Flexible solutions

The ACS5X0-07 is a cabinet-built single drive designed for industrial applications. It is compact in design and is simple to operate. It is available with IP 21, IP 22, IP 42, IP 54 protection classes.

The ACS5X0-07 offers a wide variety of standardized options to adapt to different application requirements, from line contactor to the starter for auxiliary motor fan.

Plus tailor made accessories through ABB’s application engineering. For special requirements, ABB can offer you application engineering design.

Accessories

All the ACS5X0-07’s accessories are inbuilt in the cabinet. Typical accessory choices include extended I/O and fieldbus options, line contactor and du/dt filtering, all mountable within the single cabinet.

Standard hardware

- Compact design
- IP 21 protection class
- Inbuilt harmonic filtering choke
- Fuse switch
- Main switch
- Extensive, programmable I/O
- Long lifetime cooling fan and capacitors
- Inputs galvanically isolated I/O terminals
- I/O and fieldbus extension slots inside
- Alphanumeric multilingual control panel with Start-up Assistant feature

Accessories for the ACS5X0-07:

- Relay output extension modules
- Braking chopper and resistor
- Cabinet heater
- Terminal block
- du/dt filters
- Fieldbus modules
- IP 22, 42 or 54 enclosure classes
- Line contactor with emergency stop push button
- Module-case circuit breaker
- Starter for auxiliary motor fan
- Pulse encoder interface module
- Top entry and exit of cables
### 3-phase supply voltage 380~480V

<table>
<thead>
<tr>
<th>Type code</th>
<th>Normal use</th>
<th>Heavy-duty use</th>
<th>Frame size</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>( I_{2N} ) A</td>
<td>( P_N ) kW</td>
<td>( I_{2hd} ) A</td>
</tr>
</tbody>
</table>

#### ACS550-07-03A3/xxxx-44
- \( I_{2N} \): 3.3
- \( P_N \): 1.1
- \( I_{2hd} \): 2.4
- \( P_{hd} \): 0.75
- Frame size: R1

#### ACS550-07-04A1/xxxx-44
- \( I_{2N} \): 4.1
- \( P_N \): 1.5
- \( I_{2hd} \): 3.3
- \( P_{hd} \): 1.1
- Frame size: R1

#### ACS550-07-05A4/xxxx-44
- \( I_{2N} \): 5.4
- \( P_N \): 2.2
- \( I_{2hd} \): 4.1
- \( P_{hd} \): 1.5
- Frame size: R1

#### ACS550-07-06A9/xxxx-44
- \( I_{2N} \): 6.9
- \( P_N \): 3
- \( I_{2hd} \): 5.4
- \( P_{hd} \): 2.2
- Frame size: R1

#### ACS550-07-08A8/xxxx-44
- \( I_{2N} \): 8.8
- \( P_N \): 4
- \( I_{2hd} \): 6.9
- \( P_{hd} \): 3
- Frame size: R1

#### ACS550-07-012A/xxxx-44
- \( I_{2N} \): 11.9
- \( P_N \): 5.5
- \( I_{2hd} \): 11.9
- \( P_{hd} \): 5.5
- Frame size: R2

#### ACS550-07-015A/xxxx-44
- \( I_{2N} \): 15.4
- \( P_N \): 7.5
- \( I_{2hd} \): 15.4
- \( P_{hd} \): 7.5
- Frame size: R2

#### ACS550-07-023A/xxxx-44
- \( I_{2N} \): 23
- \( P_N \): 11
- \( I_{2hd} \): 15.4
- \( P_{hd} \): 7.5
- Frame size: R3

#### ACS550-07-031A/xxxx-44
- \( I_{2N} \): 31
- \( P_N \): 15
- \( I_{2hd} \): 23
- \( P_{hd} \): 11
- Frame size: R3

#### ACS550-07-038A/xxxx-44
- \( I_{2N} \): 38
- \( P_N \): 18.5
- \( I_{2hd} \): 31
- \( P_{hd} \): 15
- Frame size: R3

#### ACS550-07-044A/xxxx-44
- \( I_{2N} \): 44
- \( P_N \): 22
- \( I_{2hd} \): 38
- \( P_{hd} \): 18.5
- Frame size: R4

#### ACS550-07-056A/xxxx-44
- \( I_{2N} \): 56
- \( P_N \): 22
- \( I_{2hd} \): 44
- \( P_{hd} \): 22
- Frame size: R4

#### ACS550-07-072A/xxxx-44
- \( I_{2N} \): 72
- \( P_N \): 30
- \( I_{2hd} \): 59
- \( P_{hd} \): 30
- Frame size: R4

#### ACS550-07-096A/xxxx-44
- \( I_{2N} \): 96
- \( P_N \): 45
- \( I_{2hd} \): 77
- \( P_{hd} \): 37
- Frame size: R5

#### ACS550-07-124A/xxxx-44
- \( I_{2N} \): 124
- \( P_N \): 55
- \( I_{2hd} \): 96
- \( P_{hd} \): 45
- Frame size: R6

#### ACS550-07-157A/xxxx-44
- \( I_{2N} \): 157
- \( P_N \): 75
- \( I_{2hd} \): 124
- \( P_{hd} \): 55
- Frame size: R6

#### ACS550-07-180A/xxxx-44
- \( I_{2N} \): 180
- \( P_N \): 90
- \( I_{2hd} \): 156
- \( P_{hd} \): 75
- Frame size: R6

#### ACS550-07-195A/xxxx-44
- \( I_{2N} \): 195
- \( P_N \): 110
- \( I_{2hd} \): 162
- \( P_{hd} \): 90
- Frame size: R6

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#### Enclosure

**Degree of Protection:**
- IP 21 (Standard)
- IP 22, IP 42, IP 54, IP54R (Optional)

**Paint color:**
- Light beige RAL 7035 semi-gloss

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#### Symbols

**Normal use (110% overloading capability)**
- \( I_{2N} \): Continuous rms current. 10% overload is allowed for one minute every 10 minutes.
- \( P_N \): Typical motor power. The power ratings apply to most IEC 4 motors at the nominal voltage, over loading application (110% overloading capability)

**Heavy-duty use**
- \( I_{2hd} \): Continuous rms current. 50% overload is allowed for one minute every 5 minutes.
- \( P_{hd} \): Typical motor power. The power ratings apply to most IEC 4 motors at the nominal voltage at heavy-duty use.

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#### Sizing

The current ratings are the same regardless of the supply voltage within one voltage range. For achieve the motor’s power rating, the rated output current must higher or equal to the motor’s rated current. If exceeded, the drive will limit the motor’s torque and current automatically. This function protects the overloading of input bridge effectively. For additional:
- The ratings apply in 40° ambient temperature.
- Maximum allowable power of motor axes was limited to 1.5 times of \( P_{hd} \).
## Technical specification

### Main supply connection

<table>
<thead>
<tr>
<th>Voltage</th>
<th>3-phase, 380-480V, +10%/-15% wide voltage wave range, Auto-identification of input line</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency</td>
<td>48 to 63 Hz</td>
</tr>
<tr>
<td>Power range</td>
<td>1.1-110kW</td>
</tr>
<tr>
<td>Power factor</td>
<td>0.98</td>
</tr>
</tbody>
</table>

### Motor connection

<table>
<thead>
<tr>
<th>Voltage</th>
<th>3-phase 0 to input voltage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency</td>
<td>0 to 500 Hz</td>
</tr>
<tr>
<td>Switch frequency</td>
<td></td>
</tr>
<tr>
<td>Standard</td>
<td>Default 4 kHz</td>
</tr>
<tr>
<td>Option</td>
<td>1 kHz, 4 kHz, 8 kHz, 12 kHz</td>
</tr>
<tr>
<td>Acceleration time</td>
<td>0.1to1800 s shaped</td>
</tr>
<tr>
<td>Deceleration time</td>
<td>0.1to1800 s shaped</td>
</tr>
</tbody>
</table>

### Programable control connections

#### Two analog inputs AI1, AI2

- **Voltage signal**: 0(2)to 10 V, R<sub>n</sub>=312kΩ single end
- **Current signal**: 0(4)to 20 mA, R<sub>n</sub>=100Ω single end
- **Potentiometer reference value**: 10 V +/-2% Max.10 mA
- **Maximum delay**: 12...32 ms
- **Resolution**: 0.1%
- **Precision**: +/-1%

#### Two analog outputs

- **Auxiliary voltage**: 0(4)to 20 mA, loading<500W
- **Voltage**: 24V DC +/-10%, Maximum250 mA
- **Frequency**: 12...24 V DC with internal or external supply, PNP and NPN
- **Input impedance**: 2.4 kΩ
- **Maximum delay**: 5 ms +/- 1ms

#### Six digital inputs DI1-DI6

- **Input impedance**: 2.4 kΩ
- **Maximum delay**: 5 ms +/- 1ms

#### Three relay outputs RO1-RO3

- **Maximum switching voltage**: 250 V AC/30 V DC
- **Maximum switching current**: 6 A/30 V DC; 1500 VA/230 VAC
- **Maximum continuous current**: 2 A rms

### Technical specification

- **Ambient temperature**: -15 to 40°C, 40 to 50°C
  - No frost allowed
  - Switch frequency 4 kHz, derating please contact supplier
- **Altitude**
  - Output current: Rated current available at 0 to 1000 m reduced by 1% per 100 m over 1000 m to 2000 m
  - Lower than 95%(without condensation)
- **Relative humidity**: Lower than 95%
- **Protection class**: IP21, IP22, IP42, IP54
- **Enclosure colour**: Light beige RAL 7053 semi-gloss
- **Contamination levels**: No conductive dust allowed.
- **Transportation**: IEC60721-3-1, class1C3(chemical gas), Class 1S3 (solid grain)
- **Storage**: IEC60721-3-2, Class2C3(chemical gas), Class 2S3 (solid grain)
- **Operation**: IEC60721-3-3, Class3C3 (chemical gas), Class 3S3 (solid grain)

### EMC (according to EN61800-3)

1st environment restricted distribution for frame sizes R3, R4 with 75m motor cables and for frame sizes R1, R2, R5, R6 with 100m motor cables.

2nd environment unrestricted distribution with 300m motor cables for frame sizes R1 to R4 and 100m motor cables for frame sizes R5 to R8 as standard.
Cabinet configuration

- Switch fuse (main switch/disconnector)
- Drive module
- Optional equipment on the side plate frame
- U1,V1,W1 Cable terminals
- U2,V2,W2 Cable terminals
- *Line contactor
- Switch fuse handle
- Control panel
- *Emergency Stop and Start/Stop switches
- *Electrical option and terminals
- *Control voltage transformer
- *du/dt filter

*Denotes optional equipment not present on all units.
ACS510-07 Type code
1.1 - 110 kW, Cabinet-built

For example:
1. ACS510-07-072A-4+K454+F250+Q951+M603, denotes the 37kW transformer and Profibus-DP adapter installed inside the cabinet, input the side-contactor, emergency stop, assistant motor fan starter.

2. ACS510-07-012A/025A-4+K454+F250+Q951+M603, denotes the 5.5kW and 11kW transformer with Profibus-DP adapter installed inside the cabinet, input the side-contactor, emergency stop, assistant motor fan starter.

Option code
I/O option One slot available for I/O options
☐ L511 Relay output extension OREL-01
☐ L504 Additional I/O terminals

Fieldbus One slot available for fieldbus
☐ K451 DeviceNet RDNA-01
☐ K452 LONWorks RLON-01
☐ K454 Profibus-DP RPBA-01
☐ K457 CANOpen RCAN-01
☐ K462 ControlNet RCNA-01

Protection class
☐ B053 IP22(When selected, cabinet R3-R6 with connection to air outlet duct )
☐ B054 IP42(When selected, cabinet R3-R6 with connection to air outlet duct )
☐ B055 IP54(When selected, all type of cabinets are with connection to air outlet duct)

Filter
☐ E255 du/dt filter (When selected, cabinet R3-R6 with connection to air outlet duct )

Resistor braking
☐ D150+D151 Brake chopper +braking resistor
When selected, a 400mm cabinet will be added
This option is noneffective for IP54
This option is noneffective for cabinet R1/R2

Line options
☐ F250+Q951 Line contactor + emergency stop
☐ F255 MCCB F255 will instead of the main fuse switch, but the handle is inside the cabinet.

Cabling
☐ H351+H353 Top entry + top exit

Cabinet options
☐ G300 Cabinet heater (external supply)
☐ G307 Terminals for external control voltage (UPS)
☐ G313 Output for motor heater (external supply)

Language of manual
☐ R700 English document

Control panel
☐ J404 Basic control panel ACS-CP-C

Starters for auxiliary motor fan
☐ M600 1,...,1.6 A
☐ M601 1.6...,2.5 A
☐ M602 2.5...,4A
☐ M603 4...,6.3 A
☐ M604 6.3...,10 A
☐ M605 10...,16 A
### ACS550-07 Type code

**1.1 - 110 kW, Cabinet-built**

07=cabinet built(R1-R4:400mm,R5-R6:600mm),IP21,switch fuse with Gg fuses,control panel ACS-CP-D,with power connection I/O/terminals,bottom entry and exit of cables,one set of manuals.

#### Size (module1)

<table>
<thead>
<tr>
<th>Size</th>
<th>R1</th>
<th>R2</th>
<th>R3</th>
<th>R4</th>
<th>R5</th>
<th>R6</th>
</tr>
</thead>
<tbody>
<tr>
<td>400V</td>
<td>03A3</td>
<td>04A1</td>
<td>05A4</td>
<td>015A</td>
<td>038A</td>
<td>044A</td>
</tr>
<tr>
<td></td>
<td>023A</td>
<td>031A</td>
<td>044A</td>
<td>059A</td>
<td>072A</td>
<td>096A</td>
</tr>
<tr>
<td></td>
<td>06A9</td>
<td>08A8</td>
<td>012A</td>
<td>124A</td>
<td>157A</td>
<td>180A</td>
</tr>
<tr>
<td></td>
<td>180A</td>
<td>195A</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Choose module 2 only when module 1 is R1/R2, that means only if the module frame size is R1/R2, the cabinet can install 2 modules.

#### Size (Module2)

<table>
<thead>
<tr>
<th>Size</th>
<th>R1</th>
<th>R2</th>
</tr>
</thead>
<tbody>
<tr>
<td>400V</td>
<td>03A3</td>
<td>04A1</td>
</tr>
<tr>
<td></td>
<td>05A4</td>
<td>015A</td>
</tr>
<tr>
<td></td>
<td>038A</td>
<td>044A</td>
</tr>
<tr>
<td></td>
<td>023A</td>
<td>031A</td>
</tr>
</tbody>
</table>

#### Voltage rating

<table>
<thead>
<tr>
<th>Voltage rating</th>
<th>4=400V</th>
</tr>
</thead>
</table>

### Option code

#### I/O options

- **L511**: Relay output extension
- **L504**: Additional I/O terminals
- **L502**: Pulse encoder module

#### Fieldbus

- **K451**: DeviceNet
- **K452**: LONWorks
- **K454**: Profinet-DP
- **K457**: CANopen
- **K462**: ControlNet

#### Protection class

- **B053**: IP22 (When selected, cabinet R3-R6 with connection to air outlet duct)
- **B054**: IP42 (When selected, cabinet R3-R6 with connection to air outlet duct)
- **B055**: IP54 (When selected, all type of cabinets are with connection to air outlet duct)

#### Filter

- **E205**: du/dt filter (When selected, cabinet R3-R6 with connection to air outlet duct)

#### Resistor braking

- **D150+D151**: Brake chopper + braking resistor

#### Line options

- **F250+Q951**: Line contactor + emergency stop
- **F255**: MCCB

#### Cabling

- **H351+H353**: Top entry + top exit

#### Cabinet options

- **G300**: Cabinet heater (external supply)
- **G307**: Terminals for external control voltage (UPS)
- **G313**: Output for motor heater (external supply)

#### Language of manual

- **R700**: English document

#### Control panel

- **J404**: Basic control panel

#### Starter for auxiliary motor fan

<table>
<thead>
<tr>
<th>Starter</th>
<th>1...1.6 A</th>
<th>1.6...2.5 A</th>
<th>2.5...4A</th>
<th>4...6.3 A</th>
<th>6.3...10 A</th>
<th>10...16 A</th>
</tr>
</thead>
<tbody>
<tr>
<td>M600</td>
<td></td>
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<tr>
<td>M601</td>
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<td>M603</td>
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<td>M605</td>
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</table>

For example:

1. **ACS550-07-072A-4+K454+F250+Q951+M603**, denotes the 37kW transformer and Profinet-DP adapter installed inside the cabinet, input the side-contactor, emergency stop, assistant motor fan starter.

2. **ACS550-07-012A/023A-4+K454+F250+Q951+M603**, denotes the 5.5kW and 11kW transformer with Profinet-DP adapter installed inside the cabinet, input the side-contactor, emergency stop, assistant motor fan starter.

F255 will instead of the main fuse switch, but the handle is inside the cabinet.