Hoist / Motor Controller

Instruction Manual

Models:

GMCseries: GMC12, GMC8, GMC4
CMCseries: CMC12, CMC8, CMC4

version 1 – SIL3 E-stop since 4.2013

ATTENTIONS

This instruction manual contains important information about the installation and the use of the equipment. Please read and follow these instructions carefully.

Always ensure that the power to the equipment is disconnected before opening the equipment or commencing any maintenance work.

1. Safety information

IMPORTANT INSTRUCTIONS

All safety and operating instructions should be read before the equipment is installed or operated.

IMPORTANT SAFETY INFORMATION

The following general safety precautions have to be observed during all phases of operation, service, and the repair of this equipment. Failure to comply with these precautions or with specific warnings in this manual violates safety standards of design, manufacture, and the intended use of this equipment.

Do not operate in an explosive atmosphere!

Do not operate this equipment in the presence of flammable gases or fumes. Operation of any electrical instrument in such an environment constitutes a definite safety hazard.

Water, moisture, heat and humidity

Do not operate this equipment near water or in areas with wet floors or in high humidity atmosphere where condensation forms on the equipment. It should never be placed near or over a heat register or other source of heated air and it should not be installed or operated without proper ventilation.

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2. Functions and Control

Motor Controller was designed to control up to 12 electrically compatible motors, either separately or simultaneously – controlled via Cable Remote Controller /CMCseries/ or Wireless Motor Controller / WGMCseries/.

Each device is equipped with unique APA /Automatic Phase Align/ module, which guarantees that the motors are still moving in the same direction on any align of input phases. If any line wire is disconnected, the hoist controller stops to ensure safe operation. Unit is also equipped wit AVM /Automatic voltage metering/ module. This module checks main voltage for AC 400V +-20%, star configuration and protects the hoists in case of problem with main voltage. Unit will not go into the safe function if:
- one phase is missing
- there is under voltage on lines
- there is overvoltage on lines

All electrical components carry their own individual CE and comply with European Directives. All components are housed in a robust steel 19" rack casing with powder coating. Unit complies with CE according the Certification of conformity attached to this manual.

3. Operation

The Motors/Hoists connected with the GMCseries controller can be activated individually or simultaneously using the GO switch located on the cable or wireless controller /WMC or CMC/. The selection of the hoists that are controlled should be made by the WMC or CMC switches. Units can be linked together to create bigger systems.

3.1 How to start

- Connect the CEE32A/5p plug to the AC400V power supply – turn the key to ON position. When the mains is OK, green OK LED + signalization of 123 or 132 align will be ON.
- If there is a problem with the phase lines / voltage or one of phase lines is missing, the red FAIL LED is ON – disconnect mains and check line voltage - phase presence.

- Connect the plugs for the electric hoists to the sockets of the CEE16A – 4p or via multi-pin cable + breakout boxes.
- Check that the emergency STOP mushroom is not engaged on GMC or WMC device
- Until Emergency circuit is not activated the RESET button becomes to blue color – press it to start operate with the hoist controller. You need to perform this every time when you disconnect or connect main to controller.

!!! This button needs to be pressed after power cycle or Emergency STOP issue!!!

- Move lever corresponding to each motor, to the position required:
    - UP - Lever in upper position
    - STAY – Lever in middle position
    - DOWN - Lever in lower position
- Pushing the GO button will activate the motors to move simultaneously
- Releasing the GO button will stop the movement of the motors simultaneously.
- When is device not used is highly recommended to turn it OFF by KEY or Emergency OFF mushroom.

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3.2 To Move a Single Motor:

- Set the UP/DOWN toggle switch for that motor to the desired direction. The associated LED should light Green for UP, or Red for DOWN direction
- Hold the GO button until the motor are moved the desired height, then release.

3.3 To Move Several Motors:

- Set the UP/DOWN toggle switches for each motor to the desired direction. Each associated LED should light Green for UP, or Red for DOWN.
- Hold the press the GO button until the motors has moved the desired height, then release.

3.4 EMERGENCY STOP:

This emergency stop is on base unit of each hoist controller. Emergency is in RED color + Yellow background with sign. This latching pushbutton turns the GMCseries controller to inactive state. Once the EMERGENCY STOP button has been pressed, it locks into the active position and must be rotated clockwise and released before disengaging.

After activation/deactivation of the Emergency stop, the controller needs to be reset by RESET button. When you're unable to reset system check the emergency lines. Both safety plugs need to be connected or circuit need to be NC for both lines. Each contactor + Emergency circuit is tested when you're trying to reset system. If you're unable to reset system consult this with manufacturer or distributor.
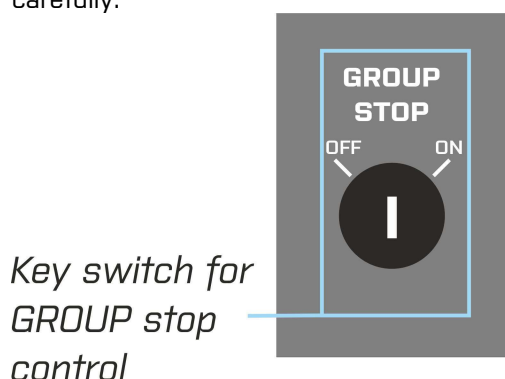
3.5 GROUP STOP switch

GROUP STOP switch:
GROUP STOP switch turns the functionality of GROUP stop on and off. This switch is located on the front panel of the controller.

When the GROUP STOP is active, the overcurrent/overload protection MCB of the hoist will cause a general STOP for all hoists connected to the controller.
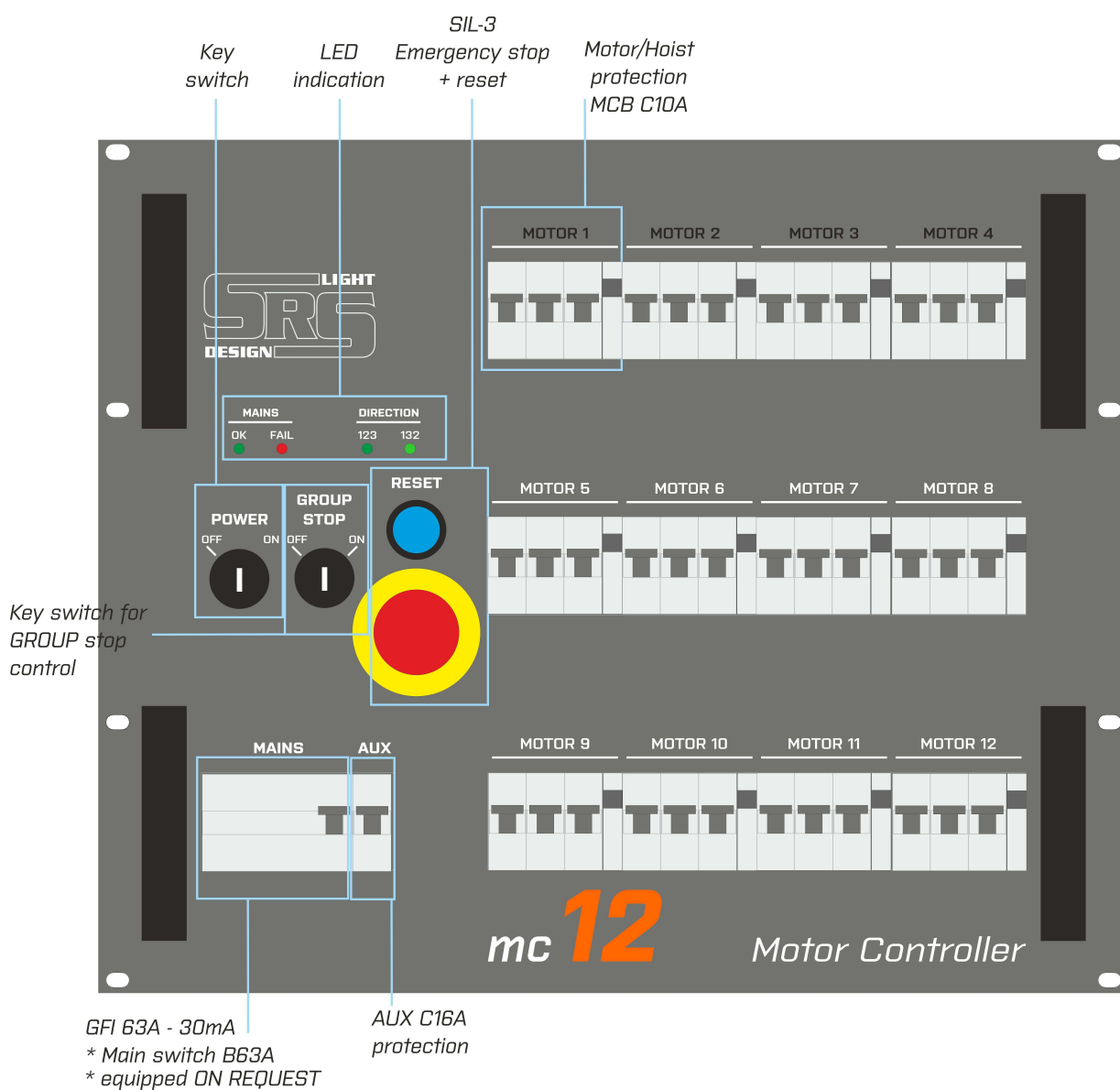To reset after the GROUP stop, the tripped MCB that has to be reset and the RESET button located on front panel pressed.

When this function is disabled, the trip of MCB will not cause an E-STOP. Please, use this function carefully.

Key switch for GROUP stop control

4. GMCseries

4.1 GMCseries front panel

Key switch

LED indication

SIL-3 Emergency stop + reset

Motor/Hoist protection MCB C10A

LIGHT

SRS DESIGN

MOTOR 1   MOTOR 2   MOTOR 3   MOTOR 4

MAINS   DIRECTION
OK   FAIL   123   132

RESET

MOTOR 5   MOTOR 6   MOTOR 7   MOTOR 8

POWER   GROUP STOP
OFF   ON   OFF   ON

Key switch for GROUP stop control

MAINS   AUX

MOTOR 9   MOTOR 10   MOTOR 11   MOTOR 12

mc12   Motor Controller

GFI 63A - 30mA
* Main switch B63A
* equipped ON REQUEST

AUX C16A protection

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4.2 GMCseries back panel

Thru Outputs
* Socapex 19
* Harting 16 pin
* Harting 24 pin

CEE16 4pin

*Digital remote
CMC-D, WMC-D

2x 4pin NC
E-stop SIL3

WMC power
Loadcell power

*Analog remote
CMC or WMC

MOTOR 1-4

MOTOR 5-8

MOTOR 9-12

FUSE T2.5A

FUSE T6.3A

DIGITAL

E-STOP 1

E-STOP 2

AUX 1

AUX 2

REMOTE

MOTOR 1   MOTOR 2   MOTOR 3   MOTOR 4

MOTOR 5   MOTOR 6   MOTOR 7   MOTOR 8

MOTOR 9   MOTOR 10   MOTOR 11   MOTOR 12

CAUTION

CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK
DO NOT REMOVE COVER
NO USER-SERVICEABLE PARTS INSIDE
REFER SERVICING TO QUALIFIED PERSONNEL

MOTOR CONTROLLER
MADE BY SRS LIGHT DESIGN, SLOVAKIA
MAIN - 3 x 230V/400V, 50Hz
       - 3 x   A
TYPE
SERIAL NUMBER

Main cable 1.5m
+ CEE32 5pin

EARTH point

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4.3 GMCseries SCT /screw terminal connection/ back panel

*Digital remote
CMC-D, WMC-D

2x 4pin NC
E-stop SIL3

WMC power
Loadcell power

*Analog remote
CMC or WMC

CAUTION

CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK
DO NOT REMOVE COVER
NO USER-SERVICEABLE PARTS INSIDE
REFER SERVICING TO QUALIFIED PERSONNEL.

MOTOR CONTROLLER
MADE BY SRS LIGHT DESIGN, SLOVAKIA
MAIN ~ 3 x 230V/400V, 50Hz
~ 3 x   A
TYPE
SERIAL NUMBER

FUSE T2.5A   DIGITAL   E-STOP 1   E-STOP 2   AUX 1   AUX 2   REMOTE

FUSE T6.3A

EARTH point

POWER
INPUT

MOTOR OUTPUT

1   2   3   4   5   6   7   8   9   10   11   12

Controller output

⏚ N L1 L2 L3   ⏚L1L2L3 ⏚L1L2L3 ⏚L1L2L3 ⏚L1L2L3 ⏚L1L2L3 ⏚L1L2L3 ⏚L1L2L3 ⏚L1L2L3 ⏚L1L2L3 ⏚L1L2L3 ⏚L1L2L3 ⏚L1L2L3

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5. Connectors description

5.1 Remote connector

Amphenol DS3102A28-21S

Pin	Function	CMC12A	CMC8A
1	M1 down	X	X
2	M1 up	V	V
3	M2 down	c	c
4	M2 up	d	d
5	M3 down	b	b
6	M3 up	h	h
7	M4 down	j	j
8	M4 up	k	k
9	M5 down	e	e
10	M5 up	Z	Z
11	M6 down	W	W
12	M6 up	L	L
13	M7 down	K	K
14	M7 up	U	U
15	M8 down	m	m
16	M8 up	f	f
17	M9 down	R	-
18	M9 up	P	-
19	M10 down	N	-
20	M10 up	M	-
21	M11 down	F	-
22	M11 up	E	-
23	M12 down	T	-
24	M12 up	S	-
25	Contactor ON	a	a
26	AC1 24V	g	g
27	AC1 24V	n	n
28	AC1 24V	p	p
29	AC2 24V	r	r
30	GROUND	s	s

5.2 AUX1 +AUX2 connector

AUX outputs are protected by single C16A GMCB. On output of NAC3MPB you have AC230V/50Hz always when the RCD or GMCB is in on position. You can use AUX freely – mainly is used for WMC power and Loadcell power.

5.3   E-STOP 1 + E-STOP 2 / E-stop connector

Unit is equipped with certified SIL3 e-stop safety relay. For additional safety you can connect up to two sources of E-STOP. Usually one is WMC unit and 2nd one should be loadcell unit. According to requirement both lines are normally closed – NC. Due this is necessary to fit the safety breach /MXX connector with short circuit between pins 1+2 and 3+4. Both lines are separated and CAN'T be connected together – otherwise you'll be not able to reset safety circuit.

Neutrik NC4FXX   Pin 1. Safety line 1 in
                          Pin 2. Safety line 1 out
                          Pin 3. Safety line 2 in
                          Pin 4. Safety line 2 out
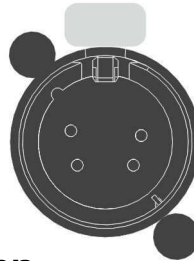
5.4   External E-STOP connection

An unlimited number of E-STOP remote boxes can be connected to the GMC and MC units.
They need to be connected in serial to the E-STOP1 or E-STOP2.

In this case, a 4-pin cable 4G 0.5mm2 is required and all E-STOP remote stations need to be equipped with 2x NC contact. Ask the manufacturer for schematics and more details.

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5.5 SCT /Screw terminal type/ Motor/hoist connector

For change of direction movement we're changing rotation of phases from 123 to 132.
In non active state is this connector without any power.
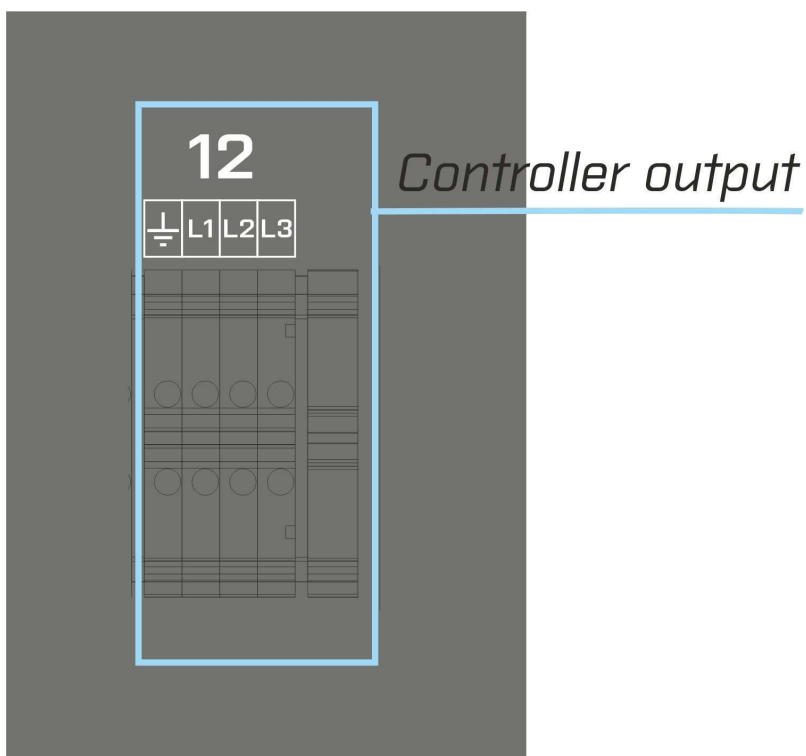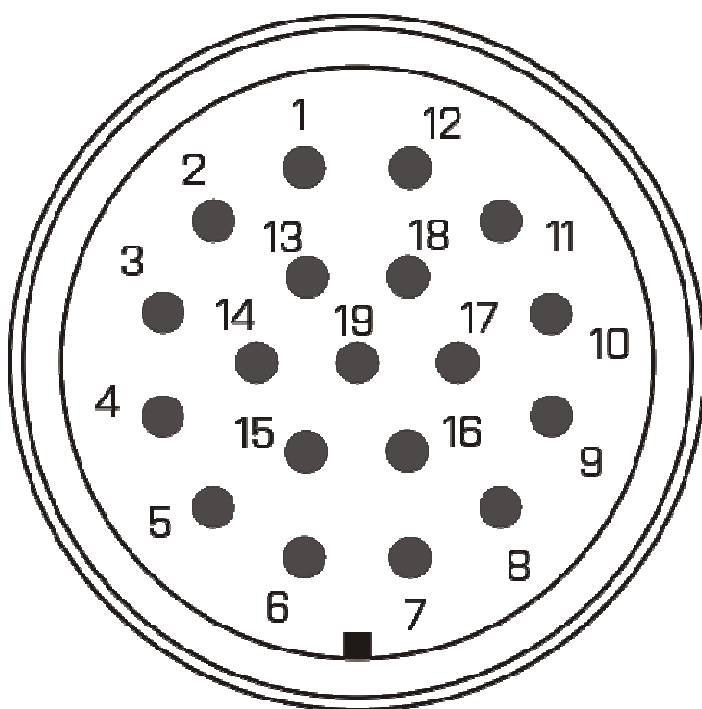

5.6 CEE16/4p motor/hoist connector

For change of direction movement we're changing rotation of phases from 123 to 132.
In non active state is this connector without any power.
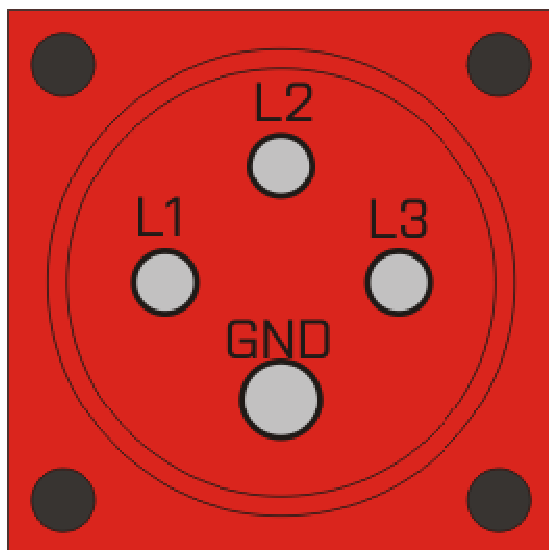
On request unit can be equipped with CEE16/5p connector. In this case the NEUTRAL on output connector is not connected.

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5.7 Socapex 19 pin

Motor 1-4	
Pin	**Wire**
1	L1 Motor 1
2	L2 Motor 1
3	L3 Motor 1
4	L1 Motor 2
5	L2 Motor 2
6	L3 Motor 2
7	L1 Motor 3
8	L2 Motor 3
9	L3 Motor 3
10	L1 Motor 4
11	L2 Motor 4
12	L3 Motor 4
13	GND
14	GND
15	GND
16	GND
17	GND
18	GND
19	GND

Motor 5-8	
Pin	**Wire**
1	L1 Motor 5
2	L2 Motor 5
3	L3 Motor 5
4	L1 Motor 6
5	L2 Motor 6
6	L3 Motor 6
7	L1 Motor 7
8	L2 Motor 7
9	L3 Motor 7
10	L1 Motor 8
11	L2 Motor 8
12	L3 Motor 8
13	GND
14	GND
15	GND
16	GND
17	GND
18	GND
19	GND

Motor 9-12	
Pin	**Wire**
1	L1 Motor 9
2	L2 Motor 9
3	L3 Motor 9
4	L1 Motor 10
5	L2 Motor 10
6	L3 Motor 10
7	L1 Motor 11
8	L2 Motor 11
9	L3 Motor 11
10	L1 Motor 12
11	L2 Motor 12
12	L3 Motor 12
13	GND
14	GND
15	GND
16	GND
17	GND
18	GND
19	GND

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5.8 Harting 16 pin A type /more common/
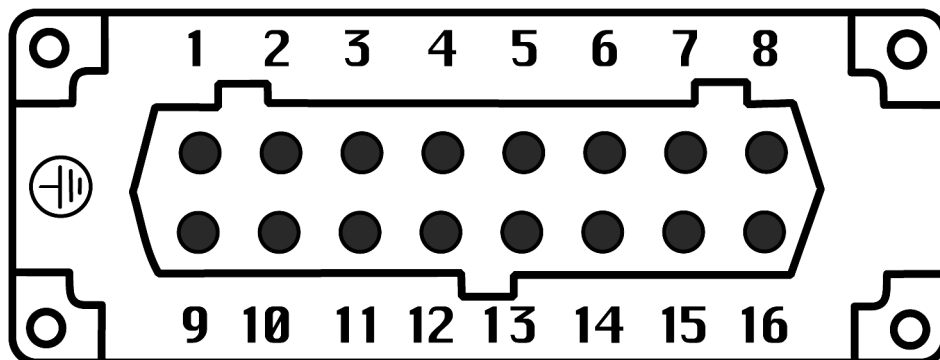
Motor 1-4	
Pin	Wire
1	L1 Motor 1
2	L2 Motor 1
3	L3 Motor 1
4	L1 Motor 2
5	L2 Motor 2
6	L3 Motor 2
7	L1 Motor 3
8	L2 Motor 3
9	L3 Motor 3
10	L1 Motor 4
11	L2 Motor 4
12	L3 Motor 4
13	GND
14	GND
15	GND
16	GND
GND	GND

Motor 5-8	
Pin	Wire
1	L1 Motor 5
2	L2 Motor 5
3	L3 Motor 5
4	L1 Motor 6
5	L2 Motor 6
6	L3 Motor 6
7	L1 Motor 7
8	L2 Motor 7
9	L3 Motor 7
10	L1 Motor 8
11	L2 Motor 8
12	L3 Motor 8
13	GND
14	GND
15	GND
16	GND
GND	GND

Motor 9-12	
Pin	Wire
1	L1 Motor 9
2	L2 Motor 9
3	L3 Motor 9
4	L1 Motor 10
5	L2 Motor 10
6	L3 Motor 10
7	L1 Motor 11
8	L2 Motor 11
9	L3 Motor 11
10	L1 Motor 12
11	L2 Motor 12
12	L3 Motor 12
13	GND
14	GND
15	GND
16	GND
GND	GND

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5.9 Harting 16 pin B type / on request/
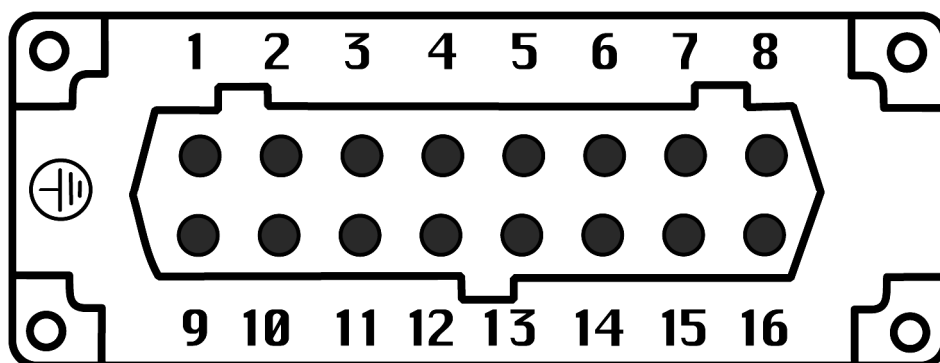
Motor 1-4	
Pin	**Wire**
1	L1 Motor 1
2	L2 Motor 1
3	L3 Motor 1
4	GND
5	L1 Motor 2
6	L2 Motor 2
7	L3 Motor 2
8	GND
9	L1 Motor 3
10	L2 Motor 3
11	L3 Motor 3
12	GND
13	L1 Motor 4
14	L2 Motor 4
15	L3 Motor 4
16	GND

Motor 5-8	
Pin	**Wire**
1	L1 Motor 5
2	L2 Motor 5
3	L3 Motor 5
4	GND
5	L1 Motor 6
6	L2 Motor 6
7	L3 Motor 6
8	GND
9	L1 Motor 7
10	L2 Motor 7
11	L3 Motor 7
12	GND
13	L1 Motor 8
14	L2 Motor 8
15	L3 Motor 8
16	GND

Motor 9-12	
Pin	**Wire**
1	L1 Motor 9
2	L2 Motor 9
3	L3 Motor 9
4	GND
5	L1 Motor 10
6	L2 Motor 10
7	L3 Motor 10
8	GND
9	L1 Motor 11
10	L2 Motor 11
11	L3 Motor 11
12	GND
13	L1 Motor 12
14	L2 Motor 12
15	L3 Motor 12
16	GND

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5.10 Harting 24 pin
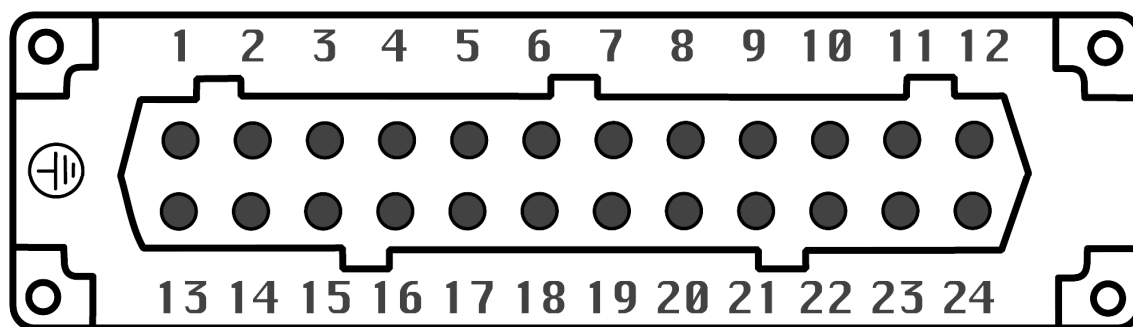
Motor 1-6	
Pin	**Wire**
1	L1 Motor 1
2	L2 Motor 1
3	L3 Motor 1
4	L1 Motor 2
5	L2 Motor 2
6	L3 Motor 2
7	L1 Motor 3
8	L2 Motor 3
9	L3 Motor 3
10	L1 Motor 4
11	L2 Motor 4
12	L3 Motor 4
13	L1 Motor 5
14	L2 Motor 5
15	L3 Motor 5
16	L1 Motor 6
17	L2 Motor 6
18	L3 Motor 6
19	GND
20	GND
21	GND
22	GND
23	GND
24	GND
GND	GND

Motor 7-12	
Pin	**Wire**
1	L1 Motor 7
2	L2 Motor 7
3	L3 Motor 7
4	L1 Motor 8
5	L2 Motor 8
6	L3 Motor 8
7	L1 Motor 9
8	L2 Motor 9
9	L3 Motor 9
10	L1 Motor 10
11	L2 Motor 10
12	L3 Motor 10
13	L1 Motor 11
14	L2 Motor 11
15	L3 Motor 11
16	L1 Motor 12
17	L2 Motor 12
18	L3 Motor 12
19	GND
20	GND
21	GND
22	GND
23	GND
24	GND
GND	GND

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6. CMCseries controller

CMCseries controller allows control of the GMCseries device via cable connection. Standard length of cable is 10m. To have larger cable please contact manufacturer. There is also CMC-EB box available for extension of cable for special purposes.
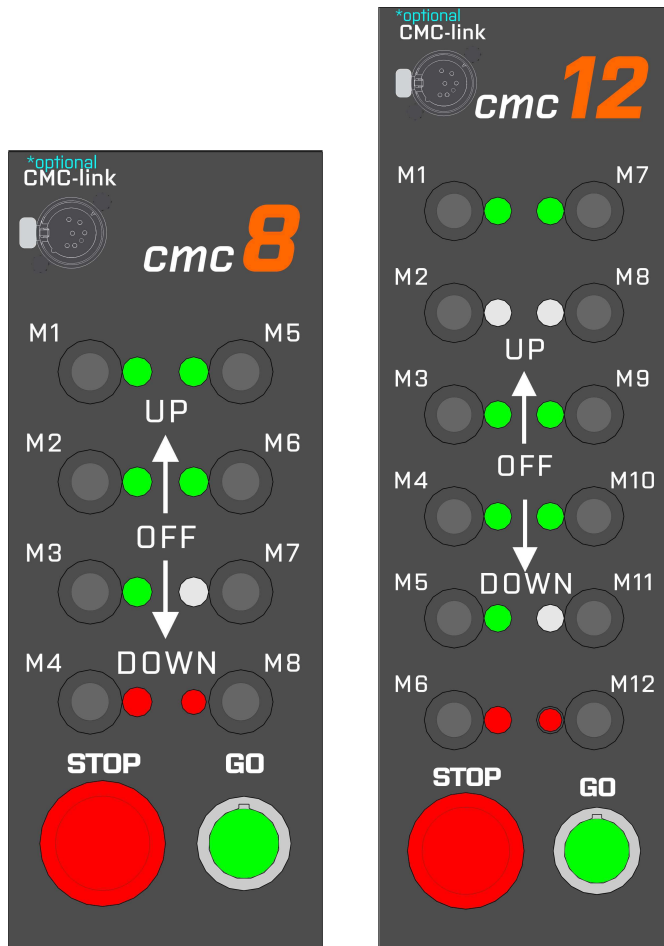
STOP:
This switch will protect to operate base unit for undesired operation and turns the GMCseries controller to inactive state. Stop is red color mushroom. Once the STOP button has been pressed, it locks into the active position and must be rotated clockwise and released before disengaging. You can use CMC+MC controller after releasing of this

GO:
This green pushbutton turns the selected channels of Hoist Control system ON when is active. Once the GO button has been depressed, the energizing of the hoists is turned off. The Light of GO button is on when there one or more direction switches active /in up or down position/

DIRECTION SWITCHES:
They allow changing the direction of movement fore each motor/hoist separately or in groups.

LINK CONNECTOR *optional:
CMC should be equipped with optional 7pin female connector for link of CMC controllers together. You can connect any CMC-8 or CMC-12 way controller. Both GO and STOP buttons will be linked together. When unit is not used in link mode, it must be equipped with 7pin dummy plug. In this plug need to be short circuit in between pin 1-6.

7. Technical data

- Mains input 400VAC +-20% 50/60Hz
- Main Plug: CEE32A 5p
- Motor Socket : CEE16A 4p

7.1 Protections and Safety:

- Short circuit protection of each hoist by automatic circuit breakers
- APA – Automatic Phase Align
- Separate main contactor
- Double mechanical blocking contactors
- Double - Recessed Emergency stop
- SIL3 emergency stop circuit

7.2 Metal Housing:

- 1.5mm Steel housing with gray powder coating
- 3mm Steel front panel

7.3 Dimensions /W x D x H/:

GMC-12: 483 x 360 x 396 mm
GMC-8: 483 x 360 x 264 mm
GMC-4: 483 x 360 x 264 mm

CMC-12: 107 x 330 x 105 mm
CMC-8: 107 x 260 x 105 mm

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8. Guarantee

GMCseries hoist controller is sold with 2 years Manufacturer's guarantee. To have extended warranty conditions please contact manufacturer at sales@srslight.com.

Guarantee covers the original factory installed components of the controller and their correct functioning.

Warranty void if: - any part or replacement components is installed or modified without authorization from the manufacturer and/or the internal circuit is tampered or modified and/or the controller is operated outside normal use conditions – electrical power supply is not conform or there is connection error or mechanical damage of controller, including overload, improper use.

We as manufacturer always help you to repair your unit.

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9. Declaration of conformity

DECLARATION OF CONFORMITY
According to guide lines 89/336 EEC and 92/31 EEC, 90/337 CEE Annex II A:

Name of producer: SRS Light Design s.r.o.

Address of producer: Rybnicna 36/D, SK- 83106 Bratislava, Slovak Republic
www.srslight.com/ sales@srslight.com, +421244681417

Declares that the product

Name of product: GMCseries hoist controller: GMC4, GMC8, GMC12 + variants

Types:

GMC-4, GMC-8, GMC-12	: CEE output motor controller
GMC-4 S, GMC-8 S, GMC-12 S	: CEE + Socapex19 output motor controller
GMC-4 H, GMC-8 H, GMC-12 H	: CEE + Harting16 output motor controller
GMC-12 H2	: CEE + Harting24 output motor controller
GMC-4 SCT, GMC-8 SCT, GMC-12 SCT	: Screw terminal connection for power and hoist

Corresponds with following harmonized standards:
Safety: EN 60065
             EN 60950
             EN 60204-1
             EN 13850
             EN 12100-2
             EN 62061 – SIL3
             EN 13849 PL "e"
EMC: EN55103-1, resp. EN55103-2
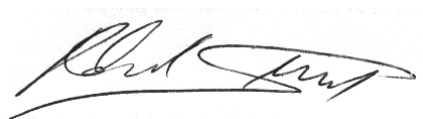
And

Is in compliance with following requirements:

Machinery directive: 2006/42/EC
Low Voltage directive: 2006/95/EC
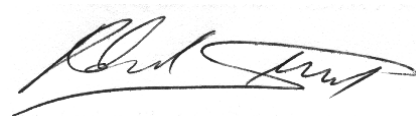
Bratislava, 04th of may 2011

Robert Sloboda

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10. Contents

Bratislava, 5th of March 2014

Robert Sloboda

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