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MARINE

# Drives and motors for electrically driven deck machinery and offshore winches



- Working in close cooperation with winch manufacturers, we've incorporated our extensive experience into the drives that work with various marine and offshore winch types.
- Pair our drives with our LV marine motors for a one-stop supplier that is backed by a global service and support network.

# Performance. Speed. Reliability. Safety.

## Everything counts.

With the help of application expertise gained over many years, we've developed drives and motors that enable precise, smooth, dependable, and safe winch operation, while reducing wear on the ropes and winch. Because everything counts.

### Deck machinery winch solution with +N5100 software option

Deck machinery winches are used for anchor handling with a chain or for mooring by maintaining rope tension.

The main benefits of an electrically driven winch include precise, smooth, dependable and safe winch operation. In addition, the electrical winch control reduces wear on the ropes and the winch.

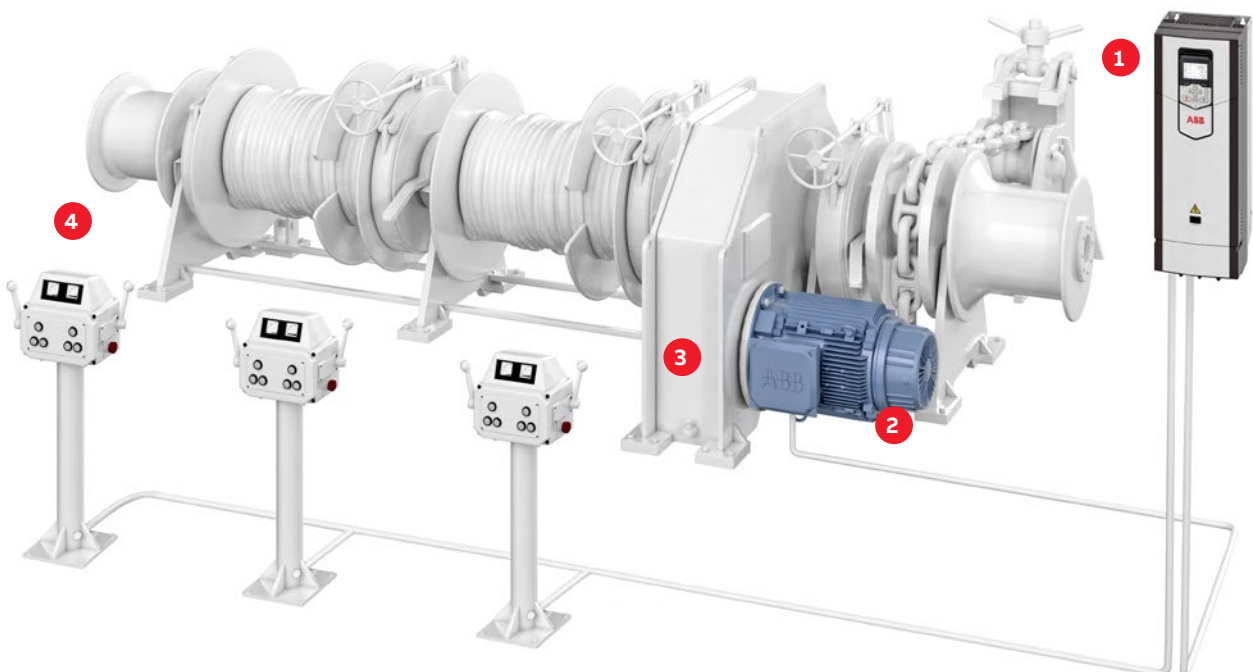
Deck machinery solutions typically have an open loop motor control (without an encoder) and S2-30% motor duty without motor cooling (IC-410). The open loop motor control is an advantage especially in harsh environment due to simpler installation with fewer parts. \*)

\*) The performance of the winch needs to be verified and approved between ABB and the winch manufacturer. In the case of hoisting machinery, a closed loop control with a motor encoder is required.

#### Anchoring/mooring winches

The built-in winch control program of our ACS880 drives includes features like anchor control, hand mooring mode, automooring mode, clutch control mode, mechanical brake control, and master-follower operation (for controlling multiple winches).

- 1 **Winch control is included in the drive** – no need for external controllers (located in the winch cabinet of the electrical room)
- 2 Full control of speed and torque **without a shaft encoder**
- 3 Automooring is possible **without a load cell sensor**
- 4 **Multiple control stands** connect directly to the drive





## Offshore machinery winch solution with +N5800 software option

Offshore machinery winches are used for applications such as:

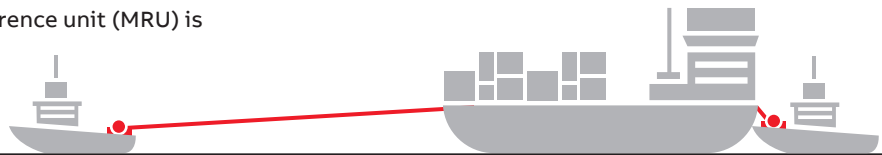
- Towing (escort tow & push tasks)
- Fish trawling (dragging & pulling tasks based on true line force)
- Umbilical & tether cable management
- Active Heave Compensation (AHC) for LARS & oceanographic operations

Offshore machinery solutions always require an encoder on the motor shaft or drum main shaft. Furthermore, the drive rating needs to be oversized to compensate for intermittent peak performance requirements. Since these applications require the motor to constantly perform close to 0 rpm, the motor duty and cooling options need to be considered. \*)

\*) The performance of the winch drive needs to be verified and approved between ABB and the winch manufacturer.

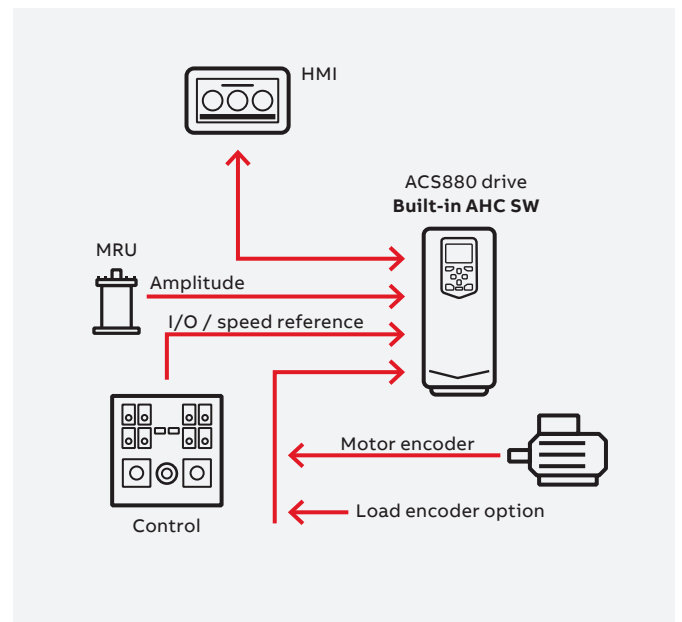
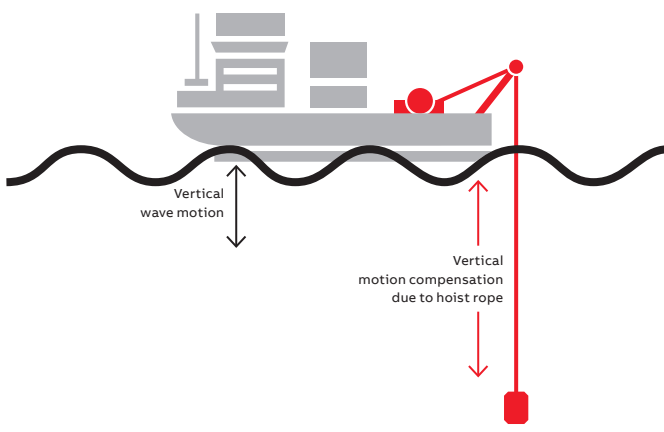
### Tugboat towing winches

Escort and push mode operations for safe tugboat control. Roll compensation with a motion reference unit (MRU) is available as an option.



### Active Heave Compensation (AHC)

AHC is built into the drive for controlling the remotely operated vehicle (ROV) and launch and recovery system (LARS) winches. The MRU is connected directly to the drive via an Ethernet interface.



# ACS880 drives with built-in winch control software

## Minimize your engineering time

Our marine-certified ACS880 drives provide reliable operation and performance where it's needed the most. Offering accurate speed and torque control for a wide range of motor types, they are suitable for new installs and retrofits of existing winches.



ACS880 drives are available in the 0.55 to 6000 kW range and voltages of 400, 440, 500 and 690 V. Enclosure class options include: IP20, IP21, IP22, IP42, IP54 and IP55.



### Removable memory unit

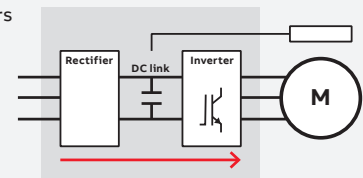
Stores the drive's software and settings for fast and easy commissioning and maintenance.

### ACS880 marine winch control software ordering codes

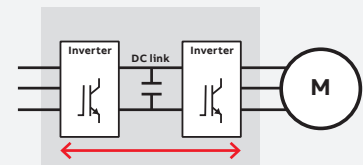
- For deck machinery, anchoring/mooring and multi-motor/master-follower winches: +N5100
- For offshore, tugboat and AHC winches: +N5800 (limited release)

### Braking options

Dynamic braking/resistors



Regenerative braking



# ACS880 ultra-low harmonic and regenerative drives

## Keeping the network clean while saving energy

### Helping to keep the vessel's network clean

Now, the ultra-low harmonic and regenerative ACS880 drives are also available with marine type approvals. Both of these drive types help to keep the vessel's electrical network clean from unwanted disturbances by producing exceptionally low harmonic content. Furthermore, the ACS880 regenerative drives help to simplify the installation by eliminating the need for an external braking resistor.

### Key benefits of ACS880 ultra-low harmonic and regenerative drives

- The total harmonic current distortion is typically <3% in a nominal situation in an undistorted network. In partial loads, the harmonic content is also low.
- Unity power factor. Network power factor correction is also possible.
- The active supply unit in the drive can boost the output voltage, which ensures reliable operation and guarantees full motor voltage, even when the supply voltage is below nominal
- No need for external filters, multi-pulse arrangements or special transformers

### With ACS880 regenerative drives you'll also get these:

- 100% of the power can be regenerated continuously
- Significant energy savings compared to other braking methods
- No need for external braking devices, which makes drive installation simple and requires less cabinet space

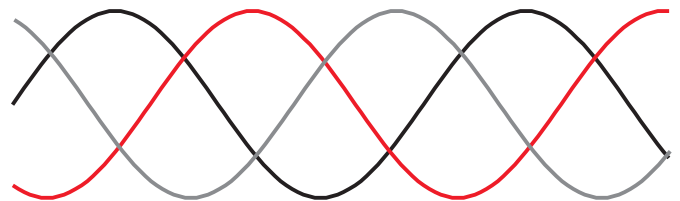
### Understanding the effects of harmonic distortion

Any distorted voltage and current waveform that deviates from the ideal sinusoidal waveform has the potential to damage electrical components, which can result in costly repairs and equipment downtime. All non-linear loads connected to the electrical supply in industrial and commercial facilities insert waveform distortions called harmonics on the power distribution system. Common non-linear loads include solid-state motor soft starters, standard variable speed drives, computers, LED lighting, welding supplies, and uninterruptible power supplies.

Harmonics negatively affect power networks and connected equipment. The higher the harmonic content, the higher the line current, which means higher losses in the network, including its components like transformers, switches, circuit breakers, and cables. In addition, the increased line current means that the power network equipment overheats, which leads to premature failure. Furthermore, harmonics with a distorted current mean there is also a risk of connected equipment malfunctioning and failing.



ACS880 ultra-low harmonic and regenerative drives are now available with marine type approvals.



A pure sinusoidal voltage and current does not contain any harmonics.

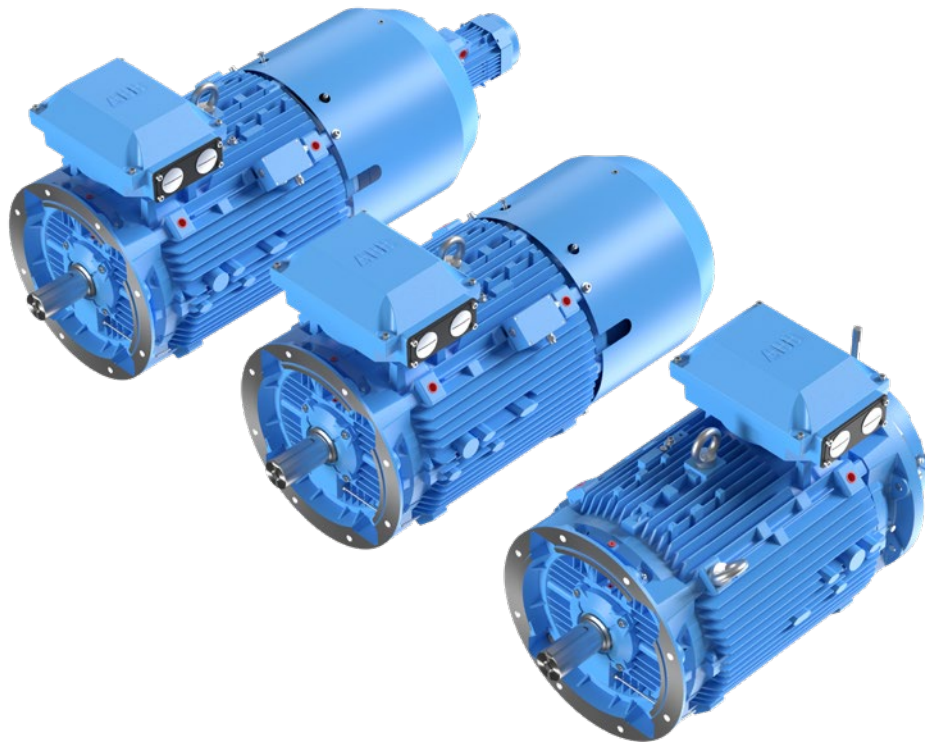


A voltage and current that deviate from the sine form contain harmonics.

## Low voltage marine motors for winches

### Made to last in demanding conditions

Our range of open-deck motors are designed to withstand salt, humidity, and waves washing over the deck. They deliver reliably high performance for your winches, day after day.



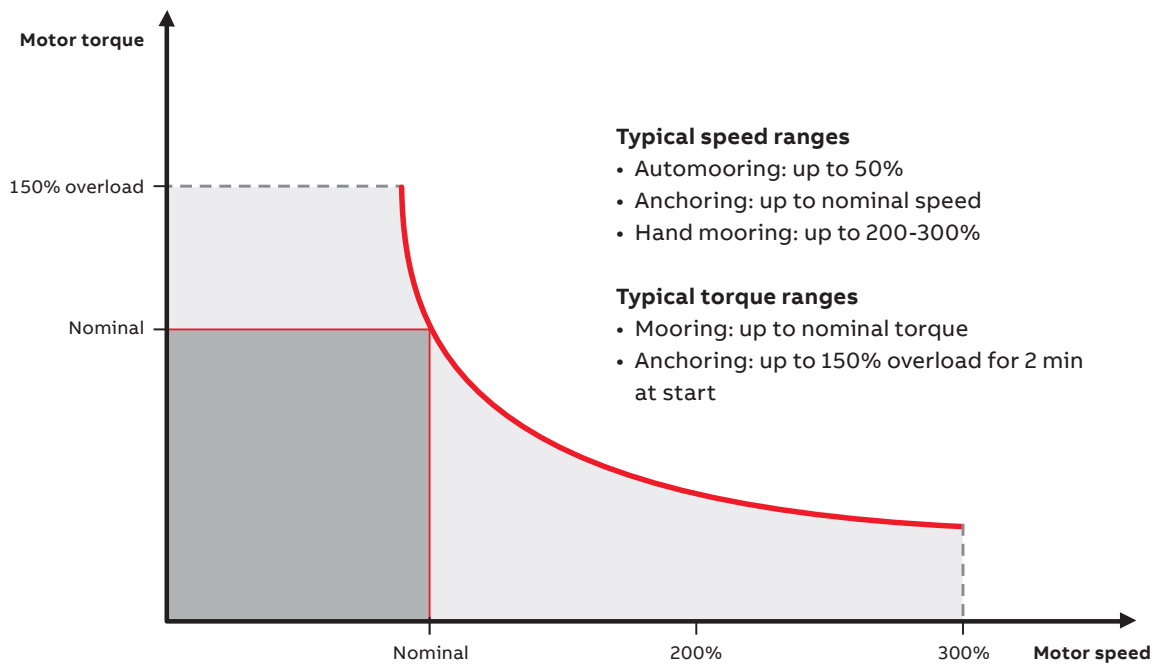
#### Key benefits of ABB's low voltage brake motors for winches:

- Our motors are designed to comply with stringent safety criteria while providing the highest reliability. At the same time, special attention is paid to marine classification requirements.
- ABB Marine Process Performance brake motors consist of three flexible designs for customized configurations: 1) totally enclosed non-ventilated TENV (IEC 410); 2) totally enclosed fan cooled TEFC (IEC 411); 3) enclosed forced ventilated TEFV (IEC 416).
- IP56 open deck protection (highest protection class for motors, standard IP56 is not adequate).
- Built-in marine IP67 brake options from all major brake manufacturers.
- Selection of encoders designed for harsh marine and offshore conditions.
- Wide range of painting systems, including the NORSOK-approved system.
- Availability of a watertight enclosure IP67 open deck-type terminal box.
- Robust, low-temperature-resistant designs can be supplied for vessels that operate in Arctic or Antarctic waters. Ex-protected versions are also available.

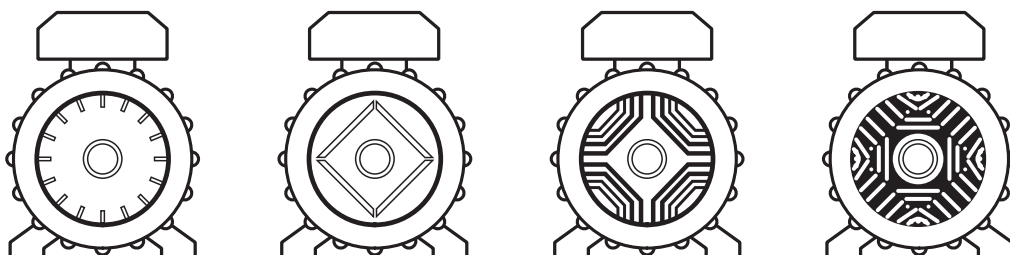




**Typical electrically driven winch motor performance (with an induction motor)**



**Available motor technologies for winches – induction, permanent magnet, SynRM and PMSynRM motors**





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For more information, please contact  
your local ABB representative or visit

**[new.abb.com/drives/segments/winches](https://new.abb.com/drives/segments/winches)**  
**[new.abb.com/motors-generators/segments/marine](https://new.abb.com/motors-generators/segments/marine)**