Variable speed drives Altivar Process ATV900

Catalog
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Schneider Electric™

Contents

Variable speed drives
Altivar Process ATV900
Process efficiency, real-time intelligence

Altivar Process
Provides the efficiency you deserve

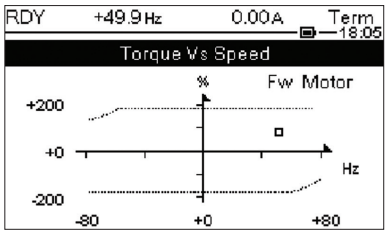
Altivar Process is the new comprehensive range of variable speed drives from Schneider Electric covering the majority of industrial applications:

> ATV900: drives focused on maximum productivity with exceptional motor control and connectivity

Wall-mounting drives, built-in cabinet, and floor-standing solutions are available with UL Type 1, UL Type 12, or NEMA 3R protection, according to customer requirements.

From basic processes to advanced custom solutions

Altivar Process drives



Display screen

Process efficiency
Motor performance and connectivity

> Excellent motor performance on induction or permanent magnet motors

> Dual port Ethernet offers maximum services such as connection to the control room and process transparency

> Network service helps ensure operation continuity even in case of connection breakdown

Complete control of your applications

> Maximize your application performance by using Drive-to-Drive communication: total control of any kind of coupling in master/slave applications

> Total management and flexibility of speed and torque on rigid and elastic coupling

Real-time intelligence
Web server and services via Ethernet

> Embedded web server interface based on the Ethernet network gives you process monitoring with your daily working tools.

> Local and remote access to energy use and customized dashboards means your energy is visible anywhere, any time, on PC, tablet, or smartphone.

> Web server and data logging help reduce downtime through fast troubleshooting and preventive maintenance.

Operational Intelligence

+ Motor control application performance

Variable speed drives
Altivar Process ATV900
User-friendliness, green product

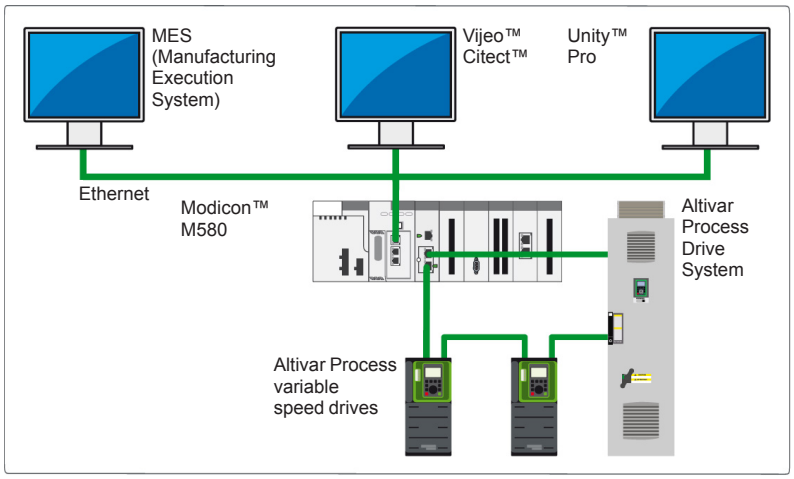
ODVA organization: Supports network technologies based on EtherNet/IP

FDT Technology: An international standard with broad acceptance in the automation industry

User-friendliness

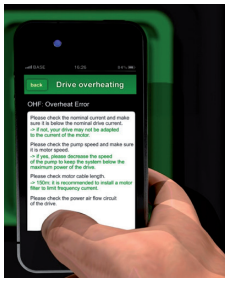
Simple integration in PLC environments

> Easy integration thanks to standardized FDT/DTM and ODVA technology
> Supported by predefined Unity Pro libraries
> Easy access via PC, tablet, or smartphone
> Secure connection via "Cyber-secure Ethernet"



Integration in the Modicon M580 automation platform

Scanning the QR code from a smartphone or tablet



Instant access to online help

Sophisticated service concept

> Modular design provides easy spare parts logistics
> Optimized maintenance costs due to dynamic maintenance schedule, with integrated monitoring of individual components
> Simple exchange of power modules and fans
> Quick assistance with dynamic QR codes and Customer Care App

Green product

Designed to have a smaller carbon footprint

> The Green Premium product label, Schneider Electric's eco-mark, indicates your compliance with international environmental standards such as:
  > RoHS-2 according to EU directive CE 2002/95
  > REACH according to EU regulation 1907/2006
  > IEC 62635: The end-of-life instructions comply with the latest recycling rules, 70% of the product components can be recycled.

+ Best in class service concept

UL Type 1
Drive systems
for asynchronous and synchronous motors

Market segments	■ **Oil & Gas** ■ **Mining, Minerals & Metals** ■ **Food & Beverage** ■ **Water & Wastewater**

Type of Drive			**ATV960●●●T4X2**
Power range for 60 Hz line supply	Three-phase: 240/480 V		1...60 hp / 1...900 hp
Main characteristics			High Performance Drive Systems with an integrated line reactor to reduce the current harmonics THDI < 48%
Degree of protection			UL Type 1
Drive	Output frequency		0.1...599 Hz
	Control type	Asynchronous motor	Standard constant torque, optimized torque mode
		Synchronous motor	PM (Permanent Magnet) motor
Communication	Integrated		EtherNet/IP and Modbus™ / TCP dual port, Modbus serial link
	Option modules		PROFINET, CANopen RJ45 Daisy Chain, Sub-D and screw terminals, Profibus DP V1, EtherCAT and DeviceNet™
Interfaces			Operating panel in the enclosure door Control terminals inside the enclosure Control terminals can be extended Reading of the parameters via USB interface on the keypad
Page			page 51

- **Oil & Gas**
- **Mining, Minerals & Metals**
- **Food & Beverage**
- **Water & Wastewater**

ATV980●●●T4X2

150...900 hp
Regenerative Drive Systems with active mains rectifier to reduce the current harmonics THDI < 5%
UL Type 1
0.1...599 Hz
Standard constant torque, optimized torque mode
PM (Permanent Magnet) motor
EtherNet/IP and Modbus / TCP dual port, Modbus serial link
PROFINET, CANopen RJ45 Daisy Chain, Sub-D and screw terminals, Profibus DP V1, EtherCAT and DeviceNet
Operating panel in the enclosure door Control terminals inside the enclosure Control terminals can be extended Reading of the parameters via USB interface on the keypad
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Variable speed drives
Altivar Process ATV900

Altivar Process range

Process automation

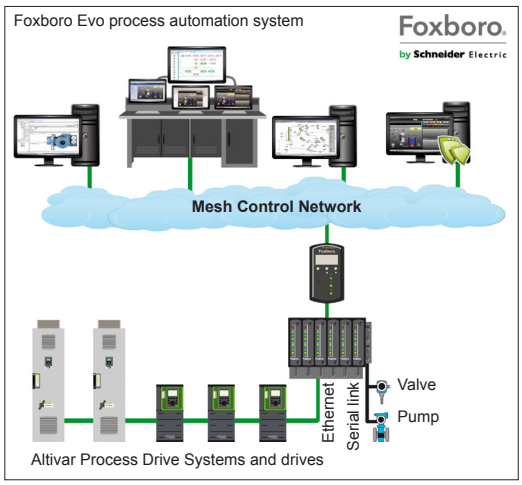
The Altivar Process is a UL Type 1, UL Type 12, or NEMA 3R (1–125 hp) variable speed drive for three-phase synchronous and asynchronous motors, specially designed for the following market segments:

- Oil & Gas
- Mining, Minerals & Metals
- Food & Beverage
- Water & Wastewater

The Altivar Process 900 series is focused on maximum productivity with exceptional motor control and connectivity.

It offers special functionalities for the industrial process segments:

- Excellent motor performance on any type of motor
- Total control of any kind of coupling in master/slave applications
- Network services help ensure operation continuity even in case of connection breakdown
- Web server and data logging help reduce downtime through fast troubleshooting and preventive maintenance



Altivar Process in Foxboro Evo DCS architecture

The association of Altivar Process services with Schneider Electric process automation control systems like Foxboro Evo™ (for process systems) or M580 ePAC (for hybrid systems) offers a high-performance, global automation and motor control solution with optimized total cost of ownership (TCO).
The solution provides operational integrity for people, processes, and assets, with improved maintenance support to reduce downtime and help ensure operation continuity.
It offers operational insight by accessing more information to optimize the process and to control the energy efficiency.
Based on market standards (FDT/DTM, Ethernet, etc.), it is a sustainable, scalable solution that enables processes to be adapted easily and affordably.

Oil & gas applications

- Drilling
- Offshore and onshore extraction
- Water treatment and re-injection
- Crude oil storage
- Separation
- Pipeline pumping
- Storage
- Refining
- DOF (Digital Oil Field)

Use

- PCP (Progressive Cavity Pump)
- Sucker-rod pumping
- Mud pump
- Rotary table, top drive
- Draw works
- Regasification compressor

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Process automation (continued)

Mining, minerals & metals applications

- Open-pit or underground mining
- Stockpiling/homogenization
- Concentration/mineral separation
- Solid-liquid separation
- Final handling/transport
- Clinker production
- Cement production

Use

- Long distance heavy conveying
- Bucket wheel excavator
- Special cranes:
  - Gantry cranes
  - Grab cranes
- Crushing
- Grinding mills (ball mills, SAG and AG mills)
- Spiral and magnetic separators
- Reclaimers and stackers
- Ship loaders
- Mobile miner
- Vibro feeders
- Crusher
- Long belt conveyor
- Kiln main drive
- Separator for VRM (Vertical Roller Mill)

Food & beverage applications

- Dairy beverage
- Agribusiness

Use

- Conveyors
- Mixers
- Shredders
- Centrifuges
- Hot rotary dryers

Water & wastewater applications

- Treatment plant
- Wastewater treatment

Use

- Decanter

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UL Type 12 cooling system with separate air flows

General overview of the offer

Altivar Process drives can help improve equipment performance and reduce operating costs by optimizing energy consumption and user comfort.

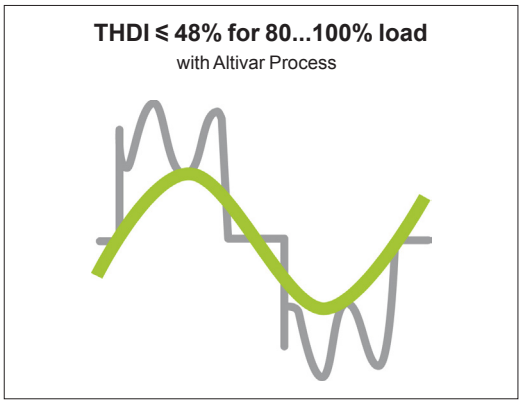
Altivar Process drives provide a wide range of integrated functions, such as:
- Safety and automation functions that meet the requirements of the most demanding applications
- Various optional fieldbus modules available for seamless integration into the main automation architectures
- Numerous configurable I/O as standard to facilitate adaptation to specific applications
- Intuitive commissioning using the graphic display terminal
- Local and remote access and monitoring using the embedded Web server
- Energy savings and protection of the grid by means of integrated harmonic filters
- Installation EMC conformity by means of integrated EMC filters

Depending on the power range, Altivar Process is available with several mounting types and protection indices:
- Wall-mounting UL Type 1 from 1– 250 hp / 0.75– 160 kW, ready-to-use for easy integration inside or without an enclosure in an electrical room

Altivar Process drives can also be supplied as Engineered Drive System variants from 1– 800 hp, developed by Schneider Electric based on customer specifications.

Rugged

Altivar Process drives are designed to adapt to the harshest environments.
- Ambient operating temperature
  - Wall-mounting drives:
    - UL Type 1: - 15...+ 50 °C / + *5...122 °F* as standard
      50...60 °C / *122...140 °F* with derating
    - a patented flange-mounting kit for evacuating the dissipated heat from the power section to outside the enclosure (see page 66)
- Storage and transport temperature: - 40…+ 70 °C / - *40…+ 158 °F*
- Operating altitude:
  - 0…1,000 m / *0…3,281 ft* without derating
  - 1,000...4,800 m / *3,281…15,748 ft* with derating of 1% per 100 m / *328 ft*
- Withstand to harsh environments:
  - Chemical class 3C3 conforming to IEC/EN 60721
  - Mechanical class 3S3 conforming to IEC/EN 60721
  - Electronic cards with protective coating
- Protection to suit requirements:
  - UL Type 1 for wall mounting in a plant room and in an enclosure



Altivar Process drive THDI

General overview of the offer (continued)

Energy

Altivar Process drives help to optimize power consumption by reducing the rms input current for the same load.

- ■ Standard offer:
  - □ THDI ≤ 48% for 80 to 100% load, which is used to maintain an optimum power factor on the most common operating range
- ■ Low harmonic offer compatible with standard IEEE 519

Environment

The Altivar Process drive was developed to meet the requirements of directives regarding protection of the environment and to anticipate future changes in regulations:

- ■ RoHS-2 *(1)*
- ■ REACh *(2)* + Solution for REACh Substitute It Now (halogen-free wiring and plastics)
- ■ PEP (Product Environmental Profile) eco-passport Program for reducing the carbon footprint and conserving raw materials
- ■ EoLI (End of Life Instruction) *(3)*
  - □ More than 70% recyclable materials (new ruling)
- ■ Efficient energy management: 30% reduction in consumption

Electromagnetic compatibility (EMC)

Compliance with electromagnetic compatibility requirements is incorporated into the design of the drive, which simplifies installation and provides an economical means of helping to ensure the equipment meets CE marking requirements.
Altivar Process drives have a category C2 or C3 EMC filter, except ATV930●●●M3 and ATV930●●●M3C models that can be equipped with an additional filter to meet more stringent requirements (see page 43).

Installation/Maintenance

Altivar Process drives are ergonomically designed to adapt to any type of installation:

- ■ Products, systems, or integrated in iMCC
- ■ UL Type 1
- ■ Easy installation of products and systems:
  - □ Cable entry equipped with Romex cable clamps to maintain an EMC connection for the power and control cable
  - □ Color code for connections to the removable terminal blocks on the HMI block
  - □ Long cable: Up to 150 m with category C3 EMC filter
- ■ Asynchronous or synchronous motor in open loop or closed loop for 0.1...599 Hz output frequency
- ■ Special motors: Conical sliding rotor, reluctance motor
- ■ Lower maintenance costs due to drive's ergonomic design:
  - □ Fans can be replaced in less than 5 minutes
  - □ No maintenance tool required
  - □ Limited number of parts
- ■ Embedded Web server:
  - □ Compatible process elements for easier implementation
  - □ Direct worldwide access to monitoring and maintenance functions:
    - Reading values
    - Modifying data
    - Configuring parameters
    - Changing controller status

(1) European directive 2002/95/EC Restriction Of Hazardous Substances (applicable in 2016)
(2) European regulation 1907/2006
(3) According to IEC 62635 Enhanced Guidelines

Integrated functions

Altivar Process drives include numerous advanced functions for the more complex applications in each market segment.

Advanced functions

■ Performance on motor control with an overload torque up to 150% Tn in an open or closed loop
■ Asynchronous, synchronous, special motors: all efficiency classes, brand independent, permanent magnet motors, torque motors, conical sliding rotor, reluctance
■ Integrated EtherNet/IP and Modbus TCP dual port, cybersecurity (Achilles Level 2)
■ Smart integration in PlantStruxure and Foxboro Evo process automation systems
■ Optimized energy efficiency, detection of energy consumption drift of the installation
■ Adaptation to the process by dedicated functions with modular design
■ Embedded safety functions STO SIL3
■ Master/slave and load sharing with drive-to-drive capability:
□ torque sharing on rigid coupling
□ torque sharing on elastic coupling
■ Contextual access to technical documentation through dynamic QR code
■ Continuous and historical real-time measurements with customizable dashboards
■ Predictive maintenance (e.g.: temperatures with PT100/1000 probe, fan monitoring, etc.)

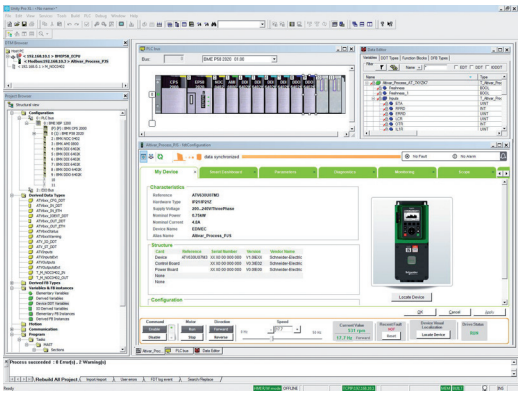
Power measurement function

Altivar Process drives integrate a power measurement function accurate to within 5%, based on measurement of the motor voltage and the power supply:
■ Process drift detection for installation reliability throughout its entire service life
■ Useful system performance information provided by comparing the energy used with the energy produced. Typical KPI is specific energy consumption.

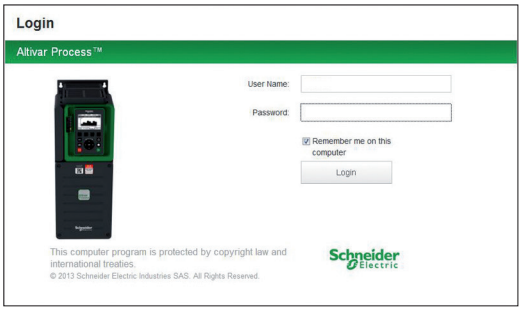
Users are therefore able to monitor and analyze input power, energy produced, and the KPIs directly from the drive or from the process management system.

Safety and monitoring functions

The Safety function STO and numerous monitoring functions are provided to help protect people and equipment.
■ Advantages:
□ Time savings in terms of installation design and compliance
□ Fewer components and cables
□ Optimum space
□ Simplified setup of machines
□ Improved maintenance performance; limited machine intervention time and installation downtime
□ Optimized conditions for maintenance operations
■ Conformity to standards EN/IEC 61508, EN/ISO 13849, IEC 61800-5-2
■ Integrated STO (Safe Torque Off) function, SIL3/PIe
■ Monitoring function to help protect against premature wear



Altivar Process DTM in Unity Pro



Embedded web server login screen

Integration

Fieldbus protocols

■ EtherNet/IP and Modbus/TCP Dual port and Modbus serial link:
□ Standard Modbus and Ethernet protocols
□ Connection of configuration and runtime tools
□ Control and supervision of the Altivar Process in process architectures (controllers, SCADA, HMIs, etc.) in industrial networks (read/write data)
□ Diagnostic, supervision, and fieldbus management functions
■ Ethernet services:
□ SNMP, SNTP, BootP & DHCP, IP v6, cybersecurity services, FDR
□ Open Ethernet topologies

Integration of configuration and runtime tools

■ FDT/DTM technology (see page 25):
□ Drive configuration, diagnostics, and control using Unity Pro or Foxboro Evo software

Configuration and runtime tools

■ Graphic display terminal (see page 22):
□ Drive control, adjustment, and configuration
□ Display of current values (motor, I/O, etc.)
□ Configuration storage and download
□ Duplication of one drive configuration on another drive from a PC or another drive
□ Remote use by means of appropriate accessories (see page 23)
□ Connection to several drives using multidrop link components (see page 23)
■ Embedded web server (see page 24):
□ Easily accessible from any PC, iPhone®, iPad®, Android® system, and major web browsers
□ Network diagnostics in real time
□ Read/write values
■ SoMove ™ software (see page 25):
□ Advanced functions for configuration, setup, and maintenance of Altivar Process drives

Integrated services

Altivar Process drives feature integrated services to achieve optimum time savings:
■ Simplified communication:
□ Ethernet dual port with embedded web server
■ Energy management (integrated power measurement)
■ Dynamic predictive maintenance
■ 3 QR codes:
1: Access to the Customer Care Center application and product data sheet
2: Direct access to description of the functions
3: QR code generated in the event of a detected error (red screen): Identification of the detected error, probable causes and remedies

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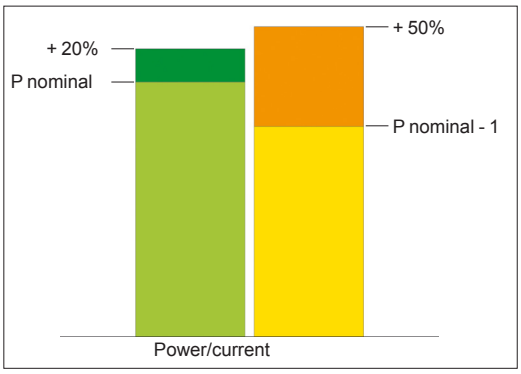
ATV930●●●N4F, ATV930●●●M3

Extensive offer

The Altivar Process offer covers motor power ratings from 0.75...315 kW for three-phase voltages between 200...240 V and 380...480 V.

Three-phase power supply	Motor power	Degree of protection	Reference
200...240 V	0.75 kW...75 kW *1...100 hp*	UL Type 1	**ATV930U07M3...D45M3** **ATV930D30M3C...D75M3C**
380...480 V	0.75 kW...315 kW *1...500 hp*	UL Type 1 UL Type 1	**ATV930U07N4... D90N4** **ATV930D55N4C...C31N4C**



Normal duty and Heavy duty modes

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 (up to 120%) with a motor power no higher than the drive nominal power
- Heavy duty (HD): Dedicated mode for applications requiring a significant overload (up to 150%) with a motor power no higher than the drive nominal power derated by one rating

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Accessories and options

Altivar Process drives are designed to take numerous accessories and options to increase their functionality and also their capacity for integration and adaptation.

Accessories

■ Drive:
□ Fan kit (see page 21)
■ Graphic display terminal:
□ Remote mounting kit for mounting on enclosure door (see page 23)
□ Multidrop connection accessories for connecting several drives to the RJ45 terminal port (see page 23)

Options

■ Modules (see page 29):
□ I/O extension:
- 2 analog inputs
- 6 digital inputs
- 2 digital outputs

□ With relay output:
- 3 NO contacts

□ Communication:
- CANopen bus: RJ45 daisy chain, SUB-D, 5-way screw terminals
- PROFINET bus
- Profibus DP V1 bus
- EtherCAT
- DeviceNet bus

■ Encoder modules (see page 28):
□ Digital interface encoder module 5/12 V
□ Resolver interface module
□ Analog interface encoder module
□ HTL encoder interface module
■ Braking units and braking resistors (see page 36)
■ Passive filters (see page 40)
■ Additional EMC input filters for reducing conducted emissions on the line (see page 43)
■ Output filters:
□ dV/dt filters (see page 45)
□ Sinus filters (see page 47)
□ Common mode filters (see page 49)

Circuit Breakers and Contactors

Schneider Electric offers combinations of circuit breakers and contactors for using Altivar Process drives in optimum conditions. As standard, the prospective line short circuit current is rated to 100 kA.

Variable speed drives
Altivar Process ATV900
Drive systems

ATV960C31T4X2

Engineered Drive Systems

Altivar Process Drive Systems offer extensive flexibility for customers from different segments and for various applications.

Depending on customer requirements, several solutions are available.

Configured to order modifications (CTO)

CTO modifications include:
- Increased UL Type1, UL Type 12, or UL Type 3R protection degree
- Additional enclosure allowing cabling from the top or from the bottom
- Ethernet port on front door
- Digital and analog I/O modules and relay output modules
- Communication modules for various fieldbus systems
- Indicator lights on front door
- dV/dt filters for long motor cables

Engineered to order modifications (ETO)

In the ETO variant, Altivar Process Drive Systems can be adapted to customer requirements easily and quickly with its unique features.

The ETO variant allows the minimum delivery time for individually adapted, ready to connect enclosures.

ETO modifications include:
- Enclosure heating
- “Local/remote” key switch
- Encoder interface modules
- STO - SIL 3 Stop category 0 or 1 emergency stop
- Front display module (FDM)
- Motor/bearing temperature monitoring
- Motor heating
- Circuit breaker options
- Undervoltage coil for circuit breaker

Engineered Drive System based on the ATV960C50T4X2 drive

Custom designed modifications

These modifications offer, in addition to the predefined options, the possibility of implementing customer-specific adaptations in Drive Systems.

The following custom designed modifications are available:
- Modified wiring colors
- Remote monitoring
- Different ranges of supply voltages
- Design without a main switch
- Air intake from the back
- Other enclosure colors
- Customized documentation and labeling
- Design for IT system
- Seaworthy packaging

Full ETO Drive System

Engineered Drive Systems (continued)

Full engineered to order (Full ETO)

With the full ETO Drive System, numerous options can be included to meet specific customer requirements.

Possible ETO options:
- Multi-drive systems (several frequency inverters in the same enclosure)
- Other cooling systems
- Other enclosure types
- Other dimensions
- Etc.

For further information, please consult our Customer Care Center.

Variable speed drives
Altivar Process ATV900
Three-phase supply voltage: 200...240 V 50/60 Hz

PF151200

ATV930D11M3

PF151201

ATV930D15M3

PF151202

ATV930D30M3

IP21 / UL Type 1 drives - Wall mounting (1)

Motor			Line supply (7)			Altivar Process					
Power indicated on rating plate (2)			Line current (3)		Apparent power	Maximum continuous current (2)	Maximum transient current for 60 s	Minimum resistance value	Reference (1)	Frame Size	Weight
			200 V	240 V	240 V						
ND:	Normal duty (4)										
HD:	Heavy duty (5)										
	kW	HP	A	A	kVA	A	A	Ω			kg/lb
3-phase supply voltage: 200...240 V 50/60 Hz											
ND	0.75	1	3	2.6	1.1	4.6	5.5	56	ATV930U07M3	1	4/9
HD	0.37	0.5	1.7	1.5	0.6	3.3	5				
ND	1.5	2	5.9	5	2.1	8	9.6	56	ATV930U15M3	1	4/9
HD	0.75	1	3.3	3	1.2	4.6	6.9				
ND	2.2	3	8.4	7.2	3	11.2	13.4	56	ATV930U22M3	1	5/10
HD	1.5	2	6	5.3	2.2	8	12				
ND	3	4	11.5	9.9	4.1	13.7	16.4	34	ATV930U30M3	1	5/10
HD	2.2	3	8.7	7.6	3.2	11.2	16.8				
ND	4	5	15.1	12.9	5.4	18.7	22.4	34	ATV930U40M3	1	5/10
HD	3	4	11.7	10.2	4.2	13.7	20.6				
ND	5.5	7.5	20.2	17.1	7.1	25.4	30.5	23	ATV930U55M3	2	8/17
HD	4	5	15.1	13	5.4	18.7	28.1				
ND	7.5	10	27.1	22.6	9.4	32.7	39.2	19	ATV930U75M3	3	14/30
HD	5.5	7.5	20.1	16.9	7	25.4	38.1				
ND	11	15	39.3	32.9	13.7	46.8	56.2	12	ATV930D11M3	3	14/30
HD	7.5	10	27.2	23.1	9.6	32.7	49.1				
ND	15	20	52.6	45.5	18.9	63.4	76.1	15	ATV930D15M3	4	27/60
HD	11	15	40.1	34.3	14.3	46.8	70.2				
ND	18.5	25	66.7	54.5	22.7	78.4	94.1	15	ATV930D18M3	4	27/60
HD	15	20	53.1	44.9	18.7	63.4	95.1				
ND	22	30	76.0	64.3	26.7	92.6	111.1	15	ATV930D22M3	4	27/60
HD	18.5	25	64.8	54.5	22.7	78.4	117.6				
ND	30	40	104.7	88.6	36.8	123	147.6	10	ATV930D30M3	5	58/127
HD	22	30	78.3	67.1	27.9	92.6	138.9				
ND	37	50	128.0	107.8	44.8	149	178.8	10	ATV930D37M3	5	58/127
HD	30	40	104.7	88.6	36.8	123	184.5				
ND	45	60	155.1	130.4	54.2	176	211.2	10	ATV930D45M3	5	58/127
HD	37	50	128.5	108.5	45.1	149	223.5				

IP21 / UL Type 1 drives without braking unit - Wall mounting (1)

Motor			Line supply			Altivar Process					
Power indicated on rating plate (2)			Line current (3)		Apparent power	Maximum continuous current (2)	Maximum transient current for 60 s	Minimum resistance value	Reference (1)	Frame Size	Weight
			200 V	240 V	240 V						
ND:	Normal duty (4)										
HD:	Heavy duty (5)										
	kW	HP	A	A	kVA	A	A	Ω			kg/lb
3-phase supply voltage: 200...240 V 50/60 Hz											
ND	30	40	104.7	88.6	36.8	123	147.6	N/A	ATV930D30M3C	5	57/125
HD	22	30	78.3	67.1	27.9	92.6	138.9				
ND	37	50	128.0	107.6	44.8	149	178.8	N/A	ATV930D37M3C	5	57/125
HD	30	40	104.7	88.6	36.8	123	184.5				
ND	45	60	155.1	130.4	54.2	175	211.2	N/A	ATV930D45M3C	5	57/125
HD	37	50	128.5	108.5	45.1	149	223.5				
ND	55	75	189	161	61.1	211	253.2	N/A	ATV930D55M3C	5	82/181
HD	45	60	156	134	50	176	264				
ND	75	100	256	215	83.7	282	338.4	N/A	ATV930D75M3C	5	82/181
HD	55	75	189	161	61.1	211	316.5				

*(1) Altivar Process **ATV930●●●M3** drives are designed without an EMC filter. An additional filter can be added to help meet more stringent requirements and reduce electromagnetic emissions.*
*(2) These values are given for a nominal switching frequency of 4 kHz up to **ATV930D22M3** or 2.5 kHz for **ATV930D30M3...D45M3** and **ATV930D30M3C...D75M3C**, for use in continuous operation. The switching frequency is adjustable. Above 2.5 or 4 kHz (depending on the rating), the drive will automatically reduce the switching frequency in the event of an excessive temperature rise. For continuous operation above the nominal switching frequency, derate the nominal drive current (see derating curves on our website www.schneider-electric.com).*
(3) Typical value for the indicated motor power and for the prospective line Isc.
(4) Values given for applications requiring a slight overload (up to 120%).
(5) Values given for applications requiring a significant overload (up to 150%).
(6) For short circuit current rating (SCCR) information, see document number NHA61583, Annex to the Getting Started with Altivar Process ATV930.
***Note:** Consult the summary tables of possible drive, option, and accessory combinations as outlined in the Process manual.*

Overview: page 8 | Configuration and runtime tools: page 22 | Combinations: page 26 | Dimensions: page 66

Variable speed drives
Altivar Process ATV900
Three-phase supply voltage: 380...480 V 50/60 Hz

PF151202

ATV930D15N4

PF151203

ATV930D30N4

PF151204

ATV930D55N4

IP21 / UL Type 1 drives with category C2 or C3 integrated EMC filter - Wall mounting *(1)*

Motor			Line supply *(6)*			Altivar Process					
Power indicated on rating plate *(2)*			Line current *(3)*		Apparent power	Maximum continuous current *(2)*	Maximum transient current for 60 s	Minimum resistance value	Reference	Frame Size	Weight
			380 V	480 V	380 V						
ND:	Normal duty *(4)*										
HD:	*Heavy duty (5)*										
	kW	*HP*	A	A	kVA	A	A	Ω			kg/*lb*
3-phase supply voltage: 380...480 V 50/60 Hz *(4)*											
ND	0.75	*1*	1.5	1.3	1.1	2.2	2.6	56	**ATV930U07N4**	**1**	5/10
HD	*0.37*	*0.5*	*0.9*	*0.8*	*0.7*	*1.5*	*2.3*				
ND	1.5	*2*	3	2.6	2.2	4	4.8	56	**ATV930U15N4**	**1**	5/10
HD	*0.75*	*1*	*1.7*	*1.5*	*1.2*	*2.2*	*3.3*				
ND	2.2	*3*	4.3	3.8	3.2	5.6	6.7	56	**ATV930U22N4**	**1**	5/10
HD	*1.5*	*2*	*3.1*	*2.9*	*2.4*	*4*	*6*				
ND	3	*4*	5.8	5.1	4.2	7.2	8.6	34	**ATV930U30N4**	**1**	5/10
HD	*2.2*	*3*	*4.5*	*4*	*3.3*	*5.6*	*8.4*				
ND	4	*5*	7.6	6.7	5.6	9.3	11.2	34	**ATV930U40N4**	**1**	5/10
HD	*3*	*4*	*6*	*5.4*	*4.5*	*7.2*	*10.8*				
ND	5.5	*7.5*	10.4	9.1	7.6	12.7	15.2	23	**ATV930U55N4**	**1**	5/10
HD	*4*	*5*	*8*	*7.2*	*6.0*	*9.3*	*14*				
ND	7.5	*10*	13.8	11.9	9.9	16.5	19.8	19	**ATV930U75N4**	**2**	8/17
HD	*5.5*	*7.5*	*10.5*	*9.2*	*7.6*	*12.7*	*19.1*				
ND	11	*15*	19.8	17	14.1	23.5	28.2	12	**ATV930D11N4**	**2**	8/17
HD	*7.5*	*10*	*14.1*	*12.5*	*10.4*	*16.5*	*24.8*				
ND	15	*20*	27	23.3	19.4	31.7	38	15	**ATV930D15N4**	**3**	14/30
HD	*11*	*15*	*20.6*	*18.1*	*15.0*	*23.5*	*35.3*				
ND	18.5	*25*	33.4	28.9	24	39.2	47	15	**ATV930D18N4**	**3**	14/31
HD	*15*	*20*	*27.7*	*24.4*	*20.3*	*31.7*	*47.6*				
ND	22	*30*	39.6	34.4	28.6	46.3	55.6	15	**ATV930D22N4**	**3**	14/32
HD	*18.5*	*25*	*34.1*	*29.9*	*24.9*	*39.2*	*58.8*				
ND	30	*40*	53.3	45.9	38.2	61.5	73.8	10	**ATV930D30N4**	**4**	28/62
HD	*22*	*30*	*40.5*	*35.8*	*29.8*	*46.3*	*69.5*				
ND	37	*50*	66.2	57.3	47.6	74.5	89.4	10	**ATV930D37N4**	**4**	28/62
HD	*30*	*40*	*54.8*	*48.3*	*40.2*	*61.5*	*92.3*				
ND	45	*60*	79.8	69.1	57.4	88	105.6	10	**ATV930D45N4**	**4**	29/63
HD	*37*	*50*	*67.1*	*59.0*	*49.1*	*74.5*	*111.8*				
ND	55	*75*	97.2	84.2	70	106	127.2	2.5	**ATV930D55N4**	**5**	58/127
HD	*45*	*60*	*81.4*	*71.8*	*59.7*	*88*	*132*				
ND	75	*100*	131.3	112.7	93.7	145	174	2.5	**ATV930D75N4**	**5**	59/126
HD	*55*	*75*	*98.9*	*86.9*	*72.2*	*106*	*159*				
ND	90	*125*	156.2	135.8	112.9	173	207.6	2.5	**ATV930D90N4**	**5**	60/131
HD	*75*	*100*	*134.3*	*118.1*	*98.2*	*145*	*217.5*				
ND	220	*350*	397	324	247	427	512	1.4	**ATV930C22N4** *(6)*	**7A**	172/380
HD	*160*	*250*	*296*	*246*	*187*	*302*	*453*				

*(1) Category C2 EMC filter for **ATV930U07N4...D45N4**. Category C3 EMC filter above **ATV930D45N4**.*

*(2) These values are given for an adjustable nominal switching frequency of 4 kHz for **ATV930U07N4...ATV930D45N4** or 2.5 kHz for **ATV930D55N4...D90N4**, for use in continuous operation.*
Above 2.5 or 4 kHz (depending on the rating), the drive will automatically reduce the switching frequency in the event of an excessive temperature rise. For continuous operation above the nominal switching frequency, derate the nominal drive current (see derating curves on our website www.schneider-electric.com).

(3) Typical value for the indicated motor power and for the prospective line Isc.

(4) Values given for applications requiring a slight overload (up to 120%).

(5) Values given for applications requiring a significant overload (up to 150%).

(6) Product supplied as IP00 for mounting in an enclosure. For IP21 / UL Type 1 wall mounting, order a conformity kit.

***Note**: Consult the summary tables of possible drive, option, and accessory combinations as outlined in the Process Manual.*

Variable speed drives

Altivar Process ATV900

Three-phase supply voltage: 380...480 V, 380...440 V
50/60 Hz

PF151205

ATV930C11N4C

UL Type 1 drives with category C3 integrated EMC filter without braking unit - Wall mounting

Motor			Line supply *(6)*			Altivar Process					
Power indicated on rating plate *(1)*			Line current *(2)*		Apparent power	Maximum continuous current *(1)*	Maximum transient current for 60 s	Minimum resistance value	Reference	Frame size	Weight
			380 V	480 V	380 V						
ND:	Normal duty *(3)*										
HD:	*Heavy duty (4)*										
	kW	*HP*	A	A	kVA	A	A	Ω			kg/*lb*
Three-phase supply voltage: 380...480 V 50/60 Hz *(3)*											
ND	55	*75*	97.2	84.2	70.0	106	127.2	N/A	**ATV930D55N4C**	**5**	57/125
HD	*45*	*60*	*81.4*	*71.8*	*59.7*	*88*	*132*				
ND	75	*100*	131.3	112.7	93.7	145	174.0	N/A	**ATV930D75N4C**	**5**	58/128
HD	*55*	*75*	*98.9*	*86.9*	*72.2*	*106*	*159*				
ND	90	*125*	156.2	135.8	112.9	173	207.6	N/A	**ATV930D90N4C**	**5**	59/129
HD	*75*	*100*	*134.3*	*118.1*	*98.2*	*145*	*217.5*				
ND	110	*150*	201	165	121.8	211	253	N/A	**ATV930C11N4C**	**6**	82/181
HD	*90*	*125*	*170*	*143*	*102.6*	*173*	*259.5*				
ND	132	*200*	237	213	161.4	250	300	N/A	**ATV930C13N4C**	**6**	82/181
HD	*110*	*150*	*201*	*165*	*121.8*	*211*	*270*				
ND	160	*250*	284	262	201.3	302	362	N/A	**ATV930C16N4C**	**6**	82/181
HD	*132*	*200*	*237*	*213*	*161.4*	*250*	*360*				
ND	220	*350*	397	324	247	427	512	N/A	**ATV930C22N4C*(6)***	***7A***	172/319
HD	*160*	*250*	*296*	*246*	*187*	*302*	*453*				
ND	250	*400*	451	366	279	481	577	N/A	**ATV930C25N4C*(6)***	***7A***	203/448
HD	*200*	*300*	*365*	*301*	*229*	*387*	*581*				
ND	315	*500*	569	461	351	616	739	N/A	**ATV930C31N4C*(6)***	***7B***	203/448
HD	*250*	*400*	*457*	*375*	*286*	*481*	*722*				

(1) These values are given for a nominal switching frequency of 2.5 kHz for use in continuous operation.
The switching frequency is adjustable for all ratings.
Above 2.5 kHz, the drive will automatically reduce the switching frequency in the event of an excessive temperature rise. For continuous operation above the nominal switching frequency, derate the nominal drive current (see derating curves on our website www.schneider-electric.com).

(2) Typical value for the indicated motor power and for the maximum prospective line Isc.

(3) Values given for applications requiring a slight overload (up to 120%).

(4) Values given for applications requiring a significant overload (up to 150%).

(5) Product is supplied as IP 00 for mounting in an enclosure.
For IP 21 / UL Type 1 wall mounting, order the UL Type 1 conformity kit.

(6) For Short Circuit Current Rating (SCCR) information, see document number NHA6158301, Annex to the Getting Started with Altivar Process ATV930.

***Note**: Consult the summary tables of possible drive, option, and accessory combinations (see* page 26*).*

Replacement parts

Description	For drive	Reference	Weight kg/*lb*
Fan kit for wall-mounting drives			
Power fan for UL Type 1 drives, bracket, instruction sheets	ATV930U07M3...U40M3, ATV930U07N4...U55N4	**VX5VPS1001**	–
	ATV930U55M3, ATV930U75N4...D11N4	**VX5VPS2001**	–
	ATV930U75M3...D11M3, ATV930D15N4...D22N4	**VX5VPS3001**	–
	ATV930D15M3...D22M3, ATV930D30N4...D45N4	**VX5VPS4001**	–
	ATV930D30M3...D45M3, ATV930D30M3C...D45M3C ATV930D55N4...D90N4	**VX5VPS5001**	–
	ATV930D55M3C...D75M3C, ATV930C11N4C...C16N4C	**VX5VPS6001**	–
Fan kit for floor-standing drives			
Power fan, bracket, instruction sheets	ATV930C11N4F...C31N4F	**VX5VPM001**	–
Door fan, bracket, instruction sheets	ATV930C11N4F...C31N4F	**VX5VPM002**	–

Accessories

Description	For use with	Enclosure max.height (mm/*in.*)	Enclosure max. width (mm/*in.*)	Reference	Weight kg/*lb*
Mounting bracket for flange-mounting kit	NSYPTDS1, NSYPTDS2, NSYPTDS3	–	–	**NSYAEFPFPTD**	–
Flange-mounting kit for separate air flow *(5)*	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/*2.85*	295/*11.61*	**NSYPTDS3**	–
	ATV930D15M3...D22M3, ATV930D30N4...D45N4	800/*31.50*	385/*15.16*	**NSYPTDS4**	–
	ATV930D30M3...D45M3, ATV930D30M3C...D45M3C, ATV930D55N4...D90N4, ATV930D55N4C...D90N4C	975/*38.39*	427/*16.81*	**NSYPTDS5**	–
Kit for UL Type 1 conformity	ATV930D55M3C...D75M3C, ATV930C11N4C...C16N4C	–	–		–

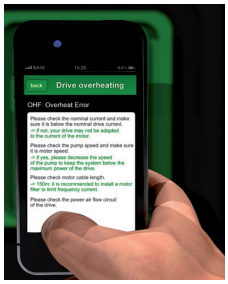
Variable speed drives
Altivar Process ATV900
Option: Configuration and runtime tools

Graphic display terminal (example shows dynamic speed and torque)

Detected fault: The screen's red backlight is activated automatically

Embedded dynamic QR codes for contextual, instantaneous access to online help

Scanning the QR code from a smartphone or tablet



Instant access to online help

Graphic display terminal (supplied with the drive)

This terminal can be:
- Connected and mounted on the front of the drive
- Connected and mounted on an enclosure door using a remote mounting accessory
- Connected to a PC to exchange files via a Mini USB/USB connection *(1)*
- Connected to several drives in multidrop mode (see page 23)

This terminal is used to:
- Control, adjust, and configure the drive
- Display current values (motor, I/O, and process data)
- Display graphic dashboards such as the energy consumption monitoring dashboard
- Store and download configurations (several configuration files can be stored in the 16 MB memory)
- Duplicate the configuration of one powered-up drive on another powered-up drive
- Copy configurations from a PC or drive and duplicate them on another drive (the drives must be powered on for the duration of the duplication operations)

Other characteristics:
- 24 integrated languages (complete alphabets) covering the majority of countries around the world (other languages can be added; please consult our website www.schneider-electric.com)
- 2-color backlit display (white and red); if an error is detected, the red backlight is activated automatically (function can be disabled)
- Operating range: -15…50 °C / *+5…122 °F*
- Degree of protection: IP 65
- Trend curves: Graphic display of changes over time in monitoring variables, energy data, and process data
- Embedded dynamic QR codes for contextual, instantaneous access to online help (diagnostics and settings, etc.) using a smartphone or tablet
- Real-time clock with 10-year backup battery providing data acquisition and event timestamping functions even when the drive is stopped

Description

Display:
- 8 lines, 240 x 160 pixels
- Displays bar charts, gauges, and trend charts
- 4 function keys to facilitate navigation and provide contextual links for enabling functions
- "STOP/RESET" button: Local control of motor stop command/clearing detected errors
- "RUN" button: Local control of motor run command
- Navigation buttons:
  - OK button: Saves the current value (ENT)
  - Turn ±: Increases or decreases the value, goes to the next or previous line
  - "ESC" button: Aborts a value, parameter, or menu to return to the previous selection
  - Home: Root menu
  - Information (i): Contextual help

References

Description	Reference	Weight kg/ *lb*
Graphic display terminal	**VW3A1111**	0.20/ *0.44*

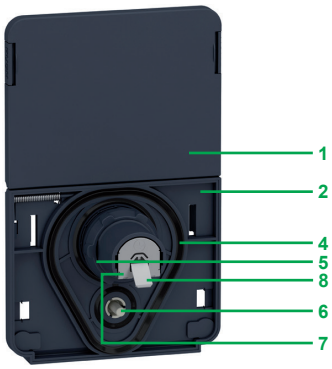
Communication accessory

Description	Reference	Weight kg/ *lb*
IP 20 WiFi dongle remote mounting of the Ethernet port for connection of WiFi equipment (PC, tablet, smartphone, etc.) powered by internal rechargeable battery	**TCSEGWB13FA0**	0.35/ *0.77*

(1) Graphic display terminal used only as a handheld terminal.

Overview: page 8 | Variable speed drives: page 18 | Combinations: page 26 | Communication buses and networks: page 30 | Dimensions: page 66

Remote mounting kit for mounting graphic display terminal on enclosure door (front panel)



Remote mounting kit for graphic display terminal (rear panel)

Accessories for graphic display terminal

■ Remote mounting kit for mounting on enclosure door with IP 65 degree of protection as standard. The kit comprises:
- Tightening tool (also sold separately under the reference ZB5AZ905)

1 Cover plate to maintain IP 65 protection when there is no terminal connected
2 Mounting plate
3 RJ45 port for the graphic display terminal
4 Seal
5 Fixing nut
6 Anti-rotation pin
7 RJ45 port for connecting the remote-mounting cordset (10 m / *32.81 ft* maximum) Cordsets should be ordered separately depending on the length required
8 Grounding connector

Drilling a hole with a standard 22 mm diameter tool, as used for a pushbutton, allows the unit to be mounted without needing a cut-out in the enclosure (Ø 22.5 mm / *Ø 0.89 in.* drill hole).

References

Description	Length m/ *ft*	IP	Reference	Weight kg/ *lb*
Remote mounting kit Order with remote-mounting cordset VW3A1104R●●●	–	65	**VW3A1112**	–
Tightening tool for remote mounting kit	–	–	**ZB5AZ905**	0.016/ *0.035*
Remote-mounting cordset equipped with 2 RJ45 connectors	1/ *3.28*	–	**VW3A1104R10**	0.050/ *0.110*
	3/ *9.84*	–	**VW3A1104R30**	0.150/ *0.331*
	5/ *16.40*	–	**VW3A1104R50**	0.250/ *0.551*
	10/ *32.81*	–	**VW3A1104R100**	0.500/ *1.102*
USB/Mini B USB cable for connecting the display terminal to a PC	–	–	**TCSXCNAMUM3P**	–
IP 65 remote mounting kit for Ethernet port *(1)* Ø 22 RJ45 female/female adapter with seal	–	65	**VW3A1115**	0.200/ *0.441*

Multidrop connection accessories

These accessories are used to connect a graphic display terminal to several drives via a multidrop link. This multidrop connection uses the RJ45 terminal port on the front of the drive.

Connection accessories

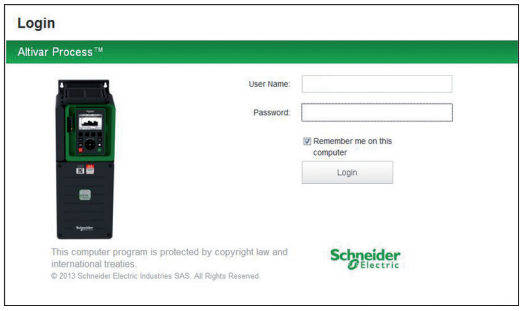
Description			Sold in lots of	Unit reference	Weight kg/ *lb*
Modbus splitter box 10 RJ45 connectors and 1 screw terminal block			–	**LU9GC3**	0.500/ *1.102*
Modbus T-junction boxes	With 0.3 m / *0.98 ft* integrated cable		–	**VW3A8306TF03**	0.190/ *0.419*
	With 1 m / *3.28 ft* integrated cable		–	**VW3A8306TF10**	0.210/ *0.463*
Modbus line terminator	For RJ45 connector	R = 120 Ω C = 1 nf	2	**VW3A8306RC**	0.010/ *0.022*

Cordsets (equipped with 2 RJ45 connectors)

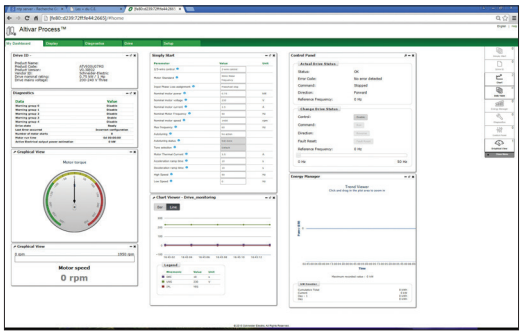
Used for	Length m/ *ft*	Reference	Weight kg/ *lb*
Serial link	0.3/ *0.98*	**VW3A8306R03**	0.025/ *0.055*
	1/ *3.28*	**VW3A8306R10**	0.060/ *0.132*
	3/ *9.84*	**VW3A8306R30**	0.130/ *0.287*

(1) Used to connect a remote PC to the RJ45 port on an IP 21 drive mounted in an enclosure or on a wall. Drill hole with a standard Ø 22 tool, as used for a pushbutton. (Requires a remote-mounting cordset VW3A1104R●0● equipped with 2 RJ45 connectors).

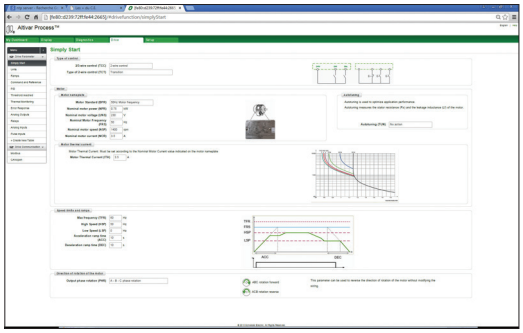
Variable speed drives
Altivar Process ATV900
Option: Configuration and runtime tools



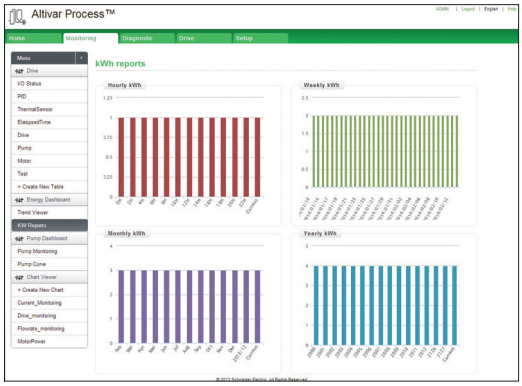
Login screen



Customizable widgets



Drive adjustment parameters



Energy dashboard

Web server

Overview

■ The Web server can be accessed:
□ For a drive not connected to an Ethernet network
- Via an Ethernet cable or the Schneider Electric WiFi dongle (the drive then appears as a network device)
□ For a drive connected to an Ethernet network
- From any point on the network by entering the drive IP address

■ The Web server is used for:
□ Commissioning the drive (setting configuration parameters and enabling the main functions)
□ Monitoring energy and process data, as well as drive and motor data
□ Diagnostics (drive status, file transfer, detected error and warning logs)

Description

The Web server is structured around 5 tabs.

■ “My dashboard” tab:
□ Configurable using a wide choice of widgets; groups all the information and dashboards selected by the user on one page

■ “Display” tab:
□ Monitors energy indicators, efficiency, and performance
□ Displays process data
□ Monitors drive parameters and status
□ Shows the I/O state and assignment

■ “Diagnostics” tab:
□ Drive status
□ Time and date-stamped warning and detected error logs
□ Network diagnostics
□ Access to drive self-tests

■ “Drive” tab:
□ Access to the main drive adjustment parameters with screen help

■ “Setup” tab:
□ Network configuration
□ Access management
□ Transferring and retrieving drive configurations
□ Exporting data acquisition files and logs
□ Customizing pages (colors, logos, etc.)

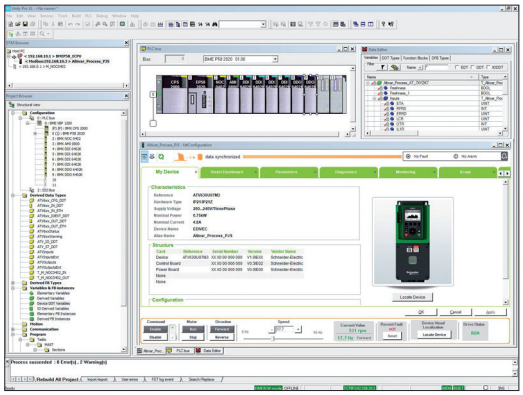
Other characteristics:
■ Ease of connection via the RJ45 port or WiFi connection
■ Password-protected authentication (modifiable password; access rights can be configured by administrator)
■ No downloads or installation necessary
■ Web server can be disabled
■ Works in a similar way on PCs, iPhones, iPads, Android systems, and the following major web browsers:
□ Internet Explorer® (version 8 or higher)
□ Google Chrome® (version 11 or higher)
□ Mozilla Firefox® (version 4 or higher)
□ Safari® (version 5.1.7 or higher)

Variable speed drives
Altivar Process ATV900
Option: Configuration and runtime tools

DTM

Overview

Using FDT/DTM technology it is possible to configure, control, and diagnose Altivar Process drives directly in Unity Pro and SoMove software by means of the same software brick (DTM).
FDT/DTM technology standardizes the communication interface between field devices and host systems. The DTM contains a uniform structure for managing drive access parameters.



Altivar Process DTM in Unity

Specific functions of the Altivar Process DTM

- Offline or online access to drive data
- Drive firmware updates
- Transfer of configuration files from and to the drive
- Customization (dashboard, My Menu, etc.)
- Access to drive parameters and option cards
- Oscilloscope function
- Graphic interface to assist with configuration of the Altivar Process functions
- Energy and process dashboards
- Graphic display of system operation and comparison with optimum operation (dynamic speed and torque curves)
- Detected error and warning logs (with timestamping)

Advantages of the DTM library in Unity Pro:
- Single tool for configuration, setup, and diagnostics
- Network scan for automatic recognition of network configuration
- Ability to add/remove, copy/paste configuration files from other drives in the same architecture
- Single input point for all parameters shared between the ePAC (programmable controller) and the Altivar Process drive
- Creation of drive profiles for implicit communication with the ePAC as well as dedicated profiles for programs with DFBs (derived function blocks)
- Integration in the fieldbus topology
- Drive configuration is an integral part of the Unity Pro project file (STU) and the archive file (STA)

Advantages of the DTM library in SoMove:
- Drive-oriented software environment
- Wired connection to the Ethernet communication port
- Standard cable (file transfer performance)
- Function block library for Unity Pro
- Display blocks for Vijeo Citect

- Third-party software and downloads:

The Altivar Process DTM library is a flexible, open, and interactive tool that can be used in a third-party FDT.
DTMs can be downloaded from our website www.schneider-electric.com.

SoMove software

SoMove software

Overview

SoMove software for PC is used to configure, set up, and maintain Altivar Process drives.

In addition to the functions offered by the Web server, SoMove software features the oscilloscope function for accurate display of data samples, as well as access to multi-drive applications.

The software can be connected to Altivar Process variable speed drives via:
- A Bluetooth® wireless connection with the Bluetooth/Modbus adapter TCSWAAC13FB
- Ethernet Modbus and WiFi connection with the WiFi dongle TCSEGWB13FA0
- Ethernet Modbus TCP connection

For more information on SoMove setup software, please consult the “SoMove: Setup Software” catalog available on our website www.schneider-electric.com.

Possible combinations of options for ATV930●●●M3 and ATV930●●●N4 drives

Motor		Drive	Accessories		Options			
kW	*HP*		Flange-mounting kit	Kit for IP 21 / UL Type 1 conformity	EMC filters	IP 21 kit for EMC filters	dV/dt filters	IP 21 kit for dV/dt filters
Three-phase supply voltage: 200…240 V 50/60 Hz - IP 21 / UL Type 1								
0.75	*1*	**ATV930U07M3**	NSYPTDS1	–	VW3A4701	VW3A47901	VW3A5301	VW3A53902
1.5	*2*	**ATV930U15M3**	NSYPTDS1	–	VW3A4701	VW3A47901	VW3A5302	VW3A53902
2.2	*3*	**ATV930U22M3**	NSYPTDS1	–	VW3A4702	VW3A47902	VW3A5302	VW3A53902
3	*4*	**ATV930U30M3**	NSYPTDS1	–	VW3A4702	VW3A47902	VW3A5302	VW3A53902
4	*5*	**ATV930U40M3**	NSYPTDS1	–	VW3A4703	VW3A47903	VW3A5303	VW3A53902
5.5	*7.5*	**ATV930U55M3**	NSYPTDS2	–	VW3A4703	VW3A47903	VW3A5304	VW3A53903
7.5	*10*	**ATV930U75M3**	NSYPTDS3	–	VW3A4703	VW3A47903	VW3A5304	VW3A53903
11	*15*	**ATV930D11M3**	NSYPTDS3	–	VW3A4704	VW3A47904	VW3A5304	VW3A53903
15	*20*	**ATV930D15M3**	NSYPTDS4	–	VW3A4705	VW3A47905	VW3A5305	VW3A53905
18.5	*25*	**ATV930D18M3**	NSYPTDS4	–	VW3A4706	VW3A47906	VW3A5305	VW3A53905
22	*30*	**ATV930D22M3**	NSYPTDS4	–	VW3A4706	VW3A47906	VW3A5305	VW3A53905
30	*40*	**ATV930D30M3**	NSYPTDS5	–	VW3A4707	VW3A47907	VW3A5306	–
37	*50*	**ATV930D37M3**	NSYPTDS5	–	VW3A4707	VW3A47907	VW3A5306	–
45	*60*	**ATV930D45M3**	NSYPTDS5	–	VW3A4708	VW3A47908	VW3A5306	–
Three-phase supply voltage: 200…240 V 50/60 Hz - IP 21 / UL Type 1 without braking unit								
45	*60*	**ATV930D30M3C**	NSYPTDS5	–	VW3A4707	VW3A47907	VW3A5306	–
45	*60*	**ATV930D37M3C**	NSYPTDS5	–	VW3A4707	VW3A47907	VW3A5306	–
45	*60*	**ATV930D45M3C**	NSYPTDS5	–	VW3A4708	VW3A47908	VW3A5306	–
55	*75*	**ATV930D55M3C**	–	VW3A9704	VW3A4709	–	VW3A5307	–
75	*100*	**ATV930D75M3C**	–	VW3A9704	VW3A4710	–	VW3A5307	–
Three-phase supply voltage: 380...480 V 50/60 Hz - Ip 21 / UL Type 1								
0.75	*1*	**ATV930U07N4**	NSYPTDS1	–	VW3A4701	VW3A47901	VW3A5301	VW3A53902
1.5	*2*	**ATV930U15N4**	NSYPTDS1	–	VW3A4701	VW3A47901	VW3A5301	VW3A53902
2.2	*3*	**ATV930U22N4**	NSYPTDS1	–	VW3A4701	VW3A47901	VW3A5301	VW3A53902
3	*4*	**ATV930U30N4**	NSYPTDS1	–	VW3A4702	VW3A47902	VW3A5302	VW3A53902
4	*5*	**ATV930U40N4**	NSYPTDS1	–	VW3A4702	VW3A47902	VW3A5302	VW3A53902
5.5	*7.5*	**ATV930U55N4**	NSYPTDS1	–	VW3A4702	VW3A47902	VW3A5302	VW3A53902
7.5	*10*	**ATV930U75N4**	NSYPTDS2	–	VW3A4703	VW3A47903	VW3A5303	VW3A53902
11	*15*	**ATV930D11N4**	NSYPTDS2	–	VW3A4703	VW3A47903	VW3A5303	VW3A53902
15	*20*	**ATV930D15N4**	NSYPTDS3	–	VW3A4703	VW3A47903	VW3A5304	VW3A53903
18.5	*25*	**ATV930D18N4**	NSYPTDS3	–	VW3A4704	VW3A47904	VW3A5304	VW3A53903
22	*30*	**ATV930D22N4**	NSYPTDS3	–	VW3A4704	VW3A47904	VW3A5304	VW3A53903
30	*40*	**ATV930D30N4**	NSYPTDS4	–	VW3A4705	VW3A47905	VW3A5305	VW3A53905
37	*50*	**ATV930D37N4**	NSYPTDS4	–	VW3A4706	VW3A47906	VW3A5305	VW3A53905
45	*60*	**ATV930D45N4**	NSYPTDS4	–	VW3A4706	VW3A47906	VW3A5305	VW3A53905
55	*75*	**ATV930D55N4**	NSYPTDS5	–	VW3A4707	VW3A47907	VW3A5306	–
75	*100*	**ATV930D75N4**	NSYPTDS5	–	VW3A4708	VW3A47908	VW3A5306	–
90	*125*	**ATV930D90N4**	NSYPTDS5	–	VW3A4708	VW3A47908	VW3A5306	–
Three-phase supply voltage: 380...480 V 50/60 Hz - IP 21 / UL Type 1 without braking unit								
55	*75*	**ATV930D55N4C**	NSYPTDS5	–	VW3A4707	VW3A47907	VW3A5306	–
75	*100*	**ATV930D75N4C**	NSYPTDS5	–	VW3A4708	VW3A47908	VW3A5306	–
90	*125*	**ATV930D90N4C**	NSYPTDS5	–	VW3A4708	VW3A47908	VW3A5306	–
110	*150*	**ATV930C11N4C**	–	VW3A9704	VW3A4709	–	VW3A5307	–
132	*200*	**ATV930C13N4C**	–	VW3A9704	VW3A4709	–	VW3A5307	–
160	*250*	**ATV930C16N4C**	–	VW3A9704	VW3A4710	–	VW3A5307	–
Pages		page 18	page 21	page 21	page 43	page 44	page 45	page 46

(1) When used with ATV950U07N4/N4E...D90N4/N4E drives, the filter must be mounted in a separate enclosure to maintain IP 55 protection for the installation.

I/O extension modules

Description	Reference	Page
Module with digital and analog I/O	VW3A3203	page 29
Module with relay outputs	VW3A3204	page 29

Encoder interface modules

Description	Reference	Page
Digital interface encoder module	VW3A3420	page 28
Analog interface encoder module	VW3A3422	page 28
Resolver interface module	VW3A3423	page 28
HTL encoder interface module	VW3A3424	page 28

List of fieldbus modules *(1)*

Description	Reference	Page
CANopen Daisy chain	VW3A3608	page 33
CANopen SUB-D	VW3A3618	page 33
CANopen screw terminal block	VW3A3628	page 34
PROFINET	VW3A3627	page 35
PROFIBUS DP V1	VW3A3607	page 35
DeviceNet	VW3A3609	page 35

(1) See table below for module compatibility.

Module compatibility table

Module type	Digital and analog I/O VW3A3203 *(2)*	Relay outputs VW3A3204 *(2)*	Fieldbuses VW3A36●● *(3)*	Encoder interface modules VW3A3420, VW3A3422 and VW3A3423 *(3)*
Digital and analog I/O VW3A3203				
Relay outputs VW3A3204				
Fieldbuses VW3A36●●				
Encoder interface modules VW3A3420, VW3A3422 and VW3A3423 VW343424				

Combination possible

Combination impossible

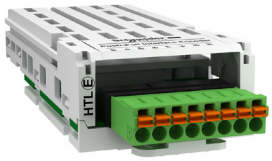
(2) Maximum combination involving two types of module is 2.
(3) Maximum combination involving two types of module is 1.

Variable speed drives
Altivar Process ATV900
Option: Encoder interface modules

VW3A3423 resolver encoder interface module

VW3A3420 digital interface encoder module 5/12 V

VW3A3422 analog interface encoder module



VW3A3423 HTL encoder interface module

Overview

Encoder interface modules are used for Flux Vector Control operation with sensor (FVC mode) for asynchronous motors, or for Vector Control operation with speed feedback (FSY mode) for synchronous motors. They improve drive performance during demanding motor load states:
- Zero speed torque
- Accurate speed regulation
- Torque accuracy
- Shorter response times on a torque surge
- Improved dynamic performance in transient state

For asynchronous motors, in the other control modes (voltage vector control, voltage/frequency ratio), encoder interface modules improve static speed accuracy.

Depending on the model, encoder interface modules can also be used for monitoring, irrespective of the control type:
- Overspeed detection
- Load slipping detection

They can also transmit a reference value provided by the encoder input to the Altivar variable speed drive. This specific feature is used to synchronize the speed of several drives. The encoder options have a thermal sensor input to monitor one standard temperature sensor.

4 modules are available depending on the encoder technology:
- Resolver encoder
- Encoder with digital output
- Encoder with analog output
- HTL encoder interface

The Altivar variable speed drive can only be equipped with one of the encoder interface modules. The interface encoder module is inserted in a dedicated slot. It is protected against encoder supply short circuits and overloads.

References

Description	Technology type	Used with encoder *(1)*	Power supply	Maximum current	Maximum cable length	Maximum operating frequency	Supported thermal sensors	Reference	Weight
			V ⎓	mA	m/*ft*	kHz			kg/*lb*
Resolver interface module	Resolver	–	–	50	100/*328*	3...12	PTC (digital/linear), PT100, PT1000, Klixon	**VW3A3423**	0.150/ *0.331*
Digital interface encoder module 5/12 V	A/B/I	**XCC1●●●●●●●R** **XCC1●●●●●●●X**	5, 12 or 24	250, 100	100/*328*	1,000	PTC (digital/linear), PT100, PT1000, Klixon	**VW3A3420**	0.150/ *0.331*
	SSI	**XCC2●●●●●●●S●●** **XCC3●●●●●●●S●●**	5, 12 or 24	250, 100	50/*164 (2)*	1,000 *(2)*			
	EnDat® 2.2		5, 12 or 24	250, 100	50/*164 (2)*	1,000 *(2)*			
Analog interface encoder module	1 Vpp		5, 12 or 24	250, 100	100/*328*	100	PTC (digital/linear), PT100, PT1000, Klixon	**VW3A3422**	0.150/ *0.331*
	SinCos Hiperface®		5, 12 or 24	250, 100	100/*328*	100			
HTL encoder interface module	HTL	–	12, 15, or 24	200, 175, 100	*500/1640*	300	PTC (digital/linear), PT100, PT1000, Klixon	**VW3A3424**	0.150/ *0.331*

Connection accessories (see the complete list of connection accessories at www.schneider-electric.com)

Description	Composition	Length m/*ft*	Reference	Weight kg/*lb*
Connectors				
Connector 9-way male SUB-D for resolver interface module	–	–	**AEOCON011**	–
Cordset				
Cordset equipped with 1 x 15-way high density male SUB-D connector for digital or analog encoder modules	–	1/*3.28*	**VW3M4701**	–
Connecting cable				
Cable for creating cordsets for encoder interface modules	5 x (2 x 0.25 mm²/*AWG 24*) + 1 x (2 x 0.5 mm²/*AWG 20*)	100/*328*	**VW3M8221R1000**	21.000/ *46.297*

(1) To determine the complete reference, please refer to the "Detection for the automation solution - OsiSense" catalog or our website www.schneider-electric.com.
(2) With propagation delay compensation on EnDat® up to 100 m/328 ft and higher maximum frequencies possible, SSI 300 kHz up to 100m/328ft possible..

Overview: page 8 | Variable speed drives: page 18 | Combinations: page 26 | Communication buses and networks: page 30 | Dimensions: page 66

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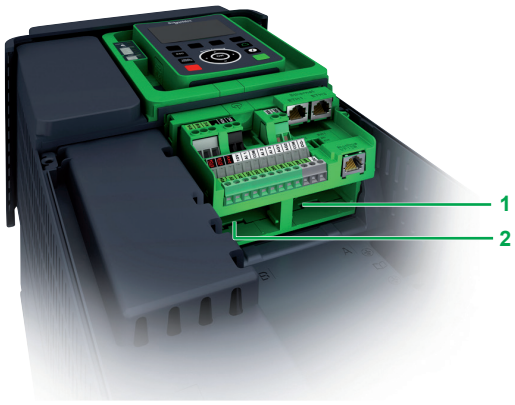

I/O extension modules

Presentation

By installing I/O extension modules Altivar Process drives can be adapted to meet the needs of applications that manage additional sensors or specific sensors.

2 extension modules are available:
- Module with digital and analog I/O
- Module with relay outputs

These modules are inserted in slots A and B on Altivar Process drives:
1 Slot A for I/O extension or fieldbus modules
2 Slot B for I/O extension modules

Module with digital and analog I/O

- 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
- 6 x 24 V ⎓ positive or negative digital inputs
- Sampling: 1 ms max
- 2 assignable digital outputs
- 2 removable spring terminal blocks

Module with relay outputs

- 3 relay outputs with NO contacts
- 1 fixed screw terminal block

PF140391B

VW3A3203

PF130897B

VW3A3204

I/O extension modules

Description	I/O type				Reference	Weight
	Digital inputs	Digital outputs	Analog inputs	Relay outputs		kg/*lb*
Module with digital and analog I/O	6	2	2 *(1)*	–	**VW3A3203**	–
Module with relay outputs	–	–	–	3 *(2)*	**VW3A3204**	–

(1) Differential analog inputs configurable via software as current (0-20 mA / 4-20 mA), or for PTC, PT100, or PT1000, 2 or 3-wire. When configured as PTC probe inputs, they must never be used to protect an ATEX motor in applications in explosive atmospheres. Please refer to the ATEX guide on our website www.schneider-electric.com.
(2) NO contacts.

***Note**: Digital and analog I/O modules and relay output modules can go in either slot A or slot B on Altivar Process drives. However, the drives cannot take 2 modules of the same type (e.g., 2 digital and analog I/O modules or 2 relay output modules).*

Variable speed drives
Altivar Process ATV900
Communication buses and networks

Overview

Altivar Process drives have 3 built-in RJ45 communication ports as standard:
- 1 EtherNet/IP and Modbus TCP dual port
- 1 serial port

Integrated communication protocols

Altivar Process drives integrate the EtherNet/IP and Modbus TCP and Modbus serial link communication protocols as standard.

- EtherNet/IP and Modbus TCP dual port

This offers standard services regularly used in industrial networks: Connection to the Modbus TCP or EtherNet/IP network
- EtherNet IP adapter including standard CIP objects (AC/DC drive objects, CIP energy objects, etc.), compliant to ODVA specification
- The RSTP connection allows ring topology to help ensure continuity of service.
- Dual port allows daisy chain connection to simplify cabling and network infrastructure (no need to use a switch).
- Modbus TCP message handling is based on the Modbus protocol and is used to exchange process data with other network devices (e.g., a PLC).

It provides Altivar Process drives with access to the Modbus protocol and to the high performance of the Ethernet network, which is the communication standard for numerous devices.
- SNMP (Simple Network Management Protocol) offers standard diagnostics services for network management tools.
- The FDR (Fast Device Replacement) service allows automatic reconfiguration of a new device installed to replace an existing device.
- Device security is reinforced by disabling some unused services as well as managing a list of authorized devices.
- Setup and adjustment tools (SoMove, Unity with DTM) can be connected locally or remotely.
- The embedded Web server is used to display operating data and dashboards as well as to configure and diagnose system elements from any web browser.

These numerous services offered by Altivar Process drives simplify integration into Schneider Electric process automation control systems like M580 ePAC or Foxboro Evo DCS.

- Serial port
- Field network operation for exchanging data with other devices via the Modbus protocol
- Multidrop connection of the following HMIs and configuration tools:
  - The graphic display terminal supplied with the drive
  - A Magelis industrial HMI terminal
  - A PC with SoMove or Unity setup software

The detailed specifications for the EtherNet/IP or serial communication ports, and the Modbus and Modbus TCP protocols are available on our website www.schneider-electric.com.

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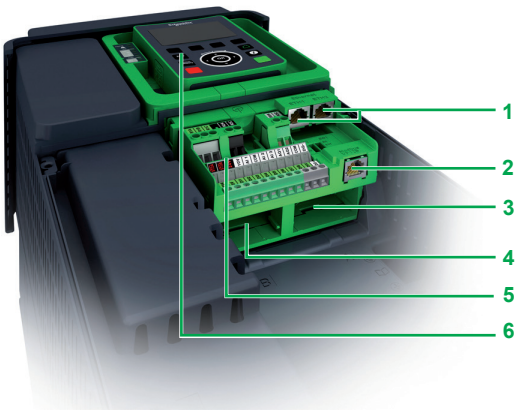


Description

1 2 x RJ45 EtherNet/IP and Modbus TCP port
2 RJ45 serial port
3 Slot A for I/O extension or fieldbus modules
4 Slot B for I/O extension modules
5 Removable screw terminal blocks for 24 V ⎓ power supply and integrated I/O
6 RJ45 serial link for HMI (graphic display terminal, Magelis terminal, etc.)

Altivar Process drives can only take one fieldbus module, in slot A **3** only.
They cannot take 2 modules of the same type (e.g., 2 digital and analog I/O modules or 2 relay output modules).
The drives can take one digital and analog I/O module and one relay output module in either slot A **3** or slot B **4**.

Note: *The user manuals and description files (gsd, eds) for devices on the fieldbuses and networks are available on our website www.schneider-electric.com.*

Optional fieldbus modules

The Altivar Process drive can also be connected to other industrial fieldbuses and networks by using one of the fieldbus modules available as an option. Fieldbus modules are supplied in “cassette” format for ease of mounting/removal.

Dedicated fieldbus modules:
- ■ CANopen:
  - □ RJ45 Daisy Chain
  - □ Sub-D
  - □ Screw terminal block
- ■ EtherCAT
- ■ PROFINET
- ■ PROFIBUS DP V1
- ■ DeviceNet

PROFINET and PROFIBUS DP V1 modules also support the Profidrive and CiA402 profiles.

It is possible to maintain communication using a separate power supply for the control and power sections. Monitoring and diagnostics via the network are possible even if there is no power supplied to the power section.

Functions

The drive functions can be accessed via the various communication networks:
- ■ Configuration
- ■ Adjustment
- ■ Control
- ■ Monitoring

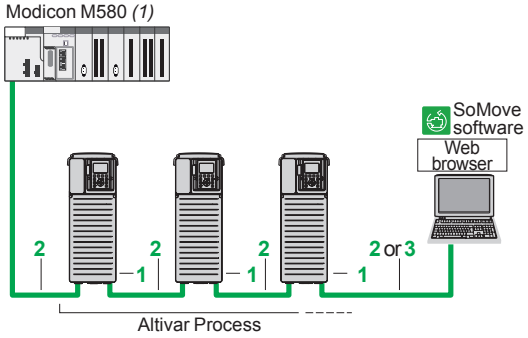
Altivar Process drives offer a high degree of interfacing flexibility with the possibility to assign, by configuration, the different control sources (I/O, communication networks, and HMI terminal) to control functions in order to meet the requirements of complex applications.

Network services and parameters are configured using the SoMove drive setup software, or using Unity software if the drive is being integrated into a PlantStruXure architecture.

Communication is monitored according to the specific criteria for each protocol. However, regardless of the protocol, it is possible to configure how the drive responds to a detected communication interruption, as follows:
- ■ Define the type of stop when a communication interruption is detected
- ■ Maintain last command received
- ■ Fallback position at preset speed
- ■ Ignore the detected communication interruption

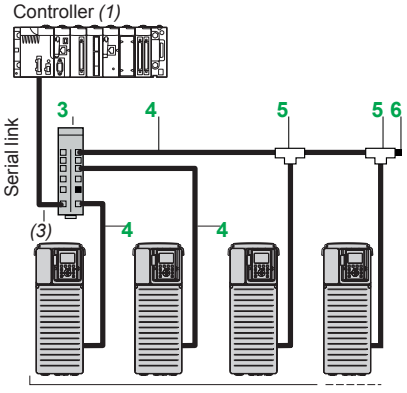
Variable speed drives
Altivar Process ATV900
Communication buses and networks
Option: Integrated ports

Modicon M580 *(1)*



Example of connection on an EtherNet/IP network

Controller *(1)*



Example of serial link architecture

Integrated EtherNet/IP and Modbus TCP dual port

Description	Item	Length m/ *ft*	Unit reference	Weight kg/ *lb*
ConneXium cordsets *(2)*				
Straight shielded twisted pair cables equipped with 2 RJ45 connectors conforming to EIA/TIA-568 category 5 and IEC 11801/EN 50173-1, class D	2	2/ *6.56*	**490NTW00002**	–
		5/ *16.40*	**490NTW00005**	–
		12/ *39.37*	**490NTW00012**	–
Crossover shielded twisted pair cables equipped with 2 RJ45 connectors conforming to EIA/TIA-568 category 5 and IEC 11801/EN 50173-1, class D	3	5/ *16.40*	**490NTC00005**	–
		15/ *49.21*	**490NTC00015**	–
Straight shielded twisted pair cables equipped with 2 RJ45 connectors conforming to UL and CSA 22.1	2	2/ *6.56*	**490NTW00002U**	–
		5/ *16.40*	**490NTW00005U**	–
		12/ *39.37*	**490NTW00012U**	–
Crossover shielded twisted pair cables equipped with 2 RJ45 connectors conforming to UL and CSA 22.1	3	5/ *16.40*	**490NTC00005U**	–
		15/ *49.21*	**490NTC00015U**	–

Integrated serial port

Description			Item	Length m/ *ft*	Unit reference	Weight kg/ *lb*
Connection accessories						
Splitter box 10 RJ45 connectors and 1 screw terminal block			3	–	**LU9GC3**	0.500/ *1.102*
Modbus T-junction boxes	With 0.3 m / *0.98 ft* integrated cable		5	0.3/ *0.98*	**VW3A8306TF03**	0.190/ *0.419*
	With 1 m / *3.28 ft* integrated cable		5	1/ *3.28*	**VW3A8306TF10**	0.210/ *0.463*
Modbus line terminator *(4)*	For RJ45 connector	R = 120 Ω C = 1 nf	6	–	**VW3A8306RC**	0.010/ *0.022*
Cordsets equipped with 2 RJ45 connectors			4	0.3/ *0.98*	**VW3A8306R03**	0.025/ *0.055*
				1/ *3.28*	**VW3A8306R10**	0.060/ *0.132*
				3/ *9.84*	**VW3A8306R30**	0.130/ *0.287*

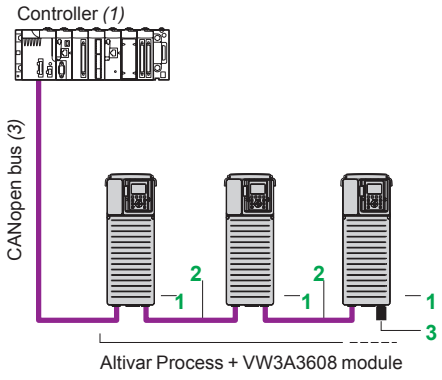
(1) Please refer to the "Modicon automation platform" catalogs on our website www.schneider-electric.com.
(2) Also exist in 40 and 80 m / 131 and 262 ft lengths. For other ConneXium connection accessories, please consult our website www.schneider-electric.com.
(3) Cable depends on the PLC.
(4) Sold in lots of 2.

PF514340

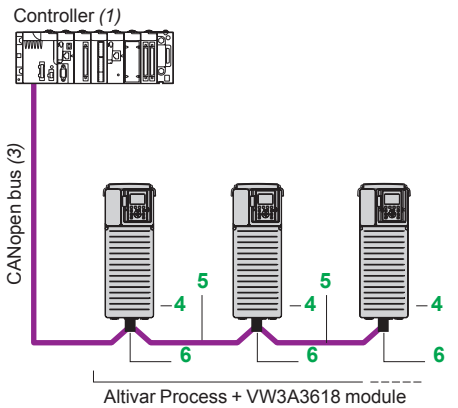
VW3A3608

PF514341

VW3A3618



Optimized solution for daisy chain connection to the CANopen bus



Example of connection to the CANopen bus via SUB-D connector

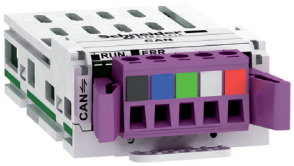
CANopen bus *(1)*

Description	Item	Length m/ *ft*	Unit reference	Weight kg/ *lb*
Fieldbus module				
CANopen Daisy chain module Ports: 2 RJ45 connectors	1	–	**VW3A3608**	–
Connection to RJ45 connector (optimized solution for daisy chain connection on CANopen bus)				
CANopen cordsets equipped with 2 RJ45 connectors	2	0.3/ *0.98*	**VW3CANCARR03**	0.050/ *0.110*
		1/ *3.28*	**VW3CANCARR1**	0.500/ *1.102*
CANopen line terminator for RJ45 connector	3	–	**TCSCAR013M120**	–
Fieldbus module				
CANopen SUB-D module Ports: 1 x 9-way male SUB-D connector	4	–	**VW3A3618**	–
Connection to SUB-D connector				
CANopen cables *(3) (4)* Standard cable, CE mark Low smoke zero halogen. Flame-retardant (IEC 60332-1)	5	50/ *164.04*	**TSXCANCA50**	4.930/ *10.869*
		100/ *328.08*	**TSXCANCA100**	8.800/ *19.401*
		300/ *984.25*	**TSXCANCA300**	24.560/ *54.145*
CANopen cables *(3) (4)* UL certification, CE mark Flame-retardant (IEC 60332-2)	5	50/ *164.04*	**TSXCANCB50**	3.580/ *7.893*
		100/ *328.08*	**TSXCANCB100**	7.840/ *17.284*
		300/ *984.25*	**TSXCANCB300**	21.870/ *48.215*
CANopen cables *(3) (4)* Cable for harsh environments or mobile installations, CE mark Low smoke zero halogen Flame-retardant (IEC 60332-1)	5	50/ *164.04*	**TSXCANCD50**	3.510/ *7.738*
		100/ *328.08*	**TSXCANCD100**	7.770/ *17.130*
		300/ *984.25*	**TSXCANCD300**	7.770/ *17.130*
IP 20 straight CANopen connector *(5)* 9-way female SUB-D connector with line terminator that can be deactivated For connecting CAN-H, CAN-L, CAN-GND	6	–	**TSXCANKCDF180T**	0.049/ *0.108*

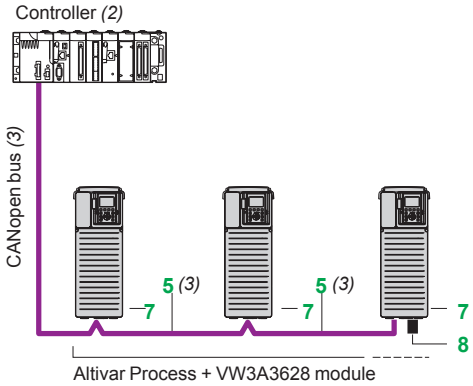
(1) Altivar Process drives can only take one fieldbus module.
(2) Please refer to the "Modicon automation platform" catalogs on our website www.schneider-electric.com.
(3) Cable depends on the PLC.
(4) Standard environment:
- No particular environmental constraints
- Operating temperature between +5 °C and +60 °C / +41 °F and +140 °F
- Fixed installation
Harsh environment:
- Resistance to hydrocarbons, industrial oils, detergents, solder splashes
- Relative humidity up to 100%
- Saline atmosphere
- Operating temperature between -10 °C and +70 °C / +14 °F and 158 °F
- Significant temperature variations
(5) Only straight connectors are compatible with Altivar Process drives.

Variable speed drives
Altivar Process ATV900
Communication buses and networks
Option: Communication modules

PF095129



VW3A3628



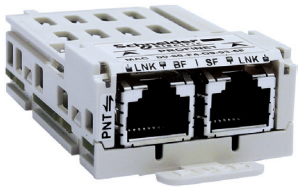
Example of connection to the CANopen bus with a screw terminal block

CANopen bus (continued) (1)				
Description	**Item**	**Length m/ *ft***	**Unit reference**	**Weight kg/ *lb***
Fieldbus module				
CANopen module Port: 1 x 5-way screw terminal block	7	–	**VW3A3628**	–
Connection to screw terminal block				
CANopen IP 20 cordsets *(3)* equipped with 2 x 9-way female SUB-D connectors Standard cable, CE mark. Low smoke zero halogen Flame-retardant (IEC 60332-1)	5	0.3/ *0.98*	**TSXCANCADD03**	0.091/ *0.201*
		1/ *3.28*	**TSXCANCADD1**	0.143/ *0.315*
		3/ *9.84*	**TSXCANCBDD3**	0.268/ *0.591*
		5/ *16.40*	**TSXCANCBDD5**	0.400/ *0.882*
IP 20 CANopen tap junction boxes equipped with: ■ 4 x 9-way male SUB-D connectors + screw terminal block for trunk cable tap link ■ Line terminator	–	–	**TSXCANTDM4**	0.196/ *0.432*
IP 20 CANopen tap junction boxes equipped with: ■ 2 screw terminal blocks for trunk cable tap link ■ 2 RJ45 connectors for connecting drives ■ 1 RJ45 connector for connecting a PC	–	–	**VW3CANTAP2**	–
CANopen line terminator for screw terminal connector *(4)*	8	–	**TCSCAR01NM120**	–

(1) Altivar Process drives can only take one fieldbus module.
(2) Please refer to the "Modicon automation platform" catalogs on our website www.schneider-electric.com.
(3) Cable depends on the PLC.
(4) Sold in lots of 2.

Variable speed drives
Altivar Process ATV900
Communication buses and networks
Option: Communication modules

PF 514350

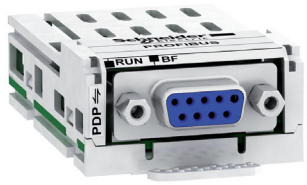


VW3A3627

PROFINET bus *(1)*

Description	Reference	Weight kg/ *lb*
Fieldbus module		
PROFINET module equipped with 2 RJ45 connectors	**VW3A3627**	0.290/ *0.639*

PF095130



VW3A3607

PROFIBUS DP V1 bus *(1)*

Description	Reference	Weight kg/ *lb*
Fieldbus module		
PROFIBUS DP V1 module Port: 1 x 9-way female SUB-D connector Conforming to PROFIBUS DP V1 Profiles supported: ■ CiA 402 drive ■ Profidrive Offers several message handling modes based on DP V1	**VW3A3607**	0.140/ *0.309*
SUB-D connection		
IP 20 straight connectors *(2)* for Profibus module	**LU9AD7**	–

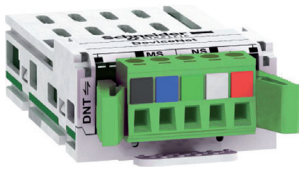
PF100282

VW3A3601

EtherCAT bus *(1)*

Description	Reference	Weight kg/ *lb*
Fieldbus module		
EtherCAT module equipped with 2 RJ45 connectors	**VW3A3601**	0.290/ *0.639*

PF514345



VW3A3609

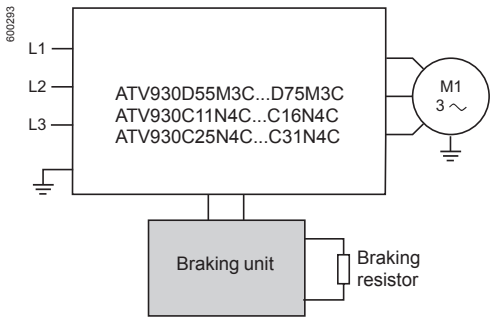
DeviceNet bus *(1)*

Description	Reference	Weight kg/ *lb*
Fieldbus module		
DeviceNet module Port: 1 removable 5-way screw connector Profiles supported: ■ CIP AC DRIVE ■ CiA 402 drive	**VW3A3609**	0.300/ *0.661*

(1) Altivar Process drives can only take one fieldbus module.
(2) Only straight connectors are compatible with Altivar Process drives.

Variable speed drives
Altivar Process ATV900
Option: Braking units

Overview



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 and ATV930U07N4...C22N4 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.

Applications

High-inertia machines, machines with slow and fast cycles, high-power machines performing vertical movements.

References

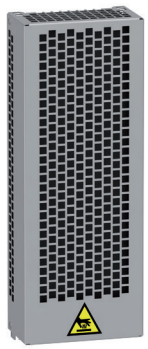
For drives	Power		Losses	Cable (drive-braking unit)		Cable (braking unit-resistors)		Percentage of conduction time	Minimum resistor value	Reference	Weight
	Conti-nuous	Maximum	At continuous power	Cross-section	Maximum length	Cross-section	Maximum length				
	kW	kW	W	mm²	m	mm²	m	%	Ohms		kg/*lb*
Supply 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	**VW3A7106**	28.000/ *61.729*
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		28.000/ *61.729*
ATV930C25N4C	200	420	550	- *(1)*	- *(1)*	2 x 95	50	5% at 420 kW 15% at 320 kW 50% at 250 kW	1	**VW3A7101**	30.000/ *66.139*
ATV930C31N4C	400	1050	1050	2 x 150	1	2 x 150	50	5% at 750 kW 15% at 550 kW 50% at 440 kW	0.7	**VW3A7102**	80.000/ *176.370*

(1) For the ATV930 variable speed drive, the braking unit is connected to the drive with internal connections.

Variable speed drives
Altivar Process ATV900
Option: Braking resistors

Overview

PF151255



VW3A7741

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

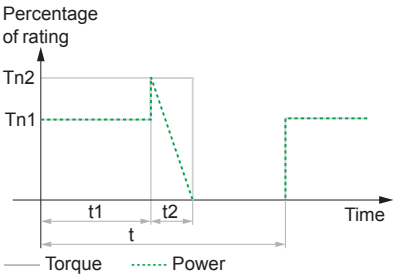
Braking resistors are designed to be located outside the enclosure, but should not inhibit natural cooling. Air inlets and outlets must not be obstructed in any way. The air must be free of dust, corrosive gas, and condensation.

Several resistor models are available, depending on the drive rating:
■ With IP 20 and Type 1 casing and thermal protection provided by temperature-controlled switch or by the drive
The internal circuits of Altivar Process drives rated 90 kW or less have a built-in dynamic brake transistor.

An external braking unit is necessary for wall-mounting Altivar Process drives between 110 kW and 315 kW at 400...480 V as well as 55 kW and 75 kW at 200...240 V.

Applications

Braking resistors are designed for a defined cycle (see the 3 cycle types defined below). Depending on your own applications and cycles, you can use these resistors or define a new value.
■ Braking resistors for light braking cycles for machines with cycles and inertia. The braking power is limited to 1.5 Tn for 0.8 s every 40 s.
■ Braking resistors for medium braking cycles for machines with high inertia and conveyors. The braking power is limited to 1.35 Tn for 4 s every 40 s.
■ Braking resistors for severe braking cycles for machines with very high inertia and vertical movements (hoisting). The braking power is limited to 1.65 Tn for 6 s and Tn for 54 s every 120 s.



Light Cycle	
t = 40 s	*t: period*
t1 = 0 s	*Tn1: braking torque*
t2 = 0.8 s	*Tn2: braking torque*
Tn1 = 0	*Tn: nominal torque*
Tn2 = 1.5 x Tn	

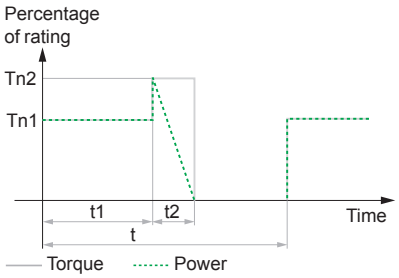
References for a light braking cycle

For drives	Degree of protection of the resistor	Ohmic value at 20 °C/ *68 °F*	Average power available at 50 °C/ *122* °F *(1)*	Quantity required per drive	Reference	Weight
		Ω	kW			kg/*lb*
Supply voltage: 200…240 V or 380…480 V 50/60 Hz						
ATV930U07M3 ATV930U07N4…U40N4	IP20	100	0.1	1	**VW3A7730**	1.500/ 3.307
ATV930U15M3…U22M3 ATV930U55N4…U75N4	IP20	60	0.16	1	**VW3A7731**	2.000/ *4.409*
ATV930U30M3…U40M3 ATV930D11N4…D15N4	IP20	28	0.3	1	**VW3A7732**	3.000/ *6.614*
ATV930U55M3…U75M3 ATV930D18N4...D30N4	IP20	16	1.1	1	**VW3A7733**	4.000/ *8.818*
ATV930D11M3 ATV930D37N4...D45N4	IP20	10	1.1	1	**VW3A7734**	5.500/ *12.125*
ATV930D15M3 ATV930D55N4	IP20	8	1.1	1	**VW3A7735**	5.500/ *12.125*
ATV930D18M3…D22M3 ATV930D75N4...D90N4	IP23	5	1.9	1	**VW3A7736**	18.000/ *39.683*
ATV930D30M3…D45M3 ATV930C11N4C...C16N4C	IP23	2.5	3.2	1	-	21.000/ *46.297*
ATV930C31N4C	IP23	1.4	1.5	1		
ATV930D55M3C...D75M3C	IP23	1.4	1.5	1	**VW3A7738**	16.000/ *35.274*
ATV930C22N4 ATV930C25N4C	IP23	1.4	5.1	1	**VW3A7748**	*29.000* *69.934*

(1) Load factor for resistors: The value of the average power that can be dissipated at 50 °C / 122 °F from the resistor into the casing is determined for a load factor during braking that corresponds to the majority of normal applications:
- *Normal duty: 0.8 s braking with a 1.2 Tn braking torque for a 40 s cycle*
- *Heavy duty: 0.8 s braking with a 1.5 Tn braking torque for a 40 s cycle*

Overview: page 8 | Variable speed drives: page 18 | Configuration and runtime tools: page 22 | Combinations: page 26 | Dimensions: page 66

Variable speed drives
Altivar Process ATV900
Option: Braking resistors



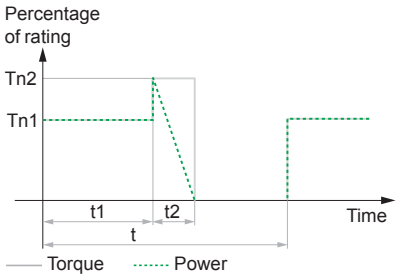
Medium Cycle	
t = 40 s *t1 = 0 s* *t2 = 4 s* *Tn1 = 0* *Tn2 = 1.35 x Tn*	*t: period* *Tn1: braking torque* *Tn2: braking torque* *Tn: nominal torque*

References for a medium braking cycle

For drives	Degree of protection of the resistor	Ohmic value at 20 °C/ *68 °F*	Average power available at 50 °C/ *122* °F *(1)*	Quantity required per drive	Reference	Weight
		Ω	kW			kg/*lb*
Supply voltage: 200…240 V or 380…480 V 50/60 Hz						
ATV930U07M3 ATV930U07N4...U15N4	IP20	100	0.1	1	**VW3A7730**	1.5/ *3.3*
ATV930U15M3...U22M3	IP20	60	0.16	1	**VW3A7731**	2.0/ *4.4*
ATV930U30M3...U40M3	IP20	28	0.3	1	**VW3A7732**	3.0/ *6.6*
ATV930U55M3…U75M3	IP20	16	1.1	1	**VW3A7733**	4.0/ *8.8*
ATV930D11M3	IP20	10	1.1	1	**VW3A7734**	5.5/ *12.1*
ATV930D15M3	IP20	8	1.1	1	**VW3A7735**	5.5/ *12.1*
ATV930D18M3...D22M3	IP23	5	1.9	1	**VW3A7736**	18.0/ *39.7*
ATV930D30M3...D45M3	IP23	2.5	3.2	1	-	20.0/ *44.0*
ATV930U22N4...U40N4	IP20	100	0.26	1	**VW3A7740**	2.5/ *5.5*
ATV930U55N4...U75N4	IP20	60	0.5	1	**VW3A7741**	4.5/ *9.9*
ATV930D11N4...D15N4	IP20	28	1.1	1	**VW3A7742**	4.0/ *8.8*
ATV930D18N4...D30N4	IP20	16	2.2	1	**VW3A7743**	7.0/ *15.4*
ATV930D37N4...D45N4	IP20	10	3.4	1	**VW3A7744**	11.5/ *25.4*
ATV930D55N4	IP23	8	3.8	1	**VW3A7745**	23.0/ *50.7*
ATV930D75N4...D90N4	IP23	5	6.9	1	**VW3A7746**	27.0/ *59.5*
ATV930C11N4C...C16N4C	IP23	2.5	11	1	**VW3A7747**	43.0/ *94.8*
ATV930D55M3C...D75M3C	IP23	1.4	5.1	1	—	25.0/ *55.1*

(1) Load factor for resistors: The value of the average power that can be dissipated at 50 °C / 122 °F from the resistor into the casing is determined for a load factor during braking that corresponds to the majority of normal applications:
- *Normal duty: 4 s braking with a 1.35 Tn braking torque for a 40 s cycle*
- *Heavy duty: 4 s braking with a 1.65 Tn braking torque for a 40 s cycle*

Variable speed drives
Altivar Process ATV900
Option: Braking resistors



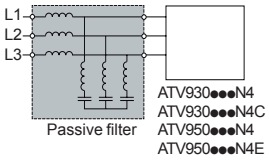
Severe Cycle	
t = 120 s *t1 = 54 s* *t2 = 6 s* *Tn1= Tn* *Tn2= 1.65 x Tn*	*t: period* *Tn1: braking torque* *Tn2: braking torque* *Tn: nominal torque*

References for a severe braking cycle (hoisting applications)

For drives	Degree of protection of the resistor	Ohmic value at 20 °C/ *68 °F*	Average power available at 50 °C/ *122* °F *(1)*	Quantity required per drive	Reference	Weight
		Ω	kW			kg/*lb*
Supply voltage: 200…240 V or 380…480 V 50/60 Hz						
ATV930U07M3	IP20	100	0.26	1	**VW3A7740**	2.5/ *5.5*
ATV930U15M3	IP20	60	0.5	1	**VW3A7741**	4.5/ *9.9*
ATV930U22M3	IP20	60	3.4	1	**VW3A7751**	10.0/ *22.0*
ATV930U30M3	IP20	28	1.1	1	**VW3A7742**	4.0/ *8.8*
ATV930U55M3	IP20	16	2.2	1	**VW3A7743**	7.0/ *15.4*
ATV930D11M3	IP20	10	3.4	1	**VW3A7744**	11.5/ *25.3*
ATV930D18M3	IP23	5	6.9	1	**VW3A7746**	27.0/ *59.5*
ATV930U07N4...U40N4	IP20	100	1.7	1	**VW3A7750**	5.5/ *12.1*
ATV930U55N4…U75N4	IP20	60	3.4	1	**VW3A7751**	10.0/ *22.0*
ATV930U40M3 ATV930D11N4...D15N4	IP23	28	5.1	1	**VW3A7752**	25.0/ *55.1*
ATV930U75M3 ATV930D18N4…D30N4	IP23	16	14	1	**VW3A7753**	47.0/ *103.6*
ATV930D37N4...D45N4	IP23	10	19	1	**VW3A7754**	67.0/ *147.7*
ATV930D90N4	IP23	10	19	2		
ATV930D15M3 ATV930D55N4	IP23	8	25	1	**VW3A7755**	86.0/ *189.6*
ATV930D22M3 ATV930D75N4	IP23	5	32	1	**VW3A7756**	120.0/ *264.6*
ATV930D30M3…D45M3 ATV930C11N4C...C16N4C	IP23	5	32	2		
ATV930D55M3C...D75M3C	IP23	1.4	29	1	**VW3A7757**	114.0/ *251.3*

(1) Load factor for resistors: The value of the average power that can be dissipated at 50 °C / 122 °C from the resistor into the casing is determined for a load factor during braking that corresponds to the majority of normal applications:
- Heavy duty: 54 s braking with a 1 Tn braking torque and 6 s braking with a 1.65 Tn braking torque for a 120 s cycle

Variable speed drives
Altivar Process ATV900
Option: Passive filters



Overview

Passive filters are used to obtain total harmonic distortion of less than 10% or 5%.
Reactive power increases at no load or low load. To help reduce this reactive power, the filter capacitors can be disconnected (see the diagrams on our website www.schneider-electric.com).
Passive filters provide IP 20 protection.

Applications

Reduction of current harmonics in order to use drives in applications where harmonic mitigation is desired. It is the responsibility of the end user or specifier to determine the correct passive filter combination to meet the customer's needs.

Variable speed drives
Altivar Process ATV900
Option: Passive filters

PF140347A

VW3A46144

Passive filters: 460 V 60 Hz three-phase supply

Motor rating		For Altivar Process drives	Filter		Quantity required per drive	Reference	Weight
			Nominal current				
			input	output			
kW	*HP*		A	A			kg/ *lb*
THDI < 10%							
0.75	*1*	**ATV930U07N4**	6	6.2	1	**VW3A46139**	12.0/ *26.5*
1.5	*2*	**ATV930U15N4**					
2.2	*3*	**ATV930U22N4**					
3	*4*	**ATV930U30N4**					
4	*5*	**ATV930U40N4**	10	10.4	1	**VW3A46140**	13.5/ *29.8*
5.5	*7.5*	**ATV930U55N4**					
7.5	*10*	**ATV930U75N4**	14	14.5	1	**VW3A46141**	16.3/ *35.9*
11	*15*	**ATV930D11N4**	19	19.5	1	**VW3A46142**	22.0/ *48.5*
15	*20*	**ATV930D15N4**	25	26	1	**VW3A46143**	23.0/ *50.7*
18.5	*25*	**ATV930D18N4**	31	32	1	**VW3A46144**	33.0/ *72.8*
22	*30*	**ATV930D22N4**	36	37	1	**VW3A46145**	37.0/ *81.6*
30	*40*	**ATV930D30N4**	48	50	1	**VW3A46146**	39.0/ *86.0*
37	*50*	**ATV930D37N4**	60	62	1	**VW3A46147**	43.0/ *94.8*
45	*60*	**ATV930D45N4**	73	76	1	**VW3A46148**	55.0/ *121.3*
55	*75*	**ATV930D55N4** **ATV930D55N4C**	95	99	1	**VW3A46149**	62.0/ *136.7*
75	*100*	**ATV930D75N4** **ATV930D75N4C**	118	122	1	**VW3A46150**	74.0/ *163.1*
90	*125*	**ATV930D90N4** **ATV930D90N4C**	154	160	1	**VW3A46151**	85.0/ *187.4*
110	*150*	**ATV930C11N4C**	183	190	1	**VW3A46152**	102.0/ *224.9*
132	*200*	**ATV930C13N4C**	231	240	1	**VW3A46153**	119.0/ *262.4*
160	*250*	**ATV930C16N4C**	291	302.5	1	**VW3A46154**	142.0/ *313.1*
220	*350*	**ATV930C22N4** **ATV930C22N4C**	355	369	1	**VW3A46155**	162.0/ *357.2*
250	*400*	**ATV930C25N4C**	436	450	2	**VW3A46157**	205.0/ *452.0*
315	*500*	**ATV930C31N4C**	231	240	2	**VW3A46153**	119.0/ *262.4*

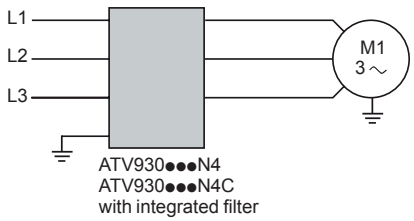
PF140347A

VW3A46164

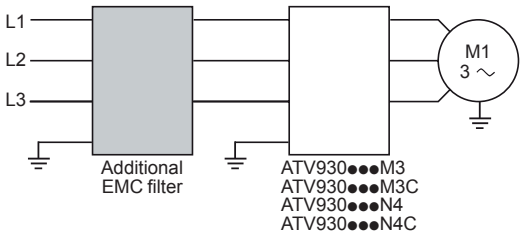
Passive filters: 460 V 60 Hz three-phase supply

Motor rating		For Altivar Process drives	Filter		Quantity required per drive	Reference	Weight
			Nominal current				
			input	output			
kW	*HP*		A	A			kg/ *lb*
THDI < 5%							
0.75	*1*	**ATV930U07N4**	6	6.2	1	**VW3A46158**	16.0/ *35.3*
1.5	*2*	**ATV930U15N4**					
2.2	*3*	**ATV930U22N4**					
3	*4*	**ATV930U30N4**					
4	*5*	**ATV930U40N4**	10	10.4	1	**VW3A46159**	18.0/ *39.7*
5.5	*7.5*	**ATV930U55N4**					
7.5	*10*	**ATV930U75N4**	14	14.5	1	**VW3A46160**	20.0/ *44.1*
11	*15*	**ATV930D11N4**	19	19.5	1	**VW3A46161**	30.0/ *66.1*
15	*20*	**ATV930D15N4**	25	26	1	**VW3A46162**	34.0/ *75.0*
18.5	*25*	**ATV930D18N4**	31	32	1	**VW3A46163**	52.0/ *114.6*
22	*30*	**ATV930D22N4**	36	37	1	**VW3A46164**	53.0/ *116.9*
30	*40*	**ATV930D30N4**	48	50	1	**VW3A46165**	57.0/ *125.6*
37	*50*	**ATV930D37N4**	60	62	1	**VW3A46166**	75.0/ *165.3*
45	*60*	**ATV930D45N4**	73	76	1	**VW3A46167**	97.0/ *213.9*
55	*75*	**ATV930D55N4** **ATV930D55N4C**	95	99	1	**VW3A46168**	104.0/ *229.3*
75	*100*	**ATV930D75N4** **ATV930D75N4C**	118	122	1	**VW3A46169**	106.0/ *233.7*
90	*125*	**ATV930D90N4** **ATV930D90N4C**	154	160	1	**VW3A46170**	126.0/ *277.8*
110	*150*	**ATV930C11N4C**	183	190	1	**VW3A46171**	135.0/ *297.6*
132	*200*	**ATV930C13N4C**	231	240	1	**VW3A46172**	172.0/ *379.2*
160	*250*	**ATV930C16N4C**	291	316	1	**VW3A46173**	221.0/ *487.2*
220	*350*	**ATV930C22N4** **ATV930C22N4C**	355	369	1	**VW3A46174**	*229.0/ 504.9*
250	*400*	**ATV930C25N4C**	436	450	1	**VW3A46176**	*270.0/ 595.3*
315	*500*	**ATV930C31N4C**	231	240	2	**VW3A46172**	*170.0/ 374.8*

Variable speed drives
Altivar Process ATV900
Option: EMC filters



Altivar Process drive with integrated EMC filter



Altivar Process drive with additional EMC filter

Integrated EMC filters

Altivar Process drives (except ATV930●●●M3/M3C) 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.

The integrated EMC filter runs off the leakage current to ground. The leakage current can be reduced by disconnecting the filter capacitors (please refer to the installation guide on our website www.schneider-electric.com). In this configuration, the product does not comply with the European EMC directive.

For drives	Maximum length of shielded cable *(1)*	
	IEC/EN 61800-3 category C2	IEC/EN 61800-3 category C3
	m	m
Three-phase supply voltage: 380…480 V UL Type 1		
ATV930U07N4… D45N4	50	150
ATV930D55N4/N4C...D90N4/N4C ATV930C11N4C...C16N4C	–	150

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.

Use according to the type of line supply

Use of these additional filters is only possible on TN (neutral connection) and TT (grounded neutral) type systems.

Standard IEC/EN 61800-3, appendix D2.1, states that on IT systems (isolated or impedance grounded neutral), filters can cause permanent insulation monitors to operate in a random manner.

If a machine needs to be installed on an IT system, one solution is to insert an isolation transformer and connect the machine locally to a TN or TT system.

References

For drives	Maximum length of shielded cable *(1)*		In *(2)*	If	Reference	Weight
	IEC/EN 61800-3 category C2 *(3)*	IEC/EN 61800-3 category C3 *(3)*				
	m	m	A	mA		kg/ *lb*
Three-phase supply voltage: 200...240 V 50 Hz						
ATV930U07M3...U15M3	50	150	8	7.6	**VW3A4701**	2.0/ *4.4*
ATV930U22M3...U30M3	50	150	15	7.6	**VW3A4702**	2.4/ *5.3*
ATV930U40M3...U75M3	50	150	35	7.6	**VW3A4703**	4.1/ *9.0*
ATV930D11M3	50	150	50	7.6	**VW3A4704**	5.2/ *11.5*
ATV930D15M3	50	150	70	13.9	**VW3A4705**	6.1/ *13.5*
ATV930D18M3...D22M3	50	150	100	13.9	**VW3A4706**	6.5/ *14.3*
ATV930D30M3...D37M3 ATV930D30M3C...D37M3C	50	150	160	13.9	**VW3A4707**	8.5/ *18.7*
ATV930D45M3 ATV930D45M3C	50	150	200	13.9	**VW3A4708**	9.5/ *20.9*
ATV930D55M3C	50	150	240	27.8	**VW3A4709**	15.0/ *33.1*
ATV930D75M3C	50	150	305	27.8	**VW3A4710**	17.0/ *37.5*

(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.
(2) Nominal filter current.
(3) Values given depend on the nominal switching frequency of the drive. This frequency depends on the drive rating.

PF130917B

VW3A4703

Additional EMC input filters (continued)

References (continued)

For drives	Maximum length of shielded cable (1) (2)		In (4)	If	Reference	Weight
	IEC/EN 61800-3 category C2 (3)	IEC/EN 61800-3 category C3 (3)				
	m	m	A	mA		kg/ *lb*
Three-phase supply voltage: 380...480 V 50 Hz						
ATV930U07N4...U22N4	150	300	8	7.6	**VW3A4701**	2.0/ *4.4*
ATV930U30N4...U55N4	150	300	15	7.6	**VW3A4702**	2.4/ *5.3*
ATV930U75N4...D15N4	150	300	35	7.6	**VW3A4703**	4.1/ *9.0*
ATV930D18N4...D22N4	150	300	50	7.6	**VW3A4704**	5.2/ *11.5*
ATV930D30N4	150	300	70	13.9	**VW3A4705**	6.1/ *13.5*
ATV930D37N4...D45N4	150	300	100	13.9	**VW3A4706**	6.5/ *14.3*
ATV930D55N4 ATV930D55N4C	150	300	160	13.9	**VW3A4707**	8.5/ *18.7*
ATV930D75N4...D90N4 ATV930D75N4C...D90N4C	150	300	200	13.9	**VW3A4708**	9.5/ *20.9*
ATV930C11N4C ATV930C13N4C	150	300	240	27.8	**VW3A4709**	15.0/ *33.1*
ATV930C16N4C	150	300	305	27.8	**VW3A4710**	17.0/ *37.5*
ATV930C22N4 ATV930C22N4C...C31N4C	300	-	546	599	**VW3A4711**	*25.0/ 55.1*

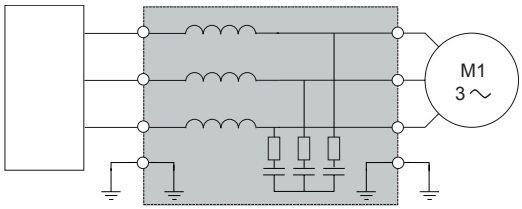
UL Type 1 protection kit for IP 20 filters

Additional input filters provide IP 20 protection as standard. This kit can be used to provide UL Type 1 protection.

Description	For filters	Reference	Weight kg/ *lb*
Mechanical kit including cover and cable clamps	**VW3A4701**	**VW3A47901**	0.2/ *0.4*
	VW3A4702	**VW3A47902**	0.3/ *0.7*
	VW3A4703	**VW3A47903**	0.4/ *0.9*
	VW3A4704	**VW3A47904**	0.5/ *1.1*
	VW3A4705	**VW3A47905**	0.9/ *2.0*
	VW3A4706	**VW3A47906**	1.0/ *2.2*
	VW3A4707	**VW3A47907**	1.5/ *3.3*
	VW3A4708	**VW3A47908**	2.0/ *4.4*

(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.
*(2) The associations of EMC filters with **ATV9●0U07N4/N4E...D22N4/N4E** drives are also compliant with the IEC/EN 61800-3 category C1 standard with a 50 m shielded cable length.*
(3) Values given depend on the nominal switching frequency of the drive. This frequency depends on the drive rating.
(4) Nominal filter current.

Variable speed drives
Altivar Process ATV900: Output filters
Option: dV/dt filters



ATV930●●●M3 dV/dt filter
ATV930●●●M3C
ATV930●●●N4
ATV930●●●N4C
Altivar Process drive with dV/dt filter

Overview

Altivar Process drives operate with the following maximum motor cable lengths: 150 m / *492 ft* for shielded cables and 300 m / *984 ft* for unshielded cables.

The output voltage delivered by a drive based on PWM (Pulse Width Modulation) is a series of pulses.

When applied to the motor, unexpected phenomena occur, such as overvoltages across the motor windings and high frequency currents flowing through the leakage capacitors of the cable and windings.

To limit overvoltages in the motor, it is recommended, for cables longer than 50 m / *164 ft*, that you check the motor insulation type and add an output filter if necessary.

For further information, please consult the White Paper "An Improved Approach for Connecting VSD and Electric Motors" available on our website www.schneider-electric.com.

Output filters are used to limit dV/dt at the motor terminals to 500 V/µs maximum.

Output filters are designed to limit overvoltages at the motor terminals to less than:
- 800 V with a shielded cable 0 to 50 m *(0 to 164 ft)* long, with a 400 V supply voltage
- 1,000 V with a shielded cable 50 to 150 m *(164 to 492 ft)* long, with a 400 V supply voltage
- 1,500 V with a shielded cable 150 to 300 m *(492 to 984 ft)* long, with a 400 V supply voltage (up to 500 m *(16,400 ft)* with an unshielded cable)

They are also used to:
- Limit overvoltages at the motor terminals
- Filter interference caused by opening a contactor placed between the filter and the motor

The performance of dV/dt filters will be affected if the maximum cable lengths are exceeded. For an application with several motors connected in parallel, the cable length must include all cabling. If a cable longer than that recommended is used, the dV/dt filters may overheat.

The switching frequency must be under 8 kHz.

dV/dt output filters

For drives	Maximum length of motor cable		Degree of protection	In *(3)*	Reference	Weight
	Maximum switching frequency *(1)*	Shielded cable *(2)*				
	kHz	m/*ft*	IP	A		kg/*lb*
Three-phase supply voltage: 200...240 V						
ATV930U07M3	4	300/*984*	20	6	**VW3A5301**	11.0/*24.3*
ATV930U15M3...U30M3	4	300/*984*	20	15	**VW3A5302**	12.0/*26.5*
ATV930U40M3	4	300/*984*	20	25	**VW3A5303**	12.0/*26.5*
ATV930U55M3...D11M3	4	300/*984*	20	50	**VW3A5304**	18.0/*39.7*
ATV930D15M3...D22M3	4	300/*984*	20	95	**VW3A5305**	19.0/*41.9*
ATV930D30M3...D45M3 ATV930D30M3C...D45M3C	2.5	300/*984*	00	180	**VW3A5306**	22.0/*48.5*
ATV930D55M3C...D75M3C	2.5	300/*984*	00	305	**VW3A5307**	40.0/*88.2*

(1) The filters are designed to operate in a switching frequency range of between 2 and 8 kHz.
(2) Values given depend on the nominal switching frequency of the drive. This frequency depends on the drive rating. These cable lengths are given as examples only as they can vary depending on the application. They correspond to motors conforming to IEC 6034-25 and NEMA MG1/31.2006.
(3) Nominal filter current.

Variable speed drives
Altivar Process ATV900: Output filters
Option: dV/dt filters

dV/dt output filters (continued)

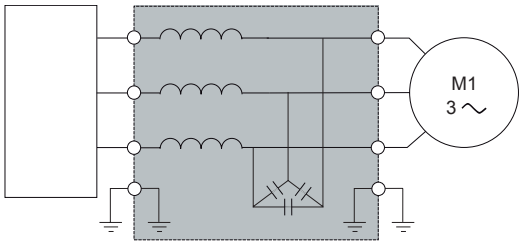
For drives	Maximum length of motor cable		Degree of protection	In *(3)*	Reference	Weight
	Maximum switching frequency *(1)*	Shielded cable *(2)*				
	kHz	m/*ft*	IP	A		kg/*lb*
Three-phase supply voltage: 380...480 V						
ATV930U07N4...U22N4	4	300/*984*	20	6	**VW3A5301**	11.0/*24.3*
ATV930U30N4...U55N4	4	300/*984*	20	15	**VW3A5302**	12.0/*26.5*
ATV930U75N4...D11N4	4	300/*984*	20	25	**VW3A5303**	12.0/*26.5*
ATV930D15N4...D22N4	4	300/*984*	20	50	**VW3A5304**	18.0/*39.7*
ATV930D30N4...D45N4	4	300/*984*	20	95	**VW3A5305**	19.0/*41.9*
ATV930D55N4...D90N4 ATV930D55N4C...D90N4C	2.5	300/*984*	00	180	**VW3A5306**	22.000/*48.5*
ATV930C11N4C...C16N4C	2.5	300/*984*	00	305	**VW3A5307**	40.0/*88.2*
ATV930C22N4 ATV930C22N4C	2.5	*250/820*	00	481	**VW3A5106**	*58.0/127.9*
ATV930C25N4C...C31N4C	2.5	*200/656*	00	759	**VW3A5107**	*93.0/205.0*

UL Type 1 protection kit for IP 20 filters

Description	For dV/dt filters	Reference	Weight kg/*lb*
Mechanical kit including cover and cable clamps	**VW3A5301** **VW3A5302** **VW3A5303**	**VW3A53902**	1.3/*2.9*
	VW3A5304	**VW3A53903**	1.7/*3.8*
	VW3A5305	**VW3A53905**	3.2/*7.1*

(1) The filters are designed to operate in a switching frequency range of between 2 and 8 kHz.
(2) Values given depend on the nominal switching frequency of the drive. This frequency depends on the drive rating. These cable lengths are given as examples only as they can vary depending on the application. They correspond to motors conforming to IEC 6034-25 and NEMA MG1/31.2006.
(3) Nominal filter current.

Variable speed drives
Altivar Process ATV900: Output filters
Option: Sinus filters



ATV930●●●M3 Sinus filter
ATV930●●●M3C
ATV930●●●N4
ATV930●●●N4C
Altivar Process drive with sinus filter

Overview

Sinus filters allow Altivar Process drives to operate with long motor cables:
- 500 m (1,640 ft) with a shielded cable
- 1,000 m (3,280 ft) with an unshielded cable

The minimum switching frequency at which sinus filters can operate is 4 kHz. This is the default value when the sinus filter function is activated on the variable speed drive (please refer to the programming guide on our website www.schneider-electric.com).

The output frequency must be less than 100 Hz.

At 100% load, the voltage drop is less than 8% with output frequency 50 Hz and switching frequency 4 kHz.

Applications

For applications requiring:
- Long cable runs
- Motors connected in parallel
- Submersible pumps sensitive to dv/dt
- An intermediate transformer between the drive and the motor

Sinus filters

For drives	Nominal current	Degree of protection	Reference *(1)*	Weight
	A	IP		kg/ *lb*
Three-phase supply voltage: 200...240 V				
ATV930U07M3	6	20	**VW3A5401**	10.0/ *22.1*
ATV930U15M3...U30M3	15	20	**VW3A5402**	13.5/ *29.8*
ATV930U40M3	25	20	**VW3A5403**	20.0/ *44.1*
ATV930U55M3...D11M3	50	20	**VW3A5404**	35.0/ *77.2*
ATV930D15M3...D22M3	95	20	**VW3A5405**	60.0/ *132.3*
ATV930D30M3...D45M3 ATV930D30M3C...D45M3C	180	00	**VW3A5406**	90.0/ *198.4*
ATV930D75M3C *(2)*	305	00	**VW3A5407**	134.0/ *295.4*

(1) The filters are designed to operate in a switching frequency range of between 4 and 8 kHz.
(2) In "Normal duty", apply a derating of Pn-1 to the drive nominal power with a minimum switching frequency of 4 kHz.
For example: An ATV930D75M3C drive with sinus filter can be used on a 55 kW motor.

Variable speed drives
Altivar Process ATV900: Output filters
Option: Sinus filters

Sinus filters (continued)

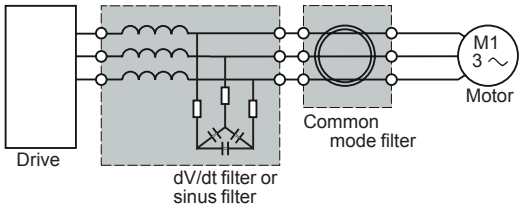
For drives	Nominal current	Degree of protection	Reference (1)	Weight
	A	IP		kg/ *lb*
Three-phase supply voltage: 380...480 V				
ATV930U07N4...U22N4	6	20	**VW3A5401**	10.0/ *22.1*
ATV930U30N4...U55N4	15	20	**VW3A5402**	13.5/ *29.8*
ATV930U75N4...D11N4	25	20	**VW3A5403**	20.0/ *44.1*
ATV930D15N4...D22N4	50	20	**VW3A5404**	35.0/ *77.2*
ATV930D30N4...D45N4	95	20	**VW3A5405**	60.0/ *132.3*
ATV930D55N4...D90N4 ATV930D55N4C...D90N4C	180	00	**VW3A5406**	90.0/ *198.4*
ATV930C13N4C...C16N4C *(2)*	305	00	**VW3A5407**	134.0/ *295.4*
ATV930C22N4 *(2)* ATV930C22N4C *(2)*	400	00	**VW3A5209**	*190.0/ 418.9*
ATV930C25N4C...C31N4C *(2)*	600	00	**VW3A5210**	*260.0/ 573.2*

UL Type 1 protection kit for IP 20 filters

Description	For sinus filter	Reference	Weight kg/ *lb*
Mechanical kit including cover and cable clamps	**VW3A5401** **VW3A5402**	**VW3A53901**	1.0/ *2.2*
	VW3A5403	**VW3A53902**	1.3/ *2.9*
	VW3A5404	**VW3A53903**	2.7/ *6.0*
	VW3A5405	**VW3A53904**	3.2/ *7.1*

(1) The filters are designed to operate in a switching frequency range of between 4 and 8 kHz.
(2) In "Normal Duty", apply a derating of Pn-1 to the drive nominal power with a minimum switching frequency of 4 kHz. For example:
An ATV930C13N4C drive with sinus filter can be used on a 110 kW motor.
An ATV930C16N4C drive with sinus filter can be used on a 132 kW motor.

Variable speed drives
Altivar Process ATV900: Output filters
Option: Common mode filters



Altivar Process ATV900 drive with common mode filter

Overview

Sinus filters or dV/dt filters reduce the overvoltage across windings and high frequency currents in differential mode. But they have no effect on the common mode current between phases and the cable shielding, and between the windings and the stator/rotor of the motor.

Common mode filters bring several benefits:
- Reduction of RFI (Radio Frequency Interference) of the motor cable and improvement of the effectiveness of the EMC filter for conducted emissions
- Reduction of the high frequency currents circulating in the bearings of the motor and prevention of their damage.

It is possible to use the common mode filter at the output terminals of the drive, the dV/dt filter, or the sinus filter.

***Note**: The selection of a common mode configuration depends on the type and length of motor cable. An abnormal increase of the temperature indicates a possible saturation. Additional filters shall be used to avoid it.*

Common mode filters

For drives	Maximum length of unshielded cable			
	150 m/ *492.12 ft*	**300 m/ *984.25 ft***	**500 m/ *1,640.42 ft***	**1,000 m/ *3,280.83 ft***
ATV930U07M3…U40M3	VW3A5501	VW3A5502	2 x VW3A5501	VW3A5501 + VW3A5502
ATV930U55M3	VW3A5501	VW3A5502	VW3A5501 + VW3A5502	2 x VW3A5502
ATV930U75M3…D11M3	VW3A5503	VW3A5504	2 x VW3A5503	VW3A5503 + VW3A5504
ATV930D15M3…D22M3	VW3A5503	VW3A5504	VW3A5503 + VW3A5504	2 x VW3A5504
ATV930D30M3…D45M3 ATV930D30M3C…D45M3C	VW3A5503	VW3A5504	VW3A5503 + VW3A5504	2 x VW3A5504
ATV930D55M3C…D75M3C	VW3A5505	VW3A5506	VW3A5505 + VW3A5506	VW3A5506

Variable speed drives
Altivar Process ATV900: Output filters
Option: Common mode filters

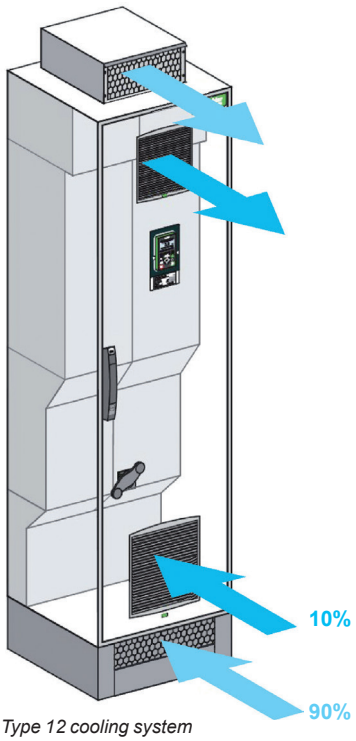
Common mode filters *(continued)*

For drives	Maximum length of unshielded cable			
	150 m/ *492.12 ft*	300 m/ *984.25 ft*	500 m/ *1,640.42 ft*	1,000 m/ *3,280.83 ft*
ATV930U07N4…U40N4	VW3A5501	VW3A5502	2 x VW3A5501	VW3A5501 + VW3A5502
ATV930U55N4	VW3A5501	VW3A5502	VW3A5501 + VW3A5502	VW3A5501 + VW3A5502
ATV930U75N4…D11N4	VW3A5503	VW3A5504	VW3A5501 + VW3A5502	2 x VW3A5502
ATV930D15N4…D22N4	VW3A5503	VW3A5504	2 x VW3A5503	VW3A5503 + VW3A5504
ATV930D30N4…D90N4 ATV930D55N4C…D90N4C	VW3A5503	VW3A5504	VW3A5503 + VW3A5504	2 x VW3A5504
ATV930C11N4C…C16N4C	VW3A5505	VW3A5506	2 x VW3A5505	2 x VW3A5506

For drives	Maximum length of shielded cable		
	150 m/ *492.12 ft*	300 m/ *984.25 ft*	500 m/ *1,640.42 ft*
ATV930U07N4…U40N4	VW3A5501	VW3A5502	2 x VW3A5501
ATV930U55N4	VW3A5502	2 x VW3A5501	2 x VW3A5502
ATV930U75N4…D11N4	VW3A5502	2 x VW3A5501	2 x VW3A5502
ATV930D15N4…D22N4	VW3A5503	2 x VW3A5503	VW3A5503 + VW3A5504
ATV930D30N4…D90N4 ATV930D55N4C…D90N4C	VW3A5504	VW3A5503 + VW3A5504	2 x VW3A5504
ATV930C11N4C	VW3A5505	VW3A5506	VW3A5505 + VW3A5506
ATV930C13N4C…C16N4C	VW3A5506	2 x VW3A5505	2 x VW3A5506

Variable speed drives
Altivar Process ATV900
ATV960 high performance drive systems

An Example ATV960 Drive System



Type 12 cooling system

Overview

Concept

The ATV960 High Performance Drive Systems range offers standard enclosures ready to connect.
The modular system concept with more than 80 selectable options makes it possible to adapt the enclosure unit optimally to individual requirements.
The fully-tested, ready-to-connect enclosure allows quick installation and commissioning of the drive.

Power versus overload

For optimum adaptation to the application you can choose between two overload modes:
- Normal duty: High continuous power with an overload capability of 20% (for compressors, displacement pumps, blowers, etc.)
- Heavy duty: Reduced continuous power with an increased overload capability of 50% for 60 s for drives with enhanced requirements regarding overload capability, starting torque, load impacts, and control performance (such as mixers, crushers, mills, conveyors, etc.)

Standard equipment

The standard equipment contains frequency inverter modules, semiconductor fuses, a main switch, a line reactor to reduce the harmonics, a dV/dt filter choke (from 500 hp) to help protect the motor, and spacious mains and motor bars for connecting the power cables.
The design is based on the standard enclosure system “Spacial SF” with a graphic operating panel integrated into the enclosure door.

Compact dimensions

The control is located on a spacious control panel. It has compact dimensions, nevertheless there is enough space for additional extensions and accessibility in case of maintenance.

Device features

High motor performance

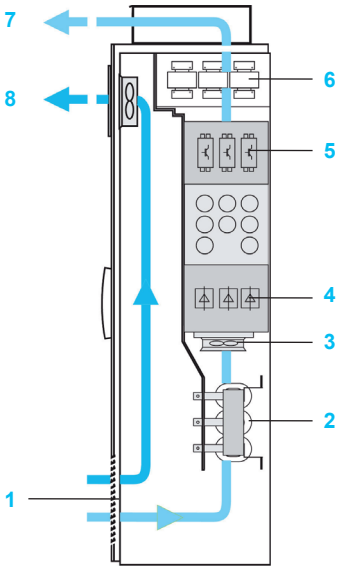
Optimum control over the motor in each operating state due to the new motor control method of the ATV960 High Performance Drive Systems.
- Asynchronous motors (all efficiency classes, high number of poles)
- Synchronous motors (PM motors, torque motors, reluctance motors)
- Special motors for submersible pumps

Extended connectivity

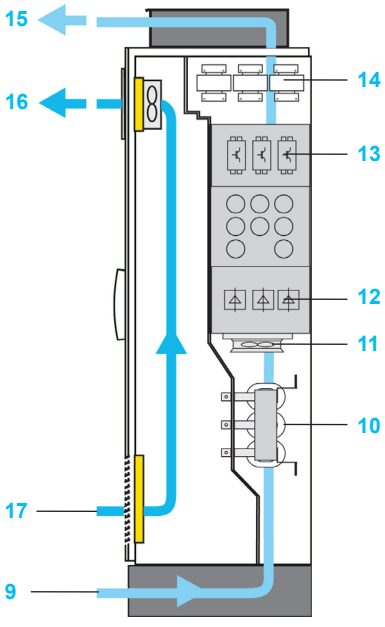
Integrated Dual Ethernet as standard provides increased redundancy and supports RSTP (Rapid Spanning Tree Protocol).
Dynamic drive-to-drive communication for multi-motor drives with master/slave groups and optimum load sharing between all motors.

Cooling concept

The power section components are cooled in a separate cooling air channel. About 90% of the heat losses are evacuated via this channel. The inside of the enclosure is cooled via fans in the enclosure door.



UL Type 1 enclosure



UL Type 12 enclosure

Protection degrees

The standard design of Altivar Process High Performance Drive Systems complies with UL Type 1 protection degree. This solution provides optimum cooling of the built-in frequency inverter modules and power components as well as maximum compactness.

For operation in harsh ambient conditions, the increased UL Type 12 or UL Type 3R protection degree is available as an option. This solution consists of a clearly specified and tested cooling system with a separate cooling air channel which provides excellent reliability.

About 90% of the heat losses are evacuated via the separate cooling air channel. The inside of the enclosure is cooled via fans located in the enclosure door.

Standard UL Type 1 enclosure design

In order to avoid internal air short-circuits, the power sections of the components are located in the main cooling air channel.

The cooling air intake comes from a grid located in the bottom of the enclosure door. The internal fan, which is in a separate air channel, provides cooling of the power section. The air then comes out through the top of the enclosure.

The heat losses from the control section are evacuated by a fan in the enclosure door.

The incoming air temperature must be between 0 °C / *32 °F* and 40 °C / *104 °F* (-10 °C / *14 °F* with enclosure heating) and can reach +50 °C / *122 °F* with derating (class 3K3 according to IEC/EN 60721-3-3).

Type 1 enclosures comprise:
1 An air intake (without filter mat) via a grid on the bottom of the enclosure door
2 A line reactor
3 Fans for the power section
4 A rectifier module
5 An inverter module
6 A dV/dt filter choke
7 An air outlet via a metal cover with protection against water splashes on the enclosure roof
8 An air outlet (without filter mat) with fans for the control section

UL Type 12 or UL Type 3R protection degree

With the increased protection degree with separate channels, the cooling air intake comes from the floor and goes out through the enclosure roof.

The control section is cooled by filter fans located in the enclosure door.

The incoming air temperature must be between 0 °C / *32 °F* and 40 °C / *104 °F* (-10 °C / *14 °F* with enclosure heating) and can reach +50 °C / *122 °F* with derating (class 3K3 according to IEC/EN 60721-3-3).

UL Type 12 and UL Type 3R enclosures comprise:
9 An air intake for the power section via the enclosure plinth
10 A line reactor
11 Fans for the power section
12 A rectifier module
13 An inverter module
14 A dV/dt filter choke
15 An air outlet via a metal cover with protection against water splashes on the enclosure roof
16 An air outlet (with filter mat) with fans for the control section
17 An air intake grid (with filter mat) for the control section

Variable speed drives
Altivar Process ATV900
ATV960 high performance drive systems

ATV960C16T4X2

UL Type 1 three-phase 380...480 V High Performance Drive Systems

Motor			Line supply			Altivar Process			
Power indicated on rating plate *(1)*			Line current *(2)*	Apparent power	Maximum prospective line Isc	Maximum continuous current *(1)*	Maximum transient current for	Reference *(1)*	Weight
			400 V	400 V			60 s		
ND:	Normal duty *(3)*								
HD:	*Heavy duty (4)*								
	kW	*HP*	A	kVA	kA	A	A		kg/ *lb*
THDI ≤ 44% at 100% load									
ND	110	*150*	195	135	50	211	253	**ATV960C11T4X2**	300.0/ *661.4*
HD	*90*	*125*	*164*	*113*	*50*	*173*	*260*		
ND	132	*200*	232	161	50	250	300	**ATV960C13T4X2**	300.0/ *661.4*
HD	*110*	*150*	*197*	*136*	*50*	*211*	*317*		
ND	160	*250*	277	192	50	302	362	**ATV960C16T4X2**	300.0/ *661.4*
HD	*132*	*200*	*232*	*161*	*50*	*250*	*375*		
ND	200	*300*	349	242	50	370	444	**ATV960C20T4X2**	400.0/ *881.9*
HD	*160*	*250*	*286*	*198*	*50*	*302*	*453*		
ND	250	*400*	432	299	50	477	572	**ATV960C25T4X2**	400.0/ *881.8*
HD	*200*	*300*	*353*	*244*	*50*	*370*	*555*		
ND	315	*500*	538	373	50	590	708	**ATV960C31T4X2**	400.0/ *881.8*
HD	*250*	*400*	*432*	*299*	*50*	*477*	*716*		
ND	355	*600*	611	423	50	660	792	**ATV960C35T4X2**	650.0/ *1433.0*
HD	*280*	*500*	*489*	*339*	*50*	*520*	*780*		
ND	400	*600*	681	472	50	730	876	**ATV960C40T4X2**	650.0/ *1433.0*
HD	*315*	*500*	*545*	*378*	*50*	*590*	*885*		
ND	500	*700*	846	586	50	900	1080	**ATV960C50T4X2**	650.0/ *1433.0*
HD	*400*	*600*	*681*	*472*	*50*	*730*	*1095*		
ND	630	*900*	1058	733	50	1140	1368	**ATV960C63T4X2**	850.0/ *1873.9*
HD	*500*	*700*	*849*	*588*	*50*	*900*	*1350*		

(1) These values are given for a nominal switching frequency of 2.5 kHz for use in continuous operation.
The switching frequency is adjustable from 2…8 kHz for all ratings.
Above 2.5 kHz, the drive will automatically reduce the switching frequency in the event of an excessive temperature rise. For continuous operation above the nominal switching frequency, derate the nominal drive current (see the derating curves on our website www.schneider-electric.com).
(2) Typical value for the indicated motor power and for the maximum prospective line Isc.
(3) Values given for applications requiring a slight overload (up to 120%).
(4) Values given for applications requiring a significant overload (up to 150% for 60 s).

***Note**: Consult the summary tables of possible drive, option, and accessory combinations (see* page 26*).*

Input and Output Current Ratings and Dissipated Heat

VAC	HP	kW	Max. Input Current	Output Current Drive Only	Output Current with Bypass or 50 °C Rated	Typical Dissipated Power at Rated Load
			(A)	(A)	(A)	(W)
230	1	0.7	3	4.6	4.2	63
	2	1.5	5.3	8	6.8	100
	3	2.2	7.6	11.2	9.6	138
	5	3	13	18.7	15.2	226
	7.5	5.5	17.1	25.4	22	289
	10	7.5	23.1	32.7	28	401
	15	11	34.3	46.8	42	651
	20	15	45.5	63.4	54	768
	25	18	54.5	78.4	68	860
	30	22	67.1	92.6	80	972
	40	30	88.6	123	104	1231
	50	37	108.5	149	130	1553
	60	45	130.4*(1)*	175	154	1789
460	1	0.7	1.5	2.2	2.1	60
	2	1.5	2.9	4	3.4	84
	3	2.2	4	5.6	4.8	115
	5	3	7.2	9.3	7.6	173
	7.5	5.5	9.2	12.7	10	231
	10	7.5	12.5	16.5	14	272
	15	11	18.1	23.5	21	378
	20	15	24.4	31.7	27	515
	25	18	29.9	39.2	34	680
	30	22	35.8	46.3	40	739
	40	30	48.3	61.5	52	898
	50	37	59	74.5	65	1072
	60	45	71.8	88	77	1324
	75	55	86.9	106	96	1418
	100	75	118.1	145	124	1823
	125	90	156	173	156	2120
	150	110	184	211	180 *(2)*	2530
	200	130	218	250	240 *(2)*	3150
	250	160	280	302	302 *(2)*	4030
	300	200	328	370	*(3)*, *(2)*	4380
	400	250	427	477	*(3)*, *(2)*	5750
	500	310	535	590	*(3)*, *(2)*	7810
	600	400	634	730	*(3)*, *(2)*	9900
	700	500	776	900	*(3)*, *(2)*	13330
	900	630	968 *(1)*	1140	*(3)*, *(2)*	16250

(1) Rating only for Normal Duty.
(2) See Maximum Ambient Temperature on page 56 for more information on 50 °C derating.
(2) Consult Schneider Electric.

Variable speed drives
Altivar Process ATV900
ATV960 high performance drive systems

Additional enclosure allowing cabling from the bottom

Drive Systems Offer

This consists of:
- The standard High Performance offer
- One or more options

Configured to order modifications (CTO)

CTO modifications include:
- UL Type 1 or 12 protection / UL Type 3R from 1 to 125 hp
- Additional enclosure allowing cabling from the top or from the bottom
- Discrete and analog I/O modules and relay output module
- Communication modules for various fieldbus systems
- Indicator lights on front door
- dV/dt filters for long motor cables

Engineered to order modifications (ETO)

Some of these options depend on the drive rating. They can be integrated without any need for modifications to the enclosure.

ETO modifications include:
- Enclosure lighting, heating
- "Local/remote" key switch
- Ethernet port on front door
- Encoder interface modules
- STO - SIL 3 Stop category 0 or 1
- Motor/bearing temperature monitoring
- Motor heating

Custom designed modifications

These options depend on the drive rating. Some may lead to modification of the size of the enclosure.

Custom designed modifications include:
- Different ranges of supply voltages
- Multipulse supply
- Design without a main switch
- Air intake from the back
- Other enclosure colors
- Customized documentation and labeling
- Reinforced or seaworthy packaging
- Design for IT mains
- Motor contactor
- Remote monitoring
- Etc.

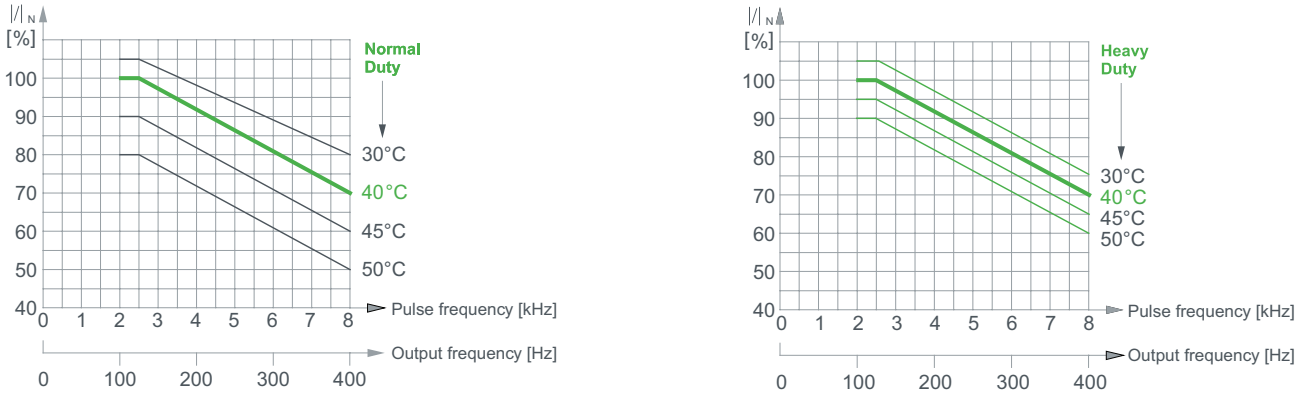
Maximum Ambient Temperature

Depending on the chosen pulse frequency, the maximum ambient temperature, and the desired output frequency, a derating may be necessary. To determine this, consult the derating diagrams.

Observe these guidelines:

- For output frequencies greater than 125 Hz, the pulse frequency is increased automatically. For example, the pulse frequency is increased to 4 kHz at 200 Hz output frequency. Consequently, a derating of 8% at maximum at 40 °C / *104 °F* must be considered.
- Due to the reduction of the output current, the overload capability of the Altivar Process drive system is reduced.
- At higher pulse frequencies, the allowed motor cable length is reduced.
- For full shaft power the motor size should not be more than one power rating greater than the drive's power rating.

Note: If the ambient temperature is too high, the pulse frequency is automatically reduced, which helps to prevent on inverter overload (except in the case of operation with sinus-motor filter.

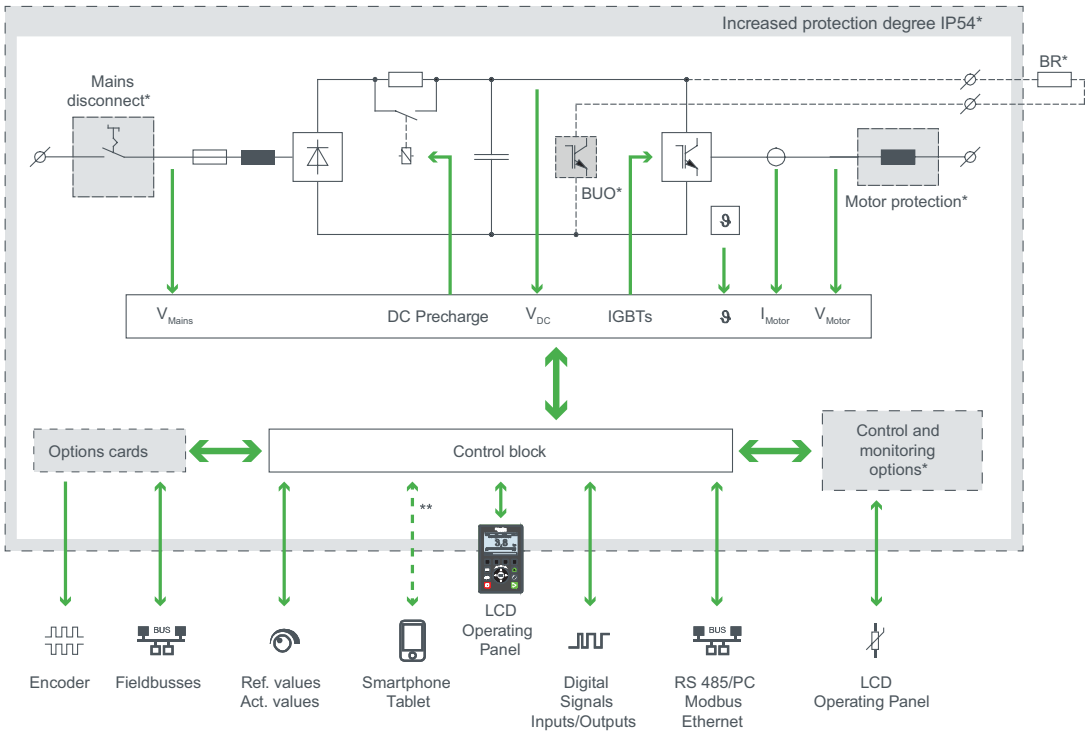


Derating as a function of ambient temperature, pulse frequency, and output frequency

Altivar 960 System Concept

Altivar Process drive systems are manufactured according to the design selected (basic device and options) are are delivered as a drive unit ready to connect. They include the functionally necessary components.

Depending on the local conditions and the requests on the drive, the basic design can be supplemented with options. Options for the power path, control and operation, and mechanical options are available. They are all integrated into the enclosure unit. Enclosure dimensions vary depending on the options selected .

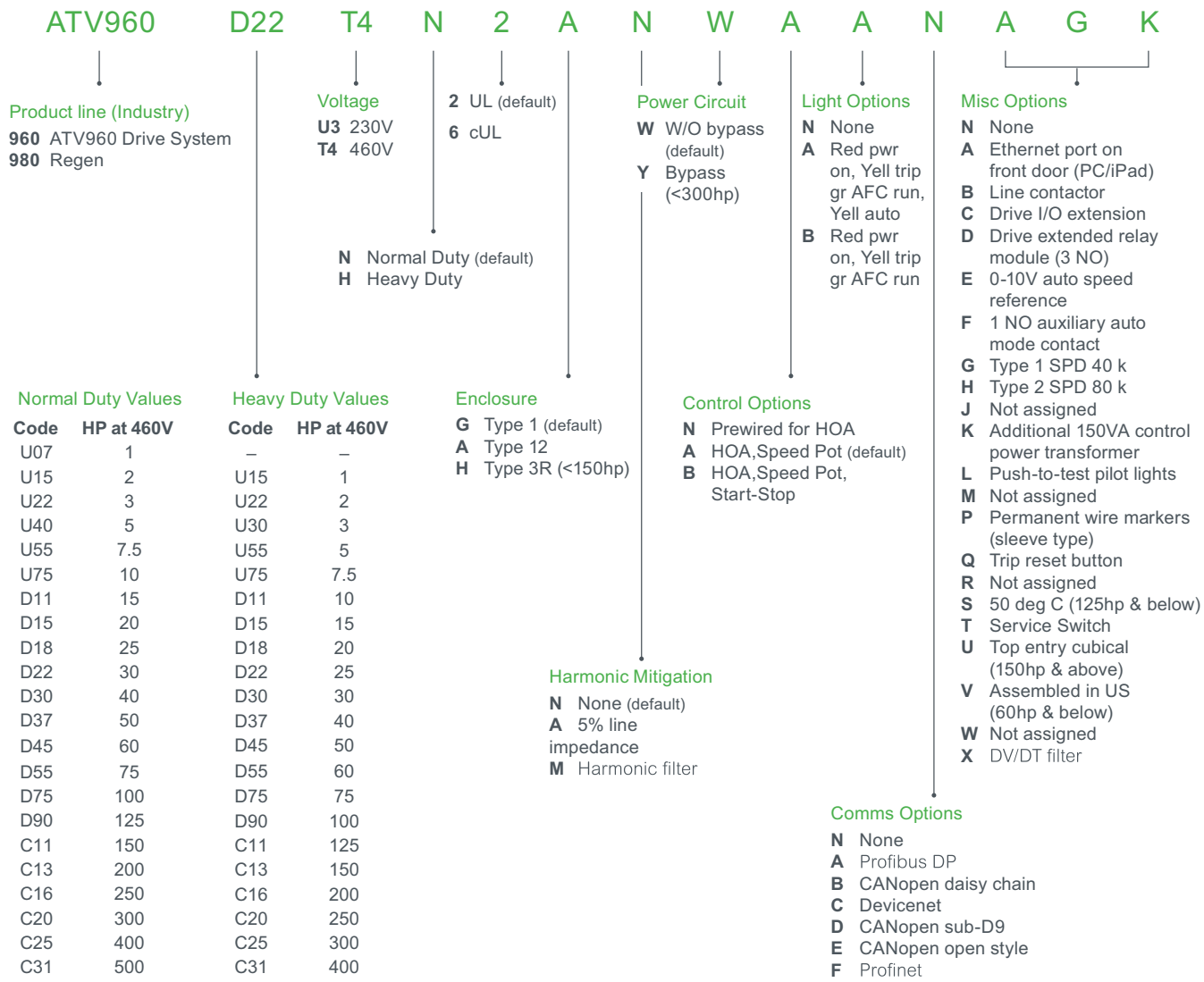


* Optionally selectable
** With optional WIFI module (TCSEGWB13FA0)

Variable speed drives
Altivar Process ATV900
ATV960 high performance drive systems

Configuration to Order

Consult the following diagram for an explanation of the Altivar Process Drive System catalog numbers. Catalog number example: ATV960D22T4N2ANWAANAGK



Variable speed drives
Altivar Process ATV900
ATV980 regenerative drive systems

An example ATV980 Regenerative Drive System

Overview

Concept

The ATV980 Regenerative Drive Systems help improve the efficiency by feeding back the drive energy to the mains.

Schneider Electric has developed a concept based on a 3-level technology that reduces the total current distortion factor (THDI) to a value below 5% and allows the full energy flow in both directions at the same time.

During the development of the enclosure system, special attention was paid to make installation and operation simple. The result is a ready-to-connect enclosure for drives for which generator operating states can occur. This provides a 4-quadrant drive solution with shock-free changes from motor operation to generator operation.

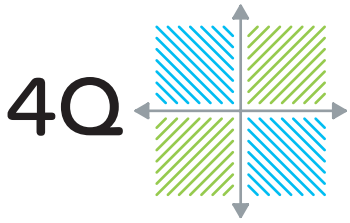
The modular system concept with more than 80 selectable options makes it possible to adapt the enclosure unit to individual requirements. The fully-tested, ready-to-connect enclosure allows quick installation and commissioning of the drive.

Standard equipment

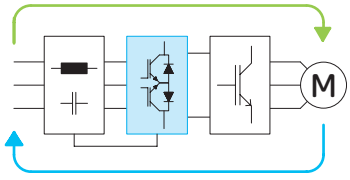
The standard Regenerative offer contains active infeed modules as well as frequency inverter modules, filter components, semiconductor fuses, a main switch, a dV/dt filter choke (from 160 kW) helping to protect the motor, and spacious mains and motor bars for connecting the power cables.

The design is based on the ready-assembled Sarel™ "Spacial SF" enclosures with a graphic operating panel integrated in the enclosure door.

Inside the enclosure there is a spaciously designed control panel with the control components. It has compact dimensions, nevertheless there is enough space for additional extensions and accessibility for maintenance.



4-quadrant technology



3-level technology

Device features

Simple use

ATV980 drives pilot and stop each motor without any additional effort. This 4-quadrant (4Q) technology is an ideal solution for drives for which generator operating states can occur. This avoids having complex multi-drive solutions.

Energy savings by highly efficient power regeneration

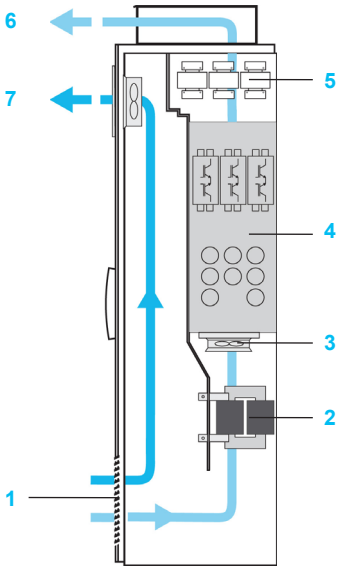
The 3-level technology inside the active mains rectifier and the dynamically adapted DC link voltage help ensure an efficient flow of energy to and from the mains. ATV980 Drive Systems therefore help save electrical energy.

Reduced load of the mains 3-level concept

In comparison with the classic circuit structure of active mains rectifiers, the 3-level technology allows the switching frequency to increase and the current load to be reduced at the same time.

This new technology achieves a total distortion factor (THDI) below 2% and thus fulfills the requirements of the IEEE 519 standard. The THDI is below 5% for distorted mains.

Additionally, the cosinus Phi is equal to 1 in each load situation, helping to reduce the the load on the mains.



Type 1 enclosure

Protection degrees

The standard design of the Altivar Process Regenerative Drive Systems complies with the Type 1 protection degree. This solution provides optimal cooling of the built-in frequency inverter modules and power components as well as maximum compactness.

For operation with rough ambient conditions, the increased Type 12 protection degree
is available as an option. This solution consists of a clearly specified and tested cooling system with a separate cooling air channel which provides good reliability.

About 90% of the heat losses are evacuated via the separate cooling air channel. The inside of the enclosure is cooled via fans located in the enclosure door.

Standard Type 1 enclosure design

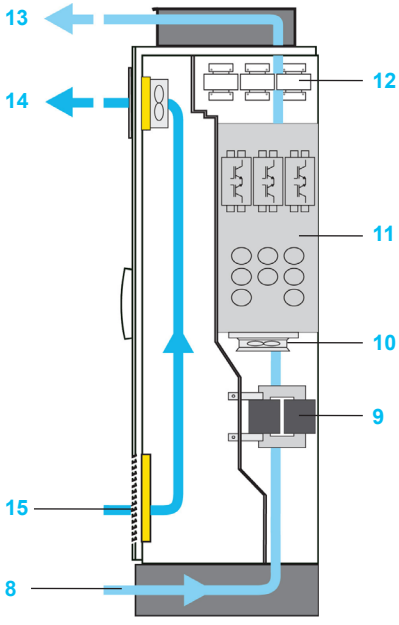
In order to avoid internal air short-circuits, the power parts of the components are located in the main cooling air channel.

The cooling air intake comes from a grid located in the lower area of the enclosure door. The internal fan, which is in a separated air channel, provides the cooling of the power part. The air then comes out through the top of the enclosure.

The heat losses of the control part are evacuated by a fan in the enclosure door.

The incoming air temperature must be between 0 °C / *32 °F* and 40 °C / *104 °F* (-10 °C / *14 °F* with enclosure heating) and may reach +50 °C / *122 °F* with derating (class 3K3 according to IEC/EN 60721-3-3).

Type 1 enclosures comprise:
1 An air intake (without filter mat) via a grid on the lower part of the enclosure door
2 Filter components
3 Fans for the power part
4 An Active Front End module
5 A dV/dt filter choke
6 An air outlet via a metal cover with protection against water splashes on the enclosure roof
7 An air outlet (without filter mat) with fans for the control part



Type 12 enclosure

Increased Type 12 protection

With the increased Type 12 protection, cooling air comes from the floor and goes out through the enclosure roof through a separate channel.

The control part is cooled by filter fans located in the enclosure door.

The incoming air temperature must be between 0 °C / *32 °F* and 40 °C / *104 °F* (-10 °C / *14 °F* with enclosure heating) and may reach +50 °C / *122 °F* with derating (class 3K3 according to IEC/EN 60721-3-3).

Type 12 enclosures comprise:
8 An air intake for the power part via the enclosure plinth
9 Filter components
10 Fans for the power part
11 An Active Front End module
12 A dV/dt filter choke
13 An air outlet via a metal cover with protection against water splashes on the enclosure roof
14 An air outlet (with filter mat) with fans for the control part
15 An air intake grid (with filter mat) for the control part

Variable speed drives
Altivar Process ATV900
ATV980 regenerative drive systems

A 500 hp ATV980 Drive System

UL Type 1 three-phase 380...480 V Regenerative Drive Systems

Motor			Line supply			Altivar Process			
Power indicated on rating plate *(1)*			Line current *(2)*	Apparent power	Maximum prospective line Isc	Maximum continuous current *(1)*	Maximum transient current for 60 s	Reference *(1)*	Weight
			400 V	400 V					
ND:	Normal duty *(3)*								
HD:	*Heavy duty (4)*								
	kW	*HP*	A	kVA	kA	A	A		kg/ *lb*
THDI ≤ 5% at 100% load									
ND	110	*150*	175	121	50	211	253	**ATV980C11T4X2**	400.0/ *881.9*
HD	*90*	*125*	*144*	*100*	*50*	*173*	*260*		
ND	132	*200*	208	144	50	250	300	**ATV980C13T4X2**	400.0/ *881.9*
HD	*110*	*150*	*174*	*121*	*50*	*211*	*317*		
ND	160	*250*	252	174	50	302	362	**ATV980C16T4X2**	400.0/ *881.9*
HD	*132*	*200*	*208*	*144*	*50*	*250*	*375*		
ND	200	*300*	313	217	50	370	444	**ATV980C20T4X2**	700.0/ *1543.2*
HD	*160*	*250*	*252*	*174*	*50*	*302*	*453*		
ND	250	*400*	389	270	50	477	572	**ATV980C25T4X2**	700.0/ *1543.2*
HD	*200*	*300*	*313*	*217*	*50*	*370*	*555*		
ND	315	*500*	491	340	50	590	708	**ATV980C31T4X2**	700.0/ *1543.2*
HD	*250*	*400*	*389*	*270*	*50*	*477*	*716*		
ND	355	*600*	553	383	50	660	792	**ATV980C35T4X2**	1150.0/ *2535.3*
HD	*280*	*500*	*436*	*302*	*50*	*520*	*780*		
ND	400	*600*	620	429	50	730	876	**ATV980C40T4X2**	1150.0/ *2535.3*
HD	*315*	*500*	*491*	*340*	*50*	*590*	*885*		
ND	500	*700*	775	537	50	900	1080	**ATV980C50T4X2**	1150.0/ *2535.3*
HD	*400*	*600*	*620*	*429*	*50*	*730*	*1095*		
ND	630	*900*	971	673	50	1140	1368	**ATV980C63T4X2**	1450.0/ *3196.7*
HD	*500*	*700*	*775*	*537*	*50*	*900*	*1350*		

(1) These values are given for a nominal switching frequency of 2.5 kHz for use in continuous operation.
The switching frequency is adjustable from 2…8 kHz for all ratings.
Above 2.5 kHz, the drive will automatically reduce the switching frequency in the event of an excessive temperature rise. For continuous operation above the nominal switching frequency, derate the nominal drive current (see the derating curves on our website www.schneider-electric.com).
(2) Typical value for the indicated motor power and for the maximum prospective line Isc.
(3) Values given for applications requiring a slight overload (up to 120%).
(4) Values given for applications requiring a significant overload (up to 150% for 60 s).

Variable speed drives
Altivar Process ATV900
ATV980 regenerative drive systems

Type Designation

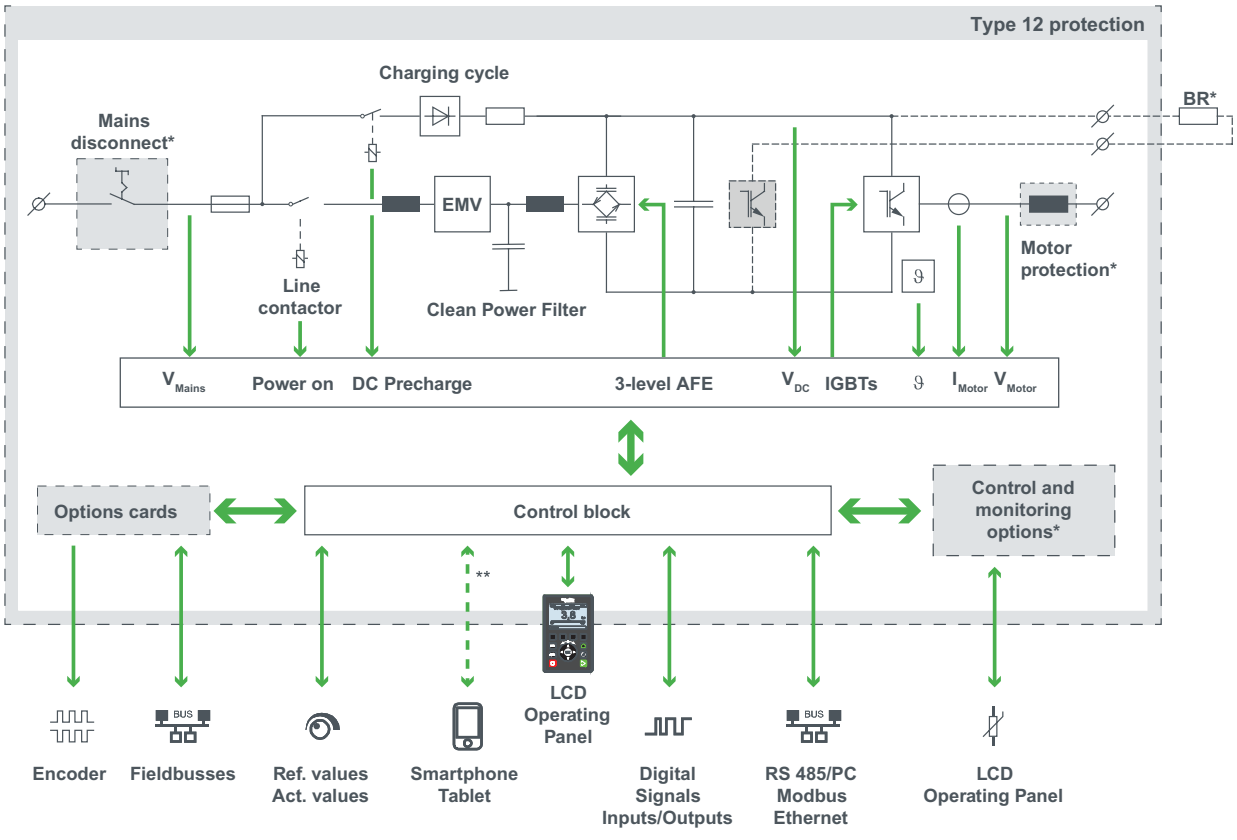
Consult the following diagram for an explanation of the Altivar 980 Regenerative Drive System catalog numbers. For more information, see page 57. Catalog number example: ATV980C16T4X2.

		ATV	980	C16	T4	X2
Product ATV	Description Altivar					
Segments 980	Regenerative Drive Systems					
Drive power C11...C80	110 / 90 kW … 800 / 630 kW					
Mains Voltage T4	3 AC 460 V ±10%					
Design variant X2	UL					

Altivar 980 System Concept

Altivar Process drive systems are manufactured according to the design selected (basic device and options) are are delivered as a drive unit ready to connect. They include the functionally necessary components.

Depending on the local conditions and the requests on the drive, the basic design can be supplemented with options. Options for the power path, control and operation, and mechanical options are available. They are all integrated into the enclosure unit. Enclosure dimensions vary depending on the options selected.

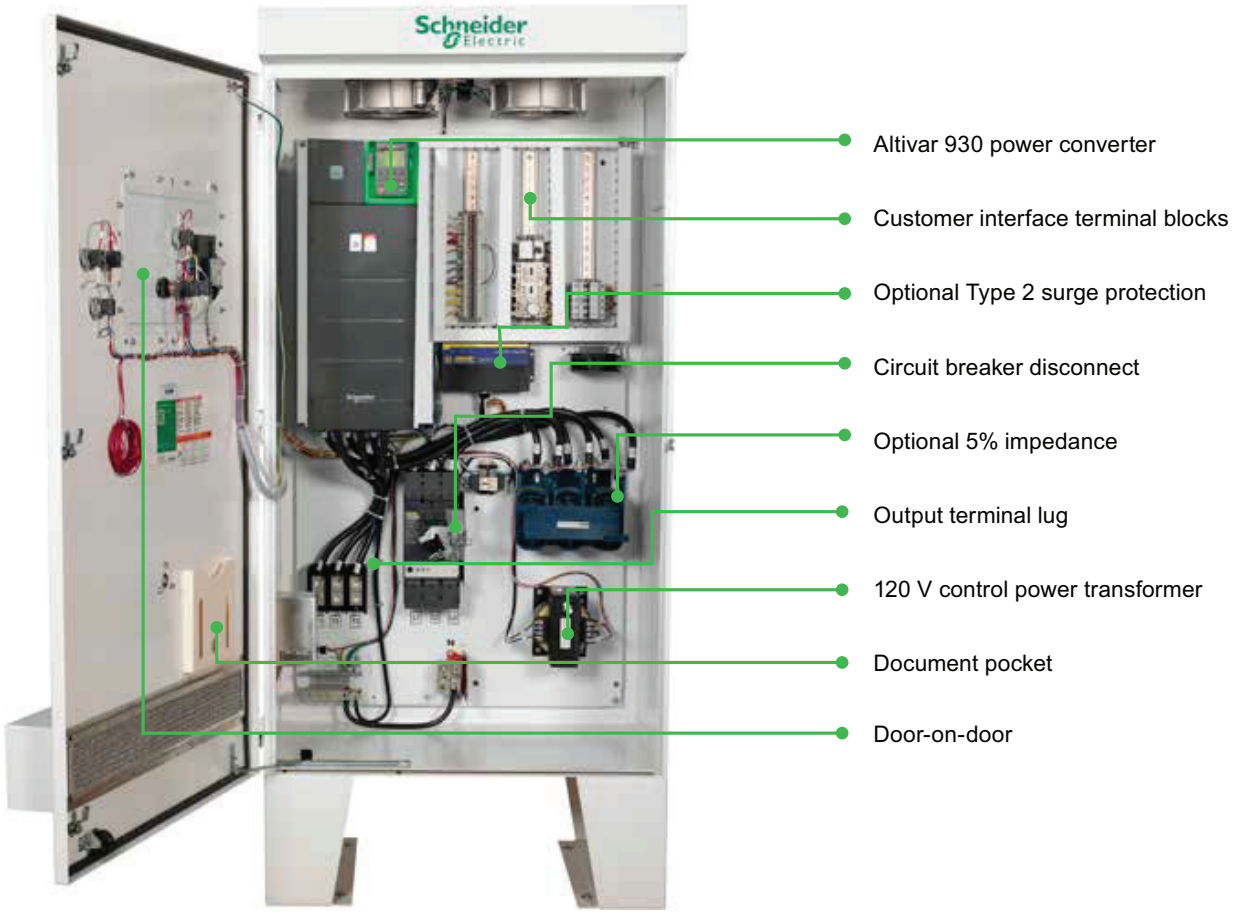


* Optionally selectable
** With optional WIFI module (TCSEGWB13FA0)

Variable speed drives
Altivar Process ATV900
Altivar outdoor ATV930

Key Benefits

- Easy-to-use graphic terminal display
- Door-on-door for easy access to keypad
- Dependable, durable, and a complete packaged offering
- Flexible for application requirements to meet customer needs
- Validated and documented control architecture designed to reduce cost, space, and start-up time
- 122 °F (50 °C) temperature evaluated to meet high-temperature environments
- Comprehensive engineering and design support
- Four-week delivery for standard feature package



Atlivar Outdoor ATV900 Components

Variable speed drives
Altivar Process ATV900
Altivar outdoor ATV930

Features

Standard Features

- 14 to 122 °F (-10 to 50 °C) range
- Door-on-door arrangement
- 3% impedance
- Cabinet heater
- UL508A Listed
- Nonbypass
- Surge protection
- Assembled in the U.S.
- UL Type 3R enclosures
- Thermostatically controlled cooled fans
- Service entrance rated
- 120 V control power transformer
- Hand-off-auto switch manual speed potentiometer
- 22 mm pilot lights
- Power on, tripped, AFC run lights
- Forced ventilation with washable filter
- Additional enclosure space for end user

Configured to order options

- 5% impedance
- 30 mm heavy-duty operators
- Bypass
- Type 2 SPD/HWA surge arrestors
- Passive harmonic filter
- Floor stand kit
- -25 °C (cold weather option)
- E-stop, pushbutton
- Ag/Irrigation (PID ready)

Dimensions

HP	VAC	Height	Width	Depth
Normal Duty				
20-50	460	58.9	36	26.8
75-125	460	70.8	36	26.8
150-250 *(1)*	460	93.9	40	41.3
Heavy Duty				
20-50	460	58.9	36	26.8
60-100	460	70.8	36	26.8
125-200 *(1)*	460	93.9	40	41.3

(1)Welded feet standard.

Input and Output Current Ratings and Dissipated Heat

HP (kW)	VAC	Max. Input Current (A)	Max. Output Current	Typical Dissipated Power at Rated Load (W)	Weight (lb)	
					Basic 6-Pulse Drive System	w/ Passive harmonic Filter
20 (15)	460	24.4	27	515	550	950
25 (18)	460	29.9	34	680		
30 (22)	460	35.8	40	739		
40 (30)	460	48.3	52	898		
50 (37)	460	59	65	1072		
60 (45)	460	71.8	77	1324	750	1100
75 (55)	460	86.9	96	1418		
100 (75)	460	118.1	124	1823		
125 (90)	460	156	156	2120		
150 (110)	460	184	180	2530	900	1500
200 (130)	460	218	240	3150		
250 (160)	460	280	302	4030		

Variable speed drives
Altivar Process ATV900
Altivar outdoor ATV930

Configured to order

The catalog number is on the nameplate attached to the inside of the enclosed drive door. The catalog number is coded to describe the configuration of the drive. Catalog number example: AO9KH4NWAANJ.

AO9	K	H	4	N	W	A	A	N	J

Product line
ATV930
Outdoor Drive

Enclosure
H Type 3R

Duty Rating
N Normal Duty
H Heavy Duty

Voltage Class
4 460 V, 3 Phase

Control Options
A 22 mm
D 30 mm

Light Options
A Power On, AFC Run, Tripped
N None

Misc Options
A 5% Effective Impedance
H SPD (Type 2)
J Floor Stand Kit
K E Stop Button
L Cold Weather Option (-25 to 50 °C)
P Passive Harmonic Filter
Q Agg / Irrigation Ready

Power Rating (hp)

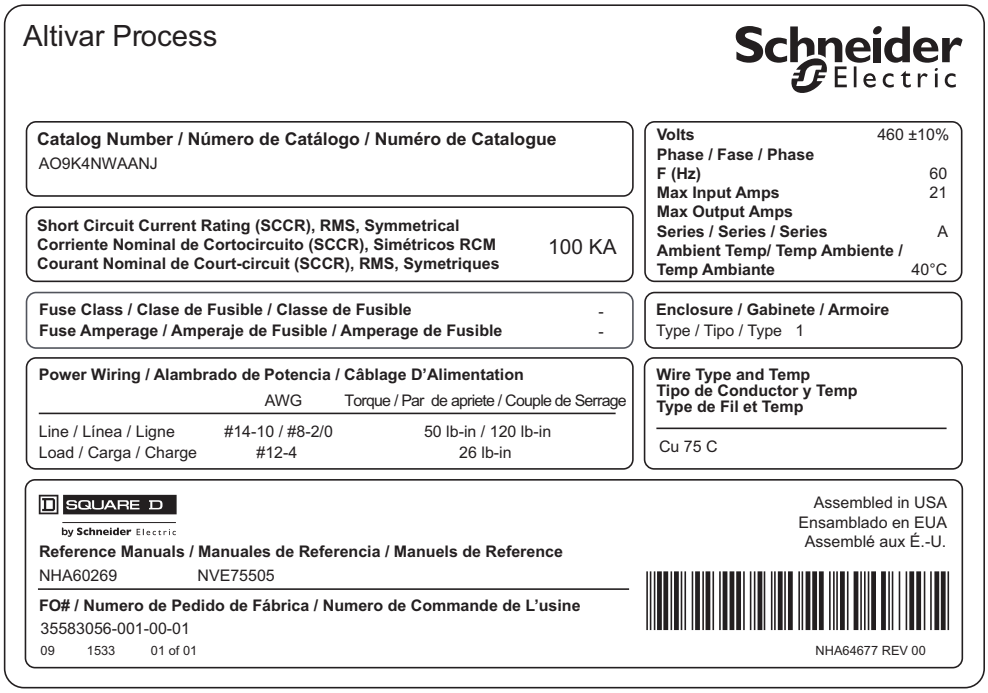
Code	HP
K	20
L	25
M	30
N	40
P	50
Q	60
R	75
S	100
T	125
U	150
W	200
X	250

Power Options
W Enclosed Drive Only (No Bypass)
Y Integrated Bypass

Communication Options
N None
F DeviceNet
G Profibus DP V1
R Ethernet IP
S CANopen Daisy Chain
T CANopen Sub-D
U CANopen Open Style
V ProfiNet

Nameplate

The nameplate for the Altivar 930 Outdoor Drive is on the inside of the enclosure door. The nameplate identifies the drive type and modification optiions.



Input voltage	460 Vac ±10%, three phase Other voltages available on request
Short circuit current rating (AC symmetrical)	65 kA
Control voltage	24 Vdc, 115 Vac +10%/-15% (control power transformer included)
Displacement power factor	98% through speed range (in AFC operation mode)
Input frequency	50/60 Hz ± 5%
Output voltage	Three-phase output, maximum voltage equal to input voltage
Galvanic isolation	Galvanic isolation between power and control (inputs, outputs, and power supplies)
Output frequency range of power converter	0.1–599 Hz (factory setting of 60 Hz)
Torque/Overtorque	Normal Duty: 120% of nominal motor torque for 60 s Heavy Duty: 150% of nominal motor torque for 60 s
Current (transient)	Normal Duty: 120% of drive rated current for 60 s Heavy Duty: 150% of drive rated current for 60 s
Switching frequency	Selectable from 0.5–8 kHz. Factory setting: 2.5 kHz The drive reduces the switching frequency automatically in the event of excessive heatsink temperature.
Storage temperature	-13 to +149 °F (-25 to +65 °C)
Operating temperature	+14 to +122 °F (-10 to +50 °C) -13 to +122 °F (-25 to +50 °C) (Cold Weather Option)
Humidity	95% with no condensation or dripping water, conforming to IEC 60068-2-78
Altitude	3,300 ft (1000 m), without derating, Derating of the current by 1% for each additional 330 ft (100 m) ■ up to 6,561 ft (2000 m) maximum ■ up to 12,467 ft (3800 m) maximum (TN, TT, or IT systems only. No corner grounded delta systems allowed.) ■ up to 15,747 ft (4800 m) maximum (TN, TT systems only. No delta connected systems.)
Enclosure	UL Type 3R; outdoor (ventilated)
Pollution degree	Pollution degree 2 (Types 1 and 3R) or 3 (Type 12) per NEMA ICS-1 Annex A and IEC 61800-5-1
Operation test vibration	Conforming to IEC/EN 60068-2-6 1.5 mm at 3–10 Hz, 0.6 g at 10–200 Hz 3M3 conforming to IEC/EN 60721-3-3
Transit shock test	Conforming to National Safe Transit Association and International Safe Transit Association test for packages.
Operational shock	Conforming to IEC/EN 60068-2-27 4 g for 11 ms 3M3 conforming to IEC/EN 60721-3-3
Codes and standards	UL Listed per UL 508A cUL Listed per C22.2 No. 14-13 IEEE519 compliant (passive harmonic filter required); Conforms to applicable NEMA ICS, NFPA, and IEC standards; Manufactured under ISO 9001 standards.

Variable speed drives
Altivar Process ATV900
UL Type 1 drives: 200...240 V and 380...480 V

PF151200

200...240 V UL Type 1 drives

Overall dimensions

Drives	W x H x D mm	in.	Frame Size
ATV930U07M3	144 x 350 x 206	*5.67 x 13.78 x 8.11*	*1*
ATV930U15M3	144 x 350 x 206	*5.67 x 13.78 x 8.11*	*1*
ATV930U22M3	144 x 350 x 206	*5.67 x 13.78 x 8.11*	*1*
ATV930U30M3	144 x 350 x 206	*5.67 x 13.78 x 8.11*	*1*
ATV930U40M3	144 x 350 x 206	*5.67 x 13.78 x 8.11*	*1*
ATV930U55M3	171 x 409 x 236	*6.73 x 16.10 x 9.29*	*2*
ATV930U75M3	211 x 545.9 x 235	*8.31 x 21.49 x 9.25*	*3*
ATV930D11M3	211 x 545.9 x 235	*8.31 x 21.49 x 9.25*	*3*
ATV930D15M3	226 x 673 x 274	*8.90 x 26.50 x 10.79*	*4*
ATV930D18M3	226 x 673 x 274	*8.90 x 26.50 x 10.79*	*4*
ATV930D22M3	226 x 673 x 274	*8.90 x 26.50 x 10.79*	*4*
ATV930D30M3	290 x 922 x 325.5	*11.42 x 36.30 x 12.81*	*5*
ATV930D37M3	290 x 922 x 325.5	*11.42 x 36.30 x 12.81*	*5*
ATV930D45M3	290 x 922 x 325.5	*11.42 x 36.30 x 12.81*	*5*

200…240 V UL Type 1 drives without braking unit

Overall dimensions

Drives	W x H x D mm	in.	Frame Size
ATV930D30M3C	290 x 922 x 325.5	*11.42 x 36.30 x 12.81*	*5*
ATV930D37M3C	290 x 922 x 325.5	*11.42 x 36.30 x 12.81*	*5*
ATV930D45M3C	290 x 922 x 325.5	*11.42 x 36.30 x 12.81*	*5*
ATV930D55M3C	320 x 852 x 393	*12.60 x 33.54 x 15.47*	*6*
With kit for UL Type 1 conformity	320 x 1,157 x 393	*12.60 x 45.55 x 15.47*	*6*
ATV930D75M3C	320 x 852 x 393	*12.60 x 33.54 x 15.47*	*6*
With kit for UL Type 1 conformity	320 x 1,157 x 393	*12.60 x 45.55 x 15.47*	*6*

PF151200

380...480 V UL Type 1 drives

Overall dimensions

Drives	W x H x D mm	in.	Frame Size
ATV930U07N4	144 x 350 x 206	*5.67 x 13.78 x 8.11*	*1*
ATV930U15N4	144 x 350 x 206	*5.67 x 13.78 x 8.11*	*1*
ATV930U22N4	144 x 350 x 206	*5.67 x 13.78 x 8.11*	*1*
ATV930U30N4	144 x 350 x 206	*5.67 x 13.78 x 8.11*	*1*
ATV930U40N4	144 x 350 x 206	*5.67 x 13.78 x 8.11*	*1*
ATV930U55N4	144 x 350 x 206	*5.67 x 13.78 x 8.11*	*1*
ATV930U75N4	171 x 409 x 236	*6.73 x 16.10 x 9.29*	*2*
ATV930D11N4	171 x 409 x 236	*6.73 x 16.10 x 9.29*	*2*
ATV930D15N4	211 x 545.9 x 235	*8.31 x 21.49 x 9.25*	*3*
ATV930D18N4	211 x 545.9 x 235	*8.31 x 21.49 x 9.25*	*3*
ATV930D22N4	211 x 545.9 x 235	*8.31 x 21.49 x 9.25*	*3*
ATV930D30N4	226 x 673 x 274	*8.90 x 26.50 x 10.79*	*4*
ATV930D37N4	226 x 673 x 274	*8.90 x 26.50 x 10.79*	*4*
ATV930D45N4	226 x 673 x 274	*8.90 x 26.50 x 10.79*	*4*
ATV930D55N4	290 x 922 x 325.5	*11.42 x 36.30 x 12.81*	*5*
ATV930D75N4	290 x 922 x 325.5	*11.42 x 36.30 x 12.81*	*5*
ATV930D90N4	290 x 922 x 325.5	*11.42 x 36.30 x 12.81*	*5*
ATV930C22N4	440 X 1195 X 380	*17.32 X 47.04 X 14.96*	*7A*
With kit for UL Type 1 conformity *(1)*			

(1) For further information, please contact our Customer Care Center.

Overview: page 8 | Variable speed drives: page 18 | Combinations: page 26

Variable speed drives
Altivar Process ATV900
UL Type 1 drives: 380...480 V and 380...440 V

PF151200

380…480 V UL Type 1 drives without braking unit

Overall dimensions

Drives	W x H x D mm	*in.*	Frame Size
ATV930D55N4C	290 x 922 x 325.5	*11.42 x 36.30 x 12.81*	*5*
ATV930D75N4C	290 x 922 x 325.5	*11.42 x 36.30 x 12.81*	*5*
ATV930D90N4C	290 x 922 x 325.5	*11.42 x 36.30 x 12.81*	*5*
ATV930C11N4C	320 x 852 x 393	*12.60 x 33.54 x 15.47*	*6*
With kit for UL Type 1 conformity	320 x 1,157 x 393	*12.60 x 45.55 x 15.47*	*6*
ATV930C13N4C	320 x 852 x 393	*12.60 x 33.54 x 15.47*	*6*
With kit for UL Type 1 conformity	320 x 1,157 x 393	*12.60 x 45.55 x 15.47*	*6*
ATV930C16N4C	320 x 852 x 393	*12.60 x 33.54 x 15.47*	*6*
With kit for UL Type 1 conformity	320 x 1,157 x 393	*12.60 x 45.55 x 15.47*	*6*
ATV930C22N4C	440 x 1195 x 380	*17.32 x 47.04 x 14.96*	*7A*
With kit for UL Type 1 conformity *(1)*			
ATV930C25N4C	598 x 1195 x 380	*23.54 x 47.04 x 14.96*	*7B*
With kit for UL Type 1 conformity *(1)*			
ATV930C31N4C	598 x 1195 x 380	*23.54 x 47.04 x 14.96*	*7B*
With kit for UL Type 1 conformity *(1)*			

(1) For further information, please contact our Customer Care Center.

Variable speed drives
Altivar Process ATV900
Type 1 drive systems: 460 V

460 V Compact Type 1 Drive Systems

Overall dimensions

Drives	W x H x D	
	mm	*in.*
ATV960C11T4X2	400 x 2,250 x 664	*15.75 x 88.58 x 26.14*
ATV960C13T4X2	400 x 2,250 x 664	*15.75 x 88.58 x 26.14*
ATV960C16T4X2	400 x 2,250 x 664	*15.75 x 88.58 x 26.14*
ATV960C20T4X2	600 x 2,250 x 664	*23.62 x 88.58 x 26.14*
ATV960C25T4X2	600 x 2,250 x 664	*23.62 x 88.58 x 26.14*
ATV960C31T4X2	600 x 2,250 x 664	*23.62 x 88.58 x 26.14*
ATV960C35T4X2	800 x 2,250 x 664	*31.50 x 88.58 x 26.14*
ATV960C40T4X2	800 x 2,250 x 664	*31.50 x 88.58 x 26.14*
ATV960C45T4X2	800 x 2,250 x 664	*31.50 x 88.58 x 26.14*
ATV960C50T4X2	800 x 2,250 x 664	*31.50 x 88.58 x 26.14*
ATV960C56T4X2	1,200 x 2,250 x 664	*47.24 x 88.58 x 26.14*
ATV960C63T4X2	1,200 x 2,250 x 664	*47.24 x 88.58 x 26.14*
ATV960C71T4X2	1,400 x 2,250 x 664	*55.12 x 88.58 x 26.14*
ATV960C80T4X2	1,400 x 2,250 x 664	*55.12 x 88.58 x 26.14*

460 V Regenerative Type 1 Drive Systems

Overall dimensions

Drives	W x H x D	
	mm	*in.*
ATV980C11T4X2	600 x 2,250 x 664	*23.62 x 88.58 x 26.14*
ATV980C13T4X2	600 x 2,250 x 664	*23.62 x 88.58 x 26.14*
ATV980C16T4X2	600 x 2,250 x 664	*23.62 x 88.58 x 26.14*
ATV980C20T4X2	1,000 x 2,250 x 664	*39.37 x 88.58 x 23.62*
ATV980C25T4X2	1,000 x 2,250 x 664	*39.37 x 88.58 x 26.14*
ATV980C31T4X2	1,000 x 2,250 x 664	*39.37 x 88.58 x 26.14*
ATV980C35T4X2	1,600 x 2,250 x 664	*62.99 x 88.58 x 26.14*
ATV980C40T4X2	1,600 x 2,250 x 664	*62.99 x 88.58 x 26.14*
ATV980C45T4X2	1,600 x 2,250 x 664	*62.99 x 88.58 x 26.14*
ATV980C50T4X2	1,600 x 2,250 x 664	*62.99 x 88.58 x 26.14*
ATV980C56T4X2	2,000 x 2,250 x 664	*78.74 x 88.58 x 26.14*
ATV980C63T4X2	2,000 x 2,250 x 664	*78.74 x 88.58 x 26.14*
ATV980C71T4X2	2,600 x 2,250 x 664	*102.36 x 88.58 x 26.14*
ATV980C80T4X2	2,600 x 2,250 x 664	*102.36 x 88.58 x 26.14*

Braking units

Overall dimensions

Braking units	W x H x D	
	mm	*in.*
VW3A7105	216 x 658 x 303	*8.50 x 25.91 x 11.93*
VW3A7106	216 x 658 x 303	*8.50 x 25.91 x 11.93*

Braking resistors

Overall dimensions

Braking resistors	W x H x D	
	mm	*in.*
VW3A7730	105 x 295 x 100	*4.13 x 11.61 x 3.94*
VW3A7731	105 x 345 x 100	*4.13 x 13.58 x 3.94*
VW3A7732	175 x 345 x 100	*6.89 x 13.58 x 3.94*
VW3A7733	190 x 570 x 180	*7.48 x 22.44 x 7.09*
VW3A7734	250 x 490 x 180	*9.84 x 19.29 x 7.09*
VW3A7735	250 x 490 x 180	*9.84 x 19.29 x 7.09*
VW3A7736	485 x 410 x 485	*19.09 x 16.14 x 19.09*
-	485 x 410 x 485	*19.09 x 16.14 x 19.09*
VW3A7738	485 x 410 x 445	*19.09 x 16.14 x 17.52*
VW3A7740	105 x 465 x 100	*4.13 x 18.31 x 3.94*
VW3A7741	175 x 465 x 100	*6.89 x 18.31 x 3.94*
VW3A7742	190 x 570 x 180	*7.48 x 22.44 x 7.09*
VW3A7743	290 x 570 x 180	*11.42 x 22.44 x 7.09*
VW3A7744	450 x 490 x 180	*17.72 x 19.29 x 7.09*
VW3A7745	485 x 610 x 485	*19.09 x 24.02 x 19.09*
VW3A7746	485 x 610 x 485	*19.09 x 24.02 x 19.09*
VW3A7747	485 x 1020 x 485	*19.09 x 40.16 x 19.09*
VW3A7750	290 x 570 x 180	*11.42 x 22.44 x 7.09*
VW3A7751	390 x 570 x 180	*15.35 x 22.44 x 7.09*
VW3A7752	485 x 610 x 485	*19.09 x 24.02 x 19.09*
VW3A7753	485 x 1,020 x 605	*19.09 x 40.16 x 23.82*
VW3A7754	485 x 820 x 1,035	*19.09 x 32.28 x 40.75*
VW3A7755	485 x 1,020 x 1,035	*19.09 x 40.16 x 40.75*
VW3A7756	485 x 1,020 x 1,285	*19.09 x 40.16 x 50.59*
VW3A7757	485 x 1,020 x 1,285	*19.09 x 40.16 x 50.59*

Passive filters: 460 V 60 Hz three-phase supply

Overall dimensions

Passive filters	W x H x D	
	mm	*in.*
VW3A46139	190 x 332.11 x 205.5	*7.48 x 13.08 x 8.09*
VW3A46140	190 x 332.11 x 205.5	*7.48 x 13.08 x 8.09*
VW3A46141	190 x 332.11 x 205.5	*7.48 x 13.08 x 8.09*
VW3A46142	232 x 436.11 x 247.5	*9.13 x 17.17 x 9.74*
VW3A46143	232 x 436.11 x 247.5	*9.13 x 17.17 x 9.74*
VW3A46144	378 x 594.08 x 242	*14.88 x 23.39 x 9.53*
VW3A46145	378 x 594.08 x 242	*14.88 x 23.39 x 9.53*
VW3A46146	378 x 594.08 x 242	*14.88 x 23.39 x 9.53*
VW3A46147	378 x 623.6 x 333	*14.88 x 24.55 x 13.11*
VW3A46148	378 x 623.6 x 333	*14.88 x 24.55 x 13.11*
VW3A46149	418 x 736.8 x 333	*16.46 x 29.01 x 13.11*
VW3A46150	418 x 736.8 x 333	*16.46 x 29.01 x 13.11*
VW3A46151	418 x 767.6 x 400	*16.46 x 30.22 x 15.75*
VW3A46152	418 x 767.6 x 400	*16.46 x 30.22 x 15.75*
VW3A46153	468 x 900.06 x 448.5	*18.42 x 35.43 x 17.66*
VW3A46154	468 x 900.06 x 448.5	*18.42 x 35.43 x 17.66*
VW3A46158	190 x 332.11 x 205.5	*7.48 x 13.08 x 8.09*
VW3A46159	190 x 332.11 x 205.5	*7.48 x 13.08 x 8.09*
VW3A46160	190 x 332.11 x 205.5	*7.48 x 13.08 x 8.09*
VW3A46161	232 x 436.11 x 247.5	*9.13 x 17.17 x 9.74*
VW3A46162	232 x 436.11 x 247.5	*9.13 x 17.17 x 9.74*
VW3A46163	378 x 594.08 x 242	*14.88 x 23.39 x 9.53*
VW3A46164	378 x 594.08 x 242	*14.88 x 23.39 x 9.53*
VW3A46165	378 x 594.08 x 242	*14.88 x 23.39 x 9.53*
VW3A46166	378 x 623.6 x 333	*14.88 x 24.55 x 13.11*
VW3A46167	378 x 623.6 x 333	*14.88 x 24.55 x 13.11*
VW3A46168	418 x 736.8 x 333	*16.46 x 29.01 x 13.11*
VW3A46169	418 x 736.8 x 333	*16.46 x 29.01 x 13.11*
VW3A46170	418 x 767.6 x 400	*16.46 x 30.22 x 15.75*
VW3A46171	418 x 767.6 x 400	*16.46 x 30.22 x 17.75*
VW3A46172	468 x 900.06 x 448.5	*18.42 x 35.43 x 17.66*
VW3A46173	468 x 900.06 x 510	*18.42 x 35.43 x 20*

Additional EMC input filters

Overall dimensions

EMC filters	W x H x D	
	mm	*in.*
VW3A4701	75 x 220 x 130	*2.95 x 8.66 x 5.12*
VW3A4702	75 x 240 x 140	*2.95 x 9.45 x 5.51*
VW3A4703	80 x 302 x 155	*3.15 x 11.89 x 6.10*
VW3A4704	90 x 283 x 165	*3.54 x 11.14 x 6.50*
VW3A4705	100 x 328 x 175	*3.94 x 12.91 x 6.89*
VW3A4706	120 x 340 x 180	*4.72 x 13.39 x 7.09*
VW3A4707	130 x 395 x 240	*5.12 x 15.55 x 9.45*
VW3A4708	200 x 455 x 320	*7.87 x 17.91 x 12.60*
VW3A4709	260 x 520 x 117	*10.24 x 20.47 x 4.61*
VW3A4710	260 x 520 x 117	*10.24 x 20.47 x 4.61*

dV/dt filters

Overall dimensions

dV/dt filters	W x H x D	
	mm	*in.*
VW3A5301	285 x 530 x 215	*10.79 x 20.33 x 8.17*
VW3A5302	285 x 530 x 215	*10.79 x 20.33 x 8.17*
VW3A5303	285 x 530 x 215	*10.79 x 20.33 x 8.17*
VW3A5304	300 x 560 x 245	*11.44 x 21.32 x 9.35*
VW3A5305	300 x 610 x 245	*11.44 x 23.09 x 9.35*
VW3A5306	380 x 325 x 235	*14.57 x 8.82 x 12.43*
VW3A5307	420 x 350 x 270	*15.75 x 9.72 x 13.41*

Sinus filters

Overall dimensions

Sinus filters	W x H x D	
	mm	*in.*
VW3A5401	210 x 455 x 210	*8.03 x 17.32 x 7.91*
VW3A5402	210 x 455 x 210	*8.03 x 17.32 x 7.91*
VW3A5403	280 x 530 x 215	*10.79 x 20.33 x 8.17*
VW3A5404	300 x 560 x 245	*11.46 x 21.32 x 9.35*
VW3A5405	375 x 760 x 280	*14.59 x 29.00 x 10.75*
VW3A5406	430 x 325 x 495	*16.54 x 12.56 x 18.92*
VW3A5407	460 x 370 x 565	*17.72 x 14.19 x 21.59*

Common mode filters

Overall dimensions

Common mode filters	W x H x D	
	mm	*in.*
VW3A5501	66 x 119.2 x 66	*2.60 x 4.69 x 2.60*
VW3A5502	66 x 163.8 x 66	*2.60 x 6.45 x 2.60*
VW3A5503	127.5 x 161 x 127.5	*5.02 x 6.34 x 5.02*
VW3A5504	127.5 x 210 x 127.5	*5.02 x 8.27 x 5.02*
VW3A5505	191 x 197 x 196	*7.52 x 7.76 x 7.72*
VW3A5506	191 x 256 x 196	*7.52 x 10.08 x 7.72*

Variable speed drives
Altivar Process
A whole world of Services for your Drives by Schneider Electric

Overview

Schneider Electric offers an extensive range of support services to help ensure the reliability of your installation in the long term, control your maintenance costs, and keeping your process running at peak performance for maximum efficiency.
Altivar Process is designed in harmony with a whole range of services offered by Schneider Electric.

A worldwide network, 24/7: ■ 400 highly qualified and certified experts ■ Field service engineers, online experts	A digital world of Services: ■ "Schneider Electric Customer Care" app ■ Remote technical support
People	Digitized support material
Spare parts	Service provisions
A dedicated supply chain: ■ All the spare parts you need ■ Designed and manufactured by Schneider Electric	An optimal life cycle model: ■ Spare parts management, Exchange and Repairs ■ Extended warranties, Maintenance plans

Schneider Electric drive maintenance expert certification

A worldwide network, 24/7:
- 400 highly qualified and certified experts
- Our Field Service Engineers follow a proven Drives certification program designed to support you with maximum expertise and efficiency.
- For fast, in-depth diagnostics and repairs, they are equipped with professional tools and software.

	Repair Centers	Low Voltage (LV) Drives field service engineers	Medium Voltage (MV) Drives field service engineers
Module A	LV drive safety training		MV drive safety training
Module B	Technical training for LV drives		Technical training for MV drives
Module C	Repair center audit	Skills assessment	On-site start-up
Module D	Certification procedure		
Module E	Registration in Schneider Electric's international directory of Drives skills		
Module F	Re-certification every 2 years		

Schneider Electric drive life cycle policy

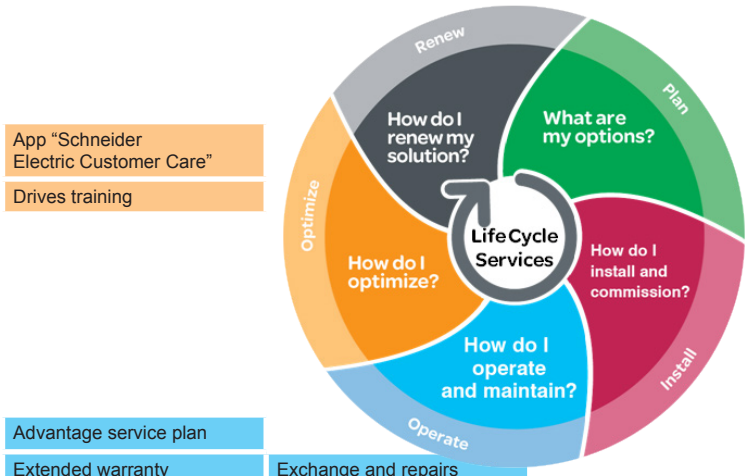
- The Schneider Electric drive life cycle model provides optimum support.
  - It is divided into 4 phases : Active, Phase out, Service, Limited
- The total Schneider Electric drive life cycle lasts more than 20 years.
  - Full maintainability: during Active, Phase out and Service periods
  - Optimized performance: during Active, Phase out and Service periods
  - Upgradability: during the Active period
  - Managed transition to new technology: during Phase out and Service periods

	Discontinuation of sales announced	Discontinuation of sales	End of service period
	↓	↓	↓
Active →	Phase-out →	Service →	Limited →
~ 5 to 10+ years	2 years	8 years	
Drives and services are fully available	Drives and services are fully available. Not to be used in new installations or new projects	Spare parts and repairs are fully available	Spare parts and repairs are limited to available inventory
		Special contracts for more than 8 years	

Variable speed drives
Altivar Process
A whole world of Services for your Drives by Schneider Electric

Drives support and services offer by Schneider Electric (continued)

Schneider Electric has developed a generic Services offer to assist you throughout the life cycle of your product. From the Design to Renew phase, whether for standard or critical operations, you'll find the solution you need in our set of standardized offers.



App "Schneider Electric Customer Care"
Drives training

Solutions for Schneider Electric drives

Initial warranty
Start-up - Commissioning
Spare parts
Spare parts management

Advantage service plan
Extended warranty
On-site expert assistance
Exchange and repairs
Remote technical support

Forecasting - Installation - Operation - Optimization - Renovation

The offer	Contact, How to order	Description
Solutions for Schneider Electric drives	Contact your center local service Schneider Electric	Our Schneider Electric experts can help you design your installation, offering whatever type of assistance you need from technical support to "turnkey" solutions.
Initial warranty	Included	When you register your drive, Schneider Electric will extend your initial warranty period by 6 months. Let's stay connected: registering allows Schneider Electric to keep you informed about recent innovations and propose Services to optimize your performance.
Start-up - Commissioning	Contact your center local service Schneider Electric	Our team of experts are specialists in installation commissioning and start-up whatever the conditions and for any application. This will extend your warranty period by an extra 6 months.
Spare parts - Spare parts management	Contact your center local service Schneider Electric	Our spare parts are available for the full life time of your equipment. They are designed and manufactured to the same high quality standards as our products. They are available via a dedicated supply chain for emergency shipments. Our team can help you identify critical parts and define the right level of the required stock. Whether stored in your premises (on-site) or in a central store (off-site), it's reassuring to know that critical spare parts are available 24/7.
Exchange and repairs	Contact your center local service Schneider Electric	Schneider Electric offers high-quality repair services via a global network of certified Repair Centers and certified Field Service Engineers to cover any need: repairs in Schneider Electric repair centers or exchanges with refurbished products, or on-site repairs (Schneider Electric intervention on your premises).

Drives support and services offer by Schneider Electric (continued)

The offer	Contact, How to order	Description
Remote technical support	Contact your center local service Schneider Electric	Direct priority access to our experts to help you solve any technical difficulties. Our experts have extensive field experience and have fully mastered the technologies implemented. A simple phone conversation or on-line chat support are usually sufficient to help you find the best solution and can reduce your costs by avoiding on-site intervention.
On-site technical support	Contact your center local service Schneider Electric	Our field service engineers can support your maintenance staff in their everyday operations, or engage when requested in the event of an emergency.
Extended warranty	Contact your center local service Schneider Electric	Spare parts and repairs performed by Schneider Electric experts on duty.
Advantage service plan	Contact your center local service Schneider Electric	The Advantage Service plan combines the Preventive Maintenance program (annual visit for inspection, checks and replacement of worn parts) with the extended warranty (covering spare parts and repairs), plus remote technical support.
Drives training	Contact your center local service Schneider Electric	A full set of training courses to master your Altivar Process drive at any stage in the life cycle of your installation.
“Schneider Electric Customer Care” app	Download from the Apple Store® or Google Play Store™	Free download from the Apple Store® or Google Play Store™. Immediate access to Schneider Electric Customer Care Centers, product documentation, FAQs, Cloud services, etc. and plenty of other services yet to come.

Product reference index

A trusted partner of Schneider Electric

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Altivar drives

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