

# ABB industrial drives

## ACS800, low harmonic drives

### Easy low harmonic solution

ABB's low harmonic drives offer an easy low harmonic solution that is incorporated in the drive. These drives use harmonics mitigation technology that does not require external filters or multi-pulse transformer. The low harmonic drives produce exceptionally low harmonic content in the drive input, with a total current distortion of less than 5.0%.

The low harmonic drive thus provides you with a simple, cost efficient solution to meet stringent power quality standards.

- Easy solution for minimum harmonic content
- Direct connection to the network
- No complex multi-winding transformer required
- No external filter equipment required
- Exceeds EN 61000-3-12 and IEEE519 requirements
- Genuine unity power factor - no compensation needed

### Perfect line current - clean network

In a conventional frequency converter with a six-pulse diode bridge as a rectifier, the network side current is not sinusoidal, and has significant harmonic content, especially fifth and seventh harmonics. This is shown by the typical current distortion, which can be 30 – 50% in total. In an ABB low harmonic drive,

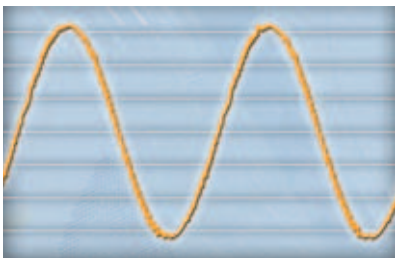


Figure 1. Network side current of low harmonic drives



the use of DTC principles, together with a low pass filter, will suppress the current harmonic content leaving distortion of less than 5%. The resulting clean sinusoidal current will therefore cause little or no distortion on the network voltage waveform.

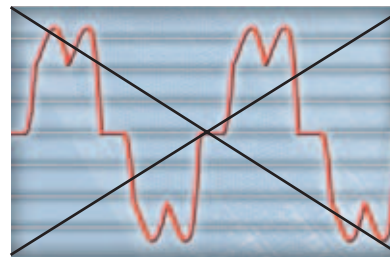


Figure 2. Network side current of conventional drives



## Wall-mounted low harmonic drive ACS800-31, up to 110 kW

The ACS800-31 is a low harmonic drive in a single, complete wall-mounted package. In line with the ACS800 series, it has all the important features and options, including EMC filters and I/O extension modules, built inside the drive. The power ratings of the ACS800-31 start from the 5.5 kW heavy-duty rating and go up to 110 kW continuous load rating. It is available with the IP21 protection class.



## Cabinet-built low harmonic drive ACS800-37, up to 2700 kW

The ACS800-37 cabinet-built drive is a low harmonic solution in the power range of 45 kW up to 2,700 kW. Like other cabinet-built single drives, it has a wide range of standardized configurations and is available with IP21, IP22, IP42, IP54 and IP54R protection classes.



## Technical specification

### Mains connection

**Voltage and power range** 3-phase,  $U_{2IN} = 208$  to 240 V,  $\pm 10\%$ , (ACS800-31 only)  
3-phase,  $U_{3IN} = 380$  to 415 V,  $\pm 10\%$   
3-phase,  $U_{5IN} = 380$  to 500 V,  $\pm 10\%$   
3-phase,  $U_{7IN} = 525$  to 690 V,  $\pm 10\%$  (600 V UL, CSA)

**Power factor**  $\cos\phi_1 = 1$  (fundamental)  
 $\cos\phi = 0.99$  (total)

**Efficiency (at nominal power)**  
97%

### Motor connection

**Voltage** 3-phase output voltage  $0 \dots U_{2IN} // U_{3IN} // U_{5IN} // U_{7IN}$

**Frequency**  $0 \dots \pm 300$  Hz  
( $0 \dots \pm 100$  Hz for ACS800-37 with du/dt filters)

**Field weakening point**  $8 \dots 300$  Hz

**Motor control** ABB's Direct Torque Control (DTC)

### Product compliance

CE  
Low Voltage Directive 73/23/EEC with amendment 93/68/EEC  
Machinery Directive 98/37/EC  
EMC Directive 89/336/EEC with amendment 93/68/EEC  
Quality assurance system ISO 9001 and  
Environmental system ISO 14001  
UL, cUL 508A or 508C and CSA C22.2 NO.14-95, C-Tick

### EMC according to EN 61800-3/A11 (2000), EN 61800-3 (2004)

2<sup>nd</sup> environment, unrestricted distribution, category C3 - standard in ACS800-37 (frame sizes R7i-nxR8i), option in the others  
1<sup>st</sup> environment, restricted distribution (category C2) as option up to 1000 A input current

For ratings, voltages, dimensions and weights, see "ACS800, single drives technical catalogue, code 3AFE68375126.



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