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# ПРИВОДЫ ПЕРЕМЕННОГО ТОКА ВЫСОКОВОЛЬТНЫЕ Техническое описание на преобразователи частоты ACS6080



# Modularity and flexibility

Get a drive solution that meets the requirements of your application and ensures optimum performance of your operations. Benefit from the versatility of the ACS6080, taking your business forward with everything working like clockwork.

The ACS6080 medium voltage drive is all about modularity: it is built from a set of standardized modules that work seamlessly together depending on your exact requirements. It is an engineered drive, designed to meet the specific needs of your application and for easy integration into your processes and systems. The drive ensures a high, constant power factor with optional reactive power compensation and low network harmonics. The ACS6080 comes with a wide range of industry-specific options and is compliant with various industry-specific certifications (marine, off-shore, etc.).

## Modular drive design

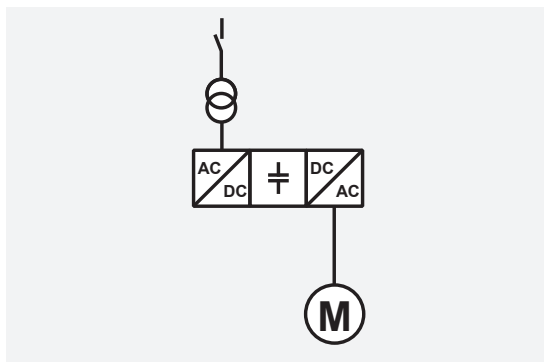
The modular product platform of the ACS6080 allows the optimum configuration of any drive system. The ACS6080 modules will be arranged according to the required output power, motor configuration and process needs. The use of well-proven modules minimizes the risk of design errors even when complex systems are engineered.

Depending on the application, three basic types of configurations are used.

## Single-motor drive configurations

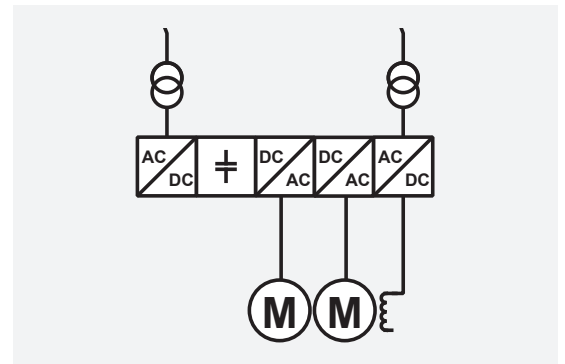
Single-motor configurations are commonly used in applications that require large, independent and decentralized drives. They are suitable for synchronous, induction and permanent magnet

motors with passive or active front end.



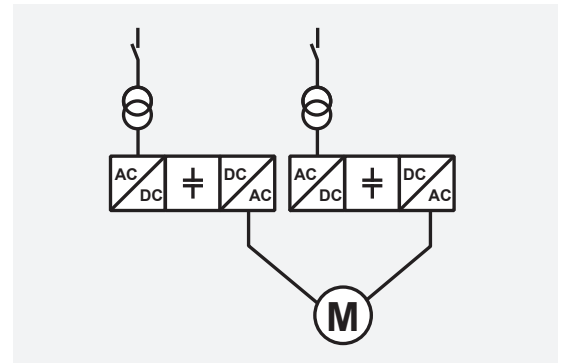
## Multi-motor drive configurations

Up to eight motors can be linked to a common DC bus, enabling multiple motor operation. Synchronous and/or induction motors, high or low power, any combination is possible in order to provide the optimum configuration with passive or active front end.



## Redundant drive configurations

Single drives can be configured to allow various schemes for redundancy for motors with two winding systems. This will increase the availability of your drive system.



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# Perfect combination of standardized drive modules

Cost and energy savings are possible with a water-cooled drive system that is configured to fully meet your needs.

EMC compliant cabinet for problem-free operation in electromagnetic environment

### User-friendly drive control panel for local operation

- Keypad with multi-language display
- Main supply on/off pushbuttons
- Emergency off pushbutton

DC bus grounding switch and electromechanically interlocked doors of power sections for personal safety



**Active Rectifier Unit (ARU)** Self-commutated, 6-pulse, 3-level voltage source inverter with IGCT technology

### Terminal Unit (TEU) and Control Unit (COU)

Contains the power terminals and the control swing frame

### Capacitor Bank Unit (CBU)

DC capacitors for smoothing the intermediate DC voltage

### Inverter unit (INU)

Self-commutated, 6-pulse, 3-level voltage source inverter with IGCT technology

### Water Cooling Unit (WCU)

Supplies deionized water for cooling the main power components

# Designed to control virtually any type of AC motor

Our ACS6080 drives control virtually any type of AC motor including induction, permanent magnet, and synchronous motors. Motor control is optimized with advanced direct torque control (DTC), ABB's premium motor control, built-in as a standard feature in our ACS6080 drives. Our robust drives ensure an energy efficient and reliable motor controller with significant cost savings for the user.

## **ACS6080 and induction motors form a reliable combination**

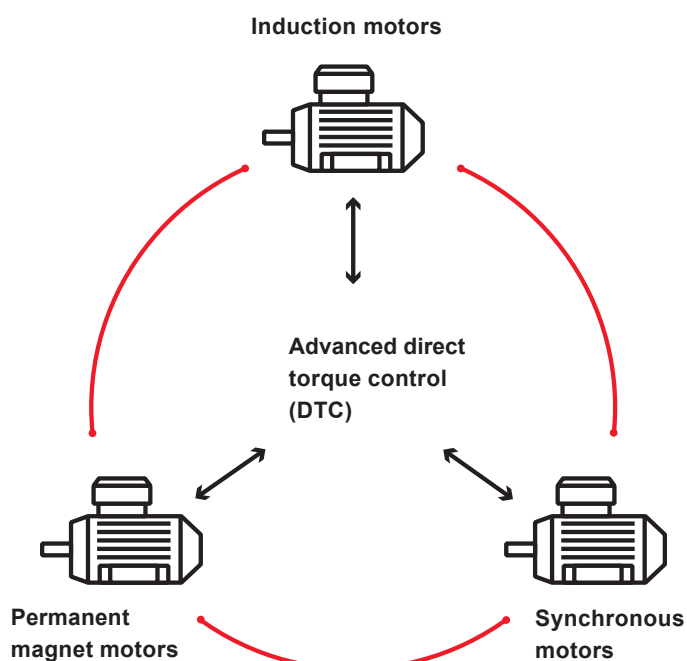
Induction motors are used throughout the industry in several types of industry applications which demand robust and high enclosure motor and drive solutions. The ACS6080 drives fit perfectly together with this type of motor, used in a wide range of industrial environments.

## **ACS6080 and permanent magnet motors for smooth operation**

Permanent magnet technology is often used for improved motor characteristics such as energy efficiency, compactness and control performance. This technology is suitable for low speed industry applications without gear boxes.

## **ACS6080 and synchronous motors for higher efficiencies in industrial applications**

Each synchronous motor has its own excitation unit. The excitation unit (EXU) supplies a synchronous motor with excitation power and is delivered as part of the ACS6080.



# Intuitive and user-friendly interface

The ACS6080 drive comes with the all-compatible user experience that is already familiar to you from ABB low voltage drives, ensuring easy operation throughout your entire installation.

The assistant control panel features intuitive use and easy navigation. High resolution display enables visual guidance. The panel saves on commissioning and learning time by means of different assistants, making the drive simple to set up and use.

It is possible to organize parameters in different ways and store essential parameters for different configurations for any specialized application needed. The menus and messages can be customized for specific terminology so that each application can be set up and configured to its optimum performance. This makes the drive easier to use with information that is familiar to users. With the panel's text editor, users can also add information, customize text and label the drive. Powerful backup and restore functions are supported as well as different language versions. The help key provides context sensitive guidance. Faults or warnings can be resolved quickly since the help key provides troubleshooting instructions.

One control panel can be connected to several drives simultaneously using the panel network feature. The user can also select the drive to operate in the panel network. The PC tool can be easily connected to the drive through the USB connector on the control panel.



## Technical data

### Input

Input configuration	6-, 12- or 24-pulse diode rectifier 6-, 12- or 18-pulse active rectifier
Input voltage	6-pulse diode rectifier: 3300 V 12- and 24-pulse diode rectifier: 1725 V 6-, 12- and 18-pulse active rectifier: 3160 V
Input voltage variation	±10% without derating +15/–30% with derating
Input frequency	50/60 Hz
Input frequency variation	±5%
Input power factor	Diode rectifier: >0.95 Active rectifier: standard 1.0, optionally controllable
Input harmonics	Compliance with IEC61000-2-4 and IEEE 519
Auxiliary voltage	Control (optional): 110, 220 VDC or 110–240 VAC 50/ 60 Hz Auxiliary: 380–690 VAC 50/60 Hz, 3-phase

### Output

Output power	5000–36000 kW
Output voltage	2.3–3.3 kV
Output frequency	0 –100 Hz (higher on request)
Motor type	Induction, synchronous and permanent magnet
Efficiency of converter	>99 %

### Mechanical

Enclosure	Standard: IP32 Optional: IP42, IP54
Cable entry	Top/bottom

### Environmental

Altitude	2000 m. a. s. l. (higher with derating)
Ambient air temperature	+0 – +40 °C (lower and higher with derating)
External cooling water temperature	+5 – +32 °C (lower and higher with derating)
Noise	<75 dB (A)
Cooling type	Water

### Standards

EN, IEC, CE, (optional CSA and all common marine standards)

## Ratings, types and voltages

Motor data Nominal rating			Converter data			
kW <sup>1</sup>	hp <sup>1</sup>	A	Type code	Power kVA	Length mm	Weight kg
<b>3300V – induction motors, single drive with diode front end</b>						
4300	5800	915	ACS6080-033-W-11A-E2-011-111A	5000	4900	4100
6000	8000	1300	ACS6080-033-W-12A-E2-011-112A	7000	4900	4300
7700	10300	1650	ACS6080-033-W-13A-E2-011-113A	9000	4900	4400
10000	13400	2150	ACS6080-033-W-14A-E2-011-115A	12000	6300	5300
12000	16100	2600	ACS6080-033-W-14A-E2-011-122A	14000	8600	7300
15400	20700	3300	ACS6080-033-W-23A-E4-011-123A	18000	9400	8100
20200	27100	4300	ACS6080-033-W-24A-E4-011-125A	24000	11800	9500
23200	31100	4950	ACS6080-033-W-24A-E4-011-123A	27000	13700	12600
<b>3300V – induction motors, single drive with active front end</b>						
4300	5800	915	ACS6080-033-W-11A-R1-011-111A	5000	5600	4900
6000	8000	1300	ACS6080-033-W-12A-R1-011-112A	7000	5600	5100
7700	10300	1650	ACS6080-033-W-13A-R1-011-113A	9000	5600	5200
10000	13400	2150	ACS6080-033-W-16A-R1-011-115A	12000	6000	5400
12000	16100	2600	ACS6080-033-W-22A-R2-011-122A	14000	10000	9500
15400	20700	3300	ACS6080-033-W-23A-R2-011-123A	18000	10400	10300
20200	27100	4300	ACS6080-033-W-26A-R2-011-125A	24000	11200	10700
23200	31100	4950	ACS6080-033-W-33A-R3-011-123A	27000	16600	14500
<b>3300V – synchronous motors, single drive with diode front end</b>						
4800	6400	915	ACS6080-033-W-11A-E2-011-111A	5000	5700	4500
6800	9100	1300	ACS6080-033-W-12A-E2-011-112A	7000	5700	4700
8700	11700	1650	ACS6080-033-W-13A-E2-011-113A	9000	5700	4800
11200	15000	2150	ACS6080-033-W-14A-E2-011-115A	12000	7100	5700
13600	18200	2600	ACS6080-033-W-14A-E2-011-122A	14000	9400	7700
17400	23300	3300	ACS6080-033-W-23A-E4-011-123A	18000	10200	8600
22400	30000	4300	ACS6080-033-W-24A-E4-011-125A	24000	10600	9900
26100	35000	4950	ACS6080-033-W-24A-E4-011-123A	27000	14500	13000
<b>3300V – synchronous motors, single drive with active front end</b>						
4800	6400	915	ACS6080-033-W-11A-R1-011-111A	5000	6400	5300
6800	9100	1300	ACS6080-033-W-12A-R1-011-112A	7000	6400	5500
8700	11700	1650	ACS6080-033-W-13A-R1-011-113A	9000	6400	5600
11200	15000	2150	ACS6080-033-W-16A-R1-011-115A	12000	6800	6000
13600	18200	2600	ACS6080-033-W-22A-R2-011-122A	14000	10800	9900
17400	23300	3300	ACS6080-033-W-23A-R2-011-123A	18000	11200	10700
22400	30000	4300	ACS6080-033-W-26A-R2-011-125A	24000	12000	11100
26100	35000	4950	ACS6080-033-W-33A-R3-011-123A	27000	17400	14900
<b>3300V – multidrive examples with diode front end</b>						
2× 6000	2× 8000	2× 1300	ACS6080-033-W-22A-E4-021-112A-212A	14000	8600	7450
5× 6000	5× 8000	5× 1300	ACS6080-033-W-24A-E4-051-112A-212A-312A-412A-512A	28000	18900	16050
<b>3300V – multidrive examples with active front end</b>						
2× 22400	2× 30000	2× 4750	ACS6080-033-W-35A-R3-021-126A-226A	36000	23600	15850
2× 6000	2× 8000	2× 1300	ACS6080-033-W-15A-R1-021-112A-212A	13000	9500	7950

### Notes:

<sup>1</sup> Indicative information: induction motor efficiency 97.5%, power factor 0.88; synchronous motor efficiency 97.5%, power factor 1.0.

### Dimensions:

Height: 2200 mm cabinet height  
2500 mm incl. cooling fans on top  
Depth: 1040 mm

# Flexible connection to automation networks

Our fieldbus adapter modules enable communication between drives, systems, devices and software. Our industrial drives are compatible with a wide range of fieldbus protocols.

The plug-in fieldbus adapter module can easily be mounted inside the drive. Other benefits include reduced wiring costs when compared with traditional input/output connections. Fieldbus systems are also less complex than conventional systems, resulting in less overall maintenance.

**Multiple fieldbus connections for flexible control**  
ACS6080 supports two fieldbus connections simultaneously. The user has flexibility of choice for control modes by being able to select one protocol for control and one for monitoring. Also redundant fieldbus connection is possible.

#### Cabling

Substituting the large amount of conventional drive control cabling and wiring with a single cable reduces costs and increases system reliability and flexibility.

#### Design

The use of fieldbus control reduces engineering time at installation due to the modular structure of the hardware and software and the simplicity of the connections to the drives.

#### Fieldbus adapter modules

Option	Fieldbus protocol
FPBA-01	PROFIBUS DP, DPV0/DPV1
FCAN-01	CANopen®
FDNA-01	DeviceNet™
FENA-11	1 port EtherNet/IP™, Modbus TCP, PROFINET IO
FENA-21	2 port EtherNet/IP™, Modbus TCP, PROFINET IO, PROFIsafe <sup>1</sup>
FECA-01	EtherCAT®
FSCA-01	Modbus RTU
FEPL-02	PowerLink
FCNA-01	ControlNet™

<sup>1</sup> For the PROFIsafe to work the PROFINET fieldbus adapter module (FENA-21) and the safety functions module are required.

# Speed feedback interfaces for precise process control

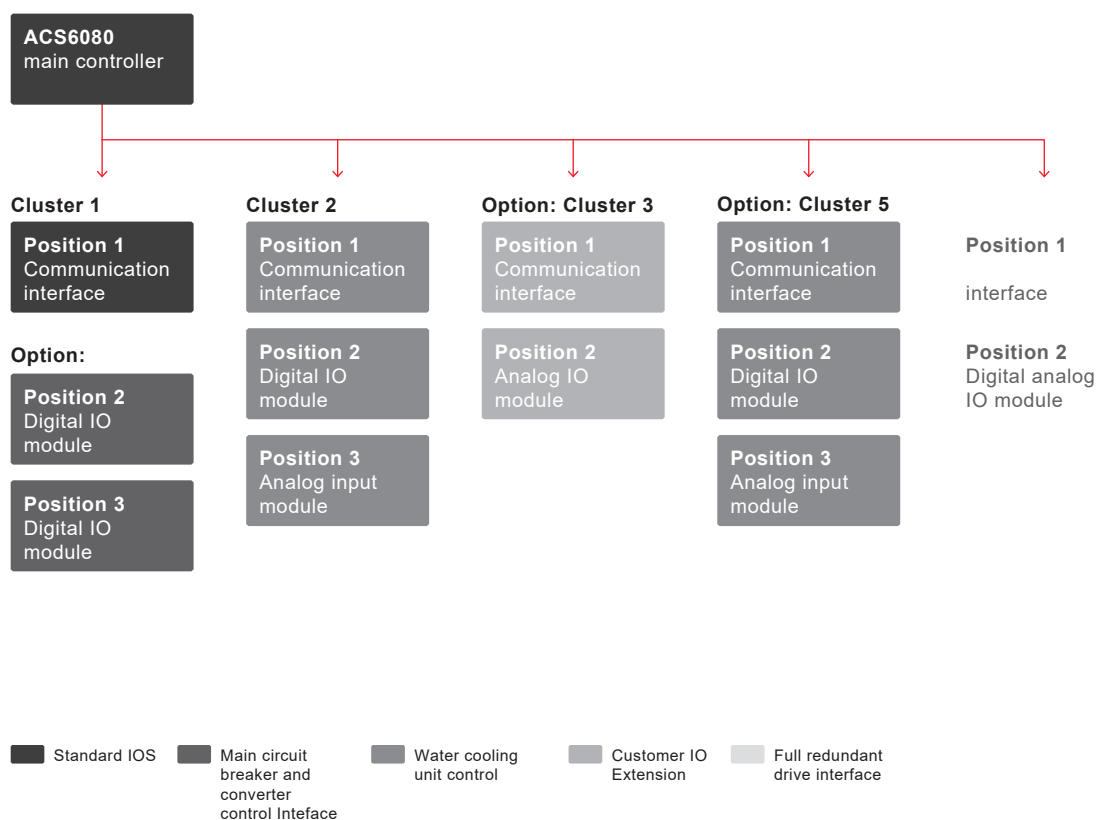
ACS6080 drives can be connected to various feedback devices, such as HTL pulse encoder, TTL pulse encoder, absolute encoder and resolver. The optional feedback module is installed in the

option slot on the drive. It is possible to use two feedback modules at the same time, either of the same type or different type.



# Standard interface and extensions for comprehensive connectivity

The ACS6080 is equipped with a wide range of standard interfaces for internal as well as process signals. In addition an optional extension for process interfaces can be added.



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