

UST1K

Automatic industrial door control unit

UST1K-1.1kW
UST1K-2.2kW
UST1K-5.5kW



Instructions and information for installation and use

The entire instruction manual is made up of instructions for using the motor and its control unit.

Nice

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GENERAL RULES OF SAFETY

The planning and production of the devices making up the control units for UST1K doors and the information contained in this user's manual are perfectly compliant with the current safety standards. Nevertheless, incorrect installation can cause serious injury to the persons that work on the system or that use it. For this reason, during installation it is important to follow all the instructions contained in this manual.

Do not start installation if you have any doubts of any kind and, if necessary, contact the Nice Assistance Service.

WORK IN SAFE CONDITIONS!

ATTENTION! – It is important to follow these instructions for reasons of safety.

ATTENTION! – It is important to keep these instructions for future consultation for reasons of safety.

Strictly follow these instructions:

- **Make only the electrical connections described in this manual: incorrect wiring could cause serious damage to the system.**
- **If used outdoors, the power supply cable must be completely protected with a special protection pipe.**

In view of the risks associated with the installation and with system control, it is necessary to install the product in the packaging, following these instructions:

- Execute only the modifications described in the user's instructions on the devices. Any other modification can cause serious malfunctioning. The manufacturer declines all responsibility for any damages caused by arbitrary modifications introduced to the devices.
- Do not position the devices near sources of heat or unprotected flames. This can cause malfunctioning, fire and other dangers.
- During installation the devices should not be immersed in water or other fluids. Prevent the infiltration of fluids in the devices during installation.
- The packaging material must be disposed of in strict observance of current regulations.

ATTENTION!! – Preserve this manual with utmost care to make device disposal or maintenance operations easier in the future.

Description and use

UST1K is a control unit for rolling shutters and sectional doors with three-phase or single-phase motors. All the common safety elements can be connected.

With the application of various bus connections (modules), other applications are possible.

For opening and closing a door, just press the special button installed on the cover or the external button.

It is possible to open and close the door wirelessly in automatic mode.

Any other use is considered improper! The manufacturer declines any responsibility whatsoever for damages caused by improper use of the various system devices not compliant with what is indicated in this manual.

The plant manufacturer is responsible for the complete plant. He must fulfil the current regulations and directives (e.g. DIN 1986, EN 12050). He is responsible for drawing up the technical documentation of the entire plant to be supplied together with the plant.

It is mandatory to comply with the provisions and national and local regulations regarding installation, accident prevention and safety at the workplace.

Disconnect the system from the electrical power supply during works.

Checks before installation

Carefully read these assembly and use instructions before beginning installation of the control unit.

The manufacturer declines all responsibility and obligation of warranty if any arbitrary changes in construction are made without previous written authorisation or installation not compliant with the assembly instructions is executed.

The plant manufacturer must ensure that the EMC directives, low voltage directives, machinery directives and directives on construction products are observed.

ATTENTION!

This control unit cannot be used in areas at risk of explosion.

ATTENTION!

Connect the power supply cable to terminal X1 (L1, L2, L3) and to the PE terminal of the main board.

The power supply cable must be put in safe conditions with fuses 3x6 A or 3x10 A.

The fuse must have a value such that the gearmotor makes the fuse trip if it becomes blocked.

CONTROL and CONNECTION ELEMENTS

Control elements

It is possible to control door OPENING and CLOSING with the buttons built into the cover in automatic and/or deadman mode.

If set in automatic mode, the door can be stopped at any time with the STOP button.

It is possible to connect other control elements for control from the outside, a triple button for example.

A switch with a cable coming down from the ceiling, installed inside or outside, controls the door in the OPEN-STOP-CLOSE function.

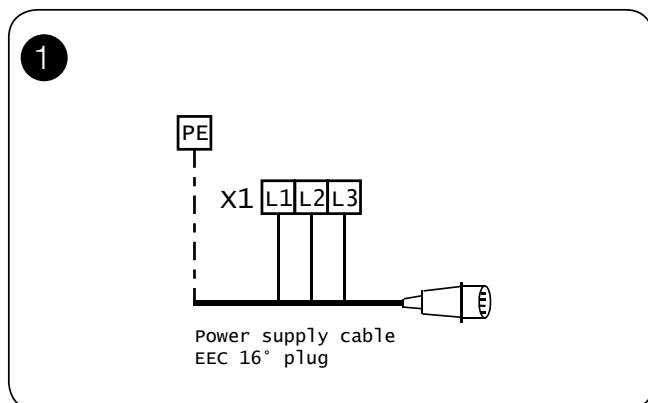
If the optional radio receiver is connected, it is always possible to stop the door with the manual radio transmitter.

Connection of the three-phase power supply cable (fig.1)

A 16A EEC plug is connected to terminals L1, L2, L3 and the PE terminal.

The connection to the UST1K station can also be carried out with the optional three-phase main switch.

In this case it is possible to remove the EEC plug during assembly.

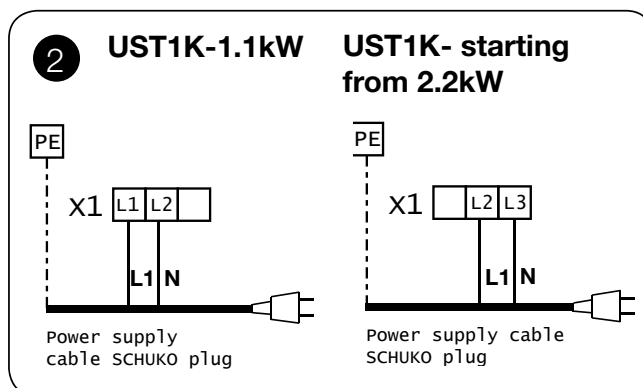


Single phase power supply cable connection (fig.2 – also see page 6)

A Schuko plug is connected to terminals L1 (phase) and L2 (N) and to terminal PE in the 1.1 kW UST1K – station. The plug is connected to L2 (phase), L3 (N) and PE on the versions with higher powers (2.2 kW and 5.5 kW).

Connection to the UST1K-1.1 kW station can also be made with an optional single-phase main switch.

In this case it is possible to remove the Schuko plug during assembly.



Direction of rotation control

If the door is in the lower final position, now it is necessary to open it by about 50 cm with the handle to prevent the track ropes from coming out of their housing (sectional doors) or excessive winding of the rolling shutter in the case of rotation is reversed.

Check the direction of rotation in deadman mode with the UP and DOWN buttons. It is necessary to disconnect the EEC plug and reverse the U and V connections (phase reversal) if the direction of rotation does not correspond to the direction of the arrow on the pressed button.

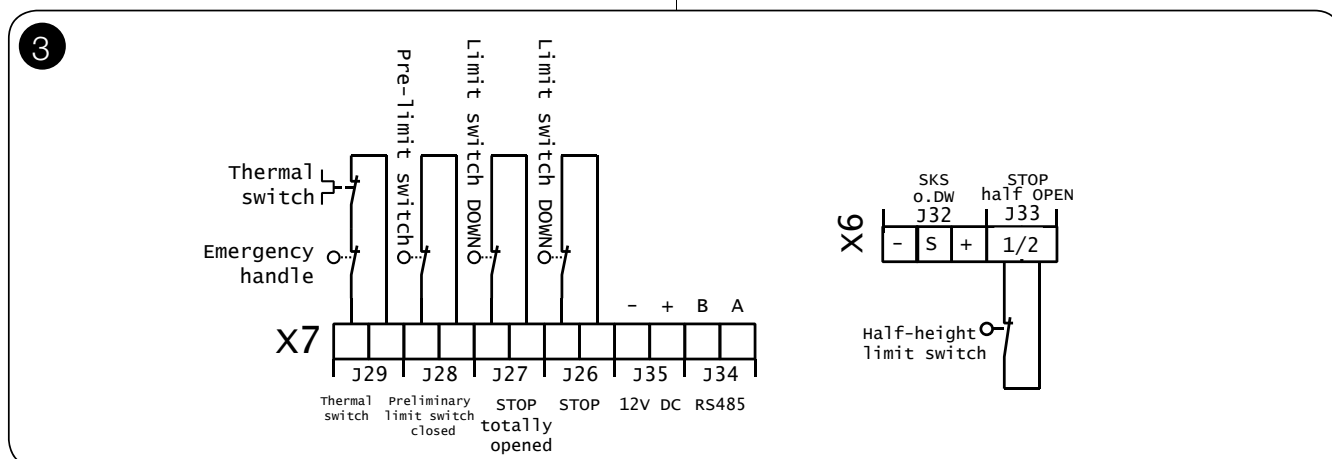
Now power up (connect the EEC plug).

Limit switch setting (fig.3)

The two OPENING and CLOSING limit switches must be connected like zero potential contacts to terminals J27 and J26 of the terminal block X7 in the UST1 control unit. The safety circuit with the integrated limit switches is to be connected to terminal J29 of terminal block X7.

It is also possible to connect a second, additional limit switch for the opening function (J33/X6) and then choose between two different OPENING positions (summer-winter switching) with a position switch installed on the housing cover (optional) of the UST1K station.

The procedure for setting the limit switches is described below.



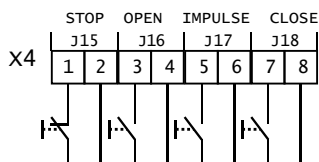
Connection of the transmitters of the OPEN, STOP, CLOSE controls (fig.4)

For controlling from the outside, it is possible to connect a triple switch to terminal block X4 in the UST1K control unit. In this case the two OPEN and CLOSE buttons are made as closing contacts (NO). The STOP button is connected to the safety circuit, so it is executed as an opening contact (NC).

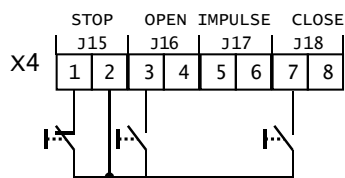
If a Stop button is connected to terminal block X4, remove the jumper from terminal J15 and connect the STOP button (opening contact)!

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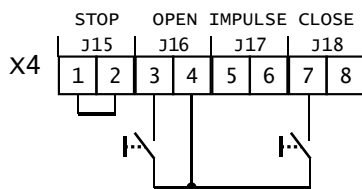
Connection of the STOP, OPEN, IMPULSE and CLOSE control elements



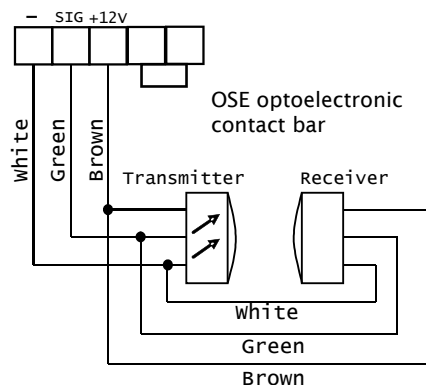
Triple button connection with 4-wire cable



Key switch connection



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Connection of a resistive sensitive edge 8.2 kΩ (fig.6)

A resistive or pneumatic sensitive edge can be directly connected to the UST1K station.

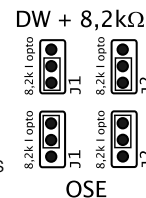
The relevant management logic is already integrated in the station. It must be connected with an 8.2 kΩ resistance in order to be able to correctly control the entire electric circuit of the sensitive edge.

The electrical connection of the sensitive edge is carried out on terminal J32 S and + of terminal block X6.

Jumpers J1 and J2

1-2 connected = Prepared for pneumatic or resistive sensitive edges with 8.2 kΩ resistance

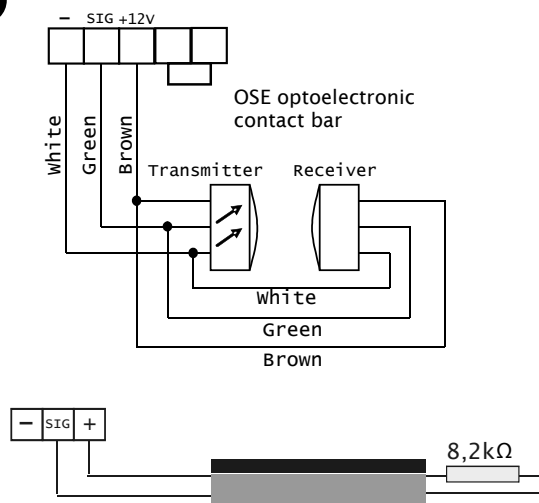
2-3 connected = Prepared for optical sensitive edges



OSE

ATTENTION: the connectors must be connected either to 8.2 kΩ terminals or to optical terminals!

6

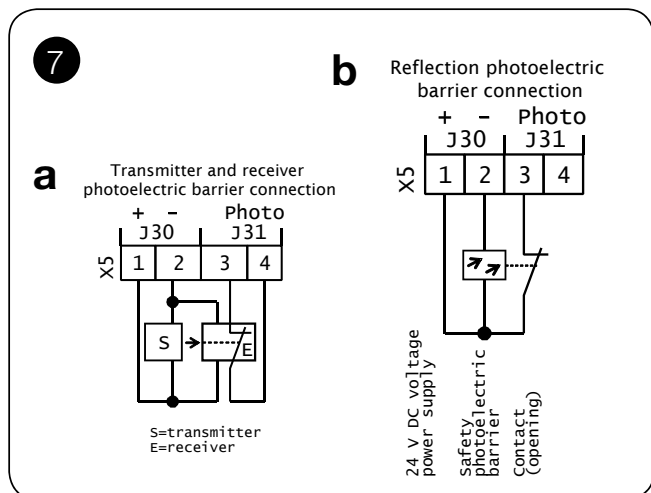


Connecting photoelectric barriers/pairs of photocells (fig. 6 a + b)

It is possible to directly connect a photoelectric barrier to the UST1K control unit (to terminal block X5) to make the passage safe. If the infrared beam of the photoelectric barrier is interrupted during the CLOSING movement of the door, it blocks and reverses the direction toward the upper final position.

ATTENTION:

The switching contact and the positive side of the electronic barrier system are connected to terminal J30/1 with positive potential in a one-way photoelectric barrier with only three connection points. Remove the jumper from terminal J31 of terminal block X5 if the photoelectric barrier is connected.



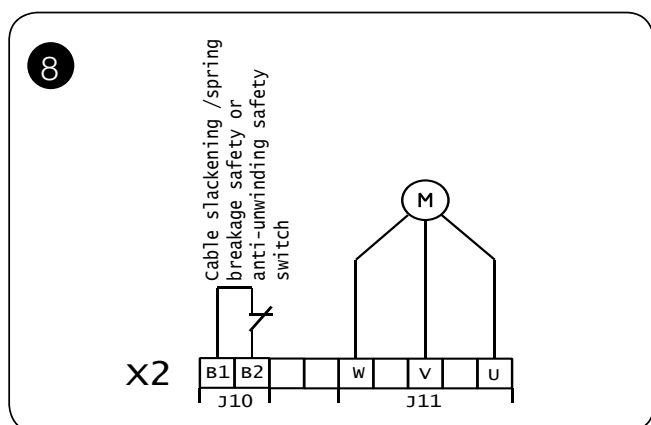
Connection of direct safety switches

The safety elements that directly intervene in the control process are connected to terminal J10 of terminal block X2. The emergency stop or safety line attachment, anti-entrapment safety device and safety device for the wicket door are between them.

Connection of safety switch for wicket door (fig.8)

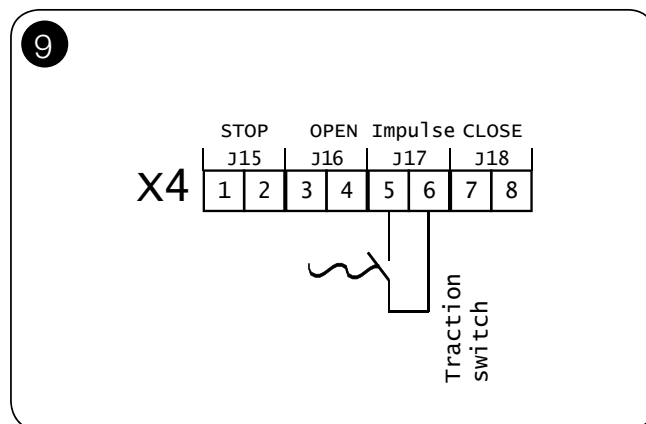
The safety switch is to be connected to terminal J10 terminal of terminal block X2 in the doors with built-in service wicket door.

Attention! Remove the jumper on J10, if present.



Connection of the control transmitter for switch with cable connected to the ceiling (fig.8)

In the UST1K control unit it is possible to connect a switch with cable connected to the ceiling, activated using traction (NC contact) to terminal J17 of terminal block X4; the function of this input corresponds to the CLOSE-STOP-OPEN-STOP step by step control.



Connection of the remote control (radio module)

It is possible to connect the Nice OXI or OXIFM receiver of the OPERA series to the 10 PIN slot (J38).

To this regard, **it is necessary** that the side with the programming/LED button faces the internal side of the housing.

It is necessary to set the specific parameters on the K5 module if the OXI radio system is used!

For more details, see the instructions for using the receiver, manual transmitter and K5 module.



OXI / OXIFM

Jumpers and U-bolts necessary for control unit operation with components not connected

Jumpers:

X2-J10

X4-J15

X5-J31

X6-J33

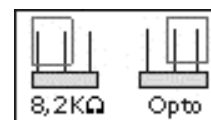
U-bolts:

X8-Pin 5-6

X9-Pin 1-2

8.2kΩ-Pin 1-2

Opto-Pin 2-3



Additional electronic limit switch X7- J26, J27, J28

MECHANICAL LIMIT SWITCH SETTING

Mechanical limit switch setting

Attention! The procedure for setting the limit switches is explained on the 5-6 pages that follow.

The stop positions with door in the up/down position are defined with setting the limit switches.

The motor must be electrically connected for making this setting.

The limit switch board (fig.11 - limit switch board with 8 cams) is accessible once the limit switch guard is unscrewed.

If external control devices are not yet connected, it is possible to control the door with the control unit using the integrated OPEN, CLOSE and STOP buttons in deadman mode.

If the OPEN button is pressed, the door should open; otherwise the L1 and L2 phases on the control unit must be reversed after having made sure the voltage has been cut off.

If the gearmotor was installed turned 180° (upside-down assembly), the door must also open with the integrated OPEN button; otherwise the L1 and L2 phases must be reversed in zero voltage conditions.

It is also necessary to correct the two emergency stop limit switches so they trip after the limit switch.

Determining the lower position of the door

To set the limit switches for the lower position of the door, perform the following operations (fig. 11):

Move the door to the desired CLOSE position.

Set the contact cam **3 E↓** (white) so the limit switch is enabled.

Tighten the fixing screw **A**.

To get accurate adjustment, use the **screw B**.

Move the door into the desired OPENING position.

Set the contact cam **1 E↑** (green) so the limit switch is enabled.

Tighten the fixing screw **A**.

To get accurate adjustment, use the **screw B**.

The safety limit switches **2 SE↓** and **4 SE↑** (red) must be set so they intervene right after the control limit switch is passed.

The safety limit switches **2 SE↓** and **4 SE↑** (red) are factory-set so they follow the limit switch at a short distance.

Check the correct position of the fixing screws after the operation test.

The additional limit switches **8 P2↓** and **7 P2↑** are closing contacts with zero potential, and the additional limit switches **6 P1↓** and **5 P1↑** are switching contacts with zero potential.

In **automatic mode** the limit switch **6** is used as a preliminary limit switch. Therefore, it is to be set so that it trips when the door reaches a distance of 5 cm from the ground.

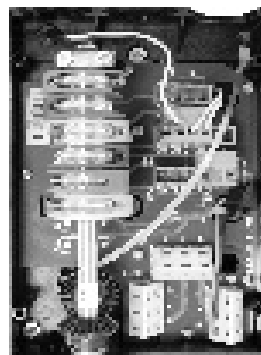
In **deadman mode** it is not necessary to set it and it is used as a contact with zero potential!

Motor cable configuration Mechanical limit switches

Control station	Wire	Motor
X2 - J11/U	1	U
X2 - J11/V	2	V
X2 - J11/W	3	W
X2 - J10	Jumper	-
X7 - J29	Grey	AMP plug
X7 - J34/B	Green	AMP plug
X7 - J35/-	White	AMP plug
X7 - J34/A	Pink	AMP plug
X7 - J29	Yellow	AMP plug
X7 - J35/+	Brown	AMP plug

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Mechanical limit switches



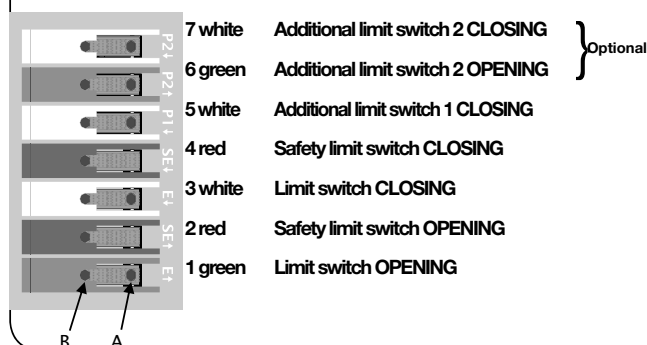
Small types



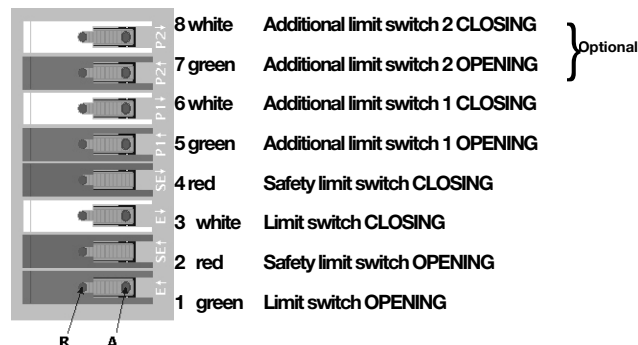
Large types

11

Mechanical limit switch setting Large motors - 7 contact cams

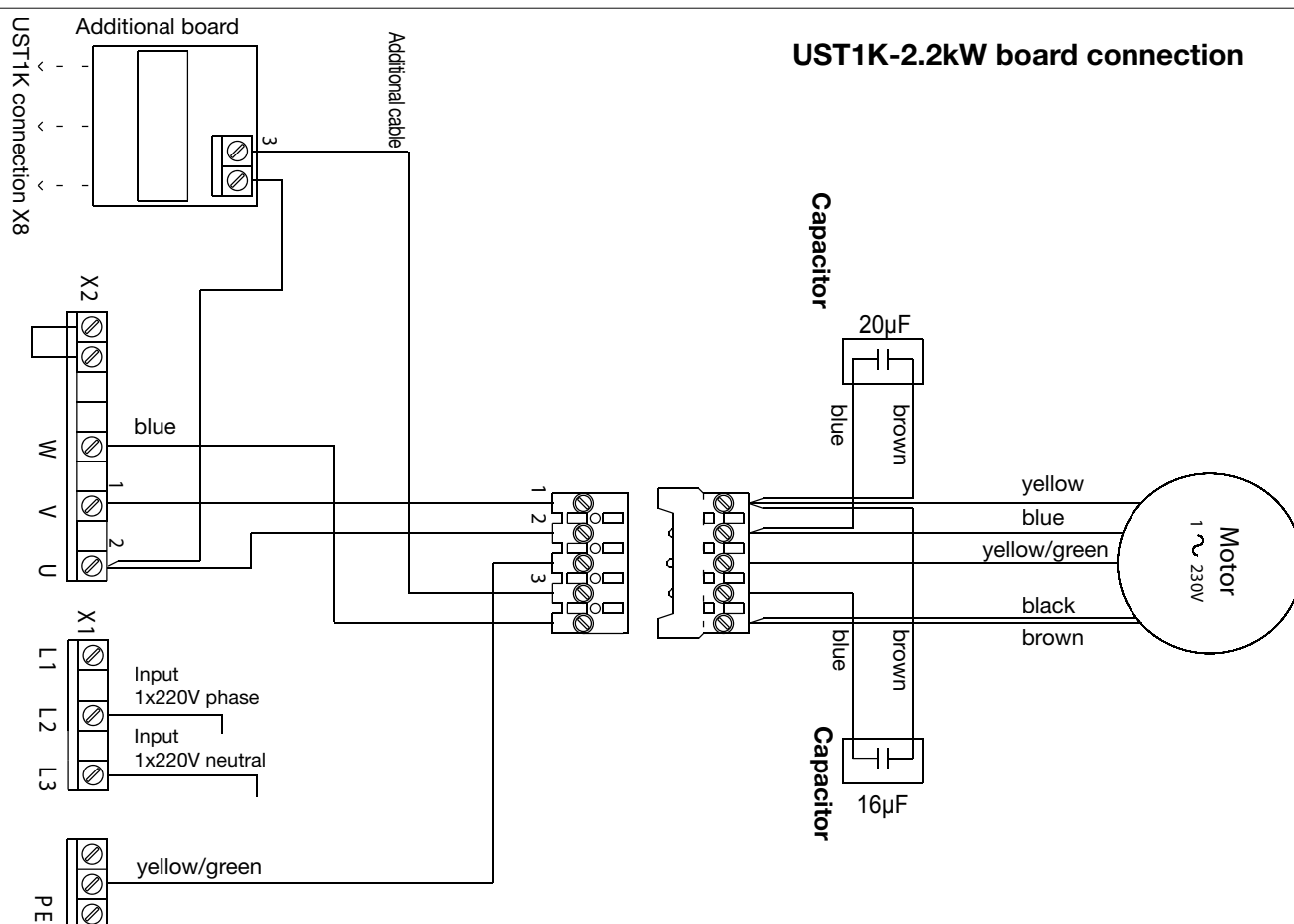


Mechanical limit switch setting Small motors - 8 contact cams

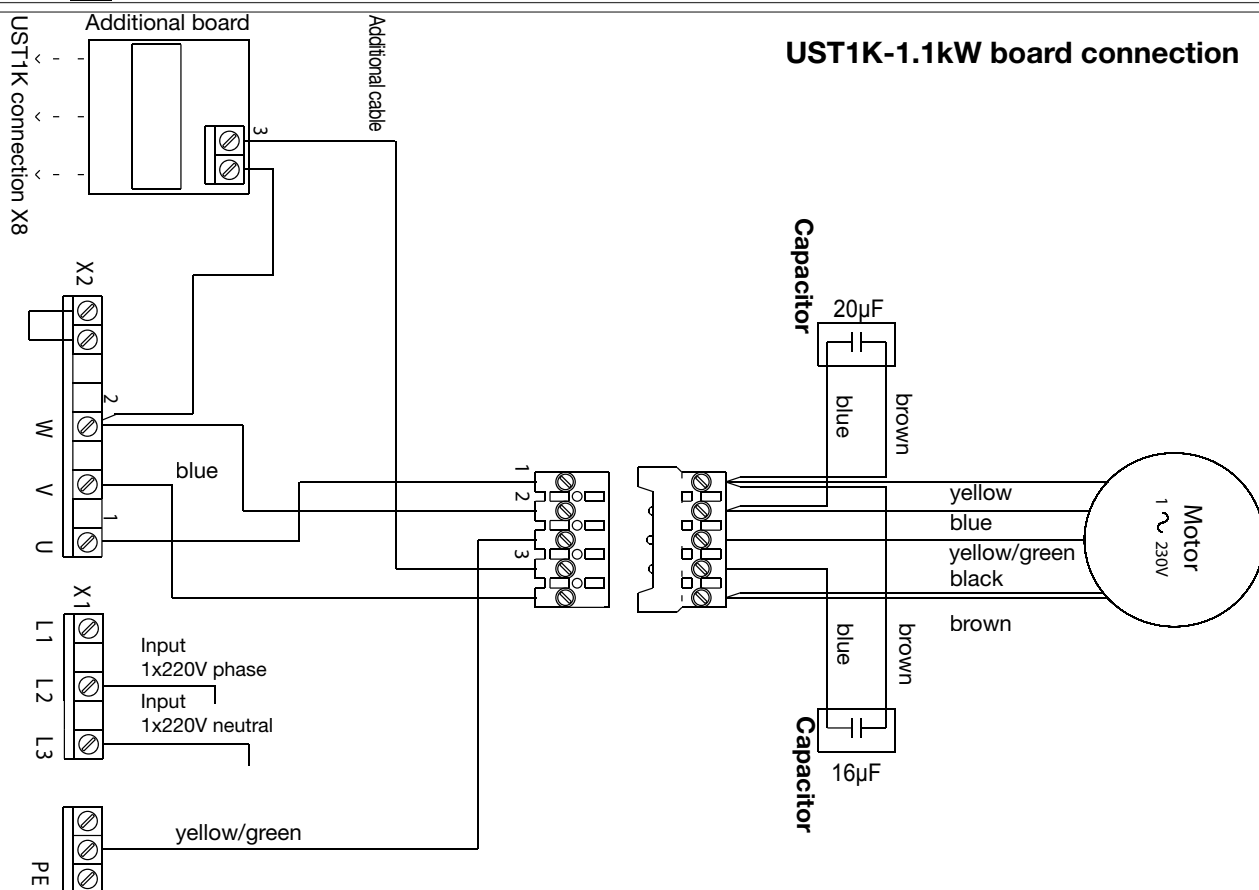


SINGLE-PHASE MOTOR CONNECTION

UST1K-2.2kW board connection



UST1K-1.1kW board connection



ASSEMBLY - SETTING

(also see fig. 12-14)



Setting of the final positions

Set the switch DIP 1 on "ON". The upper horizontal bar of the display flashes.



Setting of the upper final position:

with the UP and DOWN buttons in deadman mode, move the door to the upper final position and store this position by briefly pressing the T2 button.



It is necessary to reverse the counting direction of the electrical transmitter if error 6 is shown on the display and the door blocks during movement in the UP direction.



Set DIP switches 1 to 4 on "ON".



A small "u" appears on the display. To reverse the counting direction, press button T2 (above the DIP switch) and keep it pressed until the **u** turns 180° on the display.



Now put DIP switches 2, 3 and 4 on "OFF" - **return to setting the upper final position.**



Now the lower horizontal bar flashes.

Setting of the lower final position:

With the UP and DOWN buttons in deadman mode, move the door up to the lower final position and store this position by briefly pressing the T2 button.



Now the central horizontal bar flashes.

ATTENTION!

The preliminary limit switch is automatically set by the control unit when programming the lower final position at about 5 cm above the lower final position!!!

Partial opening setting

If you want to set a partial opening, now it is possible to adjust the desired opening by pressing the UP and DOWN buttons. Press the T2 button to confirm the position.

Now the display switches off.



SETTINGS - FINAL POSITIONS

GB



Then put the DIP switch 1 on "OFF". Now the lower bar remains lit, while the central bar flashes.



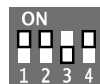
Check final positions

Move the door UP (upper final position) and DOWN (lower final position) until the lower and central bars remain lit in the lower final position.

Now the installation mode has completed.

Precision adjustment of the upper and/or lower final position:

After having set the lower final position, put the door in the upper final position by briefly pressing the UP button. The control unit switches off in the final position set with the EES limit switch.



If you want to move the upper final position upwards, it is necessary to set DIP switches 1, 2 and 4 on "ON" (to move it downwards, set DIP switches 1, 3 and 4 on "ON").



A "0" appears on the display.

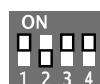
By briefly or repeatedly pressing the T2 button, a correction factor falling between 1 and 9 steps can now be set.



Then put all of the DIP switches on "OFF".

Now the final position has been corrected and will be enabled with the next lifting. Now move the door into the lower final position by pressing the DOWN button.

The control unit switches off in the final position set with the electronic limit switch.

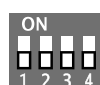


If you want to move the lower final position downwards, it is necessary to set DIP switches 1, 3 and 4 on "ON" (to move it upwards, set the DIP switches 1, 2 and 4 on "ON").



A "0" appears on the display.

By briefly or repeatedly pressing the T2 button, a correction factor falling between 1 and 9 steps can now be set.



Then put all of the DIP switches on "OFF".

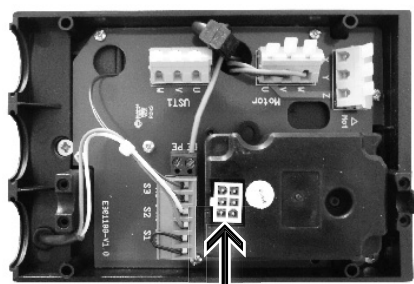
Now the final position has been corrected and will be enabled with the next lowering.

This operation can be repeated several times until the lower final position is perfectly adjusted.

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Electronic limit switches A type

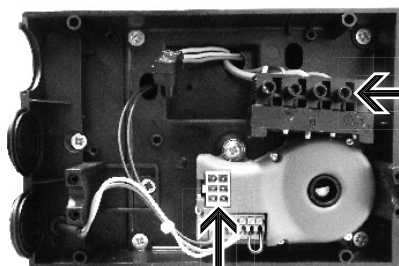
Wires 1, 2 and 3
Control unit
connection cable



Six-pole plug
Control unit connection cable

13

Electronic limit switches B type



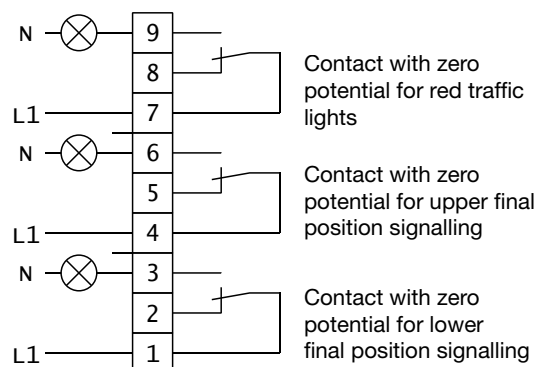
Five-pole
multiple
adapter
Control unit
connection
cable

Six-pole plug
Control unit connection cable

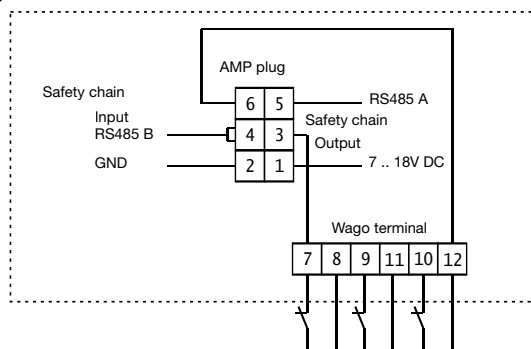
14

Control station	Wire	Motor
X2 - J1/U	1	U
X2 - J1/V	2	V
X2 - J1/W	3	W
X2 - J6	Jumper	-
X5 - J22	4	S3 - J9
X5 - J22	5	S3 - J9
X5 - J21	10	P1 ↓ - J3/C
X5 - J21	11	P1 ↓ - J3/NC
X5 - J20	6	E ↑ - J2
X5 - J20	7	E ↑ - J2
X5 - J19	8	E ↓ - J4
X5 - J19	9	E ↓ - J4
PE terminal	Yellow/green	PE

15



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Operation functions



In normal operating conditions, the status of the door and/or the number of the error present are shown on the display. In this case position all DIP switches on OFF!

Automatic closing

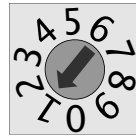
Automatic closing is set on the S2 selector.

The closing times can be set on a value between 0 and 240 seconds.

Special function:

If there is a photoelectric barrier, the time is reduced by 5 seconds after passage.

Time	setting
0	Automatic closing disabled
1	5 seconds
2	10 seconds
3	20 seconds
4	30 seconds
5	45 seconds
6	60 seconds
7	90 seconds
8	120 seconds
9	240 seconds

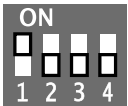


s2 rotary switch

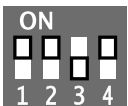
WARNING:

It is possible to lengthen the duration of the waiting time of a factor by choice (with selector in position 6 to 9) using the K5 module. The parameter to be used is P28.

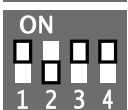
DIP switch functions:



DIP-1 "ON" and 2, 3, 4 "OFF"
Setting of the final positions



DIP-1, 2, 4 "ON" and 3 "OFF"
Precision setting of the final position (upward movement)



DIP-1, 3, 4 "ON" and 2 "OFF"
Precision setting of the final position (downward movement)

Automatic adaptation to the ground



DIP 2 = ON

This function can be used if there is an SBA sensor.

Advance notice traffic lights



DIP 3 = ON

With this function the red traffic lights (terminals 1+2) begin to flash 3 seconds before closing of the door.

Reversed movement function



DIP 4 = ON

The door blocks and reverses its direction for about 50 cm if the sensitive edge is enabled during the downward movement.

DIP 4 = OFF

The door blocks and reaches the upper final position if the sensitive edge is enabled during the downward movement.

Meaning of display messages

Upper segment:

flashing --> upper final position setting in progress

ON --> upper final position setting completed

Lower segment:

flashing --> lower final position setting in progress

ON --> lower final position setting completed

In normal operating conditions, the status of the door and/or the number of the error present are shown on the display.



Error 3
sensitive edge tripped, for example



movement UP,



movement DOWN,



upper final position,



preliminary limit switch,

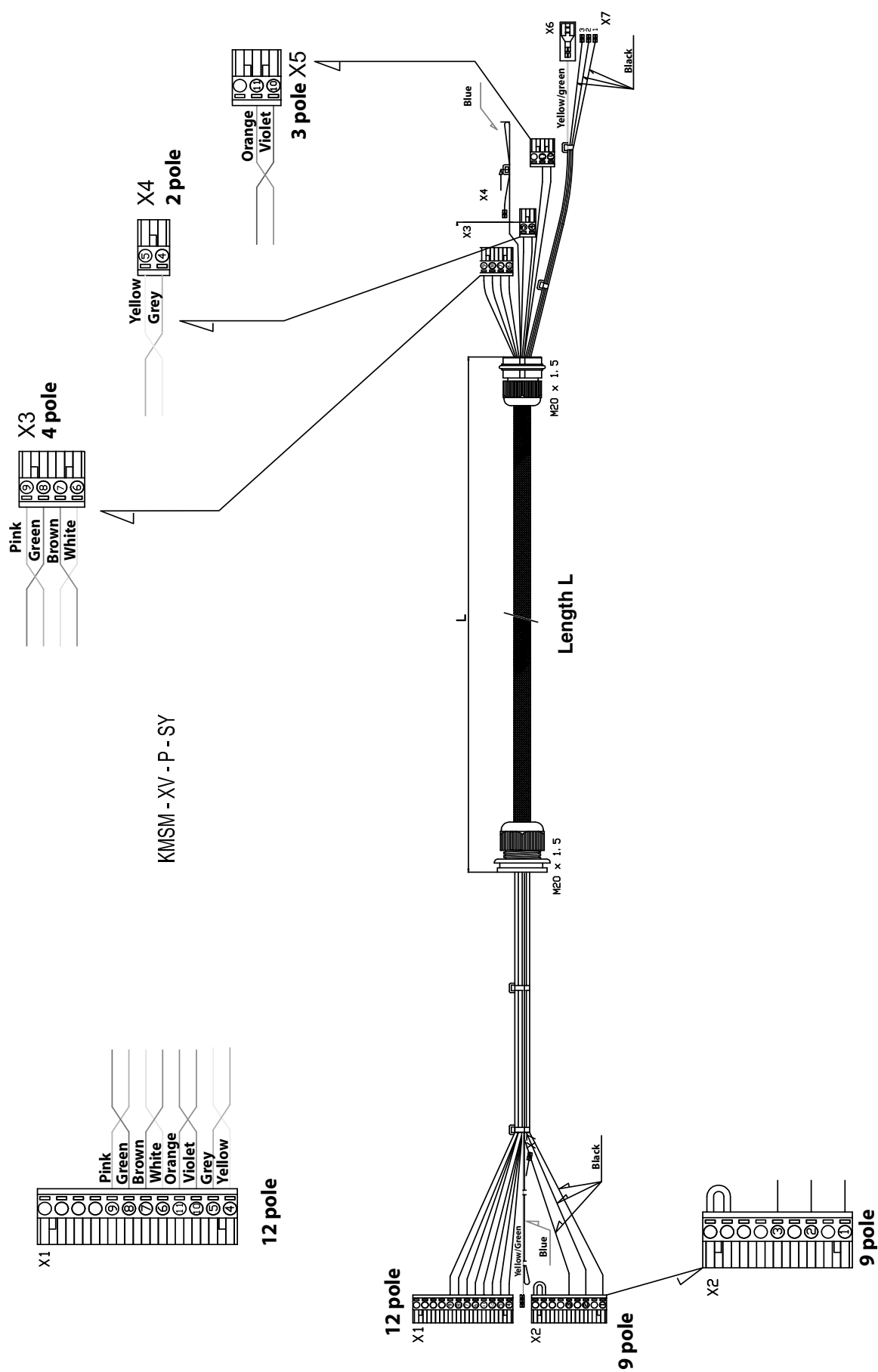


lower final position.

Fault display (represented with flashing):

- 1 Safety circuit
- 2 Lower sensitive edge fault
- 3 Lower sensitive edge tripped
- 4 Lower final position not reached (time limit)
- 5 Upper final position not reached (time limit)
- 6 Incorrect direction of rotation of motor
- 7 Power during lifting deactivation
- 8 Door in the safety limit switch sector
- 9 The door is not in one of the final positions. Correction of the final position is impossible
- 0 Digital limit switch error

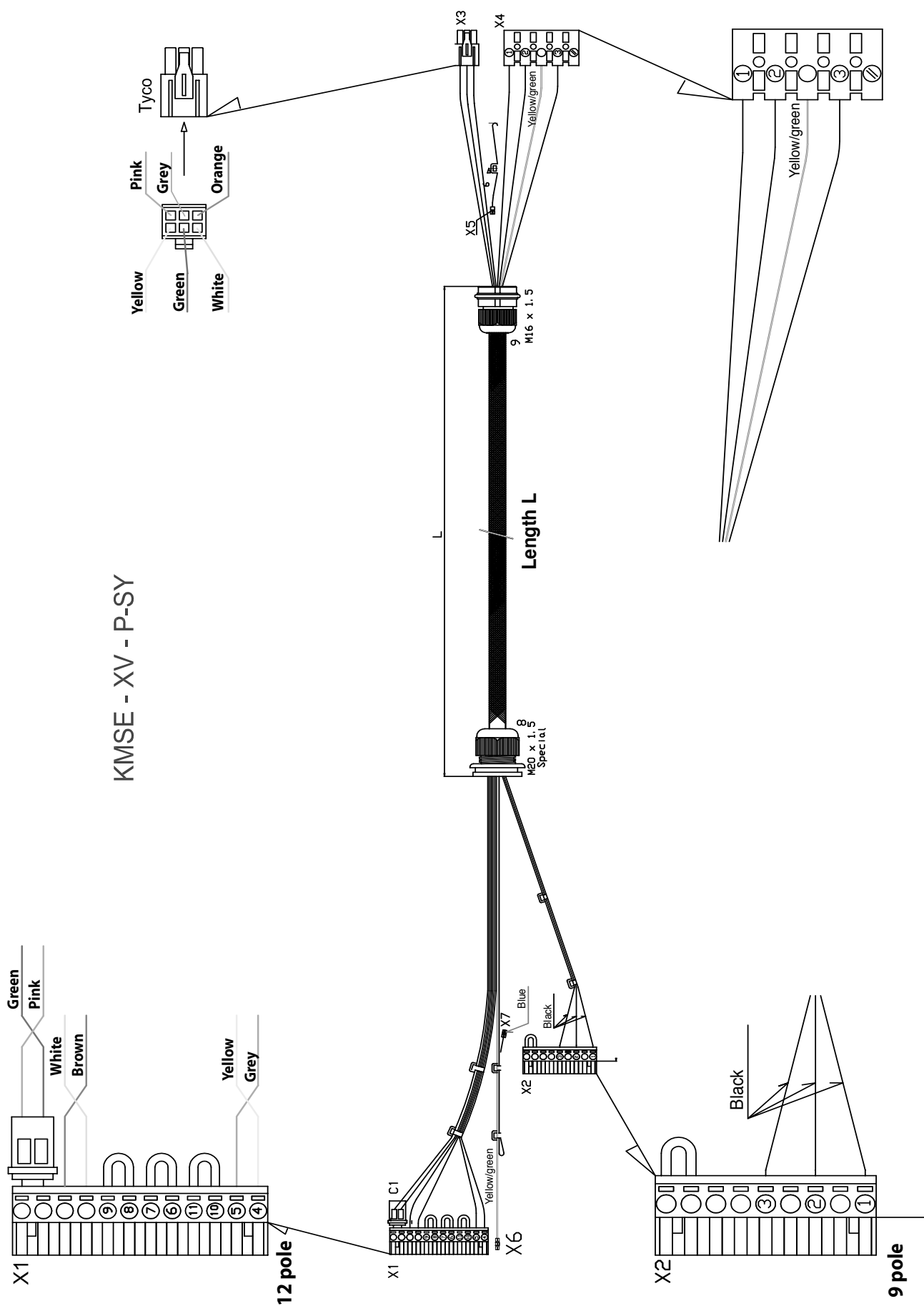
CONNECTION CABLE FOR GEARMOTORS EQUIPPED WITH ELECTRONIC LIMIT SWITCH - WITH SCREENING



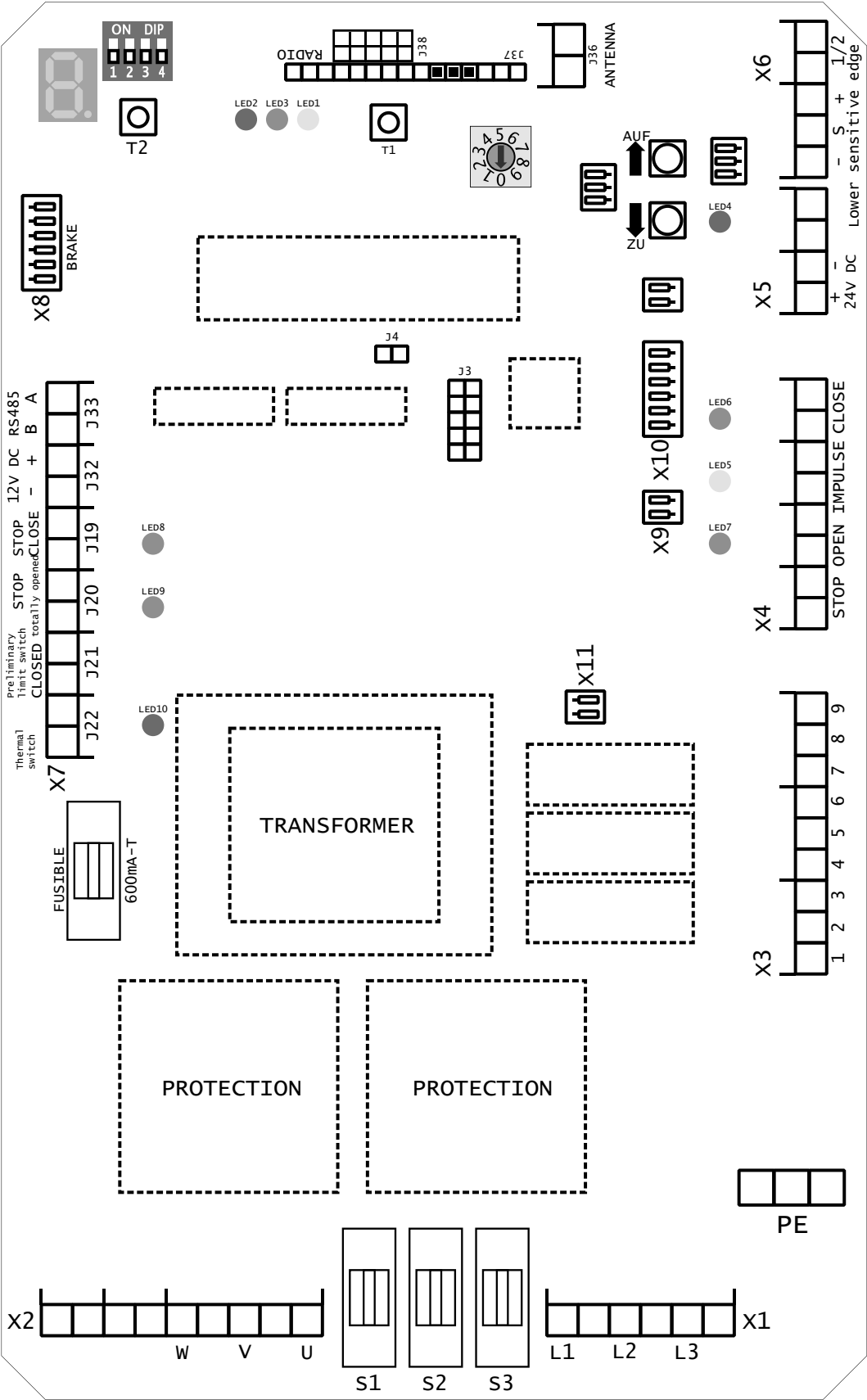


CONNECTION CABLE FOR GEARMOTORS EQUIPPED WITH ELECTRONIC LIMIT SWITCH - WITH SCREENING

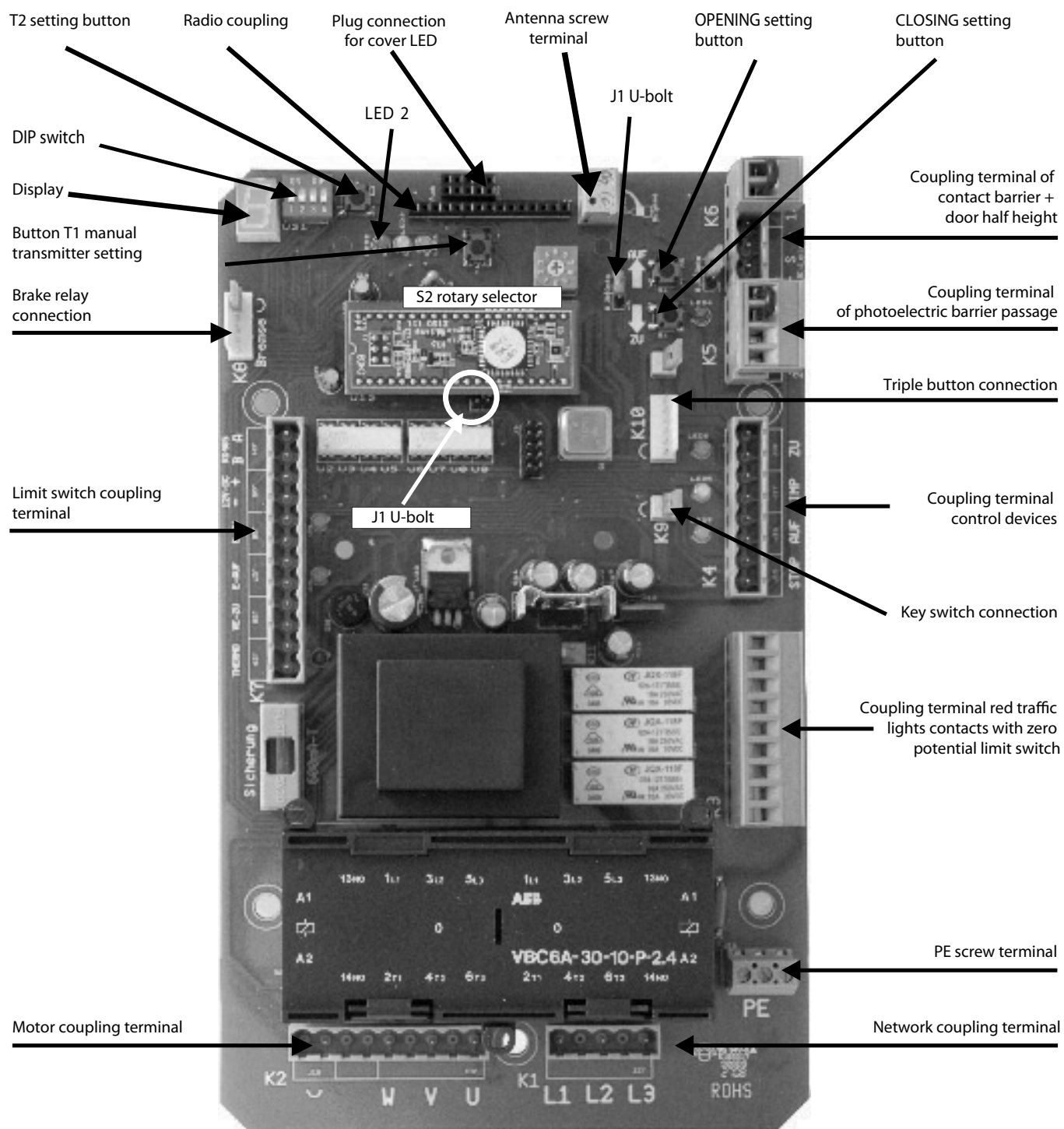
KMSE - XV - P-SY



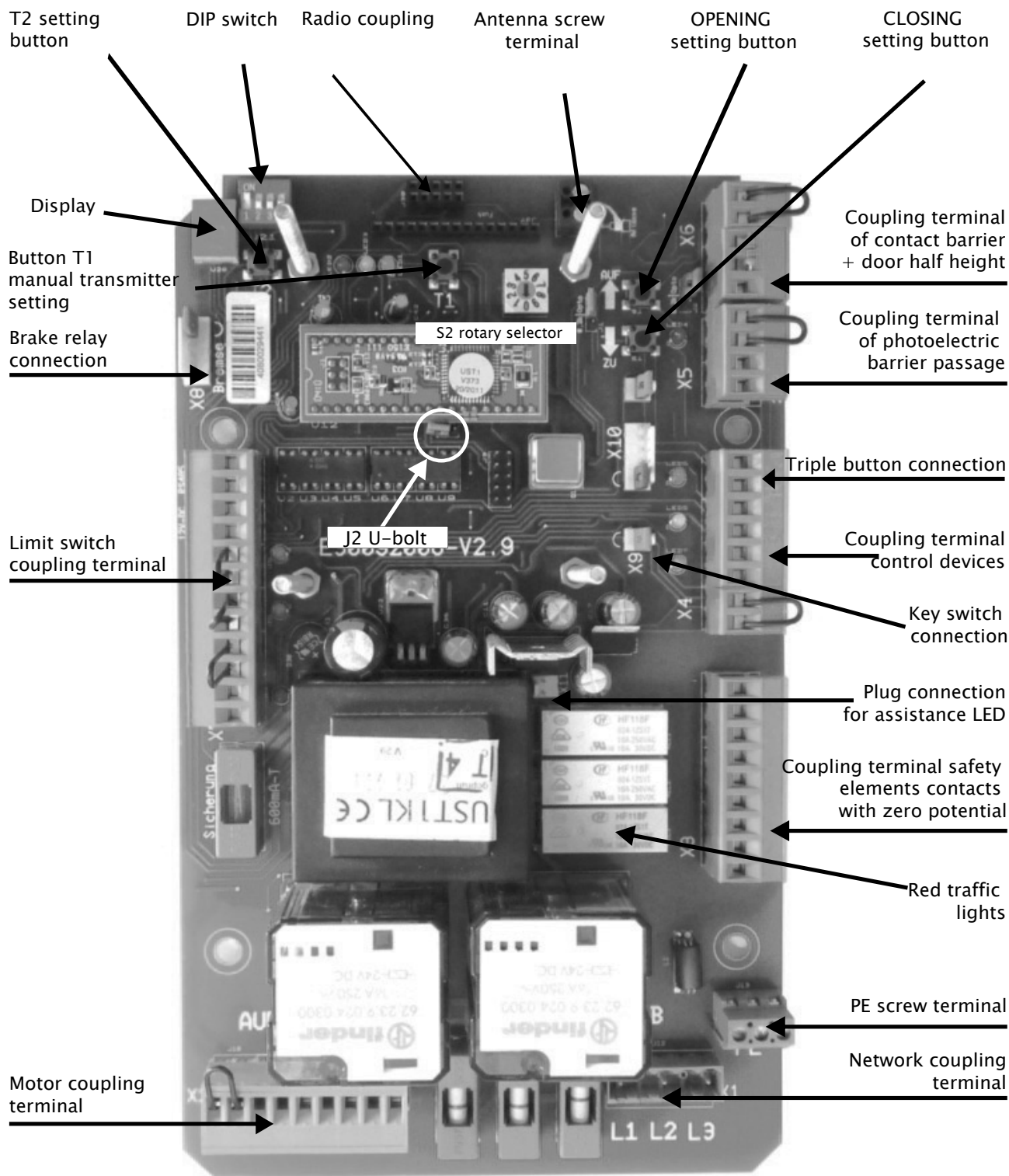
Wiring diagram UST1K-1.1kW



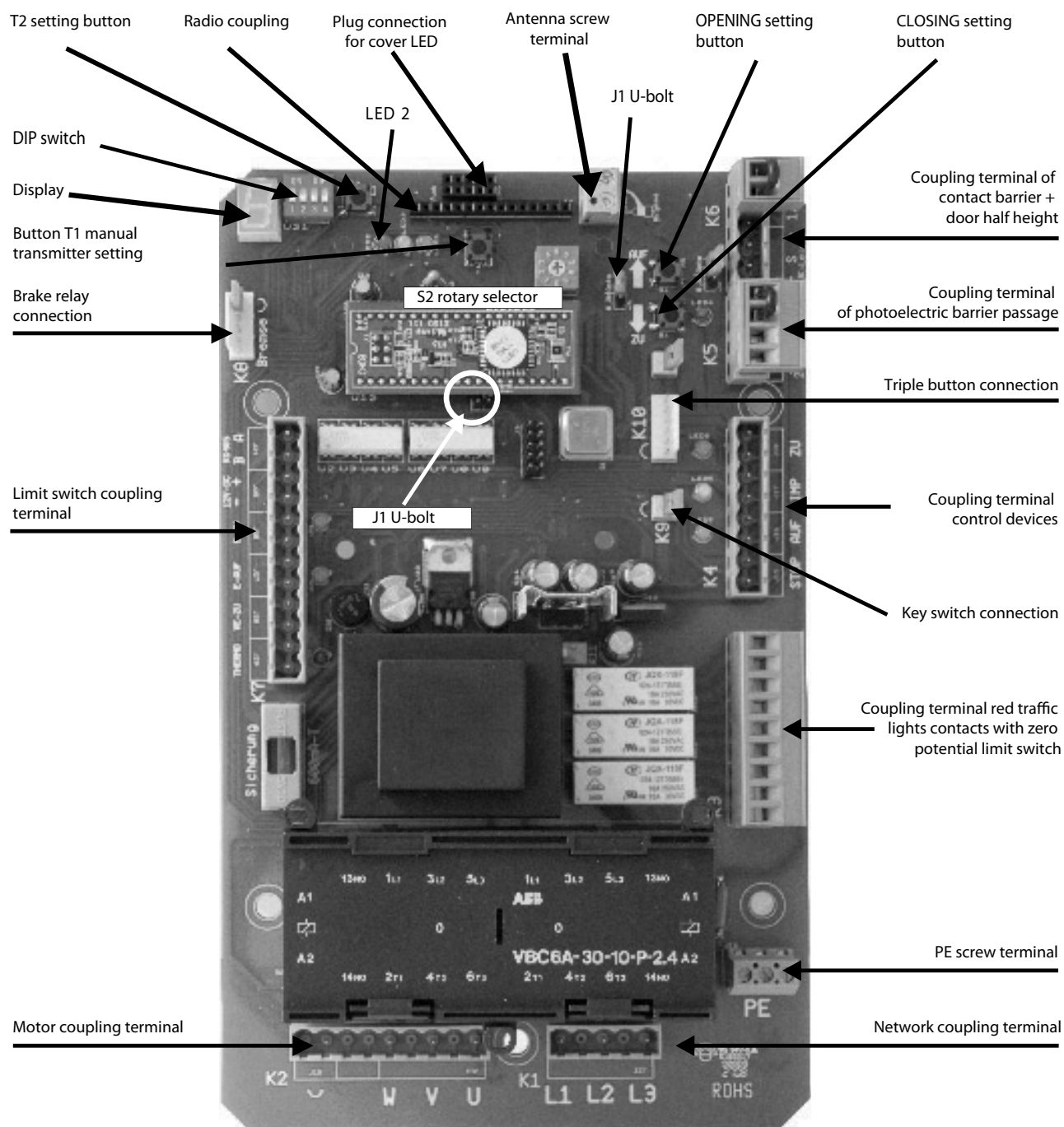
Wiring diagram UST1K - starting from 2.2kW



Electronic board UST1K-1.1kW



Electronic board UST1K - 2.2kW and 5.5kW



WARNINGS

- All of the technical characteristics indicated refer to a temperature of 20°C (± 5°C).
- Nice reserves the right to introduce all modifications to the product it deems necessary at any time, however keeping the functions and intended use unaltered.

UST1K TECHNICAL DATA

DESCRIPTION	UST1K-1.1kW	UST1K-2.2kW	UST1K-5.5kW
Voltage power supply:	3 x 400V AC 50Hz (with 6 and/or 10A fuses)		
Max. motor power:	1.1kW	2.2kW	5.5kW
Motor connection :	2x3 NO relay contacts	2x3 NO protected contacts	2x3 NO protected contacts
	400V/max. 1.1kVA	400V/max. 2.2 kVA	400V/max. 5.5 kVA
Power at rest:	< 4VA		
Ambient temperature:	from -20°C to +50°C		
Control voltage:	24 V DC Additional delayed 0.8A fuse		
Protection rating:	IP 54		

TRANSPORT / STORAGE / DISPOSAL

The control unit is totally assembled and wired, ready for connection.

The control unit is to be kept inside its packaging during transport and storage, if any, to prevent damage.

For disposal, it is necessary to separate

- metals
- plastic elements
- electrical components
- lubricants.

TECHNICAL ASSISTANCE / SPARE PARTS / ACCESSORIES

We specifically clarify that we neither carry out tests nor are we willing to approve any spare parts and/or accessories not supplied by us.

The assembly and/or use of products of this type could jeopardise gearmotor features pre-defined at the construction level, which can reflect on safety.

NICE declines all responsibility and disclaims any warranty whatsoever for damages, if any, caused by using non-original spare parts and/or accessories.

Defects that cannot be remedied internally are to be eliminated only by the door manufacturer or another specialised company, from which it is possible to also request any necessary spare parts.

EC DECLARATION OF CONFORMITY

and declaration of incorporation of “quasi-machine”

Declaration in accordance with Directives: 2004/108/EC (EMC); 2006/42/EC (MD) annex II, part B

Note - The content of this declaration corresponds to the declaration at the last available version of the document filed in the offices of Nice S.p.A. prior to the printing of this manual. This text has been adapted to meet editorial requirements. A copy of the original declaration may be requested from Nice S.p.a. (TV) I.

Declaration number:	441/UST1K	Rev.: 0	Language: EN
Name of manufacturer:	NICE S.p.A.		
Address:	Via Pezza Alta N°13, 31046 Rustignè di Oderzo (TV) Italy		
Person authorized to provide technical documentation:	Sig. Oscar Marchetto.		
Product type:	Control unit for electromechanical gear-motors		
Model / Type :	UST1K		
Accessories:	Modules K3, K3A, K5, K7		

The undersigned Luigi Paro, as Managing Director, hereby declares under his own responsibility that the product identified above complies with the provisions of the following directives:

- ☐ DIRECTIVE 2004/108/EC OF THE EUROPEAN PARLIAMENT AND COUNCIL of December 15 2004 concerning alignment of Member States' legislation regarding electromagnetic compatibility and abrogating directive 89/336/EEC, according to the following harmonized standards:
EN 61000-6-2:2005, EN 61000-6-4:2007

The product also complies with the following directive in accordance with the requirements for “quasi-machines”:

- ☐ Directive 2006/42/EC OF THE EUROPEAN PARLIAMENT AND COUNCIL of May 17 2006 regarding machines and amending directive 95/16/EC (consolidated text), according to the following harmonized standards:
EN 13849-1:2008

- I declare that the pertinent technical documentation has been prepared in accordance with Annex VII B to Directive 2006/42/EC and that the following essential requirements have been met: 1.1.1- 1.1.2- 1.1.3- 1.2.1-1.2.6- 1.5.1-1.5.2- 1.5.5- 1.5.6- 1.5.7- 1.5.8- 1.5.10- 1.5.11
- The manufacturer agrees to send the national authorities pertinent information on the “quasi-machine” in response to a motivated request without affecting its intellectual property rights.
- If the “quasi-machine” is operated in a European country with an official language other than the language used in this declaration, the importer must associate a translation with this declaration.
- The “quasi-machine” must not be operated until the final machine in which it is to be incorporated is declared to conform to the provisions of Directive 2006/42/EC, if applicable to it.

The product also complies with the following standards:

EN 60335-1:2002 + A1:2004 + A11:2004 + A12:2006 + A2:2006 + A13:2008
EN 60335-2-103:2003

The parts of the product which are subject to the following standards comply with them:

EN 13241-1:2003, EN 12445:2002, EN 12453:2002, EN 12978:2003
Oderzo, November 4 2011

Ing. Luigi Paro
(Managing Director)




**Our gearmotors and control units are
tested at TÜV-NORD.**

Nice

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