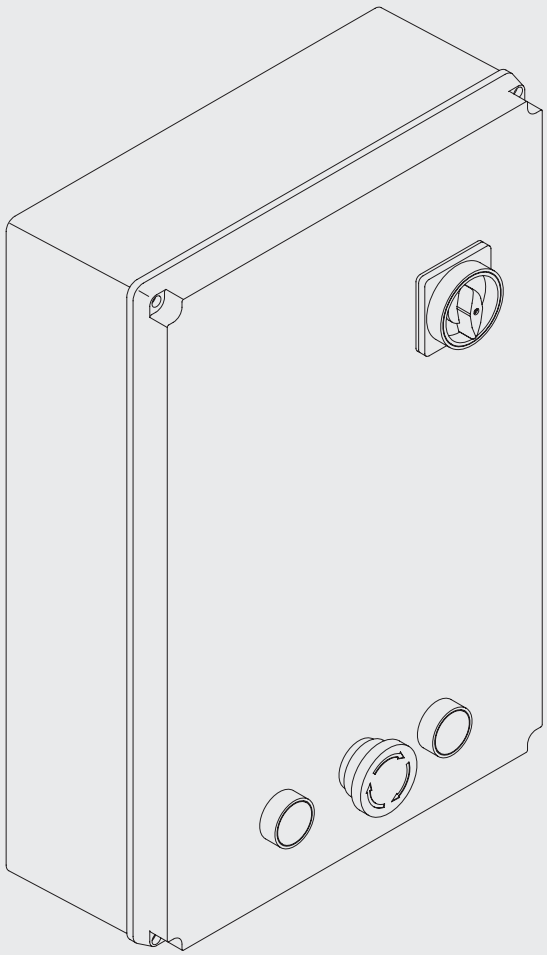
L8543006 ITA/GB/FRA
06/2013 rev. 0

CP.VN INVERTER

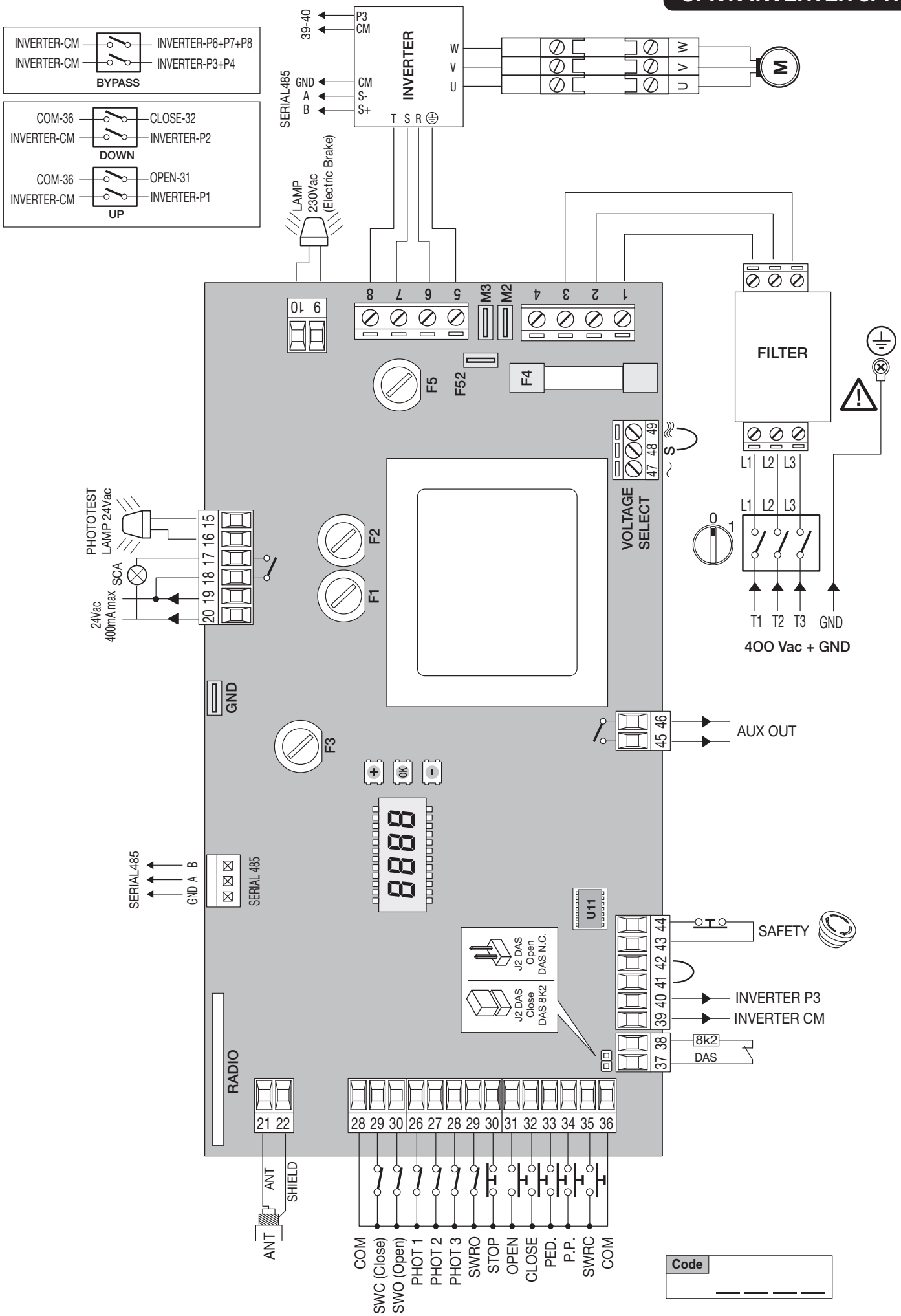


BENINCÀ®
TECHNOLOGY TO OPEN

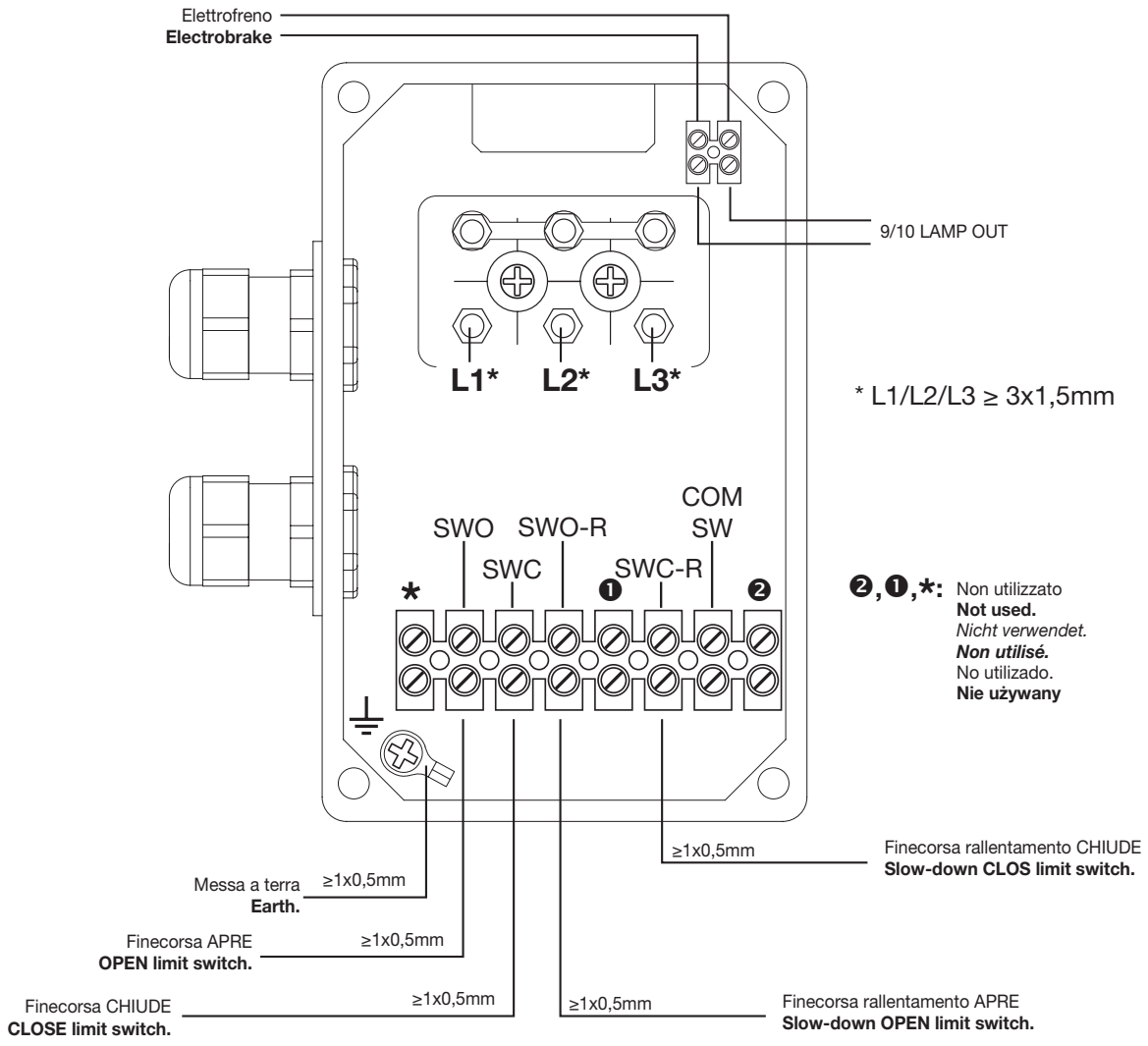
CE

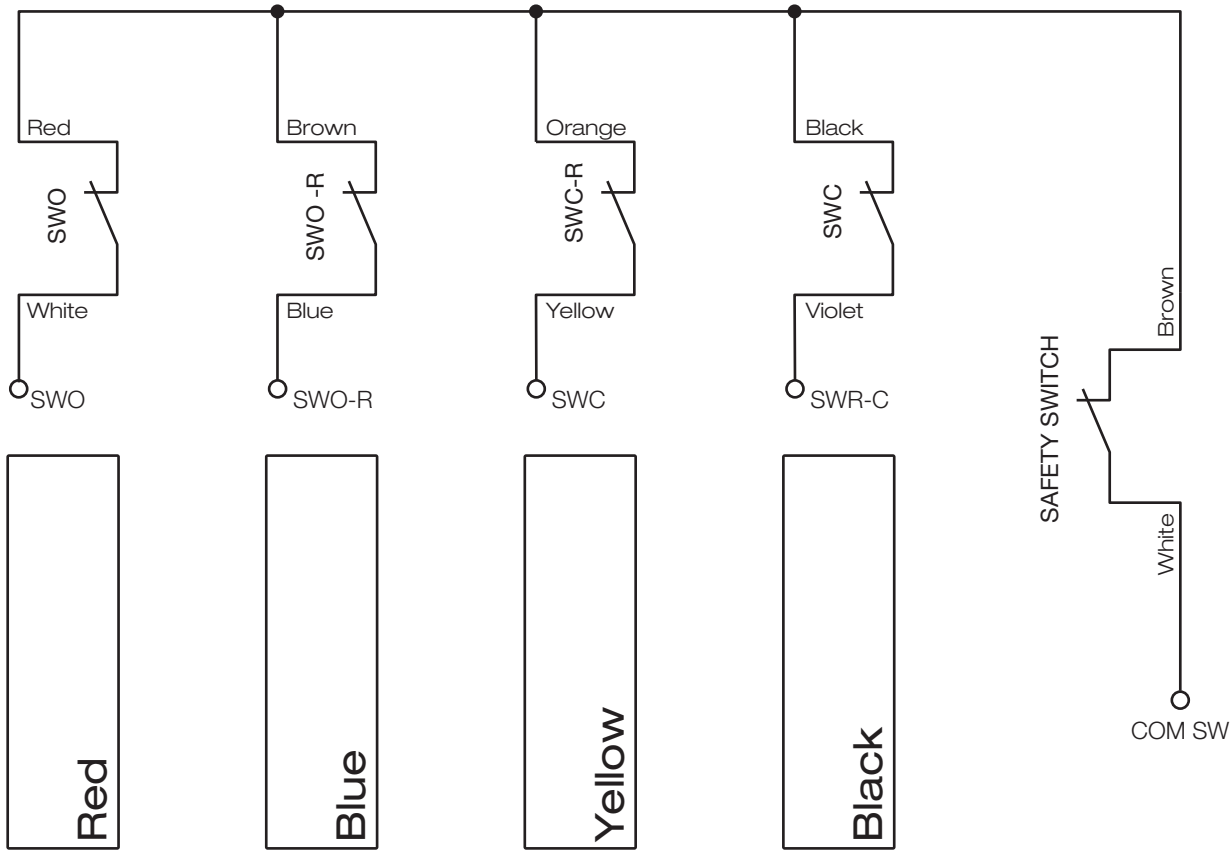
UNIONE NAZIONALE COSTRUTTORI
AUTOMATISMI PER CANCELLI, PORTE
SERRANDE ED AFFINI

UNAC

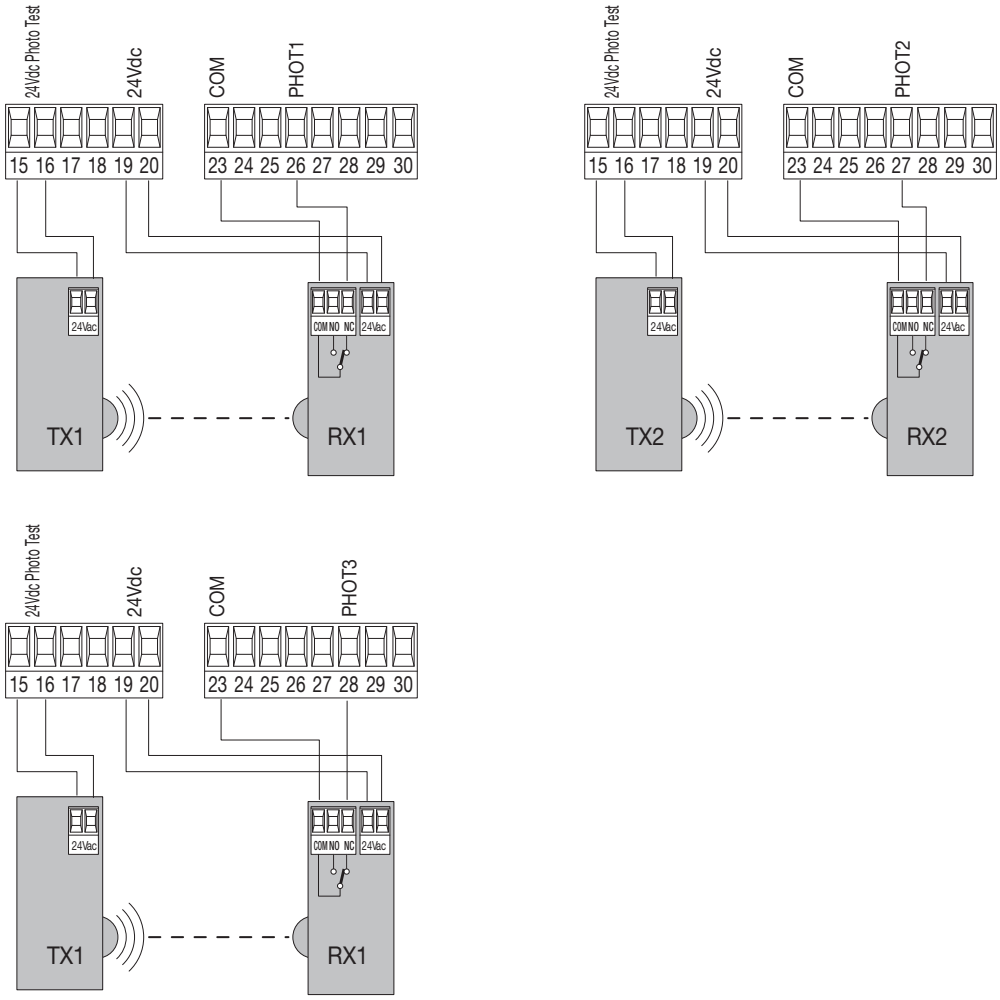

INVERTER-CM
INVERTER-P6+P7+P8
INVERTER-CM
INVERTER-P3+P4
BYPASS
COM-36
CLOSE-32
INVERTER-CM
INVERTER-P2
DOWN
COM-36
OPEN-31
INVERTER-CM
INVERTER-P1
UP
39-40
P3
CM
SERIAL485
GND
A
B
CM
S-
S+
INVERTER
T S R
W
V
U
M
LAMP
230Vac
(Electric Brake)
9 10
8 7 6 5
M3
M2
4 3 2 1
F5
F52
F4
FILTER
S
47 48 49
VOLTAGE SELECT
L1 L2 L3
0 1
L1 L2 L3
T1 T2 T3 GND
400 Vac + GND
PHOTOTEST
LAMP 24Vac
SCA
24Vac
400mA max
20 19 18 17 16 15
F2
F1
GND
F3
45 46
AUX OUT
OK
8888
SERIAL485
GND A B
SERIAL 485
U11
J2 DAS
Open
DAS N.C.
J2 DAS
Close
DAS 8K2
SAFETY
44 43 42 41 40 39
INVERTER P3
INVERTER CM
8k2
DAS
37 38
RADIO
21 22
28 29 30 26 27 28 29 30 31 32 33 34 35 36
ANT
SHIELD
ANT
COM
SWC (Close)
SWO (Open)
PHOT 1
PHOT 2
PHOT 3
SWRO
STOP
OPEN
CLOSE
PED.
P.P.
SWRC
COM
Code

VN.MT40V


Elettrofreno
Electrobrake
9/10 LAMP OUT
L1*
L2*
L3*
* L1/L2/L3 ≥ 3x1,5mm
COM
SW
SWO
SWO-R
SWC
SWC-R
*
❶
❷
❷,❶,*: Non utilizzato
Not used.
Nicht verwendet.
Non utilisé.
No utilizado.
Nie używany
≥1x0,5mm
Finecorsa rallentamento CHIUDE
Slow-down CLOS limit switch.
Messa a terra
Earth.
≥1x0,5mm
Finecorsa APRE
OPEN limit switch.
≥1x0,5mm
Finecorsa CHIUDE
CLOSE limit switch.
≥1x0,5mm
Finecorsa rallentamento APRE
Slow-down OPEN limit switch.

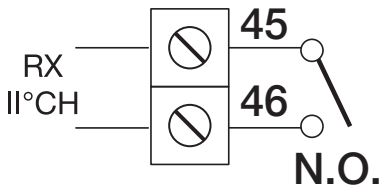

Red
SWO
White
SWO
Brown
SWO -R
Blue
SWO-R
Orange
SWC-R
Yellow
SWC
Black
SWC
Violet
SWR-C
SAFETY SWITCH
Brown
White
COM SW
Red
Blue
Yellow
Black

3



4

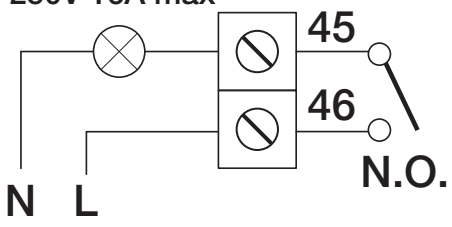
II°CH RADIO AUX: 1



SERVICE LIGHT AUX:2

LIGHT ZONE AUX:3

LIGHT
250V 16A max

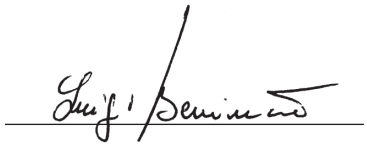


EC declaration of confirmity

Manufacturer: Automatismi Benincà SpA.
Address: Via Capitello, 45 - 36066 Sandrigo (VI) - Italia

Herewith declares that: control unit **CP.VN INVERTER.**
complies with the following relevant provisions:
EMC guidelines: 89/336/CCE, 93/68/CEE
Low voltage guidelines: 73/23/CEE, 93/68/CEE

Benincà Luigi, Legal responsible.
Sandrigo, 25/11/2011.



WARNINGS

This manual has been especially written to be use by qualified fitters.

None of the information provide in this manual can be considered as being of interest for the end users.

Preserve this manual for future needs.

The technician has to furnish all the information related to the step by step function, the manual and the emergency function of the operator, and to deliver the manual to the final user.

Foresee on the supply net an onnipolar switch or selector with distance of the contacts equal or superior to 3 mms.

Verify that of the electrical system there is an awry differential interrupter and overcurrent protection.

Some typologies of installation require the connection of the shutter to be link at a conductive mass of the ground according to the regulations in force.

The electrical installation and the operating logic must comply with the regulations in force.

The leads fed with different voltages must be physically separate, or they must be suitably insulated with additional insulation of at least 1 mm.

The leads must be secured with an additional fixture near the terminals.

During installation, maintenance and repair, interrupt the power supply before opening the lid to access the electrical parts

Check all the connections again before switching on the power.

The unused N.C. inputs must be bridged.

The descriptions and the present illustrations in this manual are not binding. Leaving the essential characteristics of the product unchanged, the manufacturer reserves himself the right to bring any change of technical, constructive or commercial character without undertaking himself to update the present publication.

TECHNICAL DATA

Mains power supply	Three-phase 400 VAC 50/60 Hz
Output, Motor	1 motor, 400 VAC three-phase
Motor max current	2.6 A
Output, power supply of accessories	24VAC 0.4 A max.
Protection level	IP54
Operating temperature	-20°C / +50°C
Radio receiver	433,92 MHz, incorporated and configurable (rolling-code or fixed+rolling-code+ ARC Advanced Rolling Code)
No. of codes storable in memory	64

CP.VN INVERTER CONTROL UNIT

INPUT/OUTPUT FUNCTIONS

CAUTION!: The CP.VN INVERTER control unit is equipped with an embedded anti-crash device (amperometric sensor). Given the overall dimensions of the door leaves for which the device is intended, the latter cannot be considered a safety device. It is therefore STRICTRLY MANDATORY to install activated protection sensitive edges according to regulations in force.

N° Terminals	Function	Description
T1-T2-T3	Power supply	Three-phase mains power supply. The unit is powered through a mains filter applied before the control unit. T1:L1 - T2:L2 - T3:L3 - 4:GND.
5-6-7-8	INVERTER	INVERTER connection 5:GND - 6:R - 7:S - 8:T.
9-10	Flashing light	Connection of flashing light, 230VAC 40W max. In the CP.VN Inverter that output is used to wire the electric brake.
15-16	24V Flashing light or Phototest	Connection to 24VAC flashing light or Phototest output for checked photocells.
17-18	SCA	Normally open, voltage-fee contact for open gate indicator light, 24VAC 0.5A max
19-20	24 VAC	Output, power supply of accessories, 24Vac/400mA max
SERIAL 485	Serial, inverter	485 serial communication between control logics and Inverter.
21-22	Antenna	Connection to built-in radio receiver module of the antenna (21-signal/22-monitor).
23-36	COM	Common, for all control inputs.
24	SWC	Input, CLOSE limit switch (Normally Closed contact)
25	SWO	Input, OPEN limit switch (Normally Closed contact)
26	PHOT 1	Input, Limit switch 1 (NC contact). It can be disconnected in the opening phase, see PH01 logics.
27	PHOT 2	Input, Limit switch 2 (NC contact). It can be disconnected in the opening phase, see PH02 logics.
28	PHOT 3	Input, Limit switch 3 (NC contact). It can be disconnected in the opening phase, see PH03 logics.
29	SWO-R	Beginning of opening slow down limit switch input (N.C. contact)
30	STOP	Input, STOP push-button (Normally Closed contact)
31	OPEN	Input, push-button for OPEN contact (Normally Open contact)
32	CLOSE	Input, CLOSE push-button (Normally Open contact)
33	PED	Input, push-button for pedestrian opening (Normally Open contact)
34	Step-by-Step	Input, Step-by-Step push-button (Normally Open contact)
35	SWC-R	Beginning of closing slow down limit switch input (N.C. contact)
37-38	SAFETY	Input, sensitive safety edge. Safety edge of the resistive type: Jumper “DAS” closed. Safety edge of the mechanical type: Jumper “DAS” open. When the safety edge is activated, the door movement is stopped and reversed for around 3sec.
39-40	INVERTER	Safety connection provides control of the hardware emergency stop to the inverter. It is always open with stopped motor, pressed SAFETY push-button .
41-42	COVER	Optional safety contact, not in use, do not remove the 41/42 bridge
43-44	SAFETY	NC safety switch (installed on the control panel box cover)
45-46	AUX OUT	Auxiliary output, configurable through the AUX parameter. Voltage-free contact, 250VAC 16A max.
Fuse	**Type**	**Description**
F1	250V T1A	Protection, power supply of accessories
F2	250V T400mA	Protection, logics of board
F3	250V T630mA	Protection, common inputs and serial of inverter
F4	500V T125mA	Protection, transformer primary
F5	250V T500mA	Protection, lashing light, 230V

BYPASS PUSHBUTTON

The control panel bypass pushbutton is located inside the control panel box, next to the inverter.
In case of control panel failure, by pushing this pushbutton it is possible to use UP/DOWN pushbuttons on the control panel cover in hold to run mode.
In this mode the pushbutton must be kept pressed for the whole run, the operator must see the door moving, because all of the safety inputs are excluded, as well as limit switches and slow down.
It must be used in case of emergency only, while waiting for a technical check up to recover control panel.

HOW TO CHECK CONNECTIONS

1) Cut off power supply.
2) Manually release the door/gate and push it for about half stoke. Lock the door again.
3) Restore power supply.
4) Check that OPEN/CLOSE pushbuttons are working in the wanted way, otherwise swap the motor/inverter wiring (U<>V)

INVERTER

The inverter allows to enhance the functional performance of the motor as regards control of the torque, speed and safety.
Although the pre-installed inverter is provided with programming functions, none of them must be changed by the installer because the CP.VN INVERTER control unit directly controls all the operating parameters. If the device is to be replaced, ask an original spare part to the manufacturer and carry out its wiring in compliance with connections shown in the handbook supplied with the spare part itself. Do not use inverters which are not supplied by the manufacturer for any reason whatsoever.

PROGRAMMING

The programming of the various functions of the control unit is carried out using the LCD display on the control unit and setting the desired values in the programming menus described below.
The parameters menu allows you to assign a numerical value to a function, in the same way as a regulating trimmer.
The logic menu allows you to activate or deactivate a function, in the same way as setting a dip-switch.
Other special functions follow the parameters and logic menus and may vary depending on the type of control unit or the software release.

TO ACCESS PROGRAMMING

1 – Press the button <PG>, the display goes to the first menu, Parameters “PAR”.
2 – With the <+> or <-> button, select the menu you want.
3 – Press the button <PG>, the display shows the first function available on the menu.
4 – With the <+> or <-> button, select the function you want.
5 – Press the button <PG>, the display shows the value currently set for the function selected.
6 – With the <+> or <-> button, select the value you intend to assign to the function.
7 – Press the button <PG>, the display shows the signal “PRG” which indicates that programming has been completed.

NOTES

Pressing <-> with the display turned off means an impulse of P.P.
Simultaneously pressing <+> and <-> from inside a function menu allows you to return to the previous menu without making any changes.
Hold down the <+> key or the <-> key to accelerate the increase/decrease of the values.
After waiting 30s the control unit quits programming mode and switches off the display.

PARAMETERS, LOGIC AND SPECIAL FUNCTIONS

The tables below describe the individual functions available in the control unit.

PARAMETERS (PAr)

MENU	FUNCTION	MIN-MAX-(Default)	MEMO
tcA	Automatic closure time. It is activated only with “TCA” logics :ON At the end of the preset time, the control unit starts a new closing operation.	1-240-(40s)	
tPEd	The passage left open by the door/gate leaf during the partial opening controlled by the pedestrian inoput, is adjusted. The value is in seconds.	1-120-(3)	
tM	Motor operating time. The maximum duration of the opening and closing operation is adjusted. The value is automatically set by the AUTOSET function.	5-240-(240s)	
FStS	The opening and closing speed is adjusted. “See section “How to adjust speed and braking”.	20-90-(45)	
SLdS	Speed during braking is adjusted. See section “How to adjust speed and braking”.	5-40-(25)	
PMo	The torque applied to motor 2 in the opening* phase is adjusted.	1-99-(20%)	
PMc	The torque applied to motor 2 in the closing* phase is adjusted.	1-99-(20%)	
SEAu	The trigger time of the anti-crash device is adjusted during the normal speed phase*. 0:Off-90: maximum sensibility - 1: minimum sensitivity	1-90-(0%)	
SEAr	The trigger time of the anti-crash device is adjusted during the braking phase*. 0:Off-90: maximum sensibility - 1: minimum sensitivity	1-90-(0%)	
tLS	It is activated with AUX 1 parameter only, preset to value 2. The activation time of the service light is adjusted.	1-240-(60s)	

tAcc	Ramp during acceleration. Value expressed in tenths of seconds. See section “How to adjust speed and braking”.	1-60-(20)	
tdEc	Ramp during deceleration. Value expressed in tenths of seconds. See section “How to adjust speed and braking”.	5-99-(50)	
tbr	Emergency braking, after the activation of PHOT/BAR/STOP inputs, or lack of INVERTER connection, the value is expressed in tenths of seconds.	2-10-(3)	
AUH	It selects the operating mode of the AUX output: 1: Second radio channel. The output is controlled by the radio channel of the built-in receiver (see RADIO Menu). 2: Service light. The contact closes for the time preset with TLS parameter. The countdown starts at the inception of the opening operation. 3: Area light. The contact closes in the opening phase and remains closed for the entire TCA time. It opens only with closed door. See wiring shown in figure 4.	1-3-(1)	
***CAUTION: A wrong presetting of these parameters may be dangerous. Comply with regulations in force!**			

LOGIC (LoG)

MENU	FUNCTION	ON-OFF-(Default)	MEMO
tcA	Enables or disables automatic closing On: automatic closing enabled Off: automatic closing disabled	(OFF)	
ibL	Enables or disables multi-flat function. On: multi-flat function enabled. The step-by-step and perdestrian commands have no effect during the opening phase. Off: multi-flat function disabled.	(OFF)	
ibcA	During the TCA phase, the PP controls are enabled or disabled. On: PP controls are disabled. Off: PP controls are enabled.	(OFF)	
ScL	The rapid closure is enabled or disabled. It can be activated only if TCA:ON On: enabled rapid closure. With open gate, the photocell activation causes the automatic closure after 3 s. If the photocell is activated during the opening phase, the operation is completed and closure starts after 3s Off: disabled rapid closure.	(OFF)	
PP	The operating mode of “P.P. Push button” and of the transmitter are selected. On: Operation : OPEN > CLOSE > OPEN > Off: Operation: OPEN > STOP > CLOSE > STOP >	(OFF)	
PrE	Forewarning flashing light enabled or disabled. On: enabled forewarning flashing light. The flashing light is activated 3 s before the starting of the motor. Off: disabled forewarning flashing light.	(OFF)	
htr	The Service Man function is enabled or disabled. On: Service Man operation. The OPEN/CLOSE push buttons should be kept pressed for the entire operating time. Off: Automatic operation.	(OFF)	
LtcA	During the TCA time, the blinker is enabled or disabled. On: Enables blinker. Off: Disables blinker.	(OFF)	
Pho1	The PHOT 1 input is enabled or disabled in the opening phase. On: Photocell 1 activated only in the closing phase. Off: Photocell 1 activated in both opening and closing phases.	(OFF)	
Pho2	As per PH01, but referred to PHOT 2 input.	(OFF)	
Pho3	As per PH01, but referred to PHOT 3 input.	(OFF)	
tSt1	The check on the photocell connected to PHOT1 input is activated or deactivated Before operation, the control unit checks the switching of the photocell contact. If the checks are not successful, the door/gate will not move. On: activated check on photocell. Off: deactivated check on photocell.	(OFF)	
tSt2	As for TST1, but referred to PHOT2 input	(OFF)	

tSt3	As for TST1, but referred to PHOT3 input	(OFF)	
cuRr	The code programmable transmitters is enabled or disabled. On: Radio receiver enabled only for rolling-code transmitters. Off: Receiver enabled for rolling-code and programmable code transmitters (self-learning and Dip Switch).	(OFF)	
rEn	The remote storage of the radio transmitter codes is enabled or disabled (see par. REMOTE LEARNING). On: Enabled remote storage Off: Disabled remote storage.	(ON)	
chtr	Enable or disable the Hold to Run mode in closure On: Hold to run mode Opening works normally, whereas closure happens by keeping the CLOSE pushbutton pressed Off: automatic functioning	(OFF)	
bLc	The lock function is enabled or disabled. Off: Lock function disabled. On: Lock function enabled. After the triggering of the closure limit switches, the control unit delays the stop by approx. 0.5sec in order to allow a better resting of the gate leaf onto the stoppers. DAS input is activated in the closing phase only.	(OFF)	

RADIO (rAd)

MENU	FUNCTION
PP	By selecting this function, the receiver is waiting for (Push) a transmitter code to be assigned to the step-by-step function. Press the transmitter key, which is to be assigned to this function. If the code is valid, it will be stored in memory and OK will be displayed. If the code is not valid, the Err message will be displayed.
2ch	By selecting this function, the receiver is waiting for (Push) a transmitter code to be assigned to the second radio channel. Press the transmitter key, which is to be assigned to this function. If the code is valid, it will be stored in memory and OK will be displayed. If the code is not valid, the Err message will be displayed.
PEd	When this function is selected, the receiver awaits (Push) a transmitter code to be assigned to the PED function. Press the transmitter key, which is to be assigned to this function. If the code is valid, it will be stored in memory and OK will be displayed. If the code is not valid, the Err message will be displayed.
cLr	By selecting this function, the receiver is waiting for (Push) a transmitter code to be erased from memory. If the code is valid, it will be stored in memory and OK will be displayed. If the code is not valid, the Err message will be displayed.
rtr	The memory of the receiver is entirely erased. Confirmation for the operation is asked.

NUMBER OF CYCLES (nMAn)

The number of cycles (open+close) completed by the system is displayed.
When the push-button <PG> is pressed once, the first 4 digits are displayed, if the push-button is pressed once more, the last 4 digits are displayed.
E.g. <PG> 0012 >>> <PG> 3456: 123.456 cycles were performed.

MAINTENANCE (MAn I)

This function allows to activate the indication of maintenance required after a certain number of operations, preset by the installer.
To activate and select the number of operations, proceed as follows:
Press the <PG> button, OFF is displayed, indicating that the function is disabled (default).
Select one of the numbers shown (from OFF to 100) by using the <+> and <-> keys . The figures express the value of hundreds of cycles (e.g.: the number 50 means 5000 operations).
Press OK to activate the function. The PROG message is displayed.
When the flashing light flashes for around 10 sec at end of operation, this means that maintenance operations are needed.

RESET (rES)

RESET of the control unit. WARNING: Returns the control unit to the default values.
When the <PG> push-button is pressed once, the RES wording begins to flash, if the push-button<PG> is pressed once more, the control unit is reset.
Note: neither the transmitter codes nor the position and stroked of the gate leaf will be erased from the receiver.

AUTOSET (AUto)

The automatic system stroke is self learned. See section “STROKE SELF-LEARNING”

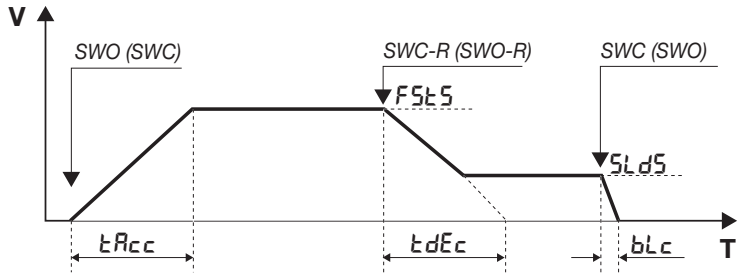
PASSWORD (codE)

It allows to type in an access protection code to the programming of the control unit.
A four-character alphanumeric code can be typed in by using the numbers from 0 to 9 and the letters A-B-C-D-E-F.
The default value is 0000 (four zeros) and shows the absence of a protection code.
While typing in the code, this operation can be cancelled at any moment by pressing keys + and – simultaneously. Once the password is typed in, it is possible to act on the control unit by entering and exiting the programming mode for around 10 minutes in order to allow adjustments and tests on functions.
By replacing the 0000 code with any other code, the protection of the control unit is enabled, thus preventing the access to any other menu. If a protection code is to be typed in, proceed as follows:
- select the Code menu and press OK.
- the code 0000 is shown, also in the case a protection code has been previously typed in.
- the value of the flashing character can be changed with keys + and -.
- press OK to confirm the flashing character, then confirm the following one.
- after typing in the 4 characters, a confirmation message “CONF” appears.
- after a few seconds, the code 0000 appears again
- the previously stored protection code must be reconfirmed in order to avoid any accidental typing in.

If the code corresponds to the previous one, a confirmation message “OK” appears.
The control unit automatically exits the programming phase. To gain access to the Menus again, the stored protection code must be typed in.
IMPORTANT: TAKE NOTE of the protection code and KEEP IT IN A SAFE PLACE for future maintenance operations. To remove the code from a protected control unit, enter the programming mode with the password and reset the code to the 0000 default value.
IF YOU LOOSE THE CODE, PLEASE CONTACT THE AUTHORISED SERVICE CENTER FOR THE TOTAL RESET OF THE CONTROL UNIT.

HOW TO ADJUST SPEED AND BRAKING

The door/gate stroke is shown in the following scheme:



The V axis is the gate/door speed, T axis is the time required by the door/gate to move from a limit switch to the other. The parameters govern both the opening and the closing phases.
At gate/door stopped on any SWO (SWC) limit switch, when a control key is pressed the gate/good starts moving and reaches the standard operating speed, which can be adjusted by FSTS parameter.
The TACC time sets how rapidly the gate/door should reach the standard speed.
The slow down begins with the SWC-R activation (SWO-R in opening)
Braking leads the gate/door from standard speed (FSTS) to braking speed, adjusted by SLDS parameter.
The TDEC time sets how rapidly the gate/door should reach the braking speed.
The TDEC time is theoretical by reason of the fact that as soon as the speed reaches the value preset by SLDS, braking at constant speed starts until reaching the SWC (SWO) limit switch.
With the logic BLC ON, motor stop in closing is delayed of 0.5s to allow a better closure

IMPORTANT:
- For the correct operation of parameters it is mandatory that the stroke learning be carried out correctly (see STROKE LEARNING).
- If the FSTS speed is increased, TSM, TACC and TDEC values must be increased proportionally in order to avert any mechanical stress to the gear motor.
- The AUTO function does not change the default values of the above-mentioned parameters. The latter must be preset by the installer according to the gate/door specifications.

STROKE LEARNING

The AUTO function makes some complete cycles in order to memorize the door run, once that those cycles are completed, the TM parameter is set automatically some seconds more than the effective run timing.
Also PMO and PMC parameters are set by ty AUTO function.

TRANSMITTER REMOTE LEARNING

If the transmitter code is already stored in the receiver, the remote radio learning can be carried out (without accessing the control unit). The REM logics must be ON.
IMPORTANT: The procedure should be carried out with gate in the opening phase, during the TCA dwell time.
Proceed as follows:
1 Press the hidden key of the transmitter, the code of which has already been stored in memory.
2 Within 5 seconds, press the already memorised transmitter key corresponding to the channel to be matched to the new transmitter. The flashing light switches on.
3 Within 10 seconds, press the hidden key of the new transmitter.
4 Within 5 seconds, press the key of the new transmitter to be matched to the channel selected at item 2. The flashing light switches off.
5 The receiver stores the new transmitter code and exits from the programming mode immediately.

ERROR MESAGES

Some messages that are displayed in the event of malfunctions are shown hereunder:

Err	Error, self-calibration	If the error occurs during self-learning, check the PP/STOP/PHC/ PHO/PED/BAR inputs or whether frictions occur during the door leaf stoke.
Err 1	Error, Inverter/Cover/Safety	It occurs in the following cases: - the SAFETY contact is open. - the COVER contact is open (bridge). - The inverter is faulty. Contact the technical assistance centre.
Err2	Error, photocells (Autotest)	Check that photocells are correctly operating.
Err3	Error, encoder	Check connections to the encoder.
Err4	Error, sensitive edge	Check connections to sensitive edge
Err5	Error, phototest	Check that photocells connections (Fig.3)
EcoN	Error, inverter communication	Check connections to 485 serial between control unit and inverter
AMP	Triggering of the amperometric sensor	An obstacle or a point of friction has caused the triggering of the amperometric sensor. Remove the obstacle or check the door stroke.
F 00 F 15	Inverter, error/alarm	Take note of the error number and contact the technical assistance

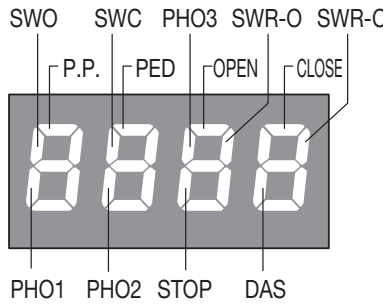
LCD DISPLAY

The LCD display can be turned by 180°.
- Cut off mains power supply
- Press PGM
- While keeping PGM pressed, reset the mains power supply
- Keep PGM pressed (around 5 sec) until the software version appears, turned by 180°.

Normally proceed with programming.

DIAGNOSTICS

In the event of malfunctions, by pressing key + or - the status of all inputs (limit switches, control and safety) can be displayed. One segment of the display is linked to each input. In the event of failure it switches on according to the following scheme.



WASTE DISPOSAL

If the product must be dismantled, it must be disposed according to regulations in force regarding the differentiated waste disposal and the recycling of components (metals, plastics, electric cables, etc..). For this operation it is advisable to call your installer or a specialised company.

BENINCÀ®

AUTOMATISMI BENINCÀ SpA - Via Capitello, 45 - 36066 Sandrigo (VI) - Tel. 0444 751030 r.a. - Fax 0444 759728