ABB industrial drives

Description
Cabinet Options for ACS800-07/U7/17/37

Options covered in this manual

Cabinet Options for ACS800-07/U7/17/37

Description

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Introduction to the manual

What this chapter contains

The chapter describes the manual in short.

Applicability

The manual applies to the following air-cooled cabinet installed drives: ACS800-07, ACS800-U7, ACS800-17, ACS800-37. The options concerned are listed on the inside of the front cover.

Availability of the options

Note: All options described in this manual are not available for all drive types. Check the availability from *ACS800 Ordering Information* (3AFE64556568), or with the ACS800 Product Configurator (configuring tool for internal use).

Safety instructions

WARNING! Follow the safety instructions given in the hardware manual and other manuals. Ignoring the instructions can cause physical injury or death, or damage to the equipment.

Target audience

The manual is intended for ABB sales and sales support personnel and drive application engineers.

Purpose of the manual

The purpose of the manual is to introduce cabinet options which have not their own manuals or are not described in the hardware manual or technical catalog.

Related documents

- Drive hardware manuals
- Cabinet option manuals
- Circuit diagrams delivered with the drive

Note: You can create circuit diagrams with the ACS800 Product Configurator (configuring tool for internal use).

Contents

The manual lists the standard cabinet features of different drive types and describes the available options in alphabetic order.

Standard features

Drive type	Frames	Features when no options are selected
ACS800-07 (45 to 560 kW)	R5, R6, R7, R8	IP21 (UL type 1), main switch fuse with aR fuses, 230 V AC control voltage, control panel CDP312R, no EMC filter, standard control program, bottom entry and exit of cables, cable lead through entry, boards without coating, one set of default language documents
ACS800-U7 (50 to 600 hp)	R5, R6, R7, R8	UL type 1 (IP21), US type main switch fuse with Class T or L fuses, 115 V AC control voltage, control panel CDP312R, no EMC filter, standard control program (US), common mode filter in frame R8 (+E208), top entry and exit of cables, cable conduit entry, one set of default language documents
ACS800-07 (500 to 2800 kW)	n×R8i	IP21 (UL type 1), main switch inside the diode supply module, no AC fuses, 230 V AC auxiliary control voltage, control panel CDP312R, standard control program, du/dt filtering (+E205), common mode filtering (+E208), EMC filtering (Category 3, TN or IT systems, +E210), bottom entry and exit of cables, cable lead through entry, coated boards, one set of default language documents
ACS800-17 (55 to 2500 kW)	R6	IP21 (UL type 1), main switch fuse with aR fuses, 230 V AC auxiliary control voltage, no EMC filter, standard control program, bottom entry and exit of cables, cable lead through entry, coated boards, one set of default language documents
	R7i, R8i	IP21 (UL type 1), main switch fuse with aR fuses, line contactor, 230 V AC auxiliary control voltage, control panel CDP312R, standard control program, EMC filtering (Category 3, TN or IT systems, +E210), du/dt filtering in 690 V R8i (+E205), common mode filtering (+E208), bottom entry and exit of cables, cable lead through entry, coated boards, one set of default language documents
	n×R8i	IP21 (UL type 1), air circuit breaker, aR fuses, 230 V AC auxiliary control voltage, control panel CDP312R, RDCO-03, EMC filtering (Category 3, TN systems, +E200), du/dt filtering (+E205), common mode filtering (+E208), standard control program, bottom entry and exit of cables, cable lead through entry, coated boards, one set of default language documents
ACS800-37 (55 to 2700 kW)	R6	IP21 (UL type 1), main switch fuse with aR fuses, 230 V AC auxiliary control voltage, RDCO-03, control panel CDP312R, no EMC filter, standard control program, bottom entry and exit of cables, cable lead through entry, coated boards, one set of default language documents
	R7i, R8i	IP21 (UL type 1), main switch fuse with aR fuses, line contactor, 230 V AC auxiliary control voltage, RDCO-03, control panel CDP312R, EMC filtering (Category 3, TN or IT systems, +E210), du/dt filtering in 690 V R8i (+E205), common mode filtering (+E208), standard control program, bottom entry and exit of cables, cable lead through entry, coated boards, one set of default language documents
	n×R8i	IP21 (UL type 1), air circuit breaker, aR fuses, 230 V AC auxiliary control voltage, RDCO-03, control panel CDP312R, EMC filtering (Category 3 in TN systems, +E200), du/dt filtering (+E205), common mode filtering (+E208), standard control program, bottom entry and exit of cables, cable lead through entry, coated boards, one set of default language documents

Note: The codes of the options included in the standard unit (when no options are selected on ordering) are not printed on the type designation label.

More information: *ACS800 Ordering Information* (3AFE64556568)

Degree of protection (B)

General

The degree of protection of the standard cabinet is IP21. The air outlet at the top of the cabinet is covered with a brass grating. With doors open, the degree of protection of the standard cabinet and all cabinet options is IP20. The live parts inside the cabinet are protected against contact with clear plastic shrouds or metallic gratings. The optional degree of protection may add extra fans, gratings and air filters to the cabinet. Examples of cabinets with different degrees of protection are shown below.

IP21

IP42

IP54 marine cabinet

Definitions

According to IEC/EN 60529, the degree of protection is indicated by an IP code where the first numeral means protection against ingress of solid foreign objects, and the second numeral protection against ingress of water. The IP codes of the standard cabinet and options covered in this manual are defined below.

IP code	The equipment is protected …	
	First numeral	Second numeral
IP20	against ingress of solid foreign objects ≥ 12.5 mm diameter *	not protected against water
IP21	against ingress of solid foreign objects ≥ 12.5 mm diameter *	against vertically dripping water
IP22	against ingress of solid foreign objects ≥ 12.5 mm diameter *	against dripping (15° tilting) water
IP42	against ingress of solid foreign objects ≥ 1 mm	against dripping (15° tilting) water
IP54	dust-protected	against splashing water

* meaning for protection of persons: against access to hazardous parts with finger

IP22 (B053)

This option provides the degree of protection of IP22 (UL type 1). It adds plastic gratings and fabric filter mats on the standard cabinet air inlet gratings.

ACS800-07 frames R7 and R8: The option contains an additional fan.

IP42 (B054)

This option provides the degree of protection of IP42 (UL type 2). It equips the cabinet air inlets with filter housings containing fabric air filter mats between the inner metallic grating and the outer plastic grating.

ACS800-07 frame R6: The option may contain an additional fan.

ACS800-07 frames R7 and R8: The option contains an additional fan.

IP54 (B055)

This option provides the degree of protection of IP54 (UL type 12). It equips the cabinet air inlets with filter housings containing folded board air filter mats between the inner metallic grating and the outer plastic grating. Additional fans on the cabinet roof of the power cubicles are included.

IP54R (B059)

This option provides the degree of protection of IP54R (UL type 12) with a collar for fitting an air outlet duct. The collar is located on the cabinet roof either directly or on the extra fan housing (ACS800-07 frames R7 and R8). The option equips the cabinet air inlets with filter housings containing folded board air filter mats between the inner metallic grating and the outer plastic grating.

Note: The ventilation system must keep the static pressure in the air outlet duct sufficiently below the pressure of the room where the drive is located in order that the cabinet fans can produce the required air flow through the cabinet. Ensure that no dirty or moist air is able to flow backward to the drive in any case, even during off-time or while servicing the drive or the ventilation system.

Calculating the required static pressure difference

The required static pressure difference between the exit air duct and the drive installation room can be calculated as follows:

$$\Delta p_s = (1.5\ldots2) \cdot p_d$$

where

$p_d = 0.5 \cdot \rho \cdot v_m^2$

$v_m = q / A_c$

p_d ≙ dynamic pressure

ρ ≙ air density (kg/m^3)

v_m ≙ average air velocity in the exit duct(s) (m/s)

q ≙ rated air flow of the drive (m^3/s)

A_c ≙ cross-sectional area of the exit duct(s) (m^2)

Example

The cabinet has 3 exit openings of 315 mm diameter. The rated air flow of the cabinet is 4650 m^3/h =1.3 m^3/s.

$A_c = 3 \cdot 0.315^2 \cdot \pi / 4 = 0.234$ m^2

$v_m = q / A_t = 1.3 / 0.234 = 5.5$ m/s

$p_d = 0.5 \cdot \rho \cdot U_m^2 = 0.5 \cdot 1.1 \cdot 5.5^2 = 17$ Pa

The required pressure in the exit air duct is then, 1.5…2 • 17 Pa = 26…34 Pa, below the pressure in the room.

More information: Contact ABB.

Construction (C)

Marine construction (C121)

The option includes the following accessories and features:

- reinforced mechanics
- grab railings
- door flush bolt which allows the door to open 90 degrees and prevents it from slamming close
- self-extinctive materials
- flat bars at base of the cabinet for fastening
- fastening braces at the top of the cabinet.

Required options: Appropriate additional wire marking option (+G338…+G342, page 30) according to the requirements of the classification society

Related options: halogen-free materials and wiring (+G330)

More information: Hardware manual

UL listed (C129)

The option includes factory inspection of the cabinet according to UL 508C and the following accessories and features:

- US type main switch fuse or main disconnector and AC fuses (n×R8i)
- top entry and exit of cables
- US cable conduit entry (plain plate without ready-made holes)
- 115 VAC control voltage when needed
- all components UL Listed/Recognized
- maximum supply voltage 600 V.

Related options: +H358 (cable conduit entry)

CSA approved (C134)

The option includes the following accessories and features:

- US/CSA type main switch fuse
- bottom entry and exit of cables
- US cable conduit entry (plain plate without ready-made holes)
- 115 VAC control voltage when needed
- all components UL/CSA listed/recognized
- maximum supply voltage 600 V.

Resistor braking (D)

Brake choppers (D150)

The option contains brake chopper(s) for feeding braking energy to brake resistors to be dissipated there.

The customer must connect brake resistors to the drive.

ACS800-07/U7 frames R5 to R8: The brake choppers are located inside the drive module.

Standard option for ACS800-07 frame 2×R8i and ACS800-37 frames up to 2×R8i. The brake choppers are located in their own cubicles. The number of the choppers depends on the drive size. The choppers are of type NBRA.

ACS800-07 and ACS800-37 frames 3×R8i and above: Application-engineered option

Not available for ACS800-17.

More information: Hardware manual and *NBRA-6xx Braking Choppers Installation and Start-up Guide* (3AFY58920541 [English])

Brake resistors (D151)

The option contains brake resistors. The number of the brake resistors depends on the drive size. The resistors are of type SAFUR.

ACS800-07 frames R5 to R8 and ACS800-37: Not available with options +B055, B059, +C121, +C129 and +C134.

Standard option for ACS800-07 frame 2×R8i and ACS800-37 frames up to 2×R8i.

ACS800-07 and ACS800-37 frames 3×R8i and above: Application-engineered option

ACS800-07 frames n×R8i: Not available with options +B055, +B059, +C129 and +C134. With marine construction (+C121) available only for 500 V and 690 V units.

ACS800-U7 and ACS800-17: Not available.

More information: Hardware manual

Filters (E)

General about EMC filtering

The EMC filter options protect the drive and equipment connected to the electrical power system against radio-frequency interference. This means that the drive operates without problems and does not disturb or interfere with any other product or system within its locality.

Definitions

EMC stands for electromagnetic compatibility.

First environment includes establishments connected to a low-voltage network which supplies buildings used for domestic purposes.

Second environment includes establishments connected to a network not supplying domestic premises.

Drive of category C2: drive of rated voltage less than 1000 V and intended to be installed and commissioned only by a professional when used in the first environment.

Drive of category C3: drive of rated voltage less than 1000 V and intended for use in the second environment and not intended for use in the first environment.

Drive of category C4: drive of rated voltage equal to or above 1000 V, or rated current equal to or above 400 A, or intended for use in complex systems in the second environment.

TN system means a grounded electrical power system. *IT system* means an ungrounded electrical power system.

More information: *Technical Guide No. 3 – EMC Compliant Installation and Configuration for a Power Drive System* (3AFE61348280 [English])

EMC filter (E200)

This option provides electromagnetic compatibility for drives of category 3 in TN (grounded) systems.

Option for ACS800-07 frame R5 and ACS800-U7/17/37 frame R6.

Not available for

- ACS800-07 frames R6 to R8 and n×R8i
- ACS800-U7 frames R6 to R8
- ACS800-17/37 frames R7i, R8i and n×R8i.

EMC filter (E202)

This option provides electromagnetic compatibility for drives of category 2 in TN (grounded) systems.

ACS800-07/U7 frames R7 and R8: The option adds the cabinet width.

ACS800-17/37 frames R7i and R8i: Requires +H359.

ACS800-07/U7/17/37 frames R5 to R8, R7i, R8i: Not available for 690 V units.

ACS800-07 frames n×R8i: Available only for -0610-3 and -0760-5 equipped with 6-pulse supply. Requires +F253 and +F260.

ACS800-17 frames n×R8i: Available only for -0640-3 and -0770-3, -0780-5, -0870-5.

ACS800-37 frames n×R8i: Available only for -0640-3, -0770-3, -0780-5, -0870-5.

EMC filter (E210)

This option provides electromagnetic compatibility for drives of category 3 in TN (grounded) systems and IT (ungrounded) systems.

Option for ACS800-07/U7 frames R6 to R8.

Standard for ACS800-07 frames n×R8i and ACS800-17/37 other frames than R6.

Not available for ACS800-17/37 frame R6.

du/dt filter (E205)

The du/dt filter protects the motor insulating system by reducing the voltage rise speed at the motor terminals. The filter also protects the motor bearings by reducing the bearing currents.

Option for ACS800-07/17/37 frames R6 to R8.

Standard for ACS800-07/17/37 frames n×R8i.

More information on when the option is required: See section *Checking the compatibility of the motor and the drive* in the drive hardware manual.

Sine output filter (E206)

The option consists of single- or threephase reactors and delta- or star-connected capacitors at the output of the drive. It is a low-pass filter that suppresses the high frequency components of the drive output. The filter is fitted in a separate cubicle with a cooling fan which rotates whenever the drive is powered. The available output current of some drive types may be reduced.

ACS800-07: Not available for frames R5 and R6 except 0135-3, 0205-3, 0165-5, 0255-5, 0145-7 and 0175-7. Not available for 0260-7, 0490-7, 0610-7 or with C121, C129 or E205.

ACS800-U7: Not available.

ACS800-07 frames n×R8i: Not available with the special construction options +C121, +C129 or +C134.

ACS800-17 and ACS800-37: Not available for frame R6 or with C121 or C129.

More information: *ACS800 Sine Filters User's Manual* (3AFE68389178 [English]).

Common mode filter (E208)

The common mode filter contains ferrite rings mounted around the drive DC busbars. The filter protects the motor bearings by reducing the bearing currents.

ACS800-07 and ACS800-U7: Not available for frames R5 and R6 except 0135-3, 0165-3, 0205-3, 0165-5, 0205-5, 0255-5, 0145-7, 0175-7 and 0205-7.

ACS800-17 and ACS800-37: Not available for frame R6.

Standard for

- ACS800-07 frames n×R8i and ACS800-U7 frame R8
- ACS800-17/37 frames R7i, R8i and n×R8i.

More information on when the option is required: See section *Checking the compatibility of the motor and the drive* in the drive hardware manual.

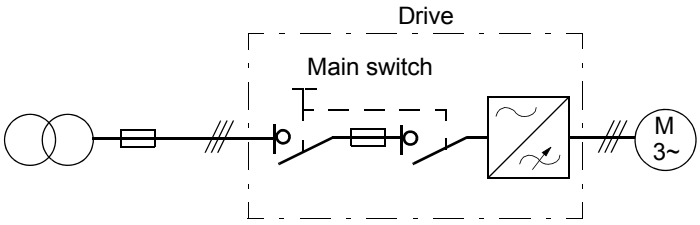
Line options (F)

Standard features of different drive types

ACS800-07 frames R5 to R8

Standard features

The cabinet is equipped with a switch fuse type of main switch which contains ultra-rapid semiconductor fuses (Class aR).



Related options: +F251 (gG fuses), F250 (line contactor)

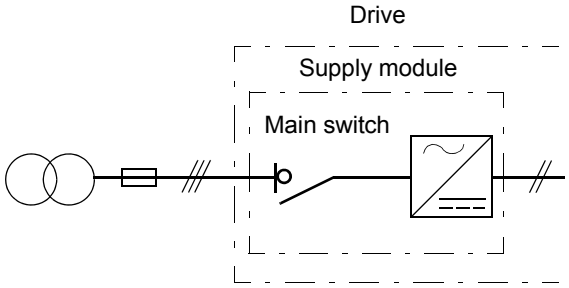
ACS800-U7 frames R6 to R8

The cabinet is equipped with an US switch fuse type of main switch which contains Class T or L fuses.

ACS800-07 frames n×R8i

Standard features

The supply modules are equipped with a main switch but the cabinet does not contain AC fuses. The customer must install external fuses for the drive.



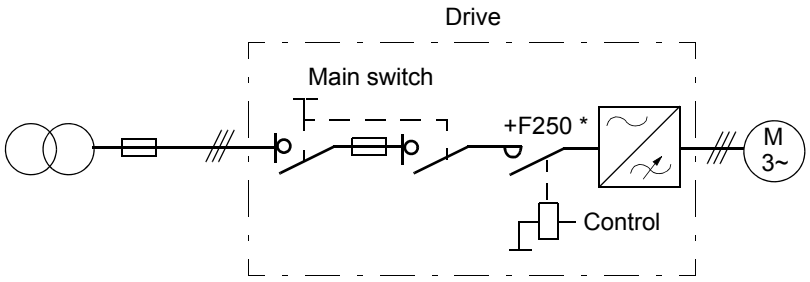
Related options: +F260 (aR line fuses) and +F253 (load-switch)

More information: *ACS800-07 Hardware Manual* (3AFE64731165 [English])

ACS800-17 and ACS800-37 frames R6, R7i and R8i

Standard features

The cabinet is equipped with a switch fuse type of main switch which contains ultra-rapid semiconductor fuses (Class aR), and with a line contactor.



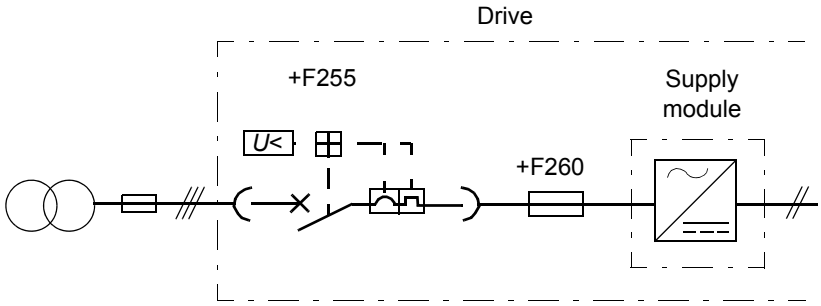
* optional in frame R6, standard in frames R7i and R8i

More information: Hardware manual

ACS800-17 and ACS800-37 frames n×R8i

Standard features

The cabinet is equipped with an air circuit breaker and aR fuses.

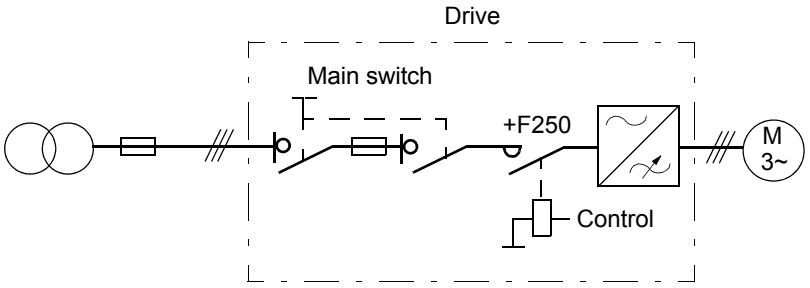


More information: Hardware manual

Line contactor (F250)

This option provides a line contactor with a manual operating switch on the cabinet door.

ACS800-07/U7 frames R5 to R8



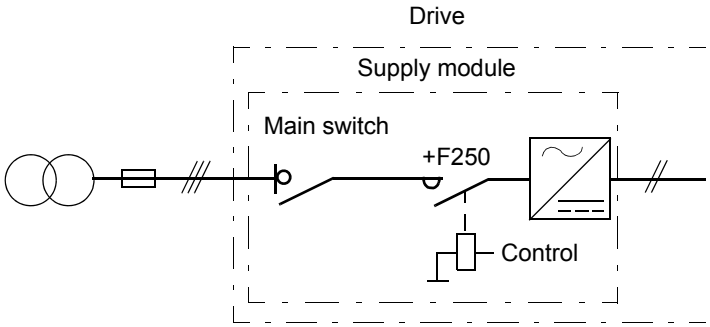
Standard for ACS800-17/37 frames R6, R7i and R8i.

Other required options: Emergency stop function +Q951 or Q952, see page *39*.

More information: Hardware manual, *ACS800 Safety Options Hardware Manual* (3AFE68578027[English]).

Frames n×R8i (ACS800-07)

This option provides a line contactor inside each supply module.



Other required options: Emergency stop function +Q951 or Q952, see page *39*.

Not available for ACS800-17 and ACS800-37.

More information: Hardware manual, *ACS800 Safety Options Hardware Manual* (3AFE68578027[English]).

gG line fuses (F251)

The option replaces the aR AC fuses with gG fuses. See the hardware manual in which cases gG fuses are allowed.

Available only for ACS800-07 frames R5 to R8.

aR line fuses (F260)

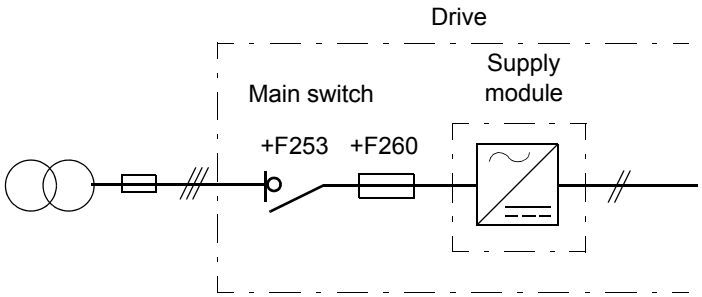
Standard for ACS800-07 frames R5 to R8 and for ACS800-17/37 frames n×R8i.

Option for ACS800-07 frames n×R8i.

Required with +F253 and +F255.

Load-switch (F253)

This option provides a load switch for ACS800-07 frames n×R8i. With the option, the supply modules are not equipped with internal load switches.



Option for ACS800-07 frames n×R8i.

Other required options: +F260.

Related options: +F259

Not available for ACS800-07/U7 frames R5 to R8, ACS800-17 and ACS800-37.

Load-switch for 12-pulse units (+A004+F253)

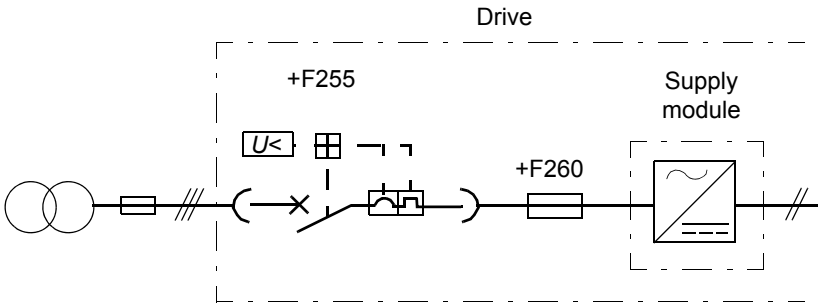
This option provides a load switch (+A004+F253) or two load switches (+A004+F253+G317) for ACS800-07 frames n×R8i. With the option, the supply modules are not equipped with internal load switches.

An additional cubicle is included with options +G317 (busbar supply terminals), +C129 and +C134.

Air circuit breaker (F255)

This option provides an air circuit breaker. The withdrawable breaker provides an air gap for electrical isolation. The trip characteristics can be configured with DIP switches on the breaker front panel. The air circuit breaker is used for overload protection whereas the fuses protect against short-circuits.

With this option, the internal load switches are removed from the supply modules.



Option for ACS800-07 frames n×R8i.

Standard for ACS800-17 and ACS800-37.

Other required options: +F260.

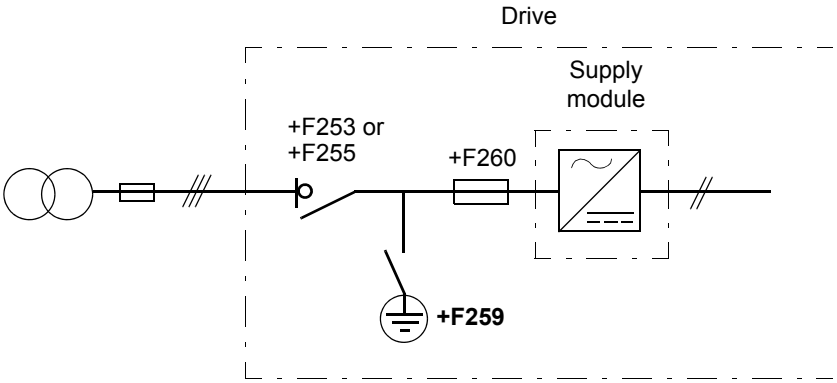
Related options: +F259 and emergency stop functions +Q951, Q951, see page 39.

Not available for ACS800-07 frames R5 to R8 and other than 6-pulse n×R8i units. Not available with frame size 1×D4 + n×R8i as standard option.

More information: See *ACS800 Safety Options Hardware Manual* (3AFE68578027[English]).

Grounding switch (F259)

The option provides a switch with magnetic or electric locking for temporary grounding. The main switch of the cabinet (air circuit breaker or load switch) and the grounding switch are interlocked so that both cannot be closed at the same time. The ground switch handle is located on the cabinet door.



Other options required: +F253 or F255

Not available for

- ACS800-07/U7/17/37 frames R5 to R8, R7i and R8i
- ACS800-07 frames n×R8i with options +C129 or +C134
- ACS800-17/37 frames n×R8i with option +C129.

Availability table

The following tables shows which line options are standard, optional or not available for different drive types.

Option code	Description	ACS800-07 Frames R5 to R8	ACS800-07 Frames n×R8i	ACS800-17 ACS800-37
-	Switch fuse	Standard	-	Standard 3)
-	Internal main switch	N/A	Standard when there is no load switch option	N/A
F250	Line contactor	Option	Option	Standard 3)
F251	gG line fuses	Option	N/A	N/A
F260	aR line fuses	Standard	Option 1)	Standard
F253	Load switch	N/A	Option 2)	N/A
F255	Air circuit breaker	N/A	Option	Standard 3)
F259	Grounding switch	N/A	Option	Option for frames n×R8i

1) The customer must take care of the protection according to the instructions given in *ACS800-07 Hardware Manual* (3AFE64731165 [English])

2) With load switch option, the internal main switch is removed from the supply module

3) Frames n×R8i are equipped with an air circuit breaker as standard. Frames R6, R7i and R8i are equipped with a switch fuse.

Heaters, external control voltage (G)

Cabinet heater with external supply (G300)

What the option contains

The option contains:

- 50 W heating elements in the cubicles where needed
- load switch for providing electrical isolation during service
- miniature circuit breaker for overcurrent protection
- terminal block for external power supply.

Description

The heater prevents humidity condensation inside the cabinet when the drive is not powered. The power output of the semiconductor-type heating elements depends on the environmental temperature.

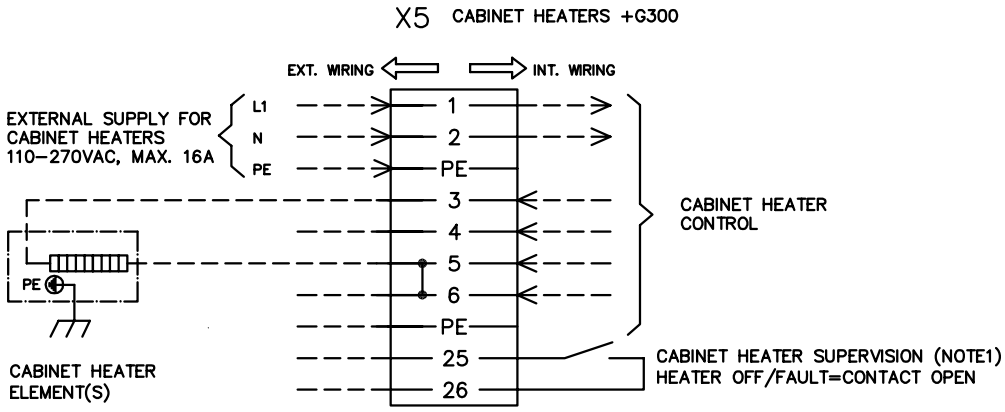
ACS800-07 frames R5 to R8: The customer must switch the heating off when it is not needed by cutting the supply voltage off.

ACS800-07 frames n×R8i, ACS800-17 and ACS800-37: The drive switches the heating off when it is running.

The customer must supply the heater from an external 110 – 240 V AC/DC power source.

Not available with +C134.

Example connection diagram



Note 1: Contact load capacity AC-14, 230 VAC, 2 A

115 V AC control voltage (G304)

The option replaces control voltage 230 VAC with 115 VAC. 115 VAC control voltage is provided when needed with options +C129 and +C134.

Terminals for external control voltage (G307)

The option provides terminals for connecting external control voltage.

Note: The external control voltage is not supplied to the fans and, in ACS800-07 frames n×R8i, to the Diode Supply System Board (DSSB).

Output for motor heater (G313)

The option contains a padlockable load switch, a miniature circuit breaker for short circuit protection and a terminal block for external supply and heating element(s) connection.

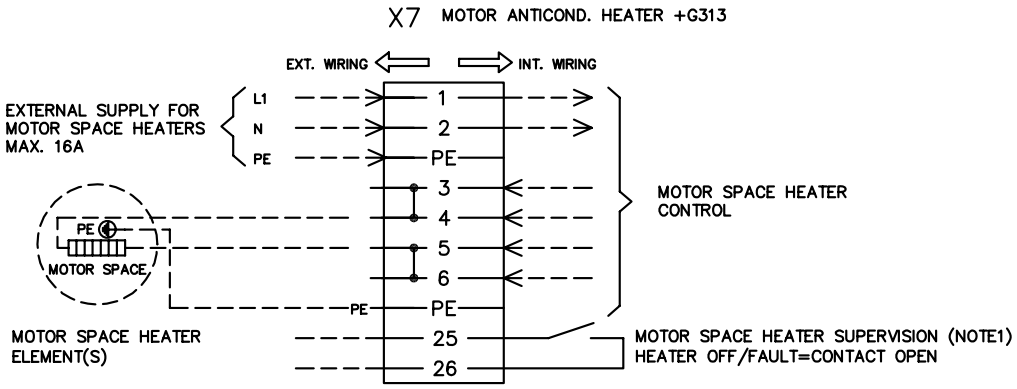
Frames R5 to R8: The customer controls the heating elements in the motor windings on and off with the external supply.

Frames n×R8i: The drive controls the heating elements on when the drive is not running and off when the drive is on.

The power and voltage of the motor heater depend on the motor.

More information: For the terminal block type, see *Additional terminal block X2 (+L504)*, page *33*.

Example connection diagram:



Note 1: Contact load capacity AC-14, 230 VAC, 2 A

Busbar supply terminals (G317)

The option provides input busbar terminals that are suitable for connecting busbar trunking systems.

The option is available only for ACS800-07/17/37 frames n×R8i.

Other required options: +F253 or F255.

Halogen-free materials and wiring (G330)

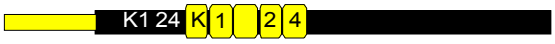
The option provides halogen-free cable ducts, control wires and wire sleeves, thus reducing toxic fire gases.

Additional wire markings (G338…G342)

As standard, only drive input and output terminals, plug-in connectors, fibre optic connectors and ribbon cables are marked.

The wire marking options are described below.

Option code	Additional markings	Wire
G338	Equipment pin numbers are printed on wires between modules and on wires connected to equipment.	T3/S
G339	Equipment and terminal block pin numbers are printed on wires between modules and on wires connected to equipment and terminal blocks. Main circuit conductors are marked.	T3/S

Option code	Additional markings	Wire
G340	Equipment pin numbers are marked with rings on wires between modules and on wires connected to equipment, terminal blocks and detachable screw terminals. Main circuit conductors are marked.	
G341	Equipment identifications and terminal block pin numbers are marked by rings on optical fibres, on wires between modules, and on wires connected to equipment, terminal blocks and detachable screw terminals. Main circuit conductors and also short and obvious connections are marked.	 **Note:** Even wires with equipment and pin identifiers ready printed on the wire insulation are marked with rings.
G342	Equipment identifications and terminal block pin numbers and remote addresses are marked by rings on optical fibres, on wires between modules, and on wires connected to equipment, terminal blocks and detachable screw terminals. Main circuit conductors and also short and obvious connections are marked.	 **Note:** Even wires with equipment and pin identifiers ready printed on the wire insulation are marked with rings.

More information: Internal document *Marking of conductors* (3AFE000492 [English, Finnish])

Cabling (H)

Top entry (H351)

The option contains power and control cable entries at the cabinet roof with grommets for preserving the degree of protection, and EMC sleeves and cushions.

Top exit (H353)

The option contains power and control cable entries at the base of the cabinet with grommets for preserving the degree of protection, and EMC sleeves and cushions.

US/UK gland/conduit plate (H358)

The option provides US/UK conduit plates (plain 3 m steel plates without any ready-made holes).

US/UK conduit plates are provided as standard with options +C129 and +C134 instead of the normal cable entries with grommets.

Common motor terminal cubicle (H359)

The option provides an additional cubicle which contains terminals for motor output (top or bottom exit) and ball-stud terminals for temporary grounding.

Not available for ACS800-07 frames R5 to R8, ACS800-U7, ACS800-17 and ACS800-37.

I/O options (L)

I/O extension and interface modules (+L500, +L501, …)

Analog and digital I/O extension modules and encoder and resolver interface modules are inserted in the optional module slots on the drive control unit.

More information: See the user's manuals of the options.

Additional terminal block X2 (+L504)

Description

The standard terminal blocks of the drive I/O board are wired to the additional terminal block at the factory for customer control wiring.

Cables accepted by the terminals:

- solid wire 0.08 to 4 mm^2
- stranded wire with ferrule 0.25 to 2.5 mm^2
- stranded wire without ferrule 0.08 to 2.5 mm^2
- 28 to 12 AWG.

Stripping length: 10 mm.

Related options: The terminal blocks of all cabinet options (except +M600 to +M606) are of the same type as terminal block X2.

Note: The optional modules inserted in the slots of the I/O board are not wired to the additional terminal block. The customer must connect the optional module control wires directly to the modules.

Thermistor relays (+L505, +2L505)

What the option contains

The standard thermistor relay option includes one (+L505) or two (+2L505) PTC relays and an auxiliary relay wired to a terminal block. Other numbers of thermistor relays must be ordered as application engineered.

Description

The thermistor relay is used for the overtemperature supervision of motors equipped with PTC thermistors. When the motor temperature rises to the thermistor wake-up level, the thermistor resistance increases sharply. The relay detects the change and indicates motor overtemperature through its auxiliary contacts.

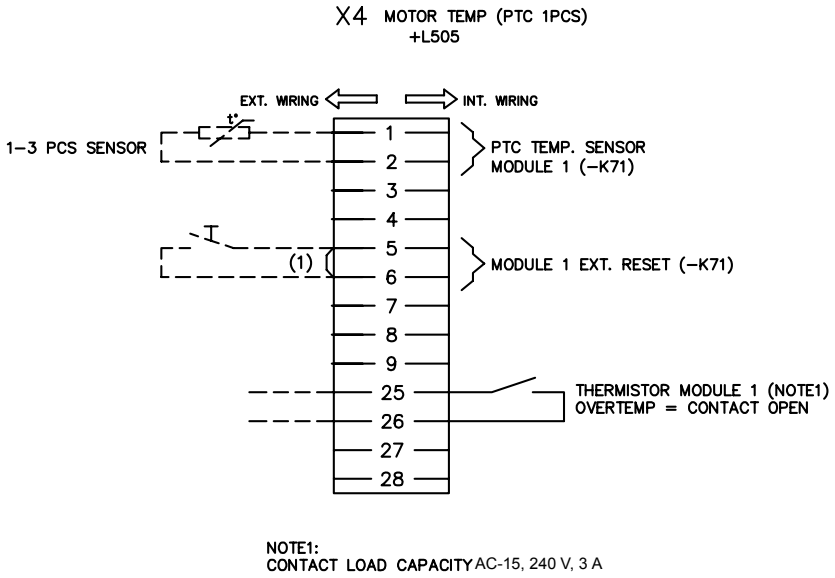
The thermistor relay provides terminals for the measuring circuit (series-connected the PTC thermistors) and terminals of one normally open contact. The relay can be reset by pressing its reset button or the resetting can be wired externally.

The customer connects PTC sensors to the thermistor relay and the terminals of the auxiliary relay of the normally open contact, for example, to

- main breaker control circuit of the drive for opening the breaker in case of motor overtemperature or
- appropriate digital input of the drive for tripping the drive and generating a fault message in case of motor overtemperature or
- customer control circuit.

More information: See the firmware manual for parameter settings and connection possibilities and the circuit diagrams delivered with the drive for the actual wiring.

Example connection diagram



Pt100 relays (+3L506, +5L506, +8L506)

What the option contains

The standard Pt100 relay option includes three (+3L506), five (+5L506) or eight (+8L506) Pt100 temperature monitoring relays and an auxiliary relay wired to a terminal block. Other numbers of Pt100 relays must be ordered as application engineered.

Description

The Pt100 relay is used for the overtemperature supervision of motors equipped with Pt100 sensors. For example, three sensors measure the temperature of the motor windings and two sensors the temperature of the bearings. The sensor resistance increases linearly as the temperature rises. The Pt100 relay releases at an adjustable wake-up level and indicates motor overtemperature through its change-over contact.

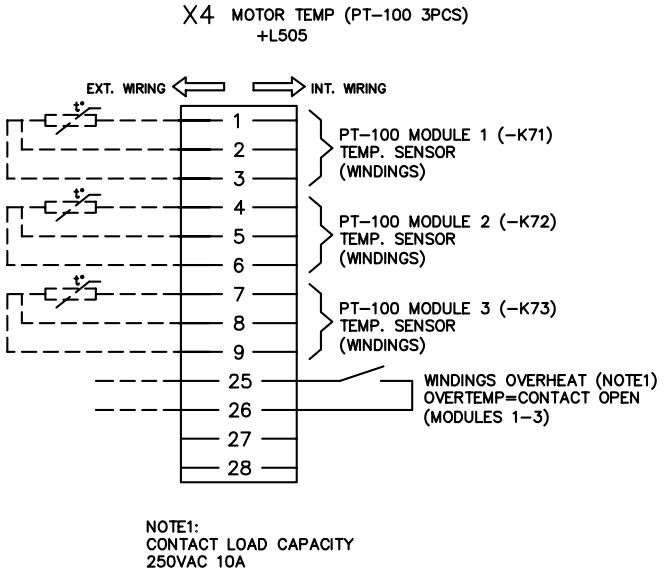
The Pt100 relay provides connection terminals for one Pt100 temperature sensor and terminals of one normally open and one normally closed contact.

The customer connects Pt100 sensors to the Pt100 relays (one sensor per relay) and the auxiliary relays of the normally open contacts of the Pt100 relays, for example, to

- main breaker control circuit of the drive for opening the breaker in case of motor overtemperature or
- appropriate digital input of the drive for tripping the drive and generating a fault message in case of motor overtemperature or
- customer control circuit.

More information: See the firmware manual for parameter settings and connection possibilities and the circuit diagrams delivered with the drive for the actual wiring.

Example connection diagram



Setting the alarm and trip levels of the Pt100 relay

The alarm and trip levels of the Pt100 relay must be set as low as possible based on the operating temperature and test results of the machine. The trip level can be set, for example, 10 °C higher than what the temperature of the machine is at maximal load in the maximum environmental temperature.

The operating temperatures of the relay are recommended to be set, typically for example, as follows:

- 120…140 °C when only tripping is in use
- alarm 120…140 °C and trip 130…150 °C when both alarm and trip are used.

ATEX certified thermal protection with PTC (+L513)

The option contains an ATEX certified thermistor relay.

Description

In combination with safety option +Q950, the option provides the ATEX certified thermal motor protection function of the drive.

More information: See *ATEX Certified Thermal Motor Protection Function User's Manual* (3AFE68401941 [English]).

Starter for auxiliary motor fan (M)

General

The options providing a starter for an auxiliary motor fan contain:

- fuses
- manual motor starter with adjustable trip limit
- contactor
- terminal block for output (X6). The maximum wire cross-section accepted by the terminal block is 6 mm^2.

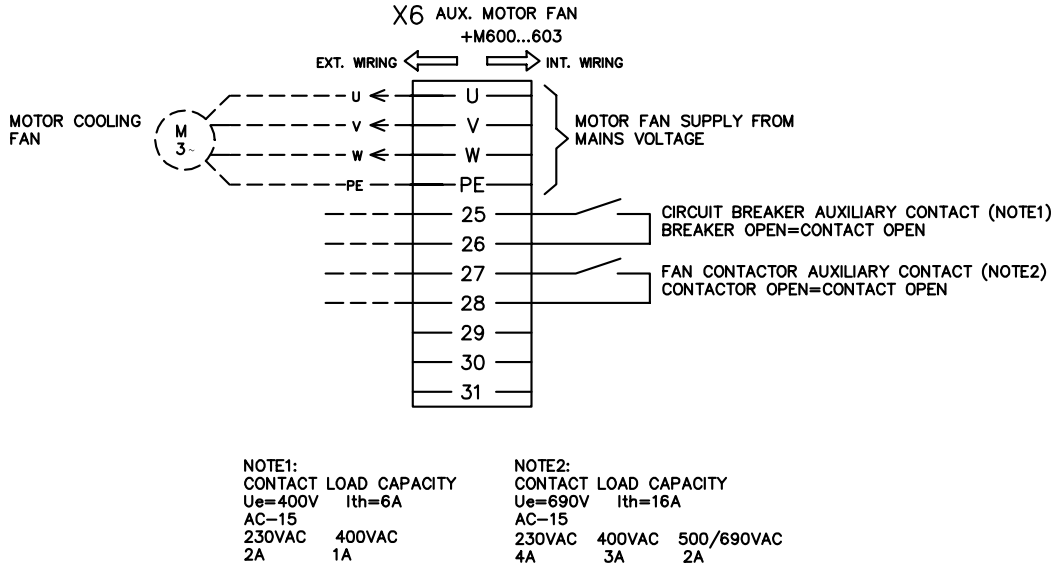
The fan voltage is the same as the drive nominal voltage.

Description

The drive controls the auxiliary motor fan on when the drive is running the motor and off when not.

ACS800-07 frames R5 to R8: The customer can control the starter on and off also externally by wiring the input to terminal block X6.

Example connection diagram



Trip limit setting ranges

Option code	Manual motor starter trip limit setting range
M600	1…1.6 A
M601	1.6…2.5 A
M602	2.5…4 A
M603	4…6.3 A
M604	6.3…10 A
M605	10…16 A
M605	16…25 A

Safety features (Q)

See *ACS800 Safety Options Hardware Manual* (3AFE68578027[English]) for the following safety options.

Option code	Function	Notes
Q950	Prevention of Unexpected Start	-
Q951	Category 0 emergency stop	In frames R5 to R8, also option +F250 is required. In frames n×R8i, also options +F255 and +F260 are required.
Q952	Category 1 emergency stop	
Q954	Earth fault monitoring for IT (ungrounded) systems	-

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