Intelligent and precise motion control

ACS800 motion control drive uses common industrial drive technology and is a cost effective solution for precision positioning and synchronization. Intelligent integrated motion control functions and versatile controllability eliminate the need for an external motion controller even in the most demanding applications, such as in material handling, packaging, printing and plastics forming.

The motion control drive provides accurate positioning, synchronization, DTC performance and high cyclic overloadability in one package for asynchronous motors.

Motion control main features:
- Four control modes - two control places
- Speed and torque control
- Position control and synchronization
- Positioning interpolator
- 16 tables for each positioning reference
- Target position reference
- Positioning speed
- Acceleration and deceleration
- Positioning method
- Homing
- Standard and advanced sequential homing
- 3 preset homing values
- Cyclic corrections
  - Master reference correction
  - Actual value correction
  - Master/Follower distance correction
  - Synchronizing reference (master actual position)
  - Through 2nd encoder input
  - Through Master/Follower optical link
- Dynamic limiter
- Selectable physical units for position values (mm, inch, increment, degree, revolution)
- Electrical gear functions
  - Motor gear
  - Load gear
  - Synchron gear
  - CAM Disk function
  - Virtual Master

ACS800-04 single drive modules

ACS800-04 drives are single drive modules that are optimized for building into customers' own cabinets. They have been designed to minimize the cabinet space used, make cabinet assembly as easy as possible, and give maximum flexibility. All the drives, regardless of the power and voltage, have the same customer interface and I/O making system design and training easier.

- Common industrial drive technology
- IP20 enclosure class
- Compact design
- Side by side mounting

Everything necessary inbuilt:
- Chokes for harmonic filtering as standard
- Brake chopper
- EMC filtering
- Wide selection of different I/O extension modules
- Fieldbus modules
- Pulse encoder (HTL and TTL) and resolver interface modules (supports two encoders simultaneously)

Other available options:
- Flange mounting (the heatsink side of the module has IP55 enclosure class)
- Prevention of unexpected start-up (complies with EN954-1, category 3)
Technical specification

### Mains and motor connections

| Voltage | 3-phase, \( U_{2IN} = 208 \) to \( 240 \) V, ± \( 10\% \)  
|         | 3-phase, \( U_{3IN} = 380 \) to \( 415 \) V, ± \( 10\% \)  
|         | 3-phase, \( U_{3IN} = 380 \) to \( 500 \) V, ± \( 10\% \)  
|         | 3-phase, \( U_{7IN} = 525 \) to \( 690 \) V, ± \( 10\% \)  
| Frequency | 48 to 63 Hz  
| Power factor | \( \cos \varphi = 0.98 \) (fundamental)  
|             | \( \cos \varphi = 0.93...0.95 \) (total)  
| Efficiency (at nominal power) | 98%  
| Voltage | 3-phase output voltage \( 0...U_{2N}/U_{3IN}/U_{5IN}/U_{7IN} \)  
| Frequency | \( 0...300 \) Hz, \( 0...\pm 120 \) Hz with \( du/dt \) filters  
| Field weakening point | 8...300 Hz

Technical control data

| Motor control | ABB's Direct Torque Control (DTC) |
| DTC | Control loop | 25 µs  
| Torque control | Torque step rise time:  
|             | Open loop | <5 ms with nominal torque  
|             | Closed loop | <5 ms with nominal torque  
| Speed control | Static accuracy:  
|             | Open loop | 10% of motor slip  
|             | Closed loop | 0.01% of nominal speed  
| Dynamic accuracy:  
|             | Open loop | 0.3...0.4%sec. with 100% torque step  
|             | Closed loop | 0.1...0.2%sec. with 100% torque step  
| Position control | Control loop | 1 ms  
| Synchronization | Control loop | 1 ms

For other ratings, voltages, dimensions and weights, see ACS800, drive modules technical catalogue, code 3AFE68404592.