Variable speed drives
Altivar Process ATV900
Drives for integration

Altivar Process Modular Standard

Altivar Process Modular Standard Reduced Height

Altivar Process Modular Low Harmonic/Regen

General presentation of the offer

Altivar Process drives for cabinet integration offer a cost-effective solution for installation into cabinets and separate enclosures thanks to their compact and robust design. These drive variants simplify cabinet design and allow quick installation and commissioning. Altivar Process also offers a range of low harmonic drives.

Altivar Process Modular concept

Altivar Process Modular is ready to build into cabinets to create high power drive solutions with minimum dimensions that withstand harsh environments.

A powerful drives range from 75 kW/*125 HP* up to 1800 kW/*2500 HP* at 400 V supply voltage and up to 2600 kW/*2600 HP* at 690 V supply voltage can be created by combining sub-assemblies and accessories such as power modules, braking units, control units, options, and mechanical accessories.

Altivar Process Modular brings a new approach where sub-assemblies are used to build drives locally:
- A power module section to be combined in different drive architectures
- Control units that make the family differentiation of the power architecture between ATV600 and ATV900 drives
- Optional kits and accessories for easy enclosure integration

Optimized cabinet design

The Altivar Process Modular drives offer has been developed to reduce the engineering time required to design cabinet-mounted drives solutions, consequently decreasing the time to market and the cost of the solution.

Altivar Process Modular brings flexible solutions for special integration constraints with IP21/IP54 protection and robust design with two offers:
- Standard: integration in 2 m/*6.56 ft* height and 600 mm/*23.62 in.* depth cabinets
- Reduced Height: integration in 1.6 m/*5.25 ft* height and 600 mm/*23.62 in.* depth cabinets

Altivar Process Modular Liquid-cooled modules allow installation in cabinets up to IP66 protection for harsh environmental conditions.

These power-intensive drives offers integrate:
- Drive power and control modules
- Line chokes to limit THDi levels for standard version and less than 3% THDi for Low Harmonic/Regen version
- A filter to help protect the motor against the effects of dv/dt
- Accessible terminals to simplify the motor wiring and power wiring

IP21 (UL Type 1) integration creates a common cooling air flow for the power and control sections.

The IP54 (UL Type 12) mechanical option introduces a system for separating the cooling air flow between the power and control sections, allowing operation in a highly polluted environment as well as optimum management of thermal stress in the plant room. Both designs allow a maximum incoming air temperature of 50 °C/*122 °F* with derating (class 3K3 according to IEC/EN 60721-3-3).

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Power module and power fan inside drawer

Product features

The Altivar Process Modular drives offer has been developed to meet the requirements of some of the most demanding applications and enclosure requirements and the most recent standards and regulations.

Compliance with electromagnetic compatibility requirements has been incorporated into the design of the modular process drives, which simplifies installation and provides an economical means of helping to ensure equipment meets marking requirements.

- Altivar Process Modular drives have category C3 EMC filters and highly efficient integrated motor filters for dv/dt and common mode reduction and voltage peak limitation that allow 300 m/*980 ft* of shielded motor cables (category C3 environment) and 500 m/*1,640 ft* of unshielded motor cables (category C4 enviroment).
- THDi ≤ 48% for 80 to 100% load, which is used to maintain an optimum power factor on the most common operating range
- Embedded line choke technology complying with standard IEC 61000-3-12
- Prewired electric core components tested by Schneider Electric laboratories and test centers
- Sinus filter option: contact your local Schneider Electric sales office for support.

Simple maintenance

Altivar Process Modular drives can significantly cut downtime of your assets by means of easily replaceable core components:

- Same power module with optimized weight and wheels for standard drives for all power ranges
- Same power fan inside a drawer accessible from the front face for all power modules
- Spare parts designed for easy and fast intervention in the field

Altivar Process Modular Liquid-cooled

Liquid-cooled drives

Altivar Process Modular Liquid-cooled drives for cabinet integration offer a modular high power solution for installation into cabinets and separate enclosures. Thanks to the optimized liquid-cooling concept, these drives are suitable for operation in a very harsh environment. The integrated liquid cooling allows optimal dissipation of the heat losses and therefore optimizes the encapsulation of the whole electrical drive unit.

The liquid-cooled modules are designed for 6- or 12-pulse supply as standard.

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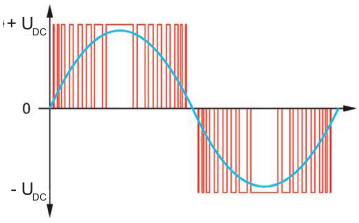
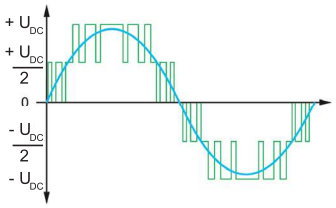
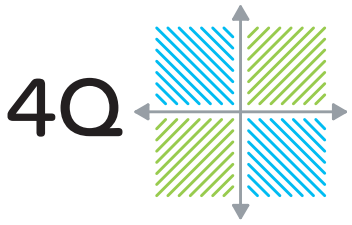
Low Harmonic/Regen drive



2-level technology



3-level technology



4-quadrant technology

Braking unit module

Product features (continued)

Low Harmonic/Regen drives

Low Harmonic/Regenerative drives are used when drives need to generate particularly low harmonics on the mains.

In addition, Low Harmonic/Regen drives are capable of feeding energy back to the mains, enabling a 4Q operation and improving overall application efficiency.

In comparison with commonly-used 2-level AFE (active front end) architectures, the 3-level technology of Altivar Process Modular Low Harmonic/Regen drives allows this new technology to reach a total distortion factor (THDi) of around 2% and thus fulfills the requirements of standard IEEE 519 for a THDi < 5% in case of distorted mains. Additionally, the cos Phi ≈ 1 in each load situation (from 30 % Pn) helps to reduce the line supply load.

The Low Harmonic/Regen drives range is an optimum solution for energy efficiency and process optimization.

Device features

Enhanced motor service life due to the 3-level concept

The 3-level AIC (active infeed converter) technology reduces the voltage load at the motor significantly, compared with other low harmonic frequency inverters. The fluctuating adaptation of the DC link voltage helps to extend the motor service life.

Reduced losses due to the 3-level concept

In comparison with the traditional circuit structure of active mains rectifiers, the switching frequency is increased and the current load is reduced at the same time when using 3-level technology.

Compact dimensions due to the 3-level concept

A significant advantage of the 3-level technology is the reduced size of the integrated filter. Due to the increased switching frequency and its location inside the forced cooling air channel, the dimensions of the filter can be almost halved.

Braking units

Same integration process as standard power module

Braking units and standard power modules have the same frame and size. They use the same integration kits and DC bus bar kits.

Compliant with standard and LH/Regen drives

Braking units can be built for both standard APM drives and Low Harmonic/Regen APM drives (up to three power modules architectures).

Compliant with any APM integration type

- Standard integration in 2 m/*6.56 ft* high cabinets
- IP21/UL Type 1 with a common cooling air flow
- IP54/UL Type 12 with a separate cooling air flow

Advanced functions

- With Standard drives:
  - Full braking torque also in overload range
  - Shortening and monitoring the deceleration time, for long travel applications, for example
  - Temporary regenerative load, such as for hoist applications
- With LH/Regen drives:
  - Braking operation when energy regeneration is not possible

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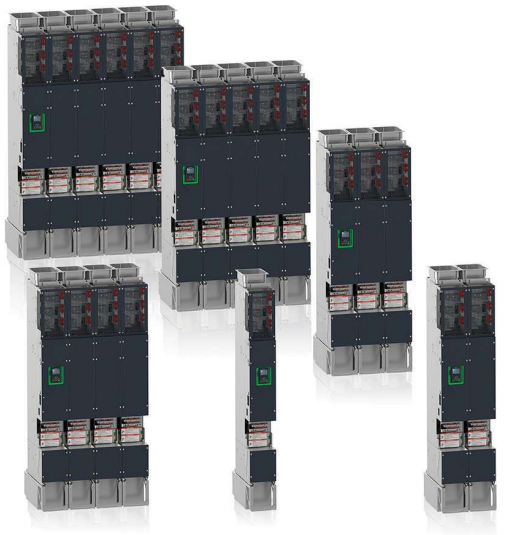
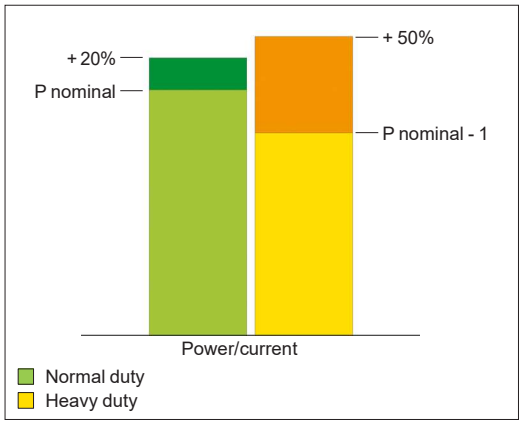


Altivar Process Modular Standard architecture from 1 to 6 modules

Altivar Process Modular Low Harmonic/Regen architecture from 1 to 6 modules



Normal duty and Heavy duty modes

Drive products for integration

Drive products for integration can be used for optimizing space when integrated inside cabinets. They cover motor power ratings from 0.75…90 kW/*1…125 HP* for 380…480 V three-phase voltages.

Three-phase power supply - 380…480 V (-15…10%)		
Motor power	**Degree of protection**	**Reference**
0.75…22 kW *1…30 HP*	IP20	**ATV930U07N4Z…D22N4Z**
30…90 kW *40…120 HP*	IP20	**ATV930D30N4Z…D90N4Z**

Modular drives, based on APM (Altivar Process Modular)

Modular drives solutions can be built using power modules, control units, and accessories. They cover motor power ratings from 75…2600 kW/*125…2600 HP* for 380…690 V three-phase voltages.

The APM drive references given in this catalog are representative of the operational drives that can be built with the APM offer. These operational drives must be integrated in a cabinet through an APM partner or through the integration services from Schneider Electric. Please contact your local Schneider Electric representative for more information on the local APM network and/or to get a quotation for an integrated APM drive.

Three-phase power supply - 380…480 V (-15…10%) Standard		
Motor power	**Degree of protection**	**Reference**
110…1000 kW *150…1400 HP*	IP00	**ATV9A0C11Q4…M10Q4** **ATV9A0C11R4…M10R4** **ATV9A0C11T4…M10T4**

Three-phase power supply - 500 (-10…15%), 600...690 V (-15…10%) Standard		
Motor power	**Degree of protection**	**Reference**
75…1,200 kW *125…1200 HP*	IP00	**ATV9A0C11N6…M12N6** **ATV9A0C11T6…M12T6** **ATV9A0C11Q6…M12Q6**

Three-phase power supply - 380…440 V (-15…10%), 480 V (-10…10%) Low Harmonic/Regen		
Motor power	**Degree of protection**	**Reference**
110…1000 kW *150…1400 HP*	IP00	**ATV9B0C11Q4…M10Q4** **ATV9B0C11R4…M10R4** **ATV9B0C11T4…M10T4**

Three-phase power supply - 500 (-10…15%), 600...690 V (-10…10%) Low Harmonic/Regen		
Motor power	**Degree of protection**	**Reference**
75…1200 kW *125…1200 HP*	IP00	**ATV9B0C11N6…M12N6** **ATV9B0C11T6…M12T6** **ATV9B0C11Q6…M12Q6**

Modular drives, based on APM-L (APM Liquid-cooled)

Three-phase power supply - 380 V…480 V(-15…10%) Standard		
Motor power	**Degree of protection**	**Reference**
132…1800 kW *200…2500 HP*	**IP00**	**ATV9L0C13Q4…M18Q4** **ATV9L0C13R4…M18R4** **ATV9L0C13T4…M18T4**

Three-phase power supply - 500 (-10…15%), 600...690 V (-15…10%) Standard		
Motor power	**Degree of protection**	**Reference**
132…2600 kW *200…2600 HP*	**IP00**	**ATV9L0C20N6…M26N6** **ATV9L0C20T6…M26T6** **ATV9L0C20Q6…M26Q6**

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

- 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