 A for 250 Vac (OVCII) and 30 Vdc. Inductive load must be • equipped with a voltage surge suppression device according to ac or • dc operation with total energy dissipation greater than the inductive • energy stored in the load. Refer to sections Output Relay with • Inductive AC Loads (see Installation Manual) and Output Relay with Inductive • DC Loads (see Installation Manual) • Refresh time: 5 ms ± 0.5 ms • Service life: o 100,000 operations at maximum switching current o 1,000,000 operations at 0.5 A	**Output Relay 3** • Minimum switching capacity: 5 mA for 24 Vdc • Maximum switching current on resistive load: • 5 A for 250 Vac (OVCII) and 30 Vdc • Maximum switching current on inductive load: • 2 A for 250 Vac (OVCII) and 30 Vdc. Inductive load must be • equipped with a voltage surge suppression device according to ac or • dc operation with total energy dissipation greater than the inductive • energy stored in the load. Refer to sections Output Relay with • Inductive AC Loads (see Installation Manual) and Output Relay with Inductive • DC Loads (see Installation Manual) • Refresh time: 1 ms ± 0.25 ms • Service life: o 100,000 operations at maximum switching current o 1,000,000 operations at 0.5 A

I/O Extension Modules

The following table provides the list and characteristics of I/O Extension Modules available on ATV61, ATV/71, ATV630 and ATV930 drives

	AT61/V71				ATV630				ATV930			
Option Module	VW3A3201		VW3A3202		VW3A3203		VW3A3204		VW3A3203		VW3A3204	
Logic Inputs / Digital Inputs	4	24 V ⎓ positive logic (Source) or negative logic (Sink) inputs	4	24 V ⎓ positive logic (Source) or negative logic (Sink) inputs	6	24 V ⎓ positive or negative digital inputs Sampling: 1 ms max	-	-	6	24 V ⎓ positive or negative digital inputs Sampling: 1 ms max	-	-
Analog Inputs	-	-		1 differential current analog input 0...20 mA 1 software-configurable voltage (0...10 V ⎓) or current (0...20 mA) analog input	2	Differential analog inputs configurable via software as current 0-20 mA/4-20 mA), or for PTC, PT100 or PT1000, 2 or 3-wire. 14-bit resolution	-	-	2	Differential analog inputs configurable via software as current 0-20 mA/4-20 mA), or for PTC, PT100 or PT1000, 2 or 3-wire. 14-bit resolution	-	-
Logic outputs / Digital outputs	2	24 V ⎓ open collector positive logic (Source) or negative logic (Sink) outputs	2	24 V ⎓ open collector positive logic (Source) or negative logic (Sink) outputs	2	Assignable digital outputs	-	-	2	Assignable digital outputs	-	-
Analog Outputs	-	-	2	Software-configurable voltage (± 10 V ⎓, 0...10 V) or current (0...20 mA) analog outputs	-	-	-	-	-	-	-	-
Relay Outputs	1	Relay logic output (“C/O” contact)	1	Relay logic output	-	-	3	Relay outputs with NO contacts	-	-	3	Relay outputs with NO contacts
Inputs for PTC probes	1	Input for 6 PTC probes This PTC probe input must never be used to protect an ATEX motor in applications in explosive atmospheres	1	Input for 6 PTC probes This PTC probe input must never be used to protect an ATEX motor in applications in explosive atmospheres	-	-	-	-	-	-	-	-
Frequency Control input	-	-	1		-	-	-	-	-	-	-	-

Communication

EtherNet/IP

The following table provides the list of EtherNet/IP capabilities (integrated or option) available on ATV61/71, ATV630 and ATV930 drives

	AT61/V71	ATV630		ATV930	
Integrated	-	-		1 EtherNet/IP and Modbus TCP dual port	
Option Module	VW3A3E316	VW3A3720	VW3A3721	-	-

ModBus TCP

The following table provides the list of ModBus TCP capabilities (integrated or option) available on ATV61/71, ATV630 and ATV930 drives

	AT61/V71	ATV630		ATV930	
Integrated	-	1 Modbus TCP dual port		1 EtherNet/IP and Modbus TCP dual port	
Option Module	VW3A3E310D	VW3A3720	VW3A3721	-	-

CANopen

The following table provides the list of CANopen capabilities (integrated or option) available on ATV61/71, ATV630 and ATV930 drives

	AT61/V71	ATV630			ATV930		
Integrated	-	-			-		
Option Module	-	VW3A3608	VW3A3618	VW3A3628	VW3A3608	VW3A3618	VW3A3628

PROFINET

The following table provides the list of PROFINET capabilities (integrated or option) available on ATV61/71, ATV630 and ATV930 drives

	AT61/V71	ATV630		ATV930
Integrated	-	-		-
Option Module	VW3A3627	VW3A3720	VW3A3721	VW3A3627

PROFIBUS DP

The following table provides the list of PROFIBUS DP capabilities (integrated or option) available on ATV61/71, ATV630 and ATV930 drives

	AT61/V71		ATV630	ATV930
Integrated	-		-	-
Option Module	VW3A3E307	VW3A3E307S371	VW3A3607	VW3A3607

DeviceNet

The following table provides the list of DeviceNet capabilities (integrated or option) available on ATV61/71, ATV630 and ATV930 drives

	AT61/V71	ATV630	ATV930
Integrated	-	-	
Option Module	VW3A3E309	VW3A3609	VW3A3609

BACnet

The following table provides the list of BACnet capabilities (integrated or option) available on ATV61/71, ATV630 and ATV930 drives

	AT61/V71	ATV630		ATV930	
Integrated	-	-			
Option Module	VW3A3E319	VW3A3725	VW3A3721	-	-

Part V
Power Options

What is in This Part?

This part contains the following chapters:

Output filters

Depending on the cable lengths or the type of application, it may be necessary to use output filters:

- Motor chokes used to limit the dv/dt
- Sinus filters that are particularly effective for long cable runs or to reduce electromagnetic motor noise

The following table gives an overview of the means available according to the product range/reference (this data can vary for some applications, contact your local Schneider Electric services for more information)

	0m…50m	*50m…100m*	*100m…150m*	*150m…300m*	*300m…500m*	*500m…600m*	*600m…1000m*
Shielded Motor Cable							
ATV630●●●M3	**Without Filter**			**dV/dt filter**	**Sinus filter**	-	
	dV/dt filter	*Sinus Filter*					
ATV630●●●N4	**Without Filter**			**dV/dt filter**	**Sinus filter**	-	
	dV/dt filter	*Sinus Filter*					
ATV71H075M3…HU22M3	Without Filter	Motor choke		Sinus filter			
ATV71HU30M3…HU75M3	Without Filter	Motor choke			Sinus filter		
ATV71H075N4…HU40N4	Without Filter	Motor choke		Sinus filter			
ATV71HU55N4…HD18N4	Without Filter	Motor choke		Sinus filter			
ATV71HD22N4, HD30N4	Without Filter	Motor choke		Sinus filter			
HD37N4	Without Filter	Motor choke		Sinus filter			
HD45N4…HD75N4	Without Filter	Motor choke		Sinus filter			
HD90N4	Without Filter	Motor choke		Sinus filter			
HC11N4, HC13N4	Without Filter	Motor choke		Sinus filter			
HC16N4, HC20N4	Without Filter	Motor choke			Sinus filter		
HC25N4	Without Filter	Motor choke			Sinus filter		
HC28N4, HC31N4	Without Filter	Motor choke		Sinus filter			
HC40N4, HC50N4	Without Filter	Motor choke			Sinus filter		

	0m…50m	50m…100m	100m…150m	150m…300m	300m…500m	500m…600m	600m…1000m
Unshielded Motor Cable							
ATV630●●●M3	**Without Filter**				**dV/dt filter**	**Sinus filter**	
	dV/dt filter	*Sinus Filter*					
ATV630●●●N4	**Without Filter**				**dV/dt filter**	**Sinus filter**	
	dV/dt filter	*Sinus Filter*					
ATV71H075M3…HU22M3	Without Filter		Motor choke		Sinus filter		
ATV71HU30M3…HU75M3	Without Filter		Motor choke		Sinus filter		
ATV71H075N4…HU40N4	Without Filter		Motor choke		Sinus filter		
ATV71HU55N4…HD18N4	Without Filter		Motor choke		Sinus filter		
ATV71HD22N4, HD30N4	Without Filter		Motor choke		Sinus filter		
HD37N4	Without Filter		Motor choke		Sinus filter		
HD45N4…HD75N4	Without Filter		Motor choke		Sinus filter		
HD90N4	Without Filter		Motor choke		Sinus filter		
HC11N4, HC13N4	Without Filter		Motor choke		Sinus filter		
HC16N4,HC20N4	Without Filter		Motor choke		Sinus filter		
HC25N4	Without Filter		Motor choke		Sinus filter		
HC28N4, HC31N4	Without Filter		Motor choke		Sinus filter		
HC40N4, HC50N4	Without Filter		Motor choke		Sinus filter		

Motor following IEC60034-25

Motor not following IEC60034-25

Drive output dV/dt between 4 & 6kV/µs

Overvoltage with dV/dt filter	
Shielded Cable	
800V	between 0 & 50m
1000V	between 50 & 150m
1500V	between 150m & 300m

EMC Filters

Integrated EMC filters

Both Altivar Process and ATV61/71 drives have integrated radio interference input filters in accordance with the EMC standard for variable speed electrical power drive “products” IEC/EN 61800-3, edition 2, category C2 or C3 in environment 1 or 2, and to comply with the European EMC (electromagnetic compatibility) directive. Nevertheless, Altivar Process drives have improved performance with the integrated filters.

Performance comparison With integrated filters

<table>
<tr><th rowspan="3">Power range</th><th colspan="4">Maximum length of shielded cable (m)</th></tr>
<tr><th colspan="2">IEC/EN 61800-3 category C2</th><th colspan="2">IEC/EN 61800-3 category C3</th></tr>
<tr><th>ATV61/71</th><th>ATVProcess</th><th>ATV61/71</th><th>ATVProcess</th></tr>
<tr><td>U07N4… U40N4</td><td>10</td><td rowspan="3">50</td><td rowspan="2">10</td><td rowspan="3">150</td></tr>
<tr><td>U55N4…HD15N4</td><td rowspan="4">Additional Filter Required</td></tr>
<tr><td>D18N4…D45N4</td><td rowspan="3">50</td></tr>
<tr><td>D55N4…C16N4</td><td rowspan="2">Additional Filter Required</td></tr>
<tr><td>C22N4…C31N4</td><td>50</td></tr>
<tr><td>61HU30Y…HD90Y</td><td>-</td><td>-</td><td>25</td><td>25</td></tr>
</table>

(1) The maximum lengths are given as examples only, as they vary depending on the stray capacitance of the motors and the cables used. If motors are connected in parallel, it is the total length of all cables that should be taken into account

Additional EMC Input filters

Additional EMC input filters can be used to meet more stringent requirements and are designed to reduce conducted emissions on the line supply below the limits of standard IEC/EN 61800-3 category C1, C2 or C3.

<table>
<tr><th></th><th colspan="4">Cable length (m) ATV71</th><th></th><th colspan="3">Cable length (m) ATV900</th><th></th></tr>
<tr><th colspan="10">ADDITIONAL INPUT EMC BOARDS</th></tr>
<tr><th rowspan="3">FILTER REFERENCE for ATV71</th><th colspan="2">C2</th><th colspan="2">C1</th><th rowspan="3">FILTER REFERENCE for ATV900</th><th>C1</th><th>C2</th><th>C3</th><th rowspan="3">ATV900 REFERENCE</th></tr>
<tr><td>LF</td><td>HF</td><td>LF</td><td>HF</td><td></td><td></td><td></td><td></td></tr>
<tr><td colspan="4">200/240 V</td><td colspan="4">200/240 V</td></tr>
<tr><td>VW3A4401</td><td>100</td><td>50</td><td>50</td><td>20</td><td>VW3A4701</td><td>50</td><td>150</td><td>300</td><td>ATV930U07M3...U15M3</td></tr>
<tr><td>VW3A4402</td><td>100</td><td>50</td><td>50</td><td>20</td><td>VW3A4702</td><td>50</td><td>150</td><td>300</td><td>ATV930U22M3...U30M3</td></tr>
<tr><td>VW3A4403</td><td>100</td><td>50</td><td>50</td><td>20</td><td>VW3A4703</td><td>50</td><td>150</td><td>300</td><td>ATV930U40M3...U75M3</td></tr>
<tr><td>VW3A4404</td><td>100</td><td>50</td><td>50</td><td>20</td><td>VW3A4704</td><td>50</td><td>150</td><td>300</td><td>ATV930D11M3</td></tr>
<tr><td>VW3A4405</td><td>100</td><td>50</td><td>50</td><td>25</td><td>VW3A4705</td><td>50</td><td>150</td><td>300</td><td>ATV930D15M3</td></tr>
<tr><td>VW3A4406</td><td>100</td><td>50</td><td>50</td><td>25</td><td>VW3A4706</td><td>50</td><td>150</td><td>300</td><td>ATV930D18M3...D22M3</td></tr>
<tr><td>VW3A4408</td><td>100</td><td>50</td><td>50</td><td>25</td><td>VW3A4707</td><td>50</td><td>150</td><td>300</td><td>ATV930D30M3...D37M3
ATV930D30M3C...D37M3C</td></tr>
</table>

	Cable length (m) ATV71					Cable length (m) ATV900			
VW3A4410	100	50	50	25	VW3A4708	50	150	300	ATV930D45M3 ATV930D45M3C
					VW3A4709	50	150	300	ATV930D55M3C
					VW3A4710	50	150	300	ATV930D75M3C
	380/480 V					380/480 V			
VW3A4401	100	50	50	20	VW3A4701	50	150	300	ATV930U07N4...U22N4 ATV950U07N4...U22N4 ATV950U07N4E...U22N4E
VW3A4402	100	50	50	20	VW3A4702	50	150	300	ATV930U30N4...U55N4 ATV950U30N4...U55N4 ATV950U30N4E...U55N4E
VW3A4403	100	50	50	20	VW3A4703	50	150	300	ATV930U75N4...D15N4 ATV950U75N4...D15N4 ATV950U75N4E...D15N4E
VW3A4404	100	50	50	20	VW3A4704	50	150	300	ATV930D18N4...D22N4 ATV950D18N4...D22N4 ATV950D18N4E...D22N4E
VW3A4405	300	200	100	100	VW3A4705	50	150	300	ATV930D30N4 ATV950D30N4 ATV950D30N4E
VW3A4406	300	200	100	100	VW3A4706	50	150	300	ATV930D37N4...D45N4 ATV950D37N4...D45N4 ATV950D37N4E...D45N4E
VW3A4407	300	200	100	100	VW3A4707	50	150	300	ATV930D55N4 ATV930D55N4C ATV950D55N4 ATV950D55N4E
VW3A4408	300	200	100	100	VW3A4708	50	150	300	ATV930D75N4...D90N4 ATV930D75N4C...D90N4C ATV950D75N4...D90N4 ATV950D75N4E...D90N4E
VW3A4410	300	150	50	25	VW3A4709	50	150	300	ATV930C11N4C ATV930C13N4C
VW3A4411	300	150	50	25	VW3A4710	50	150	300	ATV930C16N4C
VW3A4412	300	150	50	25	VW3A4411	50	150	300	ATV930C22N4 ATV930C22N4C...C31N4C
VW3A4413	300	150	50	25					

Refer to the product catalog available on www.schneider-electric.com for more information about the additional EMC input filters.

Braking Resistors and Braking Units

Braking Resistors

Braking resistors allow the drives to operate while braking to a standstill or during slowdown braking, by dissipating the braking energy. They enable maximum transient braking torque.

For a detailed description and catalog numbers, refer to the Catalog available on www.schneider-electric.com.

For mounting instructions, wiring diagrams and other information, refer to the instruction sheet NHA87388 supplied with the resistor and available on www.schneider-electric.com.

Minimum Resistor Values

Minimum allowed value of the resistor to be connected

Catalog Number	Minimum Value in Ω	Catalog Number	Minimum Value in Ω	Catalog Number	Minimum Value in Ω
ATV930U07N4	56	ATV930U30M3	22	ATV930D15Y6	12
ATV930U15N4	56	ATV930U40M3	16	ATV930D18Y6	12
ATV930U22N4	56	ATV930U55M3	11	ATV930D22Y6	12
ATV930U30N4	34	ATV930U75M3	8	ATV930D30Y6	12
ATV930U40N4	34	ATV930D11M3	5	ATV930D37Y6	8
ATV930U55N4	23	ATV930D15M3	5	ATV930D45Y6	8
ATV930U75N4	19	ATV930D18M3	5	ATV930D55Y6	8
ATV930D11N4	12	ATV930D22M3	5	ATV930D75Y6	5
ATV930D15N4	15	ATV930D30M3	2.5	ATV930D90Y6	5
ATV930D18N4	15	ATV930D37M3	2.5	ATV950U07N4	56
ATV930D22N4	15	ATV930D45M3	2.5	ATV950U15N4	56
ATV930D30N4	10	ATV930D55M3C	1.4	ATV950U22N4	56
ATV930D37N4	10	ATV930D75M3C	1.4	ATV950U30N4	34
ATV930D45N4	10	ATV930D18S6	10	ATV950U40N4	34
ATV930D55N4	2.5	ATV930D22S6	10	ATV950U55N4	23
ATV930D75N4	2.5	ATV930D30S6	5	ATV950U75N4	19
ATV930D90N4	2.5	ATV930D37S6	5	ATV950D11N4	12
ATV930C11N4C	2.5	ATV930D45S6	5	ATV950D15N4	15
ATV930C13N4C	2.5	ATV930D55S6	2.5	ATV950D18N4	15
ATV930C16N4C	2.5	ATV930D75S6	2.5	ATV950D22N4	15
ATV930C22N4	1.4	ATV930U22Y6	12	ATV950D30N4	10
ATV930C25N4C	1.05	ATV930U30Y6	12	ATV950D37N4	10
ATV930C31N4C	1.05	ATV930U40Y6	12	ATV950D45N4	10
ATV930U07M3	44	ATV930U55Y6	12	ATV950D55N4	2.5
ATV930U15M3	33	ATV930U75Y6	12	ATV950D75N4	2.5
ATV930U22M3	22	ATV930D11Y6	12	ATV950D90N4	2.5

(1) Resistor values apply to both catalog numbers ATV930•••N4 and ATV930•••N4Z.

NOTE: It is not possible to connect braking resistors on floor standing drives (catalog numbers ATV930•••••F and ATV950•••••F).

Braking Units

Braking units allow Altivar Process drives to operate while braking to a standstill or during “generator” operation, by dissipating the energy in the braking resistor.

- ATV930U07M3...D45M3, ATV930U07N4...C22N4, ATV930D15Y6...D90Y6 and ATV950U07N4...D90N4 drives have a built-in dynamic brake transistor.
- For ATV930D55M3C...D75M3C, ATV930C11N4C...C16N4C and ATV930C25N4C...C31N4C drives, a braking unit must be used.

Braking units provide IP 20 protection. Thermal protection is given by an integrated temperature probe.

For drives	Power		Losses	Cable (drive-braking unit)		Cable (braking unit-resistors)		Percentage of conduction time	Minimum resistor value	Reference
	Continuous	Maximum	At continuous power	Cross-section	Maximum length	Cross-section	Maximum length			
kW	kW		W	mm²	m	mm²	m	%	Ohms	
Supply voltage: 200…240 V 50/60 Hz										
ATV930D55M3C ...D75M3C	60	80	400	3 x 120	10	3 x 120	10	5% at 150 kW 15% at 120 kW 50% at 95 kW	1.4	VW3A7106
Supply voltage: 380…480 V 50/60 Hz										
ATV930C11N4C ...C16N4C	100	160	400	2 x 120	5	2 x 120	5	5% at 320 kW 15% at 250 kW 50% at 200 kW	2.5	VW3A7105
ATV930C25N4C ATV930C31N4C	200	420	550	– *(1)*	– *(1)*	2 x 95	50	5% at 420 kW 15% at 320 kW 50% at 250 kW	1	VW3A7101
(1) For the ATV930C25N4C variable speed drive, the braking unit is connected to the drive with internal connections.										

Part VI **Wiring and Mounting**

What is in This Part?

This part contains the following chapters:

Power Terminals Wiring

Comparison of the Power Terminals

The following table provides the list and characteristics of the power terminals on ATV61/71, ATV600 and ATV900 drives

Terminals			Function		
ATV61/71	**ATV630**	**ATV930**	**ATV61/71**	**ATV630**	**ATV930**
PE or ⏚	PE or ⏚	PE or ⏚	Ground connection terminal	Ground connection terminal	Ground connection terminal
R/L1 S/L2 T/L3	R/L1 S/L2 T/L3	R/L1 S/L2 T/L3	AC supply mains	AC supply mains	AC supply mains
PO	PO	PO	DC bus + polarity	DC bus + polarity (Only available for diagnostics)	DC bus + polarity
PA/+	PA/+	PA/+	Output to braking resistor (+ polarity)	-	Output to braking resistor (+ polarity)
PB	PB	PB	Output to braking resistor	Output to braking resistor (Only available for diagnostics)	Output to braking resistor
PC/-	PC/-	PC/-	DC bus - polarity	DC bus - polarity	DC bus - polarity
U/T1 V/T2 W/T3	U/T1 V/T2 W/T3	U/T1 V/T2 W/T3	Outputs to the motor	Outputs to the motor	Outputs to the motor

Cable section and tightening torques

Refer to the Installation Manual for your product to select the adequate cables and to apply the correct tightening torque (See related documents on page 9)

www.schneider-electric.com/contact
www.schneider-electric.com/drives