Altivar Process

ATV680 Low Harmonic Drive Systems

IEEE 519 ☑

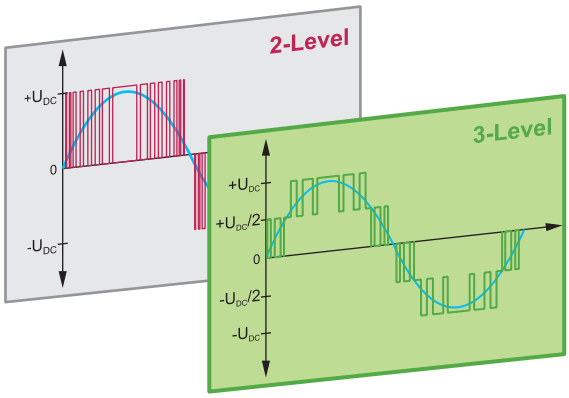
The customized solution for your drive

"Ready-to-use" Low Harmonic Drive Systems:

+ New Low Harmonic system concept
+ Developed on highest quality level
+ Manufactured according to your needs
+ Tested at full-load operating conditions
+ Pre-set appropriate to the design

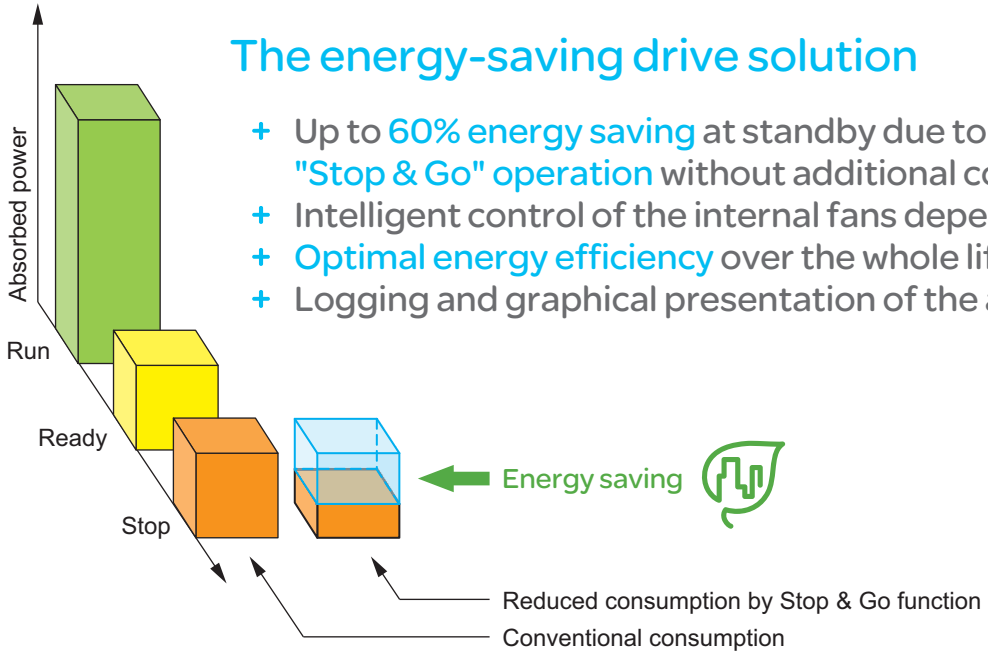
Newest 3-level architecture

+ Total current distortion factor THD(i) << 5 %
+ Improved life-time of the motor due to reduced voltage load
+ Less heat losses compared to the classic AFE architecture
+ Compact dimensions due to optimized filter components

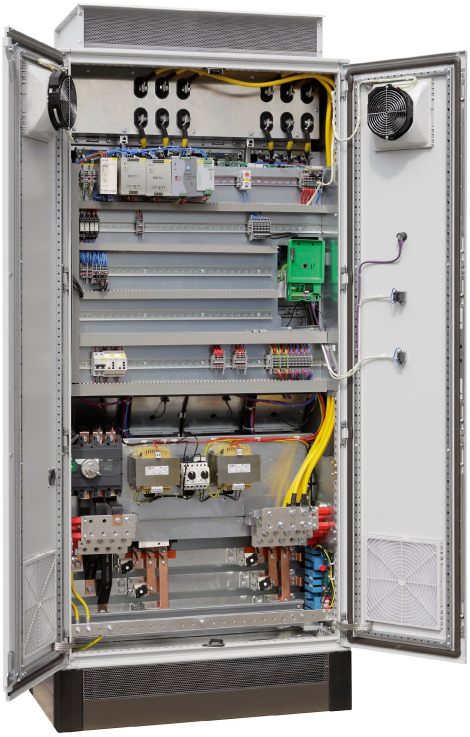


The energy-saving drive solution

+ Up to 60% energy saving at standby due to the innovative "Stop & Go" operation without additional costs
+ Intelligent control of the internal fans depending on the operation
+ Optimal energy efficiency over the whole life cycle
+ Logging and graphical presentation of the absorbed power



ATV680 – Low Harmonic Drive Systems



Low Harmonic Drive Systems as enclosure unit for speed control of asynchronous and synchronous motors.

Concept

The ATV680 Low Harmonic Drive Systems are used when drives should contain mains harmonics particularly low.

In comparison with the classic circuit structure of active mains rectifiers, the 3-level technology allows an increase of the switching frequency and the current load is reduced at the same time. This new technology reaches a total distortion factor THD(i) of around 2 % and thus fulfills the requirements according to IEEE 519 of THD(i) < 5 % also in case of distorted mains. Additionally, the cos Phi ≈ 1 in each load situation helps to reduce the load of the mains.

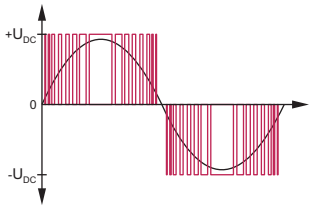
The modular construction makes it possible to adapt the enclosure unit to the individual requests. It makes the planning easy and ensures a quick installation and commissioning of the drive.

Basic equipment

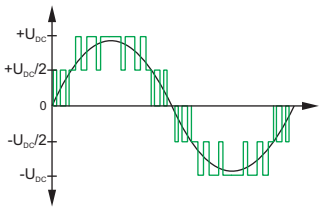
The basic equipment contains active infeed modules and their filter components as well as frequency inverter modules, semiconductor fuses, a main switch, a dv/dt filter choke (from 200 kW) for protection of the motor and spacious mains and motor bars for connection of the power cables. The design is based on the standard enclosure system Spacial SF with an graphical operating panel integrated into the enclosure door.

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

Device features



2-level technology



ATV680 with 3-level technology

Enhanced motor lifetime due to 3-level concept

The 3-level technology of the active mains rectifier reduces the voltage load at the motor significantly compared to other Low Harmonic frequency inverters. The gliding adaptation of the DC link voltage makes a major contribution to extend the motor lifetime.

Reduced losses by 3-level concept

In comparison with the classic 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. So the losses of the whole system are significantly reduced.

Compact dimensions due to 3-level concept

A significant advantage of the 3-level technology becomes clear when considering the dimensions of the integrated filter components. Due to the increased switching frequency and the location inside the forced cooling air channel, the dimensions of the filter could be almost halved.

Enclosure Design 400 V

ATV680 - General technical data	
Mains voltage	3 AC 380 V -10 % ... 415 V +6 %, 50/60 Hz ±5 % for TT, TN-C or TN-S Other voltages possible – ETO
Maximum current	Normal duty (ND): 110 % for 60 s per 10 minutes Heavy duty (HD): 150 % for 60 s per 10 minutes
Ambient temperature	-10...+50 °C (below 0 °C with option enclosure heating, above +40 °C with derating)
Standard equipment	Enclosure system Spacial SF in RAL 7035, protection degree IP23, graphical operating panel in the enclosure door, Low Harmonic Drive System with active mains rectifier to reduce the current harmonics THDi < 5 %, mains and motor terminals, cable entry from bottom
Interfaces	Pluggable control terminals, fieldbus connection via Ethernet or Modbus
Options "Light ETO"	• Increased protection degree IP54 • Enclosure plinth for basic device • Connection enclosure cable from top/bottom • Enclosure lighting • Enclosure heating • Key switch "local/remote" • Ethernet port on front door • Digital and analog I/O card • Relay output card • Communication cards for various fieldbus systems • STO - SIL 3 Stop category 0 or 1 • Indicator lamps on front door • Motor temperature monitoring • Bearing temperature monitoring • dv/dt filter choke • Motor heating • Automated mains disconnect • Setting for 415 V +10 % • Safety labels in local language
Further design variations "ETO"	• Modified wiring colors • Remote monitoring • Seaworthy packaging • Differing mains voltages • Multipulse supply (12-pulse) • Design without main switch • Increased short-circuit strength (100 kA) • Air intake from back • Differing enclosure colors • Customized documentation • Customized labeling • Design for IT mains • Motor contactor • ...
Standards	CE, EAC, ATEX, IEEE 519 (THDi < 5 %), RFI filter for second "industrial environment" C3 integrated

Type	Size	Motor rating (ND / HD)	Output current (ND / HD)	Dimensions		
				Width	Depth (1)	Height
ATV680C11Q4X1	1a	110 kW / 90 kW	210 A / 173 A	600 mm	600 mm	2150 mm
ATV680C13Q4X1		132 kW / 110 kW	250 A / 210 A	600 mm	600 mm	2150 mm
ATV680C16Q4X1		160 kW / 132 kW	302 A / 250 A	600 mm	600 mm	2150 mm
ATV680C20Q4X1	2a	200 kW / 160 kW	370 A / 302 A	1000 mm	600 mm	2150 mm
ATV680C25Q4X1		250 kW / 200 kW	477 A / 370 A	1000 mm	600 mm	2150 mm
ATV680C31Q4X1		315 kW / 250 kW	590 A / 477 A	1000 mm	600 mm	2150 mm
ATV680C35Q4X1	3a	355 kW / 280 kW	660 A / 520 A	1600 mm	600 mm	2150 mm
ATV680C40Q4X1		400 kW / 315 kW	730 A / 590 A	1600 mm	600 mm	2150 mm
ATV680C45Q4X1		450 kW / 355 kW	830 A / 650 A	1600 mm	600 mm	2150 mm
ATV680C50Q4X1		500 kW / 400 kW	900 A / 730 A	1600 mm	600 mm	2150 mm
ATV680C56Q4X1	4a	560 kW / 450 kW	1020 A / 830 A	2000 mm	600 mm	2150 mm
ATV680C63Q4X1		630 kW / 500 kW	1140 A / 900 A	2000 mm	600 mm	2150 mm
ATV680C71Q4X1	5a	710 kW / 560 kW	1260 A / 1020 A	2600 mm	600 mm	2150 mm
ATV680C80Q4X1		800 kW / 630 kW	1420 A / 1140 A	2600 mm	600 mm	2150 mm

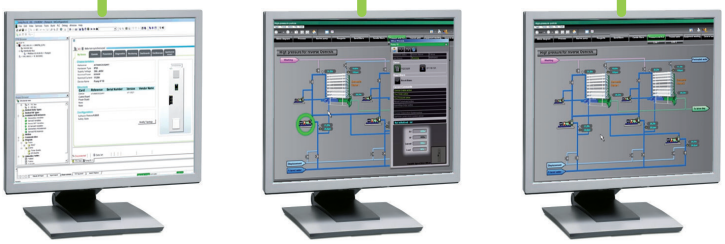
(1) Total depth including door handle: 664 mm

Perfect monitoring of your process

+ Integrated pump curves for process optimization
+ Monitoring of the pump efficiency
+ Notification of critical operating points without additional sensors
+ Process integration with pressure-, flow- and level-control including compensation of flow losses

Simple embedding into PLC environments

+ Easy integration thanks to standardized FDT/DTM and ODVA technology
+ Support by predefined libraries
+ Easy access via PC, tablet or smartphone
+ Secure connection via "Cyber-secured Ethernet"



Available on the App Store

Get it on Google play

Sophisticated service concept with QR code

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

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More Information