

ACSM1

Quick Installation and Start-up Guide ACSM1-204 Regen Supply Module

English	3
Appendix.....	13



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List of related manuals in English

REGEN SUPPLY MODULE MANUALS	Code (EN)
ACSM1-204 Regen Supply Modules Hardware Manual	3AUA0000053713
ACSM1-204 Regen Supply Modules Firmware Manual	3AUA0000052174
ACSM1-204 Quick Installation and Start-up Guide	3AUA0000060576
WFU-xx Regen Filter Module Quick Installation Guide	3AUA0000055334

DRIVE MODULE MANUALS	Code (EN)
ACSM1-04 (0.75 to 45 kW) Drive Modules Hardware Manual	3AFE68797543
ACSM1-04 (0.75 to 45 kW) Drive Modules Quick Installation Guide	3AFE68797551
ACSM1-04 (55 to 110 kW) Drive Modules Hardware Manual	3AFE68912130
ACSM1-04/04Lx (55 to 160 kW) Drive Modules Quick Installation Guide	3AFE68971853
ACSM1-04LC (55 to 132 kW) Liquid-Cooled Drive Modules Hardware Manual	3AUA0000022083
ACSM1-04 Drive Modules System Engineering Manual	3AFE68978297

OPTION MANUALS	Code (EN)
FCAN-01 CANopen Adapter Module User's Manual	3AFE68615500
FDNA-01 DeviceNet Adapter Module User's Manual	3AFE68573360
FPBA-01 PROFIBUS DP Adapter Module User's Manual	
ACSM1 Fieldbus Control with FPBA-01 PROFIBUS DP Adapter Module and ABB AC500 PLC Application Guide	3AUA0000049359
FSCA-01 RS-485 Adapter Module User's Manual	3AUA0000044530
FENA-01 Ethernet Adapter Module Hardware Manual	3AUA0000022986
FENA-01 Ethernet Adapter Module Modbus/TCP Protocol Manual	3AUA0000022989
FENA-01 Ethernet Adapter Module Ethernet/IP Protocol Manual	3AUA0000033371
FIO-01 Digital I/O Extension User's Manual	3AFE68784921
FIO-11 Analog I/O Extension User's Manual	3AFE68784930
FIO-01 Digital I/O Extension Quick Guide	3AFE68784981
FIO-11 Analog I/O Extension Quick Guide	3AFE68784999

Manual downloads: www.abb.com/drives > *Document Library*

Quick installation and start-up guide – ACSM1-204

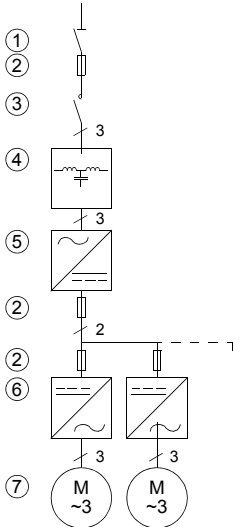
About this guide

This guide contains very basic information about the mechanical and electrical installation, and start-up of the ACSM1-204 regen supply module.

System overview

The ACSM1 regen supply feeds power to ACSM1-04 drive modules. The regen supply can also feed braking power back to the supply network. The regen supply consists of a regen filter module (WFU-xx) and regen supply module (ACSM1-204). The regen filter module is always needed in the system to operate the regen supply module.

Input power line



No.	Description
1	Main disconnector
2	Fuses
3	Main contactor
4	WFU-xx regen filter module.
5	ACSM1-204 regen supply module
6	ACSM1-04 drive module(s)
7	AC motor

Applicability

This manual applies to the ACSM1-204 regen supply module (frame sizes A to D).

For instructions on installing the regen filter module, see *WFU-xx Regen Filter Module Installation Guide* and *ACSM1-204 Regen Supply Modules Hardware Manual*.

Compatibility

ACSM1-204 modules are compatible with ACSM1-04 drives (frames A-D).

Related documents

For a list of related documents in English, see the inside of the front cover.

Safety instructions



WARNING! All electrical installation and maintenance work on the regen supply module should be carried out by qualified electricians only.



WARNING! Never work on the regen supply module or regen filter module when input power is applied to the drive system. Always ensure by measuring that no voltage is present.



WARNING! Do not use the regen supply module without a regen filter module.

Planning the installation

- The ACSM1-204 is an IP20 (UL open type) regen supply module to be used in a heated, indoor controlled environment. The regen supply module must be installed in clean air according to enclosure classification. Cooling air must be clean, free from corrosive materials and electrically conductive dust. See the Hardware Manual for detailed specifications.
 - The maximum ambient air temperature is 40 °C (104 °F) at rated current. The current is derated for 41 to 55 °C (104 to 131 °F). See the Hardware Manual for more information on derating.
 - The regen supply module is suitable for use in a circuit capable of delivering not more than 100,000 rms symmetrical amperes, 480 V maximum.
 - The cables located within the motor circuit must be rated for at least 75 °C (167 °F) in UL-compliant installations.
 - The input cable must be protected with fuses or circuit breakers. The DC cable must be protected with DC fuses. Suitable IEC and UL fuses are listed in the Technical data section of *ACSM1-204 Regen Supply Modules Hardware Manual*. For suitable circuit breakers, contact your local ABB representative.
 - For installation in the United States, branch circuit protection must be provided in accordance with the National Electrical Code (NEC) and any applicable local codes. To fulfill this requirement, use the UL classified fuses.
 - For installation in Canada, branch circuit protection must be provided in accordance with Canadian Electrical Code and any applicable provincial codes. To fulfill this requirement, use the UL classified fuses.
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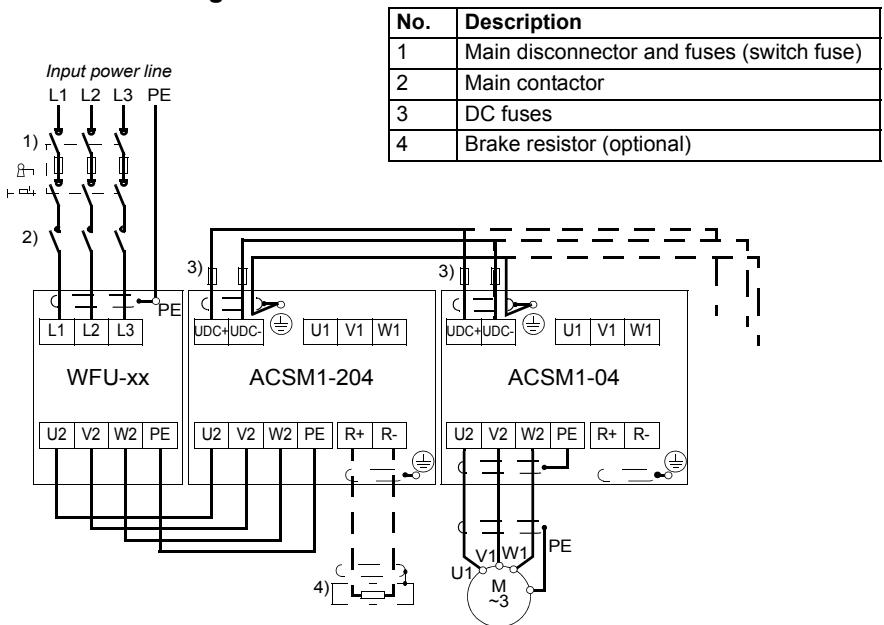
Mechanical installation

Fasten the regen supply module to the mounting base using screws through the four mounting holes. Frame A and B can be mounted onto a DIN rail, but it is recommended to fasten the modules to the mounting base also by two screws through the lower mounting holes.

Fasten the regen filter module as instructed in *WFU-xx Regen Filter Module Installation Guide*.

Installing the power cables

■ Connection diagram



■ Connection procedure

Cabling examples are presented on page 7. Tightening torques are presented on page 8 and at appropriate points in the text. For power cable connections in an installation example, see [Appendix](#) on page 13.

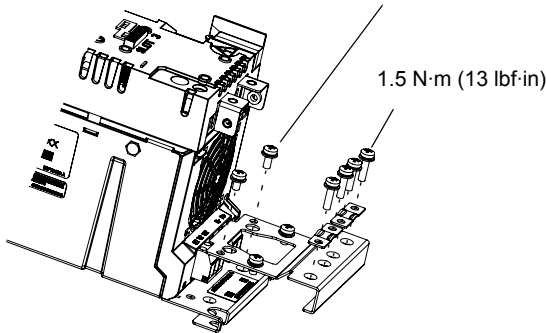
- Attach the terminal blocks included to the regen supply module.
- **Frame sizes C and D only:** Remove the two plastic connector covers at the top and bottom of the regen supply module. Each cover is held by two screws.
- On IT (ungrounded) systems and corner-grounded TN systems, remove the screw labeled VAR located close to the supply terminals. Also, remove the screws

labeled VARISTOR (1 screw) and FILTER (2 screws) in the regen filter module (under the cover).

- Fasten the two cable clamp plates included with the regen supply module, one at the top, one at the bottom. The clamp plates are identical.

Frames A and B: 1.5 N·m (13 lbf·in)

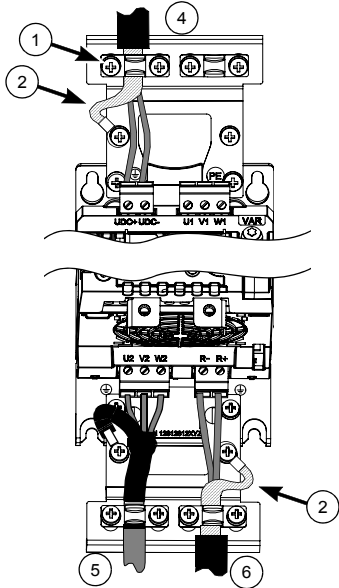
Frames C and D: 3 N·m (25 lbf·in)



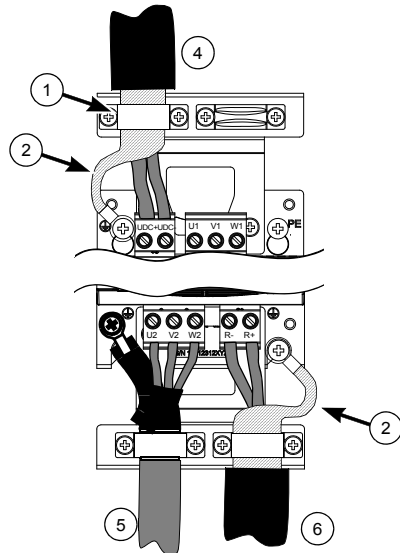
- Strip the DC cable and resistor cable (if present) so that the cable shields are bare at the cable clamps. Connect the ends of the cable shields to the ground terminals using cable lugs. Cover visible bare shield with insulating tape.
 - Connect the DC cable and resistor cable to the appropriate terminals.
 - Tighten the cable clamps onto the bare cable shields of DC cable and resistor cable.
 - Connect the AC supply conductors and PE conductor to the appropriate terminals.
 - Tighten the cable clamp onto the AC supply conductors and PE conductor, or tie the conductors to the clamp with a cable tie.
 - **Frame sizes C and D only:** Cut suitable slots on the edges of the connector covers to accommodate the cables. Refit the covers.
 - Connect the filter temperature monitoring cable of the WFU-xx regen filter module to the thermistor input (X4:8, 9) in the regen supply module.
 - Connect the fan control cable of the WFU-xx regen filter module to DIO1 (X3:14, 15) in the regen supply module.
-

■ Cabling examples

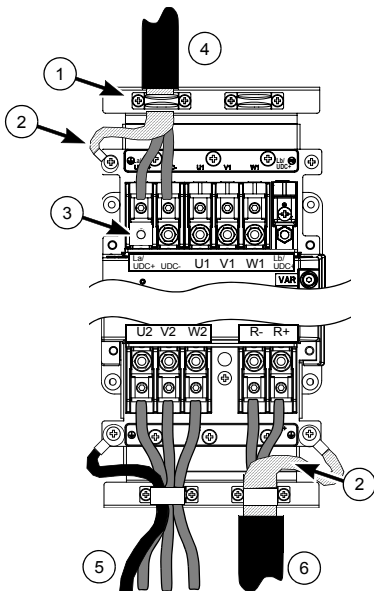
Frame size A




Frame size B



Frame sizes C and D



①	Cable clamp on bare shield.
②	Bare shield. Cover with insulating tape.
③	Screw lug detail: 
④	Connection to the drive modules.
⑤	Connection to the regen filter module. Strain relief: draw conductors under clamp or tighten conductors to clamp with cable tie.
⑥	Connection to the brake chopper (optional).

■ Recommended wire sizes

Filter unit mains supply cable

Regen supply module frame size	Wire size	Wire size (AWG)
A	1.5 ... 4 mm ²	15 ... 12
B	2.5 ... 6 mm ²	13 ... 10
C	10 ... 70 mm ²	7 ... 2/0
D	25 ... 70 mm ²	3 ... 2/0

DC cable

Regen supply module frame size	Wire size	Wire size (AWG)
A	1.5 ... 4 mm ²	15 ... 12
B	4 ... 6 mm ²	12 ... 10
C	10 ... 70 mm ²	7 ... 2/0
D	35 ... 70 mm ²	2 ... 2/0

■ Tightening torques

Regen supply module frame size	Power terminals (supply and braking resistor cables) N·m (lbf-in)	Screw lug (Allen screw) N·m (lbf-ft)
A	0.5 ... 0.6 (4.4 ... 5.3)	N/A
B	1.2 ... 1.5 (10.6 ... 13.3)	N/A
C or D	3 (25)	15 (11)

Regen supply module frame size	PE/Ground terminals N·m (lbf-in)	Power cable clamps N·m (lbf-in)	Power connector covers N·m (lbf-in)
A	1.5 (13)	1.5 (13)	N/A
B	1.5 (13)	1.5 (13)	N/A
C or D	3 (25)	1.5 (13)	3 (25)

Installing the control cables

■ Wiring the main contactor connection

Equip the installation with a main contactor that opens if the regen supply module trips on a fault.

■ Default I/O connection diagram

Notes:

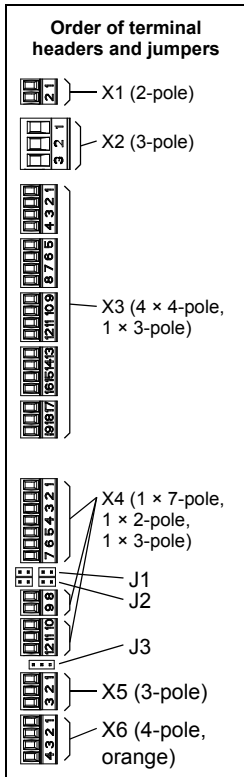
*Total maximum current: 200 mA

Wire sizes and tightening torques:

X2: 0.5 ... 2.5 mm² (24...12 AWG). Torque: 0.5 N·m (5 lbf·in)

X3, X4, X5, X6: 0.5 ... 1.5 mm² (28...14 AWG). Torque: 0.3 N·m (3 lbf·in)

- 1) WFU-xx cooling fan control
- 2) WFU-xx temperature supervision



X1		
External power input	+24V1	1
24 V DC, 1.6 A	GND	2

X2		
Relay output	NO	1
250 V AC / 30 V DC	COM	2
2 A	NC	3

X3		
+24 V DC*	+24VD	1
Digital I/O ground	DGND	2
Digital input 1: Stop/start (EXT2)	DI1	3
Digital input 2: EXT1/EXT2	DI2	4
+24 V DC*	+24VD	5
Digital I/O ground	DGND	6
Digital input 3: Fault reset	DI3	7
Digital input 4: Force stop	DI4	8
+24 V DC*	+24VD	9
Digital I/O ground	DGND	10
Digital input 5: Not connected	DI5	11
Digital input 6: Not connected	DI6	12
+24 V DC*	+24VD	13
Digital I/O ground	DGND	14
Digital I/O 1: Fan control signal (output)	DIO1	15
Digital I/O 2: Running (output)	DIO2	16
+24 V DC*	+24VD	17
Digital I/O ground	DGND	18
Digital I/O 3: Fault (output)	DIO3	19

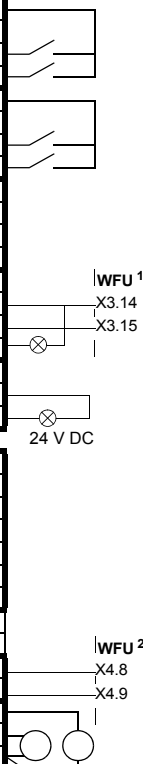
X4		
Reference voltage (+)	+VREF	1
Reference voltage (-)	-VREF	2
Ground	AGND	3
Analogue input 1: Not connected	A11+	4
	A11-	5
Analogue input 2: Not connected	A12+	6
	A12-	7

A11 current/voltage selection	J1	
A12 current/voltage selection	J2	
Thermistor input	TH	8
Ground	AGND	9
Analogue output 1 (current)	AO1 (I)	10
Analogue output 2 (voltage)	AO2 (U)	11
Ground	AGND	12

X5		
Drive-to-drive link termination	J3	
Drive-to-drive link.	B	1
	A	2
	BGND	3

X6		
Not in use. Both circuits must be closed with jumpers for the regen supply module to start.	OUT1	1
	OUT2	2
	IN1	3
	IN2	4

Control panel connection	X7
Memory unit connection	X20



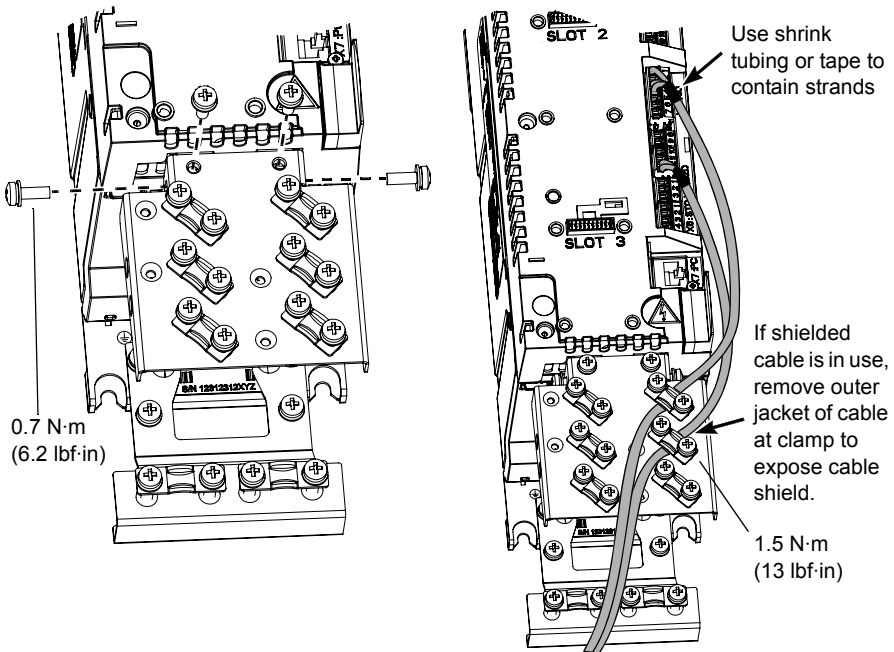
■ Default connections

Make the following connections on the control unit before attempting to start up the regen supply module:



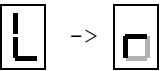
- **X3:14, 15** Fan control signal. The fan control cable must be connected.
Note: A 24 V DC supply must be connected to the WFU-xx filter.
- **X4:8, 9** Thermistor input. The filter temperature monitoring cable must be connected.
- **X6:1, 3** and **X6:2, 4** Not in use. Both circuits must be closed with jumpers (included in delivery).

■ Connection procedure

The clamp plate can be fastened at the top or the bottom of the JCU Control Unit.



Start-up

Safety	
	The start-up may only be carried out by a qualified electrician. The safety instructions must be followed during the start-up procedure. See the safety instructions on the first pages of the appropriate hardware manual.
<input type="checkbox"/>	Check the installation.
I/O connections	
<input type="checkbox"/>	Check that the I/O connections have been made as shown in Default I/O connection diagram .
Power up	
	By default, the regen supply module starts modulating when the power is switched on unless prevented by I/O.
<input type="checkbox"/>	<div style="display: flex; justify-content: space-between;"> <div style="width: 60%;"> <p>Switch the power on. When the regen supply module is modulating, the lower segments in the 7-segment display are lit in a clockwise-rotating sequence.</p> </div> <div style="width: 35%; text-align: center;"> <p>7-segment display:</p>  </div> </div>
Network identification	
<input type="checkbox"/>	<p>The regen supply module fetches the network data automatically in the first start-up after the power-up. The automatic network identification takes 5...10 ms.</p> <p>In a unit with an externally powered JCU, the automatic network identification also takes place in the first start-up after the PU has been switched off.</p>
Fieldbus control	
See the <i>Firmware Manual</i> .	



Appendix

Installation example: power and control connections

