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# ПРОМЫШЛЕННЫЕ ПРИВОДЫ

## Техническое описание на

### модули

## ACS880-607, ACS880-607LC



# Brake options

—  
01  
NBRA659 brake unit

## Brake unit

The brake unit is a cabinet-built option. It handles the energy generated by a decelerating motor. The brake chopper connects the brake resistor to the intermediate DC circuit whenever the voltage in the circuit exceeds the limit defined by the control program. Energy consumption by the resistor losses lowers the voltage until the resistor can be disconnected.

## Brake resistor for 1-phase brake units

The brake resistors are separately available for ACS880 multidrive cabinets as an option. Resistors other than the standard option resistors may be used, provided that the specified resistance value is not decreased and that the heat dissipation capacity of the resistor is sufficient for the drive application.

## Dynamic braking unit

A brake chopper for application where high continuous braking power is needed. The power range is 500 to 6500 kW.



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01

## ACS880-607, 3-phase dynamic brake units

$U_N = 400\text{ V}$ (range 380 to 415 V)																		
Resistor values		Ratings $R_{min}$							Ratings $R_{max}$							Brake unit type	Frame size	
		No-overload use				Cycle load (1 min/5 min)			No-overload use				Cycle load (1 min/5 min)					
$R_{min}$	$R_{max}$	$I_{dc}$	$I_{rms}$	$P_{cont.max}$	$I_{max}$	$I_{dc}$	$I_{rms}$	$R_{min}$	$P_{br.}$	$R_{min}$	$I_{dc}$	$I_{rms}$	$P_{cont.max}$	$I_{max}$	$I_{dc}$	$I_{rms}$	$R_{max}$	$P_{br.}$
(ohm)	(ohm)	(A)	(A)	(kW)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(kW)	(A)	(A)	(A)	(A)	(A)
1.7	2.1	781	310	500	370	999	351	640	781	282	500	312	827	291	530	0500-3	R8i	
1.2	1.4	1171	465	750	555	1499	527	960	1171	424	750	468	1241	436	800	0750-3	R8i	
1.7	2.1	1562	621	1000	740	1998	702	1290	1562	565	1000	625	1655	581	1060	1000-3	2×R8i	
1.2	1.4	2342	931	1510	1110	2997	1053	1930	2342	847	1510	937	2482	872	1600	1510-3	2×R8i	
1.2	1.4	3514	1396	2260	1665	4496	1580	2890	3514	1271	2260	1405	3723	1308	2400	2260-3	3×R8i	
1.2	1.4	4685	1862	3010	2220	5994	2106	3860	4685	1694	3010	1874	4964	1744	3190	3010-3	4×R8i	
1.2	1.4	5856	2327	3770	2775	7493	2633	4820	5856	2118	3770	2342	6205	2180	3990	3770-3	5×R8i	

$U_N = 500\text{ V}$ (range 380 to 500 V)																		
Resistor values		Ratings $R_{min}$							Ratings $R_{max}$							Brake unit type	Frame size	
		No-overload use				Cycle load (1 min/5 min)			No-overload use				Cycle load (1 min/5 min)					
$R_{min}$	$R_{max}$	$I_{dc}$	$I_{rms}$	$P_{cont.max}$	$I_{max}$	$I_{dc}$	$I_{rms}$	$R_{min}$	$P_{br.}$	$R_{min}$	$I_{dc}$	$I_{rms}$	$P_{cont.max}$	$I_{max}$	$I_{dc}$	$I_{rms}$	$R_{max}$	$P_{br.}$
(ohm)	(ohm)	(A)	(A)	(kW)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(kW)	(A)	(A)	(A)	(A)	(A)
2.2	2.6	781	310	630	370	999	351	800	781	284	630	312	835	293	670	0630-5	R8i	
1.4	1.7	1171	465	940	555	1499	527	1210	1171	430	940	468	1277	449	1030	0940-5	R8i	
2.2	2.6	1562	621	1260	740	1998	702	1610	1562	568	1260	625	1671	587	1340	1260-5	2×R8i	
1.4	1.7	2342	931	1880	1110	2997	1053	2410	2342	860	1880	937	2555	898	2060	1880-5	2×R8i	
1.4	1.7	3514	1396	2830	1665	4496	1580	3620	3514	1289	2830	1405	3832	1347	3080	2830-5	3×R8i	
1.4	1.7	4685	1862	3770	2220	5994	2106	4820	4685	1719	3770	1874	5110	1795	4110	3770-5	4×R8i	
1.4	1.7	5856	2327	4710	2775	7493	2633	6030	5856	2149	4710	2342	6387	2244	5140	4710-5	5×R8i	

$U_N = 690\text{ V}$ (range 525 to 690 V)																		
Resistor values		Ratings $R_{min}$							Ratings $R_{max}$							Brake unit type	Frame size	
		No-overload use				Cycle load (1 min/5 min)			No-overload use				Cycle load (1 min/5 min)					
$R_{min}$	$R_{max}$	$I_{dc}$	$I_{rms}$	$P_{cont.max}$	$I_{max}$	$I_{dc}$	$I_{rms}$	$R_{min}$	$P_{br.}$	$R_{min}$	$I_{dc}$	$I_{rms}$	$P_{cont.max}$	$I_{max}$	$I_{dc}$	$I_{rms}$	$R_{max}$	$P_{br.}$
(ohm)	(ohm)	(A)	(A)	(kW)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(kW)	(A)	(A)	(A)	(A)	(A)
3.0	3.6	781	310	870	370	999	351	1110	781	283	870	312	833	293	920	0870-7	R8i	
2.0	2.4	1171	465	1300	555	1499	527	1660	1171	425	1300	468	1249	439	1390	1300-7	R8i	
3.0	3.6	1562	621	1730	740	1998	702	2220	1562	567	1730	625	1665	585	1850	1730-7	2×R8i	
2.0	2.4	2342	931	2600	1110	2997	1053	3330	2342	850	2600	937	2498	878	2770	2600-7	2×R8i	
2.0	2.4	3514	1396	3900	1665	4496	1580	4990	3514	1275	3900	1405	3746	1316	4160	3900-7	3×R8i	
2.0	2.4	4685	1862	5200	2220	5994	2106	6650	4685	1700	5200	1874	4995	1755	5540	5200-7	4×R8i	
2.0	2.4	5856	2327	6500	2775	7493	2633	8320	5856	2125	6500	2342	6244	2194	6930	6500-7	5×R8i	

### Dimensions

Frame size	Height <sup>1)</sup> (mm)	Width bottom exit (mm)	Width top exit (mm)	Depth (mm)	Noise level <sup>2)</sup> (dB(A))	Air flow (m <sup>3</sup> /h)
R8i	2145	500	700	636	72	1300
2×R8i	2145	1000	1400	636	74	2600
3×R8i	2145	1500	2100	636	76	3900
4×R8i	2145	2000	2800	636	76	5200
5×R8i	2145	2500	3500	636	77	6500

<sup>1)</sup> IP21 and IP42. IP54 additional 170 mm to the height of each R8i cabinet.

<sup>2)</sup> Average noise level with controlled cooling fan.

Note: 400 mm free space needed above cabinet.

## Resistor

$R_{min}$	Minimum allowed resistance value of the brake resistor for one phase of the brake module.
$R_{max}$	Resistance value of the brake resistor for one phase of the brake module corresponding to the maximum achieved continuous braking power.
Note:	Connect one resistor per brake module phase. For example, a brake unit of frame size 2xR8i including two brake modules → 2x3 resistors are needed.

## Typical ratings for no-overload use

$I_{dc}$	Total input DC current of brake unit.
$I_{rms}$	Total rms DC output phase current of brake unit.
$I_{max}$	Peak brake current (DC) per chopper module phase.
$P_{cont,max}$	Maximum continuous braking power per brake unit.

## Cyclic load (1 min/5 min)

$I_{dc}$	Total input DC current of brake unit during a period of 1 minute with braking power $P_{br}$ .
$I_{rms}$	Total rms DC current per brake unit phase during a period of 1 minute with braking power $P_{br}$ .
$P_{br}$	Short term braking power

# ACS880-607LC liquid cooled 1-phase brake units

## $U_N = 690\text{ V}$ (range 525 to 690 V)

Nominal ratings				Duty cycle (1min/5min)		Duty cycle (10s/60s)		Losses <sup>3)</sup>	Coolant flow rate <sup>1)</sup>	Air flow <sup>2)</sup>	Height	Width <sup>1)</sup>	Depth	Brake chopper module type	Brake resistor type	Type ACS880-607LC-	
$P_{brmax}$ (kW)	$R_{tot}$ (ohm)	$I_{max}$ (A)	$I_{rms}$ (A)	$P_{brcont}$ (kW)	$P_{br}$ (kW)	$I_{rms}$ (A)	$P_{br}$ (kW)	$I_{rms}$ (A)	$P_{loss}$ (kW)	(l/min)	(m <sup>3</sup> /h)	(mm)	(mm)	(mm)			
404	-	414	107	119	298	267	404	361	2.0	1.6	-	2002	400	644	NBRW-669C	-	0400-7
807	-	828	214	238	596	534	808	722	4.0	3.2	-	2002	800	644	2xNBRW-669C	-	0800-7
1211	-	1242	321	357	894	801	1212	1083	6.0	4.8	-	2002	1200	644	3xNBRW-669C	-	1200-7
1615	-	1656	428	476	1192	1068	1616	1444	8.0	6.4	-	2002	1600	644	4xNBRW-669C	-	1600-7
2019	-	2070	535	595	1490	1335	2020	1805	10.0	8.0	-	2002	2000	644	5xNBRW-669C	-	2000-7
2422	-	2484	642	714	1788	1602	2424	2166	12.0	9.6	-	2002	2400	644	6xNBRW-669C	-	2400-7

## $U_N = 690\text{ V}$ (range 525 to 690 V)

Nominal ratings				Duty cycle (1min/5min)		Duty cycle (10s/60s)		Coolant flow rate <sup>1)</sup>	Air flow <sup>2)</sup>	Height	Width <sup>1)</sup>	Depth	Brake chopper module type	Brake resistor type	Type ACS880-607LC-	
$P_{brmax}$ (kW)	$R_{tot}$ (ohm)	$I_{max}$ (A)	$I_{rms}$ (A)	$P_{brcont}$ (kW)	$P_{br}$ (kW)	$I_{rms}$ (A)	$P_{br}$ (kW)	$I_{rms}$ (A)	(l/min)	(m <sup>3</sup> /h)	(mm)	(mm)	(mm)			
404	1.35	835	97	54	167	149	287	257	1.6	1840	2002	1200	644	NBRW-669C	2xSAFUR200F500	0400-7
807	0.68	1670	194	108	333	298	575	514	3.2	4340	2002	2400	644	2xNBRW-669C	2x(2xSAFUR200F500)	0800-7
1211	0.45	2505	291	162	500	447	862	771	4.8	6180	2002	3600	644	3xNBRW-669C	3x(2xSAFUR200F500)	1200-7
1615	0.34	3340	388	216	667	596	1150	1028	6.4	8020	2002	4800 <sup>4)</sup>	644	4xNBRW-669C	4x(2xSAFUR200F500)	1600-7
2019	0.27	4175	485	270	833	745	1437	1285	8.0	9860	2002	6000 <sup>4)</sup>	644	5xNBRW-669C	5x(2xSAFUR200F500)	2000-7
2422	0.23	5010	582	324	1000	894	1724	1542	9.6	11700	2002	7200 <sup>4)</sup>	644	6xNBRW-669C	6x(2xSAFUR200F500)	2400-7

<sup>1)</sup> Coolant flow rate is for the brake chopper module only.

<sup>2)</sup> Air flow is for the brake resistor only, which is air-cooled.

<sup>3)</sup> Power loss conducted to coolant and emitted to air

<sup>4)</sup> Additional 300 mm junction section needed.

## Ratings

### Nominal ratings

$P_{brmax}$	Maximum short-term (1 min every 10 mins) braking power.
$R_{tot}$	Total brake resistor resistance of the whole brake unit.
$I_{max}$	Maximum peak current of the whole brake unit.
$I_{rms}$	Corresponding rms current per chopper during load cycle.
$P_{brcont}$	Maximum continuous power rating.

### Cyclic load (1 min/5 min)

$P_{br}$	Maximum braking power, allowed for 1 minute every 5 minutes.
$I_{rms}$	Total rms current during a period of 1 minute with braking power $P_{br}$ .

### Cyclic load (1 min/5 min)

$P_{br}$	Total rms current during a period of 10 seconds with braking power $P_{br}$ .
$I_{rms}$	Maximum braking power, allowed for 10 seconds every 60 seconds

### Losses

$P_{loss}$	Power loss conducted to coolant and emitted to air.
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## ACS880-607LC liquid cooled 3-phase dynamic brake units

$U_N = 690 \text{ V}$  (range 525 to 690 V)

Resistor values		Ratings $R_{min}$								Ratings $R_{max}$								Brake unit type ACS880-607LC-	Frame size
$R_{min}$ (ohm)	$R_{max}$ (ohm)	No-overload use				Duty cycle (1 min/5 min)				No-overload use				Duty cycle (1 min/5 min)					
		$I_{dc}$ DC (A)	$I_{rms}$ DC (A)	$P_{cont}$ (kW)	$I_{max}$ DC (A)	$I_{dc}$ DC (A)	$I_{rms}$ DC (A)	$R_{min}$ DC (A)	$P_{br}$ (kW)	$R_{min}$ (A)	$I_{dc}$ DC (A)	$I_{rms}$ DC (A)	$P_{rcont}$ (kW)	$I_{max}$ DC (A)	$I_{dc}$ DC (A)	$I_{rms}$ DC (A)	$R_{min}$ DC (A)		
3.0	3.6	781	310	870	370	999	351	1110	781	283	870	312	833	293	920	0870-7	R8i		
2.0	2.4	1171	465	1300	555	1499	527	1660	1171	425	1300	468	1249	439	1390	1300-7	R8i		
3.0	3.6	1562	621	1730	740	1998	702	2220	1562	567	1730	625	1665	585	1850	1730-7	2xR8i		
2.0	2.4	2342	931	2600	1110	2997	1053	3330	2342	850	2600	937	2498	878	2770	2600-7	2xR8i		
2.0	2.4	3514	1396	3900	1665	4496	1580	4990	3514	1275	3900	1405	3746	1316	4160	3900-7	3xR8i		
2.0	2.4	4685	1862	5200	2220	5994	2106	6650	4685	1700	5200	1874	4995	1755	5540	5200-7	4xR8i		

# Standard interface and extensions for plug-in connectivity

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01  
Control unit ZCU  
—  
02  
Example of  
a typical multidrives  
input/output  
connection diagram.  
Variations maybe  
possible. For further  
information, please  
see the ACS880  
user manual.

ACS880 multidrives offer a wide range of standard interfaces including extensive selection of I/O connections, Safe Torque Off (STO) and a galvanically isolated RS485 link that can be configured as either Modbus RTU or high speed drive-to-drive link.

In addition, the drive control unit (ZCU/BCU) has three option slots that can be used for extensions, including communication protocol adapters, input/output extension modules, feedback modules, and a safety functions module. For I/O extensions, see page 49.

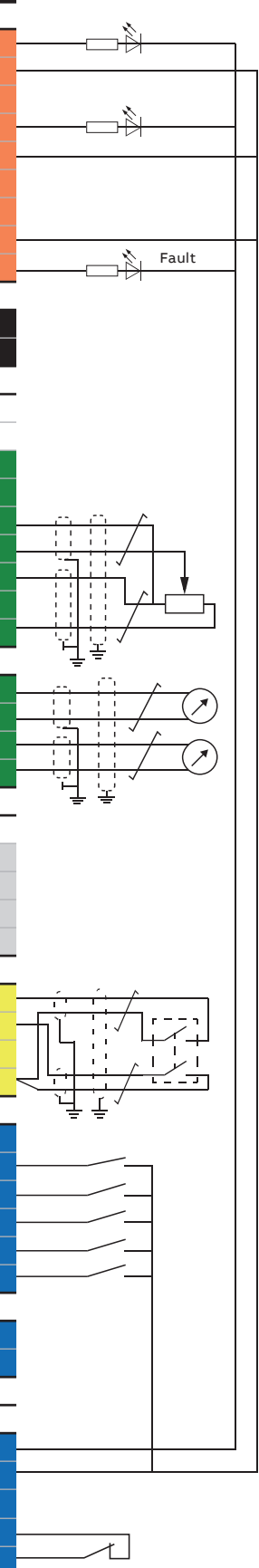
Control unit ZCU for inverters (R1i to R7i) and diode supply unit (D6D to D8D) comes with three option slots for extension option modules.

Control unit BCU is used for inverters (nxR8i), IGBT supply unit, regenerative rectifier unit, DC/DC converter, brake units and diode supply unit (frame nxDXT). BCU comes with integrated branching unit, and three option slots with an additional slot for DDCCS communication option.



Control connections	Description
2 analog inputs (XAI)	Current input: -20 to 20 mA, $R_{in}$ : 100 ohm Voltage input: -10 to 10 V, $R_{in}$ > 200 kohm Resolution: 11 bit + sign bit
2 analog outputs (XAO)	0 to 20 mA, $R_{load}$ < 500 ohm Frequency range: 0 to 300 Hz Resolution: 11 bit + sign bit
6 digital inputs (XDI)	Input type: NPN/PNP (DI1 to DI5), NPN (DI6) DI6 (XDI:6) can alternatively be used as an input for a PTC thermistor.
Digital input interlock (DIIL)	Input type: NPN/PNP
2 digital inputs/outputs (XDIO)	As input: 24 V logic levels: "0" < 5 V, "1" > 15 V $R_{in}$ : 2.0 kohm Filtering: 0.25 ms As output: Total output current from 24 V DC is limited to 200 mA Can be set as pulse train input and output
3 relay outputs (XRO1, XRO2, XRO3)	250 V AC/30 V DC, 2 A
Safe torque off (XSTO)	For the drive to start, both connections must be closed, only to be used in inverter units
Drive-to-drive link (XD2D)	Physical layer: EIA-485
Built-in Modbus	EIA-485
Assistant control panel/PC tool connection	Connector: RJ-45

<b>Relay outputs</b>		<b>XRO1, XRO2, XRO3</b>	
Ready		NO	13
250 V AC/30 V DC		COM	12
2 A		NC	11
Running		NO	23
250 V AC/30 V DC		COM	22
2 A		NC	21
Faulted (-1)		NO	33
250 V AC/30 V DC		COM	32
2 A		NC	31
<b>External power input</b>		<b>XPOW</b>	
24 V DC, 2 A		GND	2
		+24VI	1
<b>Reference voltage and analog inputs</b>		<b>J1, J2, XAI</b>	
AI1/AI2 current/voltage selection		AI1:U	AI2:U
		AI1:I	AI2:I
By default not in use.		AI2-	7
0(4) to 20 mA, $R_{in} = 100 \text{ ohm}$		AI2+	6
Speed reference		AI1-	5
0(2) to 10 V, $R_{in} > 200 \text{ kohm}$		AI1+	4
Ground		AGND	3
-10 V DC, $R_L 1 \text{ to } 10 \text{ kohm}$		-VREF	2
10 V DC, $R_L 1 \text{ to } 10 \text{ kohm}$		+VREF	1
<b>Analog outputs</b>		<b>XAO</b>	
Motor current 0 to 20 mA, $R_L < 500 \text{ ohm}$		AGND	4
		AO2	3
Motor speed rpm 0 to 20 mA, $R_L < 500 \text{ ohm}$		AGND	2
		AO1	1
<b>Drive-to-drive link</b>		<b>J3, XD2D</b>	
Drive-to-drive link termination		ON <input type="checkbox"/> OFF	
		Shield	4
Drive-to-drive link or built-in Modbus		BGND	3
		A	2
		B	1
<b>Safe torque off</b>		<b>XSTO</b>	
Safe torque off. Both circuits must be closed for the drive to start.		IN2	4
		IN1	3
		SGND	2
		OUT	1
<b>Digital inputs</b>		<b>XDI</b>	
By default not in use		DI6	6
Constant speed 1 select (1=on)		DI5	5
Acceleration and deceleration select		DI4	4
Reset		DI3	3
Forward (0)/Reverse (1)		DI2	2
Stop (0)/Start (1)		DI1	1
<b>Digital input/outputs</b>		<b>XDIO</b>	
Output: Running		DIO2	2
Output: Ready		DIO1	1
<b>Ground selection</b>		<b>XD24</b>	
Auxiliary voltage output, digital input interlock		DIOGND	5
+24 V DC 200 mA		+24VD	4
Digital input ground		DICOM	3
+24 V DC 200 mA		+24VD	2
Digital interlock		DIIL	1
<b>Safety functions module connection</b>		<b>X12</b>	
<b>Control panel/PC connection</b>		<b>X13</b>	
<b>Memory unit connection</b>		<b>X205</b>	



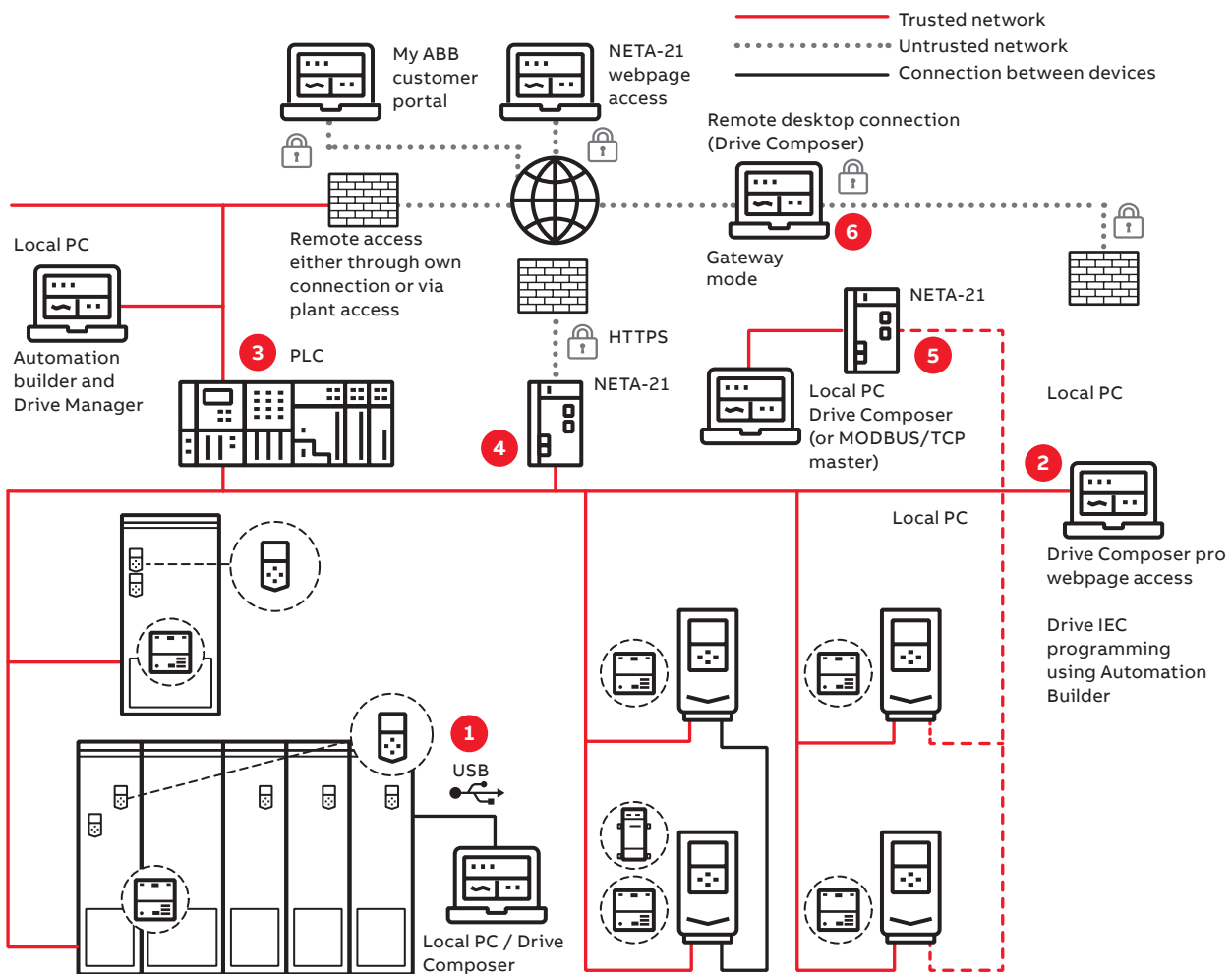
# Communication and connectivity

## Fast and reliable communication

The **F-series fieldbus adapter modules** are flexible, plug-in adapters that provide fast and simple universal connectivity to all major controllers. Universal connectivity means ABB low voltage drives connect to automation controllers and communication networks, allowing users to choose the best network to meet their needs.

- Reduces mechanical and electrical cost
- Decrease in downtime
- Increase in productivity
- Diminished start-up costs
- Lower maintenance and diagnostic costs
- Quick access to networked drives with PC-based start-up and maintenance software tools
- Reductions in wiring costs compared to traditional I/O connections

### Industrial automation plant – different network possibilities and their secure deployment



1. Local connections (point-to-point serial communication, e.g. USB) or
2. Shared (with control) upper-level physical fieldbus network (e.g., PROFINET) using Ethernet tool communication and/or
3. Communicating also through PLC system using Drive Manager device tool or
4. NETA-21 remote monitoring tool web interface or
5. NETA-21 acting as a gateway between or
6. Third-party remote desktop connection.



# Connectivity to automation systems

—  
01  
ACS880 is compatible with many communication protocols  
—  
02  
Input/output extension modules

## Communication protocol adapters

ACS880 industrial drives are compatible with a wide range of communication protocols. The drive comes with a Modbus RTU fieldbus interface as standard.

The ACS880 supports two different communication connections simultaneously and offers the possibility for redundant communication. PROFIsafe (functional safety over PROFINET) is also supported.

### Communication protocol adapters

Option code	Ordering code for loose item	Communication protocol	Adapter
+K451	68469341	DeviceNet™	FDNA-01
+K454	68469325	PROFIBUS DP, DPV0/DPV1	FPBA-01
+K457	68469376	CANopen®	FCAN-01
+K458	3AUA0000031336	Modbus RTU	FSCA-01
+K462	3AUA0000094512	ControlNet	FCNA-01
+K469	3AUA0000072069	EtherCAT®	FECA-01
+K470	3AXD5000019239	POWERLINK	FEPL-02
+K491	3AXD5000049964	Modbus/TCP	FMBT-21
+K492	3AXD50000192779	PROFINET IO	FPNO-21 <sup>1)</sup>
+K490	3AXD50000192786	EtherNet/IP	FEIP-21
+Q986	3AXD50000112821	PROFIsafe safety functions module	FSPS-21

<sup>1)</sup> For the PROFIsafe to work the PROFINET adapter module (FPNO-21) and the safety functions module FSO-12 (+Q973) or FSO-21 (+Q972) are required. The FPNO-21 adapter module enables PROFINET system redundancy S2 allowing the drive to establish connection with two control PLCs in a redundant manner.



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01

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02

## Input/output extension modules

Standard input and output can be extended by using optional analog and digital input/output extension modules. The modules are easily installed in the extension slots located on the drive.

If there are not enough I/O extension slots in the drive, the FEA-03 module can increase the number of slots. The FEA-03 has two option slots for digital I/O extensions and speed feedback interface modules. The connection to the control unit is via an optical fiber link, and the adapter can be mounted on a DIN rail (35 × 7.5 mm).

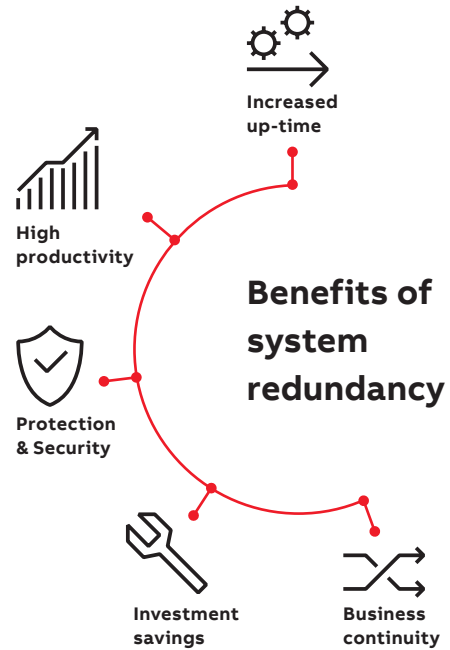
### Analog and digital input/output extension modules

Option code	Ordering code for loose item	Description	I/O module
+L501	68805368	4×DI/O, 2×RO	FIO-01
+L500	68805384	3×AI (mA/V), 1×AO (mA), 2×DI/O	FIO-11
+L515	3AUA0000108669	2×F-type option extension slots	FEA-03
+L525	3AUA0000141436	2×AI (mA/V), 2×AO (mA)	FAIO-01
+L526	3AUA0000141438	3×DI (up to 250 V DC or 230 V AC), 2×RO	FDIO-01

# PROFINET S2 system redundancy for ABB drives

System redundancy is a high-priority requirement in process industry and infrastructure installations where the system must be operational even during component breakdowns and malfunctioning. The interruption of a continuous production process could potentially lead to large financial losses or safety hazards. Thanks to the new PROFINET S2 system redundancy of ABB drives, the unwanted downtime can be minimized. This leads to better process control with improved productivity.

PROFINET system redundancy S2 is now available for ABB drives with the optional PROFINET interface module FPNO-21. It allows the drive to establish connection with two control PLCs in a redundant manner.



**PROFINET IO**  
2 ports interface module.  
Certified according to  
Conformance Class B (CC-B)

**SNTP Time synchronization**

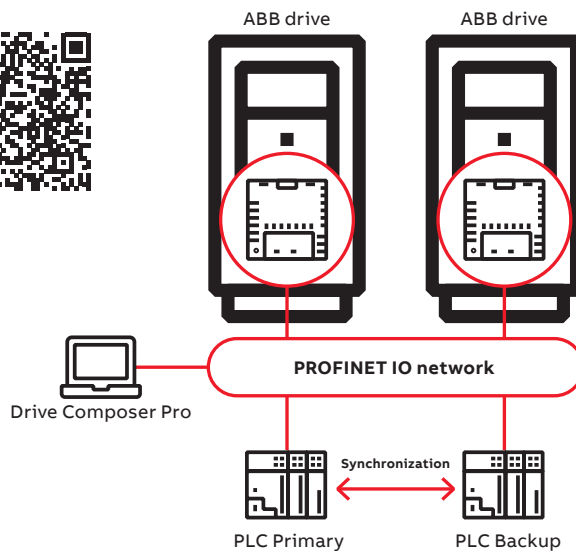
**For all-compatible drives**



**Ethernet tool network**  
PROFINET IO at the same time  
with Drive Composer pro

**PROFINET Shared Device**  
PROFIsafe support with FSO-12/-21  
safety functions module

**PROFINET S2 system redundancy**



# Feedback interface and DDCS communication options

—  
01  
FEN-01 TTL encoder  
interface module  
—  
02  
FDCO-01 DDCS  
communication module

## Speed feedback interfaces for precise process control

ACS880 drives can be connected to various feedback devices, such as HTL pulse encoders, TTL pulse encoders, absolute encoders and resolvers. The optional feedback module is installed in the option slot on the drive. It is possible to use two feedback modules at the same time, either of the same type or different types\*).

\*) Excluding FSE-31.



—  
01

## Feedback interface modules

Option code	Ordering code for loose item	Description	Feedback module
+L517	68805422	2 inputs (TTL pulse encoder), 1 output	FEN-01
+L518	68805830	2 inputs (SinCos absolute, TTL pulse encoder), 1 output	FEN-11
+L516	68805848	2 inputs (Resolver, TTL pulse encoder), 1 output	FEN-21
+L502	68978955	1 input (HTL pulse encoder), 1 output	FEN-31
+L521	3AXD5000023272	Pulse encoder interface for functional safety (for more details see section "Safety options")	FSE-31

## DDCS communication option modules

The FDCO-0X optical DDCS communication options are add-on modules on the ACS880 industrial drives control unit. The modules include connectors for two fiber optic DDCS channels. The FDCO-0X modules make it possible to perform master-follower and AC800 M communication. Alternative way for drive to drive communication is to use the standard RS485 connection.



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02

## Optical communication modules

Option code	Ordering code for loose item	Description	Module
+L503	3AUA0000107392	Optical DDCS (10 Mbd/10 Mbd)	FDCO-01
+L508	3AUA0000107393	Optical DDCS (5 Mbd/10 Mbd)	FDCO-02

# Safety options

—  
01  
FSO-12 safety  
functions module

## Integrated safety

Integrated safety reduces the need for external safety components, simplifying configuration and reducing installation space. The safety functionality is a built-in feature of the ACS880, with safe torque off (STO) as standard. The STO function corresponds to an uncontrolled stop in accordance with stop category 0 of EN 60204-1. Additional safety functions can be commissioned with the optional and compact safety functions module. ACS880 drives offer functional safety with or without encoder. The drive's functional safety is designed in accordance with EN/IEC 61800-5-2 and complies with the requirements of the European Union Machinery Directive (2006/42/EC).

Safety functions are designed to the multidrives on project specific requirements.

The safety functions are certified by TÜV Nord and comply with the highest performance requirements (SIL 3 / PL e) in machinery safety.<sup>1)</sup>

The safety functions module can also be ordered separately and installed afterwards to the drive.

**PROFIsafe safety functions module, FSPS-21**, with integrated PROFIsafe, and PROFINET IO connection supports STO and SS1-t safety functions. Since the functions are automatically configured, no additional safety settings are required in the drive.

**Safety functions modules, FSO-12 and FSO-21**, support a wide range of safety functions. Configuration of the functions is done with



—  
01

the Drive Composer Pro PC tool, which provides an easy-to-use graphical user interface. Larger safety systems can be built using PROFIsafe over PROFINET connection between a safety PLC (such as AC500-S) and the ACS880 drive. The connection is achieved by adding a PROFINET adapter, FPNO-21, to the drive.

Supported safety functions:

- Encoderless: SS1-t, SS1-r, SLS, SBC, SMS, SSE, POUS, STO
- With encoder (requires FSO-21 + FSE-31): SDI, SSM, SS1-t, SS1-r, SLS, SBC, SMS, SSE, POUS, STO

**Pulse encoder interface module, FSE-31**, provides safe encoder data to the safety functions module, and can simultaneously be used as a feedback device for the drive. FSE-31 requires an FSO-21 safety functions module and supports HTL encoders.

**Thermistor protection modules, FPTC-01 and FPTC-02**

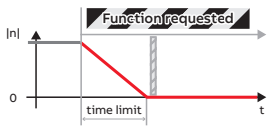
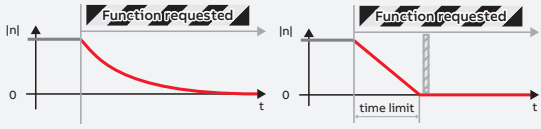
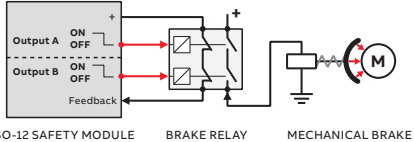
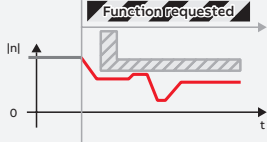

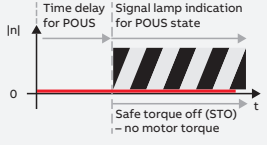
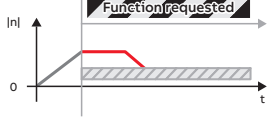
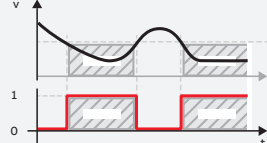
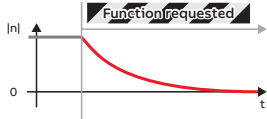
Safe temperature monitoring (STM) can be achieved by using FPTC thermistor protection modules<sup>1)</sup>.

## Safety function modules

Option code	Description	Safety module
+Q979 +Q973/ +Q972	Emergency Stop, configurable stop cat. 0 or 1; with STO, with safety functions module <sup>2)</sup>	FSO-12/-21
+Q966 +Q973/+Q972	Safely-limited speed (SLS) with safety functions module (without encoder) <sup>2)</sup>	FSO-12/-21
+Q965 + Q972 +L521	Safely-limited speed (SLS) with FSO-21 and with encoder FSE-31 <sup>2)</sup>	FSO-21 and FSE-31
+Q950 +Q973/ +Q972	Prevention of unexpected startup (POUS) with safety functions module <sup>2)</sup>	FSO-12/-21
+Q982 +Q972 +K492	PROFIsafe safety communication to be used together with FSO-21: forces to select a functional safety module and PROFINET adapter, FPNO-21	FSO-21 and FPNO-21
+L536	Thermistor protection module FPTC-01 <sup>1)</sup>	FPTC-01
+L537 +Q971	ATEX-certified thermistor protection module FPTC-02, Ex II (2) GD <sup>1)</sup>	FPTC-02

<sup>1)</sup> Thermistor modules comply with SIL 2 / PL c.

<sup>2)</sup> Safety data and safety levels can be calculated for engineered solutions for multidrives cabinets as option. Safety level depends on configuration.

Safety function	Description	Supported functions		
		FSO-12 without encoder	FSO-21 + FSE-31 + HTL encoder	
<b>Safe stop 1</b> SS1-t SS1-r	Brings the machine to a stop using a monitored deceleration ramp. It is typically used in applications where the machinery motion needs to be brought to a stop (stop category 1) in a controlled way before switching over to the no-torque (STO) state	x (SS1-t) (SS1-r)	x (SS1-t) (SS1-r)	
<b>Safe stop emergency</b> SSE	Can be configured to, upon request, either activate STO instantly (category 0 stop), or first initiate motor deceleration and then, once the motor has stopped, activate the STO (category 1 stop).	x	x	
<b>Safe brake control</b> SBC	Provides a safe output for controlling the motor's external (mechanical) brakes, together with STO.	x	x	
<b>Safely-limited speed</b> SLS	Ensures that the specified speed limit of the motor is not exceeded. This allows machine interaction to be performed at slow speed without stopping the drive. The safety function module comes with four individual SLS settings for speed monitoring.	x	x	
<b>Safe maximum speed</b> SMS	Monitors that the speed of the motor does not exceed the configured maximum speed limit.	x	x	
<b>Prevention of unexpected start-up</b> POUS	Ensures that the machine remains stopped when people are in the danger area.	x	x	
<b>Safe direction</b> SDI	Ensures that rotation is allowed only in the selected direction (available only with FSO-21 and FSE-31).		x	
<b>Safe speed monitor</b> SSM	Provides a safe output signal to indicate whether the motor speed is between user-defined limits (available only with FSO-21).		x	
<b>Safe torque off</b> STO	Brings the drive safely to a no-torque state, i.e. switches off the drive output to the motor, motor speed then coasts to a stop.  ACS880 has safe torque off as standard.	x	x	

# Summary of features and options

## ACS880 air-cooled multidrivess

	Option code	ACS880 -107 INU R1i to nxR8i	ACS880 -207 ISU nxR8i	ACS880 -307 DSU D6D to D8D 6-pulse	ACS880 -307 DSU D7T and nxD8T 6 or 12-pulse	ACS880 -907 RRU nxR8i	ACS880 -607 brake unit nxR8i	ACS880 -1607 DC/DC nxR8i
<b>Mounting</b>								
Free-standing		●	●	●	●	●	●	●
<b>Cabling</b>								
Supply bottom entry		-	●	●	●	●	-	-
Supply top entry		-	□	□	□	□	-	-
Inverter bottom exit		●	-	-	-	-	●	●
Inverter top exit		□	-	-	-	-	□	□
<b>Degree of protection</b>								
IP22 (UL type 1)		●	●	●	●	●	●	●
IP42 (UL type 1)		□	□	□	□	□	□ <sup>1)</sup>	□ <sup>1)</sup>
IP54 (UL type 12)		□	□	□	□	□	□ <sup>1)</sup>	□ <sup>1)</sup>
<b>Motor control</b>								
DTC motor control		●	-	-	-	-	-	-
<b>Control panel</b>								
Intuitive control panel		□	□	□	□	□	□ <sup>2)</sup>	□
<b>EMC filters</b>								
EMC 1st environment, restricted distribution, C2, grounded network (TN)	+E202	-	□	-	□ <sup>4)</sup>	□	-	-
EMC 2nd environment, C3, grounded (TN) and ungrounded network (IT)	+E210	□ <sup>5)</sup>	□ <sup>5)</sup>	□ <sup>5)</sup>	□ <sup>5)</sup>	□ <sup>5)</sup>	□ <sup>5)</sup>	□ <sup>5)</sup>
<b>Line filter</b>								
AC or DC choke		-	-	●	●	-	-	-
Advanced line harmonic filter LCL		-	●	-	-	-	-	-
Advanced line harmonic filter L		-	-	-	-	●	-	-
<b>Output filter</b>								
Common mode filter	+E208	● <sup>6)</sup>	● <sup>6)</sup>	-	-	● <sup>6)</sup>	●	●
Du/dt filters	+E205	● <sup>7)</sup>	●	-	-	●	●	●
<b>Braking (see braking unit table)</b>								
<b>Incoming unit apparatus</b>								
Disconnecter		-	● <sup>8)</sup>	●	● <sup>9)</sup>	● <sup>10)</sup>	-	-
Air circuit breaker	+F255	-	● <sup>11)</sup>	●	● <sup>9)</sup>	● <sup>12)</sup>	-	-
Line contactor	+F250	-	● <sup>8)</sup>	□	-	● <sup>10)</sup>	-	-
Earthing switch	+F259	-	□	□	□	□	-	-
<b>Inverter units</b>								
DC switch	+F286	□ <sup>13)</sup>	-	-	-	-	□ <sup>14)</sup>	□
R1i - R5i in an own compartment	+C204	□	-	-	-	-	-	-

- Standard
- Selectable option, with plus code
- Selectable option, external, no plus code

ACS880 air-cooled multidrives

	Option code	ACS880 -107 INU R1i to nxR8i	ACS880 -207 ISU nxR8i	ACS880 -307 DSU D6D to D8D 6-pulse	ACS880 -307 DSU D7T and nxD8T 6 or 12-pulse	ACS880 -907 RRU nxR8i	ACS880 -607 brake unit nxR8i	ACS880 -1607 DC/DC nxR8i
<b>Software</b>								
Primary control program		●	-	-	-	-	-	-
Drive application programming based on IEC 61131-3 using Drive Application Builder (available for primary control program)	+N8010	□ <sup>3)</sup>	□ <sup>3)</sup>	-	-	-	-	-
Application control program for winder	+N5000	□	-	-	-	-	-	-
Application control program for crane	+N5050	□	-	-	-	-	-	-
Application control program for winch	+N5100	□	-	-	-	-	-	-
Application control program for centrifuge/decanter	+N5150	□	-	-	-	-	-	-
Application control program for PCP pump	+N5200	□	-	-	-	-	-	-
Application control program for test bench	+N5300	□	-	-	-	-	-	-
High speed test bench <sup>25)</sup>	+P967	□	-	-	-	-	-	-
Application control program for override control	+N5450	□	-	-	-	-	-	-
Application control program for ESP pumps	+N5600	□	-	-	-	-	-	-
Application control program for position control	+N5700	□ <sup>24)</sup>	-	-	-	-	-	-
Support for asynchronous motor		●	-	-	-	-	-	-
Support for permanent magnet motor		●	-	-	-	-	-	-
Support for Synchronous reluctance motor (SynRM)	+N7502	□	-	-	-	-	-	-
Application control program for LV synchronous machine	+N8052	□	-	-	-	-	-	-
Optimal grid control of IGBT supply control program (grid converter)	+N8053	-	□	-	-	-	-	-
High speed license. Allows high speed operation above 598 Hz output frequency.	+N8200	□	-	-	-	-	-	-
<b>Approvals</b>								
CE, UKCA		●	●	●	●	●	●	●
UL, cUL		□	□	□	□	□	□	□
CSA		□	□	□	□	□	□	□
EAC/GOST R <sup>15)</sup>		●	●	●	●	●	●	●
RoHS		●	●	●	●	●	●	●
RCM		●	●	●	●	●	●	●
Marine type approvals <sup>16)</sup>	+C132	□ <sup>17)</sup>	□	-	□	-	□	□
TÜV nord certificate for STO		●	-	-	-	-	-	-
TÜV nord certificate for FSO-12	+Q973	□	-	-	-	-	-	-
TÜV nord certificate for FSO-21	+Q972	□	-	-	-	-	-	-
TÜV nord certificate for FSE-31	+L521	□	-	-	-	-	-	-
Eurofins ATEX protective device certificate	+Q971 +L513/ +L514 or +Q971 +L537	□	-	-	-	-	-	-
SEMI F47		●	●	●	●	●	●	●

- Standard
- Selectable option, with plus code
- Selectable option, external, no plus code

ACS880 air-cooled multidrives

	Option code	ACS880 -107 INU R1i to nxR8i	ACS880 -207 ISU nxR8i	ACS880 -307 DSU D6D to D8D 6-pulse	ACS880 -307 DSU D7T and nxD8T 6 or 12- pulse	ACS880 -907 RRU nxR8i	ACS880 -607 brake unit nxR8i	ACS880 -1607 DC/DC nxR8i
<b>Safety functions</b> <sup>23)</sup>								
Safe torque off (STO)		●	-	-	-	-	-	-
Safety functions module, FSO-12, without encoder, configurable functions: - Safe stop 1 (SS1-t, SS1-r) - Safely-limited speed (SLS) - Safe brake control (SBC) - Safe maximum speed (SMS) - Safe stop emergency (SSE) - Prevention of unexpected start-up (POUS) - Safe torque off (STO)	+Q973	□	-	-	-	-	-	-
Safety functions module, FSO-21, with encoder support, configurable functions: - Safe stop 1 (SS1-t, SS1-r) - Safely-limited speed (SLS) - Safe brake control (SBC) - Safe maximum speed (SMS) - Safe stop emergency (SSE) - Prevention of unexpected start-up (POUS) - Safe direction (SDI), requires encoder feedback, FSE-31 - Safe speed monitoring (SSM) - Safe torque off (STO)	+Q972	□	-	-	-	-	-	-
Pulse encoder interface module, FSE-31	+L521	□	-	-	-	-	-	-
Prevention of unexpected start-up with safety relay(s)	+Q957	□	-	-	-	-	-	-
Prevention of unexpected start-up with STO and safety functions module (FSO-12/-21)	+Q950 +Q973/ +Q972	□	-	-	-	-	-	-
Emergency stop, category 0 with opening the main contactor/breaker, with safety relay	+Q951	-	□	□	□	□	-	-
Emergency stop, category 1 with opening the main contactor/breaker, with safety relay	+Q952	-	□	□	□	□	-	-
Emergency stop, category 0 with STO, with safety relay	+Q963	-	□	□	□	□	-	-
Emergency stop, category 1 with STO, with safety relay	+Q964	-	□	□	□	□	-	-
Emergency stop, configurable category 0 or 1 with STO and safety functions module (FSO-12/-21)	+Q979 +Q973/ +Q972	-	□	□	□	□	-	-
PROFIsafe over PROFINET with safety functions module (FSO-21) and FPNO-21	+Q982 +Q972 +K492	□	-	-	-	-	-	-
Safely-limited speed (SLS) without encoder with FSO-12/-21 (encoderless)	+Q966 +Q973 +Q972	□	-	-	-	-	-	-
Safely-limited speed (SLS) with FSO-21 and encoder FSE-31	+Q965 +Q972 +L521	□	-	-	-	-	-	-
ATEX thermal motor protection for PTC/PT100, EX II (2) GD	+Q971 +L513/ +L514	□	-	-	-	-	-	-
FPTC-01 thermistor protection module	+L536	□	-	-	-	-	-	-
ATEX certified thermistor protection module, FPTC-02, EX II (2) GD	+L537 +Q971	□	-	-	-	-	-	-

- Standard
- Selectable option, with plus code
- Selectable option, external, no plus code



ACS880 air-cooled multidrives

	Option code	ACS880 -107 INU R1i to nxR8i	ACS880 -207 ISU nxR8i	ACS880 -307 DSU D6D to D8D 6-pulse	ACS880 -307 DSU D7T and nxD8T 6 or 12- pulse	ACS880 -907 RRU nxR8i	ACS880 -607 brake unit nxR8i	ACS880 -1607 DC/DC nxR8i
<b>Earth fault protection</b>								
Earth fault monitoring, earthed mains		●	●	–	–	●	–	–
Earth fault monitoring, unearthed mains	+Q954	–	□	□	□	□	–	–
<b>Control connections (I/O) and communications</b>								
2 pcs analog inputs, programmable, galvanically isolated		●	●	●	●	●	● <sup>2)</sup>	●
2 pcs analog outputs, programmable		●	●	●	●	●	● <sup>2)</sup>	●
6 pcs digital inputs, programmable, galvanically isolated – can be divided into two groups		●	●	●	●	●	● <sup>2)</sup>	●
2 pcs digital inputs/outputs		●	●	●	●	●	● <sup>2)</sup>	●
1 pcs digital input interlock		●	●	●	●	●	● <sup>2)</sup>	●
3 pcs relay outputs		●	●	●	●	●	● <sup>2)</sup>	●
Drive-to-drive link/Built-in Modbus	●	●	●	●	●	●	● <sup>2)</sup>	●
Assistant control panel/PC tool connection		●	●	●	●	●	● <sup>2)</sup>	●
Possibility for external power supply for control unit		□	□	□	□	□	□ <sup>2)</sup>	□
Built-in I/O extension and speed feedback modules: for more details see sections: "Input/output extension modules", "Speed feedback interfaces for precise process control" and "DDCS communication option modules" <sup>18)</sup>		□	□	□	□	□	□ <sup>2)</sup>	□
Built-in adapters for several communication protocols: for more details see section "Communication protocol adapters" <sup>19)</sup>		□	□	□	□	□	□ <sup>2)</sup>	□

- Standard
- Selectable option, with plus code
- Selectable option, external, no plus code

ACS880 liquid-cooled multidrives

	Option code	ACS880 -107LC INU R7i, nxR8i	ACS880 -207LC ISU R7i, nxR8i	ACS880 -307LC DSU nxD8T	ACS880 -607LC brake unit	ACS880 -1607LC DC/DC nxR8i
<b>Mounting</b>						
Free-standing		●	●	●	●	●
<b>Cabling</b>						
Supply bottom entry		–	●	●	–	–
Supply top entry		–	□	□	–	–
Inverter bottom exit		●	–	–	●	●
Inverter top exit		□	–	–	□	□
<b>Degree of protection</b>						
IP22 (UL type 1)		–	–	–	–	–
IP42 (UL type 1)		●	●	●	●	●
IP54 (UL type 12)		□	□	□	□	□
<b>Motor control</b>						
DTC motor control		●	–	–	–	–
<b>Control panel</b>						
Intuitive control panel		□	□	□	□ <sup>2)</sup>	□
<b>EMC filters</b>						
EMC 1st environment, restricted distribution, C2, grounded network (TN)	+E202	–	□	□	–	–
EMC 2nd environment, C3, grounded (TN) and ungrounded network (IT)	+E210	□ <sup>5)</sup>	□ <sup>5)</sup>	□ <sup>5)</sup>	□ <sup>5)</sup>	□ <sup>5)</sup>
<b>Line filter</b>						
AC or DC choke		–	–	●	–	–
Advanced line harmonic filter LCL		–	●	–	–	–
Advanced line harmonic filter L		–	–	–	–	–
<b>Output filter</b>						
Common mode filter	+E208	●	●	–	●	●
Du/dt filters	+E205	●	●	–	●	●
<b>Braking (see braking unit table)</b>						
<b>Incoming unit apparatus</b>						
Disconnecter		–	–	–	–	–
Air circuit breaker	+F255	–	●	●	–	–
Line contactor	+F250	–	–	–	–	–
Earthing switch	+F259	–	□	□	–	–
<b>Inverter units</b>						
DC switch	+F286	□	□	–	□ <sup>14)</sup>	□
R1i - R5i in an own compartment	+C204	–	–	–	–	–

- Standard
- Selectable option, with plus code
- Selectable option, external, no plus code

ACS880 liquid-cooled multidrives

	Option code	ACS880 -107LC INU R7i, nxR8i	ACS880 -207LC ISU R7i, nxR8	ACS880 -307LC DSU nxD8T	ACS880 -607LC brake unit	ACS880 -1607LC DC/DC nxR8i
<b>Software</b>						
Primary control program		●	–	–	–	–
Drive application programming based on IEC 61131-3 using Drive Application Builder (available for primary control program)	+N8010	□ <sup>3)</sup>	□ <sup>3)</sup>	–	–	–
Application control program for winder	+N5000	□	–	–	–	–
Application control program for crane	+N5050	□	–	–	–	–
Application control program for winch	+N5100	□	–	–	–	–
Application control program for centrifuge/decanter	+N5150	□	–	–	–	–
Application control program for PCP pump	+N5200	□	–	–	–	–
Application control program for test bench	+N5300	□	–	–	–	–
Application control program for override control	+N5450	□	□	□	–	–
Application control program for ESP pumps	+N5600	□	–	–	–	–
Application control program for position control	+N5700	□ <sup>24)</sup>	–	–	–	–
Support for asynchronous motor		●	–	–	–	–
Support for permanent magnet motor		●	–	–	–	–
Support for Synchronous reluctance motor (SynRM)	+N7502	□	–	–	–	–
Application control program for LV synchronous machine	+N8052	□	–	–	–	–
Optimal grid control of IGBT supply control program (grid converter)	+N8053	–	□	–	–	–
High speed license. Allows high speed operation above 598 Hz output frequency.	+N8200	□	–	–	–	–
<b>Approvals</b>						
CE, UKCA		●	●	●	●	●
UL, cUL		□	□	□	□	–
CSA		□	□	□	□	–
EAC/GOST R <sup>15)</sup>		●	●	●	●	●
RoHS		●	●	●	●	●
RCM		●	●	●	●	●
Marine type approvals <sup>16)</sup>	+C132	□	□	□ <sup>3)</sup>	□ <sup>3)</sup>	□
TÜV nord certificate for STO		●	–	–	–	–
TÜV nord certificate for FSO-12	+Q973	□	–	–	–	–
TÜV nord certificate for FSO-21	+Q972	□	–	–	–	–
TÜV nord certificate for FSE-31	+L521	□	–	–	–	–
Eurofins ATEX protective device certificate	+Q971 +L513/ +L514 or +Q971 +L537	□	–	–	–	–
SEMI F47		●	●	●	●	●

● Standard

□ Selectable option, with plus code

■ Selectable option, external, no plus code

ACS880 liquid-cooled multidrives

	Option code	ACS880 -107LC INU R7i, nxR8i	ACS880 -207LC ISU R7i, nxR8	ACS880 -307LC DSU nxD8T	ACS880 -607LC brake unit	ACS880 -1607LC DC/DC nxR8i
<b>Safety functions</b> <sup>23)</sup>						
Safe torque off (STO)		●	-	-	-	-
Safety functions module, FSO-12, without encoder, configurable functions: - Safe stop 1 (SS1-t, SS1-r) - Safely-limited speed (SLS) - Safe brake control (SBC) - Safe maximum speed (SMS) - Safe stop emergency (SSE) - Prevention of unexpected start-up (POUS) - Safe torque off (STO)	+Q973	□	-	-	-	-
Safety functions module, FSO-21, with encoder support, configurable functions: - Safe stop 1 (SS1-t, SS1-r) - Safely-limited speed (SLS) - Safe brake control (SBC) - Safe maximum speed (SMS) - Safe stop emergency (SSE) - Prevention of unexpected start-up (POUS) - Safe direction (SDI), requires encoder feedback, FSE-31 - Safe speed monitoring (SSM) - Safe torque off (STO)	+Q972	□	-	-	-	-
Pulse encoder interface module, FSE-31	+L521	□	-	-	-	-
Prevention of unexpected start-up with safety relay(s)	+Q957	□	-	-	-	-
Prevention of unexpected start-up with STO and safety functions module (FSO-12/-21)	+Q950 +Q973/ +Q972	□	-	-	-	-
Emergency stop, category 0 with opening the main contactor/breaker, with safety relay	+Q951	-	□	□	-	-
Emergency stop, category 1 with opening the main contactor/breaker, with safety relay	+Q952	-	□	□	-	-
Emergency stop, category 0 with STO, with safety relay	+Q963	-	□	□	-	-
Emergency stop, category 1 with STO, with safety relay	+Q964	-	□	□	-	-
Emergency stop, configurable category 0 or 1 with STO and safety functions module (FSO-12/-21)	+Q979 +Q973/ +Q972	-	□	□	-	-
PROFIsafe over PROFINET with safety functions module (FSO-21) and FPNO-21	+Q982 +Q972 +K492	□	-	-	-	-
Safely-limited speed (SLS) without encoder with FSO-12/-21 (encoderless)	+Q966 +Q973 +Q972	□	-	-	-	-
Safely-limited speed (SLS) with FSO-21 and encoder FSE-31	+Q965 +Q972 +L521	□	-	-	-	-
ATEX thermal motor protection for PTC/PT100, EX II (2) GD	+Q971 +L513/ +L514	□	-	-	-	-
FPTC-01 thermistor protection module	+L536	□	-	-	-	-
ATEX certified thermistor protection module, FPTC-02, EX II (2) GD	+L537 +Q971	□	-	-	-	-

- Standard
- Selectable option, with plus code
- Selectable option, external, no plus code

ACS880 liquid-cooled multidrives

	Option code	ACS880 -107LC INU R7i, nxR8i	ACS880 -207LC ISU R7i, nxR8	ACS880 -307LC DSU nxD8T	ACS880 -607LC brake unit	ACS880 -1607LC DC/DC nxR8i
<b>Earth fault protection</b>						
Earth fault monitoring, earthed mains		●	●	●	–	–
Earth fault monitoring, unearthed mains	+Q954	–	□	□	–	–
<b>Control connections (I/O) and communications</b>						
2 pcs analog inputs, programmable, galvanically isolated		●	●	●	● <sup>2)</sup>	●
2 pcs analog outputs, programmable		●	●	●	● <sup>2)</sup>	●
6 pcs digital inputs, programmable, galvanically isolated – can be divided into two groups		●	●	●	● <sup>2)</sup>	●
2 pcs digital inputs/outputs		●	●	●	● <sup>2)</sup>	●
1 pcs digital input interlock		●	●	●	● <sup>2)</sup>	●
3 pcs relay outputs		●	●	●	● <sup>2)</sup>	●
Drive-to-drive link/Built-in Modbus	●	–	–	–	–	–
Assistant control panel/PC tool connection		●	●	●	● <sup>2)</sup>	●
Possibility for external power supply for control unit		□	□	□	□ <sup>2)</sup>	□
Built-in I/O extension and speed feedback modules: for more details see sections: “Input/output extension modules”, “Speed feedback interfaces for precise process control” and “DDCS communication option modules” <sup>18)</sup>		□	□	□	□ <sup>2)</sup>	□
Built-in adapters for several communication protocols: for more details see section “Communication protocol adapters” <sup>19)</sup>		□	□	□	□ <sup>2)</sup>	□

● Standard

□ Selectable option, with plus code

■ Selectable option, external, no plus code

– Not available

<sup>1)</sup> Not available for resistor D151

<sup>2)</sup> Not available for 1-phase brake unit

<sup>3)</sup> Pending

<sup>4)</sup> Available only as 6-pulse D8T

<sup>5)</sup> Conducted emission and immunity are fulfilled with standard filtering. Radiated emission and immunity are as option (cabinet construction).

<sup>6)</sup> Standard for frame sizes R6i to 10×R8i

<sup>7)</sup> Optional in frame sizes R1i to R8i and 400/500 V

<sup>8)</sup> For ISU: 400 to 500 V disconnector and contactor up to 2×R8i, 690 V disconnector and contactor up to 3×R8i.

For bigger ISU frames: air-circuit breaker.

<sup>9)</sup> For DSU 6-pulse, 400/500 V: disconnector up to 3×D8T, air-circuit breaker ≥ 4×D8T.

For DSU 6-pulse, 690 V: disconnector up to 4×D8T, air-circuit breaker ≥ 5×D8T.

For DSU 12-pulse: All 12-pulse DSUs have disconnector as standard, air-circuit breaker is offered as an option.

<sup>10)</sup> For RRU: Disconnector and contactor up to 2×R8i, air-circuit breaker ≥ 4×R8i.

<sup>11)</sup> For ISU: 400 to 500 V air circuit breaker ≥ 3×R8i, 690 V air-circuit breaker ≥ 4×R8i

<sup>12)</sup> For RRU: air circuit breaker >4×R8i

<sup>13)</sup> R1i to R4i for cabinet, individual for R6i to n×R8i. Common for cabinet for R1i to R5i, individual for R6i to n×R8i.

<sup>14)</sup> DC switch for 3-phase dynamic brake unit only

<sup>15)</sup> EAC has replaced GOST R

<sup>16)</sup> ACS880 marine type approval and type approved drives are listed at

<sup>17)</sup> Marine type approval only available for frames R5i-nxR8i

<sup>18)</sup> Three option slots are available for I/O extension, speed feedback, fieldbus and functional safety options.

The slot number for I/O and encoder options can be extended with FEA-03 option.

<sup>19)</sup> Three option slots are available for I/O extension, speed feedback, communication protocol and functional safety options.

<sup>23)</sup> Three option slots are available for I/O extension, speed feedback, communication protocol and functional safety options.

FSO-xx can also be mounted on a DIN rail by using a separate installation kit. DIN rail mounting does not consume the drive's option slots.

<sup>24)</sup> Please check availability from your local ABB.

<sup>25)</sup> Available for R8i

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