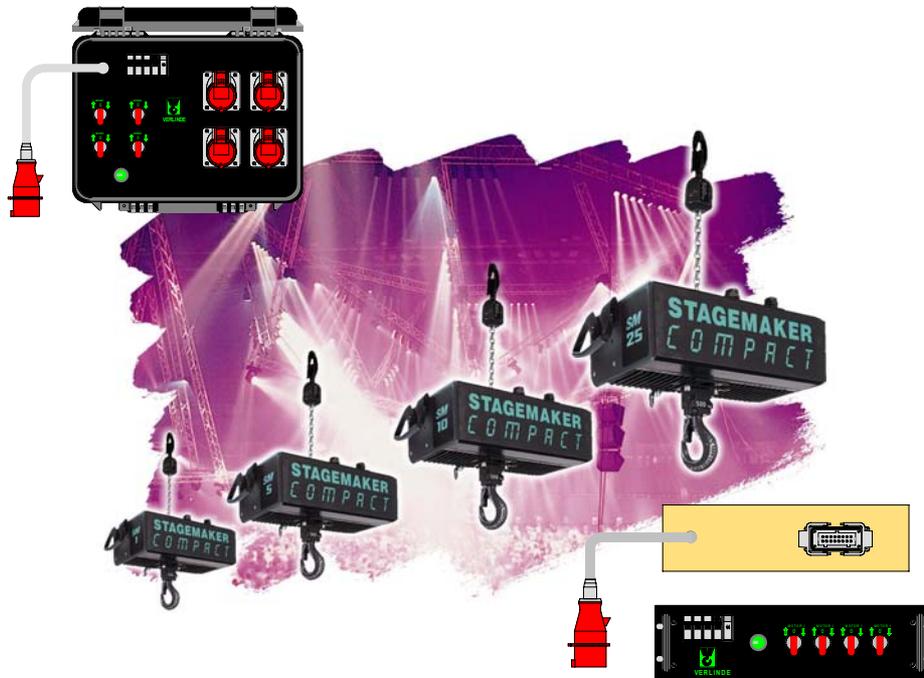


STAGEMAKER CONTROLLERS



INSTALLATION

MAINTENANCE

CONTROLLERS SERIES B – SC -R & FL FOR STAGEMAKER SM

Version "A" direct control

Version "B" low voltage control

Version "D" low voltage control BGV-C1

Herewith we,

VERLINDESA, 2 bd de l'Industrie, BP 59,
F-28501 VERNOUILLET Cedex, Frankrijk

Declare that the product

STAGEMAKER CONTROLLER	
Configuration:	BGV-C1
Type:	B2 PRMLV-C1
Date:	12 - 2003

This equipment is to be used in corporation with other machines. It cannot be put into operation until the systems of which it is a part, has been declared as conforming to the provisions of the directive:

Machines 89/392 EEG, 91/368 EEG, 93/44 EEG, 93/68 EEG

Electric machines 73/23 EEG,

Electromagnetic compatibility 89/336 EEG, 91/263 EEG, 92/31EEG, 93/68 EEG

As well as harmonised norms, in particular EN292, chapter 1 and 2 (safety of machines),

Applied technical standards and specifications, in particular:

IEC 34-1 "Rotating electrical machines"

IEC 34-5 "Rotating electrical machines"

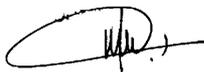
IEC 947-5-1 "Low voltage switchgear and control gear"

IEC 364 "Electrical installations of buildings"

EN 60204 "Safety of Machines"

Din 56925 (BGV-C1)

The party carrying out the integration will state these passages in declaration of conformity of the machines, the party will add the regulations and standards to the final installation "machine" and has to comply with, the party carrying out the integration will draw up the corresponding technical file.



VERLINDESA,
VERNOUILLET, 10-14 -2003

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1 INTRODUCTION:

The STAGEMAKER® CONTROLLER has been developed specifically for the control of VERLINDE STAGEMAKER® chain hoists (motors) series SM5 and SM10. The controllers are available with 4 – 8 or 12 channels and built into a compact suitcase, 19” rack casing, or vertical flightcase.

The STAGEMAKER® CONTROLLER allows you to control the chain hoists individually or simultaneously with one single button. Pre-selection facilities for all units, PRM models with remote button box incorporate red and green LED indicators, which indicate the selected hoisting direction. Even STAGEMAKER® hoists equipped with optional features, such as low voltage circuitry, adjustable limit switches and thermal motor protection can be controlled with this controller still using only the power cable.

For larger applications, STAGEMAKER® CONTROLLERS can be interconnected to serve a system of more controllers. All pre-selected motors are activated simultaneously through one single RUN button, as a standard. Other interconnections are available on request.

STAGEMAKER® CONTROLLERS fully meet the latest European electrical standards (IEC-EMC) and have been approved by the official APAVE institute. They offer a maximum flexibility, durability and safety.

There are three series of controllers: version A: Economical units with direct selection with or without remote version B: Contactor controlled units with or without remote. And version D for hoists that comply to BGV-C1 (former VBG-70).

Controllers with remote (PRM models) have LED indicators next to the toggle switches on the handheld box. The connection cable length is 10m.

Version A controllers for direct controlled hoist without remote:

- Combination of power switching and low voltage control in one housing
- Main contactor
- Mushroom emergency button with mechanical interlock
- Individual up/down selectors per motor
- Short circuit protection in main circuit by means of automatic fuses
- Phase reverse facility on incoming CE socket
- Facility to connect a second controller (master-slave function)
- LED indicators for incoming phases
- In- and outputs on CE on models SC and multi connectors on other models
- Single cable connections between controller and hoists
- Thermal protection per group of 4 hoists (except models SC)

Version A controllers for direct controlled hoist with remote have in addition:

- Remote control by means of toggle switches on a control box with flexible cable and multi connector
- All functions with LED indicators allows safe operation, even in the dark
- Manual On/Off & phase reverse switch

Version B controllers for low voltage controlled hoist without remote:

- Combination of power switching and contactor control in one housing
- Main contactor
- Mushroom emergency button with mechanical interlock
- Individual set of contactors per motor
- Short circuit protection in main- and control circuit by means of automatic fuses
- Phase reverse facility on incoming CE socket
- Output through CE connectors (one red and one yellow per channel)
- Twin cable connections between controller and hoists (multi connector on request)
- LED indicators for incoming phases
- Thermal protection per group of 4 hoists
- Individual up/down selectors per motor
- Facility to connect a second controller (master-slave function)

Version B controllers for low voltage controlled hoist with remote have in addition:

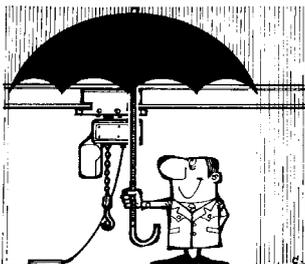
- Remote control by means of toggle switches on a control box with flexible cable and multi connector
- All functions with LED indicators allows safe operation, even in the dark
- Manual On/Off & phase reverse switch

Version D controllers for low voltage controlled BGV-C1 hoist with remote:

- Combination of power switching and contactor control in one housing
- Main contactor
- Mushroom emergency button with mechanical interlock
- Individual set of contactors per motor
- Short circuit protection in main- and control circuit by means of automatic fuses
- Phase reverse facility on incoming CE socket
- Output through Harting 16p one per channel
- Single multi cable connections between controller and hoists
- LED indicators for incoming phases
- Thermal protection per group of 4 hoists
- Individual up/down selectors per motor
- Remote control by means of toggle switches on a control box with flexible cable and multi connector
- All functions with LED indicators allows safe operation, even in the dark
- Overload indicator

2 WHAT TO DO

- Mount the controller in a protective casing, (if standard casing is not supplied).
- Handle the controller by its grips at the front or at side.
- Store the controller in its normal operating position away from aggressive atmospheres (*dust, humidity...*).
- Make sure that the controller is always clean and protected from corrosion.
- A technician should install the controller with the necessary competence.
- Make sure that connecting cables are in good condition and connectors are fitted properly.
- Make sure that connecting cables are always symmetrical fitted
- If one hoist direction doesn't match with the Up / Down indicators on the controller, check intermediary cabling and change two phases.
- If all hoists do not match with the indicators, change phases by means of phase reverse facility in the CE plug or with the reverse switch.
- Use only original parts in case of replacements.
- Always be ready during the operation to press the emergency stop button. This makes all functions inactive.
- Before operation, check that the load is correctly fastened and installed on the hook. The hook safety catches should be closed correctly.
- Make sure that the load is correctly balanced before moving it.
- Make sure that each hoist is vertical to the load and hanging free on its load chain, before starting a simultaneous operation.
- If used out door, use sufficient protection against bad weather conditions.
- Use the material under normal working conditions (*ambient temperature, atmosphere...*).
- Moving a single load or truss system, requires experienced operators.
- All the necessary precautions should be taken to ensure a correct the distribution of the load and to avoid overloading a single hoist in set of multiple use. The hoists should be carefully checked individually before such an operation.
- Notify the responsible and competent person after a dangerous operation or if the hoist seems problematic
(*Abnormal noise, abnormal behaviour...*).



Material used outdoors should be protected as well as possible against bad weather conditions.

WHAT NOT TO DO

- Never connect a STAGEMAKER controller to a power source other than specified on the unit.
- Do not set down the controller without having an adapted support, to avoid damaging the components on the rear
- Never modify the controller unless the constructor has studied and authorised the modification.
- Never modify the values and adjustments of the safety components, outside the limits provided for in the manual, or without the approval of the constructor.
- Never try to repair or intervene on the controller without the authorisation of the constructor or a qualified electrician.
- Do not let an unqualified person use the controller.
- Never connect more hoists than the available number of outlets (channels) or number of selector switches available.
- Do not use additional splitters to connect more than one hoist per channel.
- Avoid shocks or accidental collision with other objects.
- Never open the controller as long as the system is under power.
- Never block, or lock the RUN button in order to continue a movement without manual interference.
- Do not operate the controller if your physical condition does not allow it.
- Never use the controller if it is in bad condition.
- Never use suspected spare parts or parts whose origin is not known.
- Do not subject the controller to brutal shocks.
- Never distract the operator's attention while he is being operating the system.
- Do not use the controller for a purpose or in an area for which it is not intended.
- Do not expose the controller to an aggressive atmosphere (*temperature, acidity...*)
- Do not use the safety components as operation components (*emergency button, main fuse switch. etc..*)
- Do not use the controls needlessly (avoid inching - stop-start operation of the buttons). This can cause overheating and even damage to the hoist.
- Do not change the hoisting direction whilst the RUIN button is pressed (hoist under power)
- If hoist direction doesn't match with the indications on the controller, don't change phases inside the controller but exchange two phases on the hoist motor or the interconnecting cables.
- Never use hoists who are running in the opposite direction of the selected motion.
- Do not connect the controller to an unknown power supply, check if power source matches the specification of the controller and the hoists. (*under voltage or over voltage +/- 5%, absence of phase etc...*).

3 GUARANTEE

Our STAGEMAKER controllers are guaranteed **for one year** from the date of delivery.

If for a reason outside the control of the vendor, the delivery is delayed, the time lag cannot exceed three months.

If the use (*installation*) of the controller is delayed, the corresponding extension of the guarantee (a single extension limited to three months) must be requested, and written confirmation obtained.

The vendor undertakes to eliminate all operating errors originating from the concept, the execution, the components or the materials themselves.

The guarantee does not cover normal wear, or the failures resulting from abnormal use. It does not cover damage due to a lack of supervision, to false operation or to a bad utilisation of the controller, particularly due to overload, inching, under voltage or over voltage or connecting errors.

The guarantee does not apply when there is disassembly, modification or replacement of parts (*mechanical or electrical*) by an unauthorised party or without our prior agreement.

The guarantee only applies for original, factory-installed spare parts.

For the duration of the guarantee, the vendor undertakes to replace or repair, free of charge, the parts, in his workshop, that are acknowledged to be damaged following examination by a qualified and authorised technical service.

The guarantee excludes any other services or indemnities. The repairs covered by the guarantee are carried out, as a rule, in the workshops of the vendor or authorised agent. When servicing of the equipment is done outside these workshops, the labour costs for disassembly or assembly of these parts are borne by the vendor when these are done exclusively by his staff or by an authorised agent. The replaced parts become the property of the vendor and must be returned to the vendor at his expense.

For components of a relative particular importance that are not manufactured by the vendor and which carry the brand name of specialised manufacturers, the manufacturer's guarantee (which can vary according to the manufacturer) is applicable.

* The guarantee does not apply for expendable parts defined by the manufacturer:

- Fuses
- Contactor contacts

4 IDENTIFICATION:

Type codes

Type	Number of channels	Control	Remote Yes/No	Housing	For hoist configuration	Hoist connection
SC4P	4	Direct	No	ABS Hand case	A	CEE plug 4p
SC8P	8	Direct	No	ABS Hand case	A	CEE plug 4p
R4P	4	Direct	No	19" 3U rack in flight case	A	Harting 16p
R8P	8	Direct	No	19" 3U rack in flight case	A	Harting 16p
R12P	12	Direct	No	19" 6U rack in flight case	A	Harting 16p
R4PRM	4	Direct	Yes	19" 3U rack in flight case	A	Harting 16p
R8PRM	8	Direct	Yes	19" 3U rack in flight case	A	Harting 16p
R12PRM	12	Direct	Yes	19" 6U rack in flight case	A	Harting 16p
R4PRMR	4	Solid state	Option	19" 3U rack in flight case	A	Harting 16p
R8PRMR	8	Solid state	Option	19" 3U rack in flight case	A	Harting 16p
R12PRMR	12	Solid state	Option	19" 6U rack in flight case	A	Harting 16p
R4PRMRS	4	Solid state	Yes-radio	19" 3U rack in flight case	A	Harting 16p
R8PRMRS	8	Solid state	Yes-radio	19" 3U rack in flight case	A	Harting 16p
R12PRMRS	12	Solid state	Yes-radio	19" 6U rack in flight case	A	Harting 16p
FL4PLV	4	Low voltage (48Vac)	No	Vertical flight case	B1 – B2	2 x CEE plug 4p
FL8PLV	8	Low voltage (48Vac)	No	Vertical flight case	B1 – B2	2 x CEE plug 4p
FL12PLV	12	Low voltage (48Vac)	No	Vertical flight case	B1 – B2	2 x CEE plug 4p
FL8PRMLV	8	Low voltage (48Vac)	Yes	Vertical flight case	B1 – B2	2 x CEE plug 4p
FL12PRMLV	12	Low voltage (48Vac)	Yes	Vertical flight case	B1 – B2	2 x CEE plug 4p
R8CPU-C1	8	Low voltage (48Vac)	No	19" 6U rack	C & D	Harting 16p
R4PRMLV-C1	4	Low voltage (48Vac)	Yes	19" 6U rack in flight case	D	Harting 16p
R8PRMLV-C1	8	Low voltage (48Vac)	Yes	19" 6U rack in flight case	D	Harting 16p
R12PRMLV-C1	12	Low voltage (48Vac)	Yes	19" 9U rack in flight case	D	Harting 16p
B2PRMLV-C1	2	Low voltage (48Vac)	Yes	Wall mounted cubical	D	Harting 16p
B4PRMLV-C1	4	Low voltage (48Vac)	Yes	Wall mounted cubical	D	Harting 16p
B8PRMLV-C1	8	Low voltage (48Vac)	Yes	Wall mounted cubical	D	Harting 16p
B12PRMLV-C1	12	Low voltage (48Vac)	Yes	Wall mounted cubical	D	Harting 16p

Note: on request the version B controllers (low voltage) could be supplied with a Harting 6 pole output per channel for combined power and control, rather than separate CEE connectors for power and control.

Location of controls and connections

Subscription	Position		
	SC models	R models	FL models
Main switch	Front	n.a.	Front
Power indicators	Front	rear	Front
Emergency stop with mechanical interlock	Front	front	Front
Up / Down selector switches	Front	front	Front
Plug for interconnection with second unit	Front	rear	Front
Green RUN button	Front	front	Front
Main & secondary fuses	Front	front	Front
Thermal protection per group of four	n.a.	front	Front
Auxiliary output 16Amp CE-4 pole, not switched	n.a.	n.a.	Front
Main power entry 16 amp CE-5p & 0.5 m cable	Front; SC4P	rear; R4..	n.a.
Main power entry 32 amp CE-5p & 0.5 m cable	Front; SC8P	rear; R8..R12..	Front
Multi connectors for chain hoists output	n.a.	rear	Front
CE plug for hoist output	Front	n.a.	Front
Multi connector for remote button box PRM models	n.a.	rear	Front

5 FUNCTIONAL DESCRIPTION

Cable connections:

- Connect an external power source with the main CE power plug. Be sure that the nature of this source corresponds to the supplied equipment, such as mentioned aside of the plug.
- Connect the chain hoists through single cables, splitters and/or multi cables with the controller's outlets.

Note: Controllers SC4P and SC8P, have individual CE outlets, each to support one chain hoist, controllers FL..PLV have two CE connectors per channel (one for power and one for controls) or optional a 6 pin multi connector for combined power and control. All other models have 16p multi connector outlets, each to support 4 hoists. BGV-C1 controllers have a single 16p multi cable connection per hoist.

Warning: *Use only cables and connectors who are in good condition, inferior connections might cause severe damage of the equipment and electric motors.*

Connecting more than one SM10 or two SM5 hoists per channel might cause severe damage of the equipment.

Operation:

- Set the main switch to AV (on controllers with remote only)
- Use the selector switches to set the hoists in the upper or lower mode.
- Release the emergency switch by turning anti-clockwise.
- Push the RUN button to activate the pre-selected hoists.
- Check if the hoist direction matches the selected mode. If not reverse, phases on the incoming power or by means of the main switch if setting to AR (on controllers with remote only).

Note: a) Phase sequence could also be reversed by means of changing two phase-pins fitted on a satellite inside the 32Amp CE connector. Push and turn the satellite with a screwdriver 180 degrees.

b) **There are three pre-selection modes; upper, lower or zero modes.** Only pre-selected hoists in upper or lower mode will come in to the corresponding operation.

c) **Don't change the hoist direction whilst motors are under power. Release first the RUN button, make your changes and push the RUN button again.**

- If circumstances require doing so, push the RED button in order to stop all hoists immediately.
- Release this button by turning it anti clockwise.

Note: a) Version D controllers (BGV-C1) do have an indicator for overload. If this signal is activated, a reset needs to be made by pushing and re-releasing the RED E-stop button.

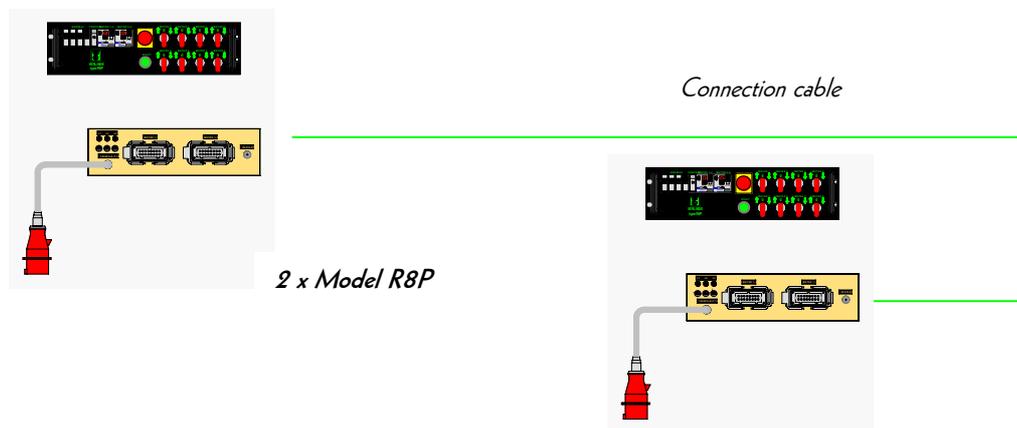
b) BGV-C1 hoist do have emergency limit switches. If for some reason these are activated, the main contactor will disconnect the power to the hoist and intervention on the hoist is required.

Master slave function: (not available on version D controllers)

A set-up of 2x4 or 2x8 or more hoist could be controlled simultaneous from one position, using two or more STAGEMAKER® controllers,

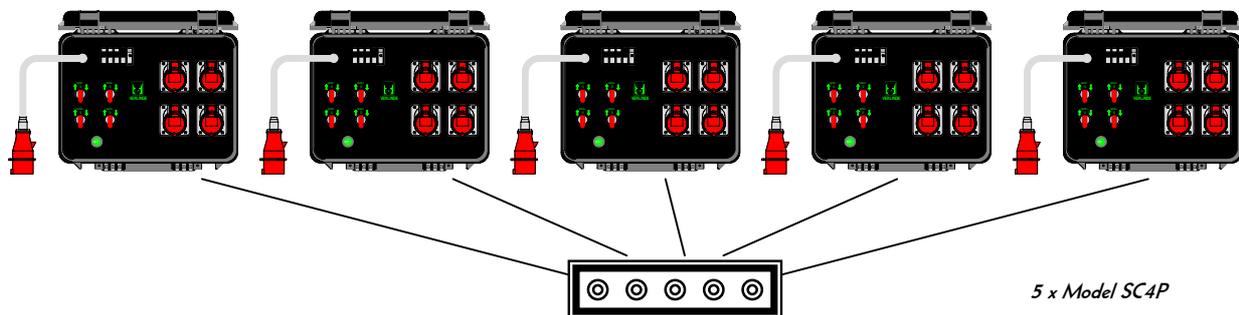
Warning: *Master slave connections can be made between: SC models and R4P-R8P and R12P controllers or R8PRM and R12PRM controllers. Controllers with and without remote may not be mixed, this will cause internal damage. For the interconnection of the controllers are special cables required. Contact us for information.*

- Interconnect the I/O START plugs of two controllers using a special cable (option)
- Set the pre-selector switches of both controllers in the required mode
- Push the RUN button of one of the two controllers. This one will be the master the second one the slave. The emergency button on the master controller is effective on the slave as well.



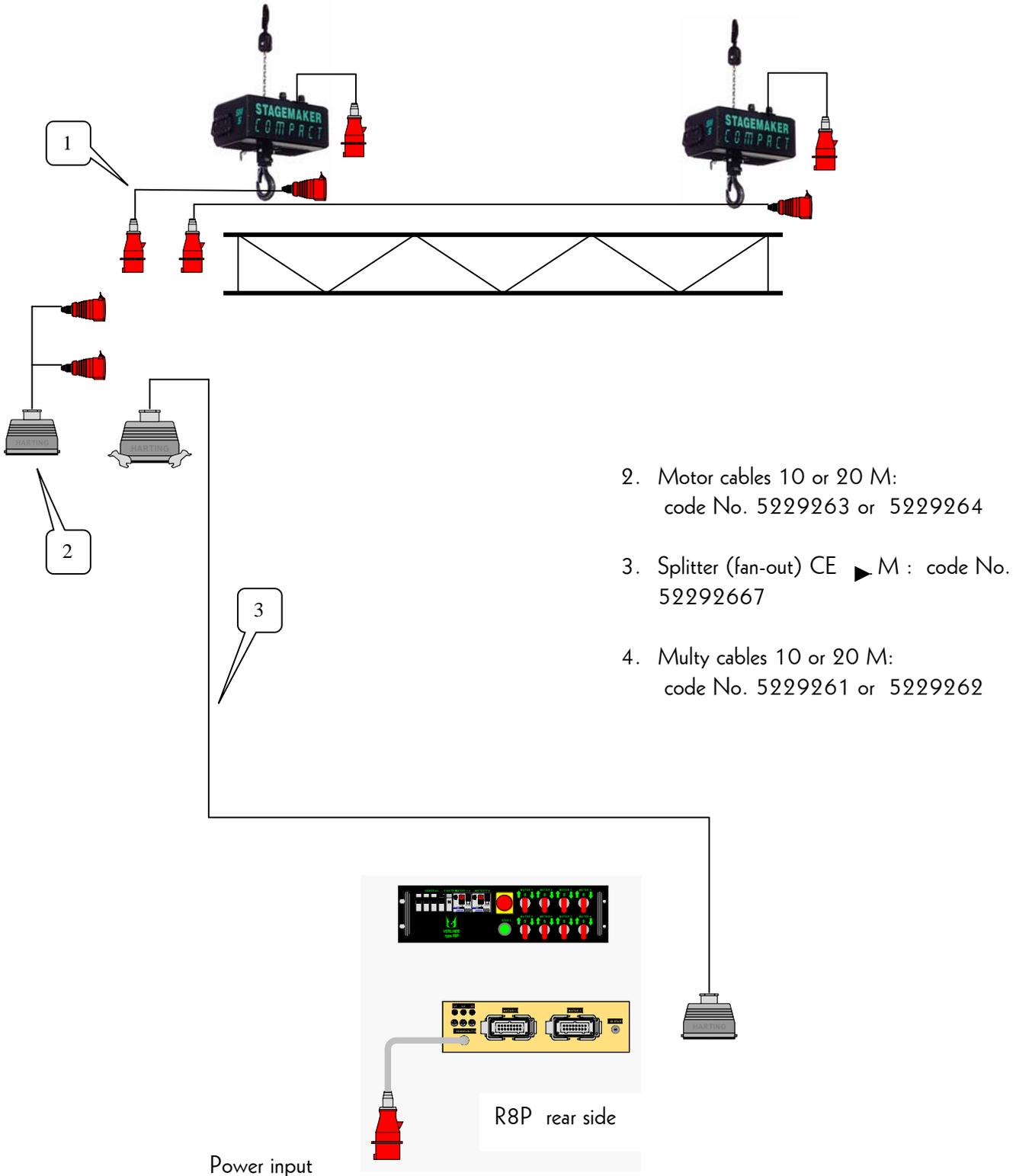
Special applications:

With the use of a special box (option) connected to the I/O START outlets of more controllers, it is possible to run up to 40 motors at the same time under one button.
(5 x 4 channel or 8 channel controllers, any type without remote!)

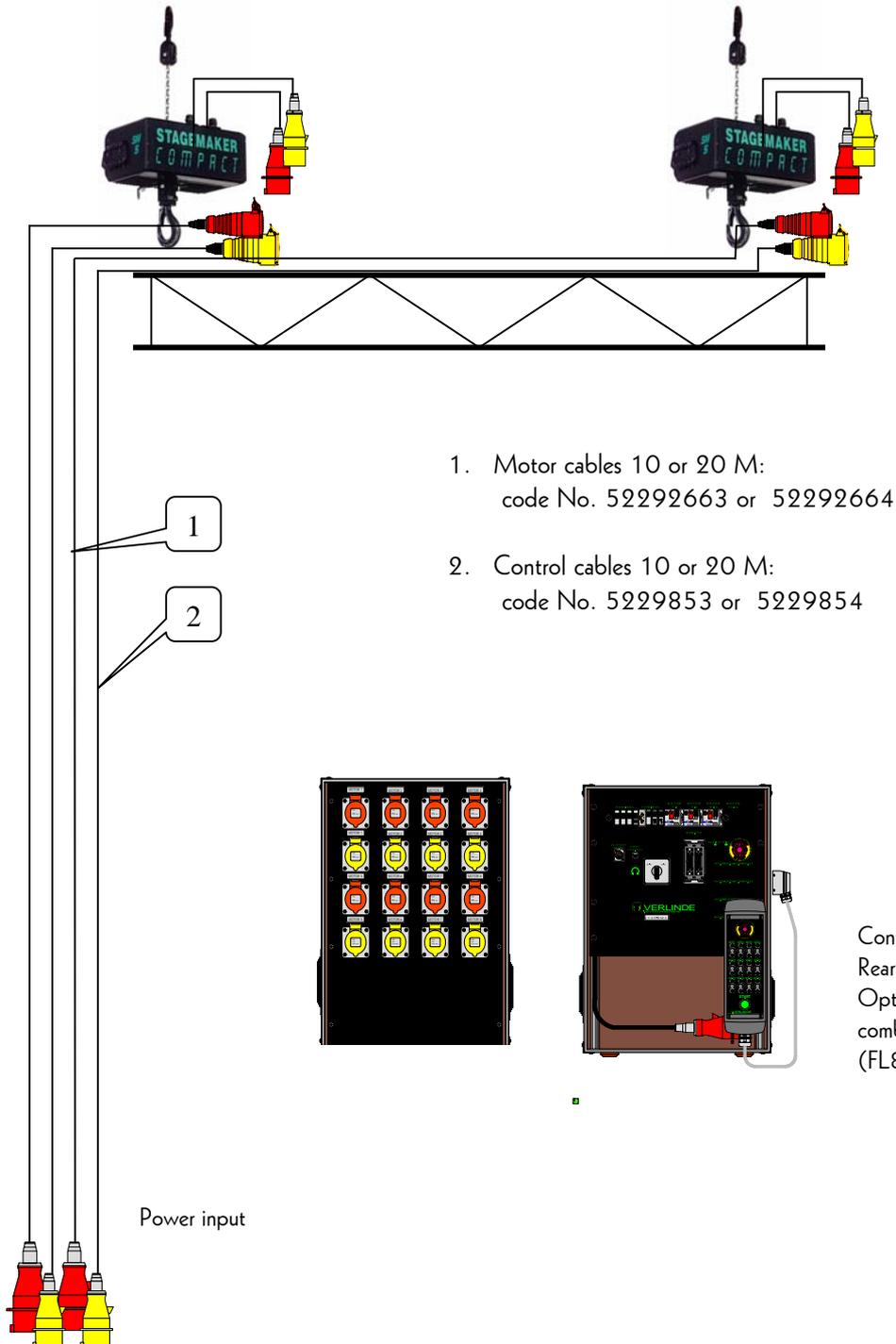


- Interconnect the I/O START plugs of all controllers using the connection cable (option)
- Set the pre-selector switches of all controllers in the required mode
- Push the RUN button of one of the controllers. This one will be the master the others are the slaves. The emergency button on the master controller is effective on the slaves as well.

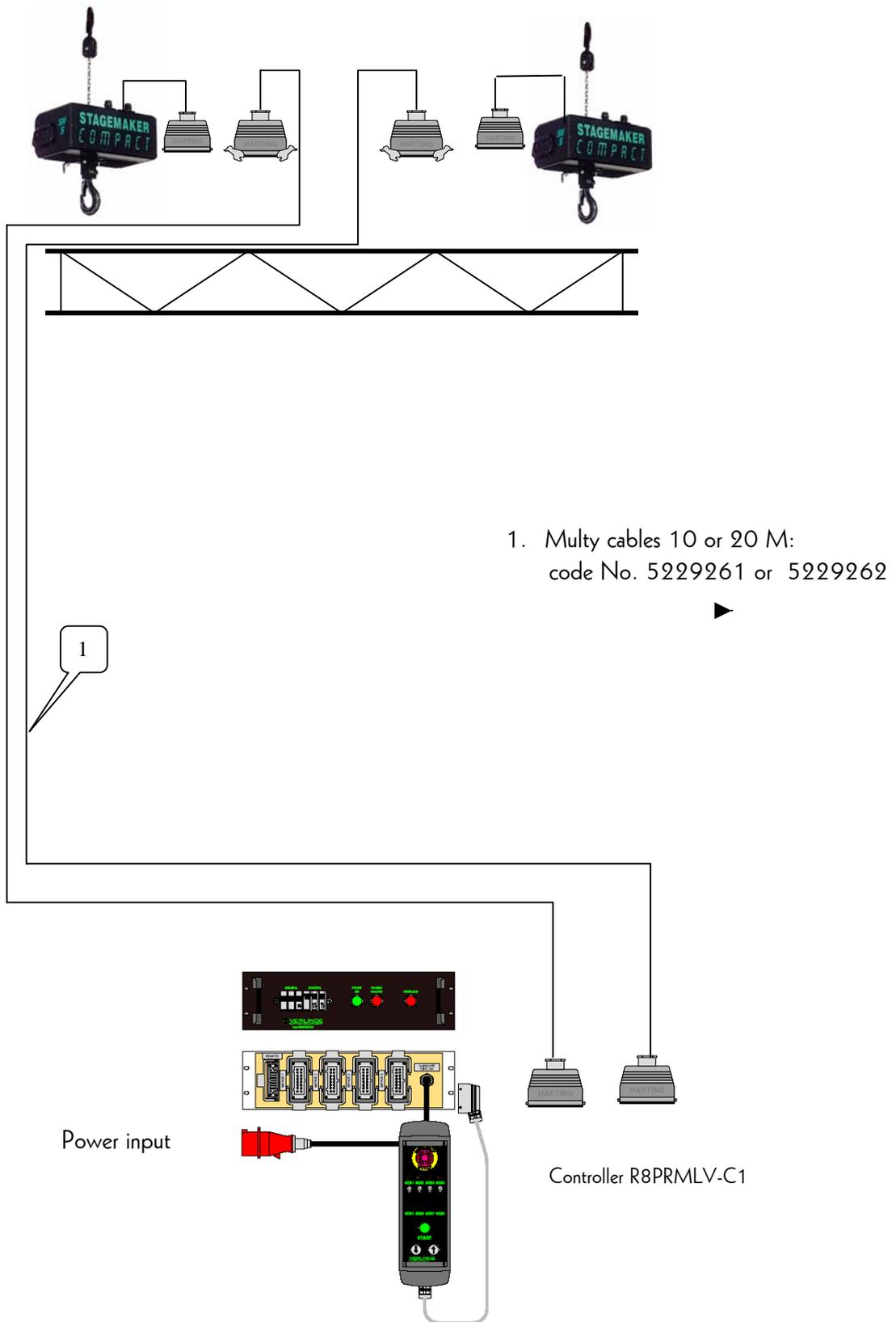
R model CONTROLLERS version A



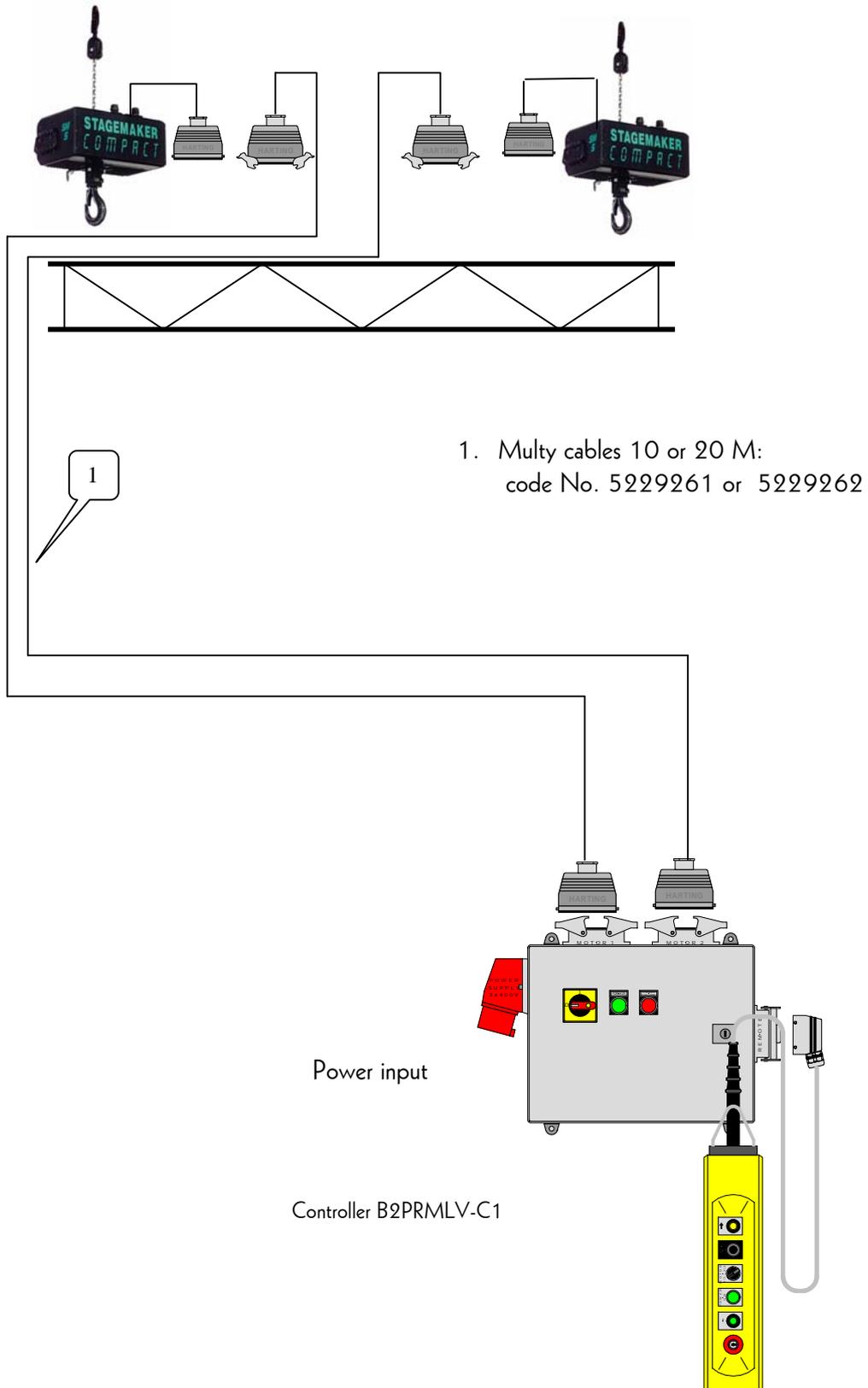
FL model CONTROLLERS version B



R model CONTROLLERS version D



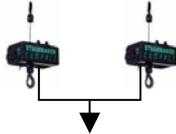
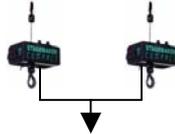
B model CONTROLLERS version D



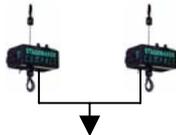
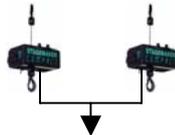
6 CABLE SELECTION TABLE

The table hereunder gives an indication of the maximum length of cables between controller and hoist (motor). They are calculated in accordance to NE 60 204 and worse case consideration

①

1.5mm ² or 1.5 ² mm ² + 2.5mm ² sections						
400V/50Hz			230V/50Hz			
L max (m)		In Max (A)	L max (m)		In Max (A)	
						
SM1	230	115	1.4	75	35	2.5
SM5	100	50	3.2	40	20	4.5
SM10	65		1.75	25		7
SM25	40		7.75			14

②

2.5mm ² sections						
400V/50Hz			230V/50Hz			
L max (m)		In Max (A)	L max (m)		In Max (A)	
						
SM1	255	125	1.4	80	40	2.5
SM5	110	55	3.2	45	20	4.5
SM10	75	35	1.75	25		7
SM25	45		7.75			14

Limitations

Cable with different section, i.e. 1.5mm² and 2.5mm², can be connected together. But maximum length of cable depends of the smallest section. That is why if a cable assembling contains both 1.5mm² and 2.5mm² cable section you should refer to chart ①. If the cable assembling contains only 2.5mm² section you should refer to chart ②.

Those chartS have been calculated according to EN-60-204 with a maximum voltage drop of 5%.

7 CABLE CONNECTION DATA

Version A and B single motor cable with CEE plugs for power

Wires	Color	Pin n°
L1 / U1	brown	1
L2 / V1	blue	2
L3 / W1	black	3
PE	yellow/green	PE

Version B2 single control cable with CEE plug for control

Wires	Color	Function	Pin n°
1	brown	48Vac	1
2	blue	up ↑	2
3	black	down ↓	3
PE	yellow/green		PE

Version A and B splitter (fan-in and fan-out)

Wires	Color	Pin n°
L1	brown	1
L2	blue	2
L3	black	2
GND	yellow/green	4
L1	brown	5
L2	blue	6
L3	black	7
GND	yellow/green	8
L1	brown	9
L2	blue	10
L3	black	11
GND	yellow/green	12
L1	brown	13
L2	blue	14
L3	black	15
GND	yellow/green	16+PE

Version A and B multi cable, extension cable for 4 motors

Wires	Wire n°	Pin n°
L1	1	1
L2	2	2
L3	3	2
GND	4	4
L1	5	5
L2	6	6
L3	7	7
GND	8	8
L1	9	9
L2	10	10
L3	11	11
GND	12	12
L1	13	13
L2	14	14
L3	15	15
GND	16	16+PE

Control and motor cable for version D (BGV-C1) controller B/RxPRMLV-C1

Plug Pin n°	Color	Function	Hoist Terminal
1	brown	L1	L1
2	blue	L2	L2
3	black	L3	L3
4	white	48Vac	1
5	yellow	A/U	5
6	transparent		-
7	orange	signal ↑	8
8	pink	action ↑	2
9	purple	“by-pass”	4
10	red	signal ↓	8
11	grey	action ↓	3
12	grey/white		-
13	brown/white	0Volt	9
14	blue/white		-
15	red/white		-
16	black/white		-
PE	yellow / green	Earth	PE

Controllers FL.. single cable with Harting plugs for power & control

Wires	Pin n°
L1	1
L2	2
L3	3
Common	4
Motion Up	5
Motion Down	6
PE	PE

Note :

These tables should be respected at any time to avoid damage to the hoists or controllers !

8 TROUBLE SHOOTING

<p>If your controller doesn't work,</p> <ul style="list-style-type: none"> • the power source • the main switch (PRM series only) • the fuses • thermal protection • if the emergency button is pressed • pre-selection switch settings • output cables 	<p>—————▶</p>	<p>check;</p> <ul style="list-style-type: none"> : all three lamps should blink : in AV or AR mode : switchbar in upper mode : black button in down mode : turn anticlockwise and pull : up or down mode : connected
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Warning: *Before going in the panel it self, or removing the top plate, first disconnect the main power entry plug.*

9 SPECIFICATIONS

<ul style="list-style-type: none"> • Power supply • Controls direct switching models • Controls remote switching models • Maximum switching capacity 	<p>: : : :</p>	<p>3 x 400 V – 50 Hz or 3 x 230 V – 50Hz 230 Vac 24 Vac 1.75 kW per channel at 400 V 0.9 kW per channel at 230 V</p>
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