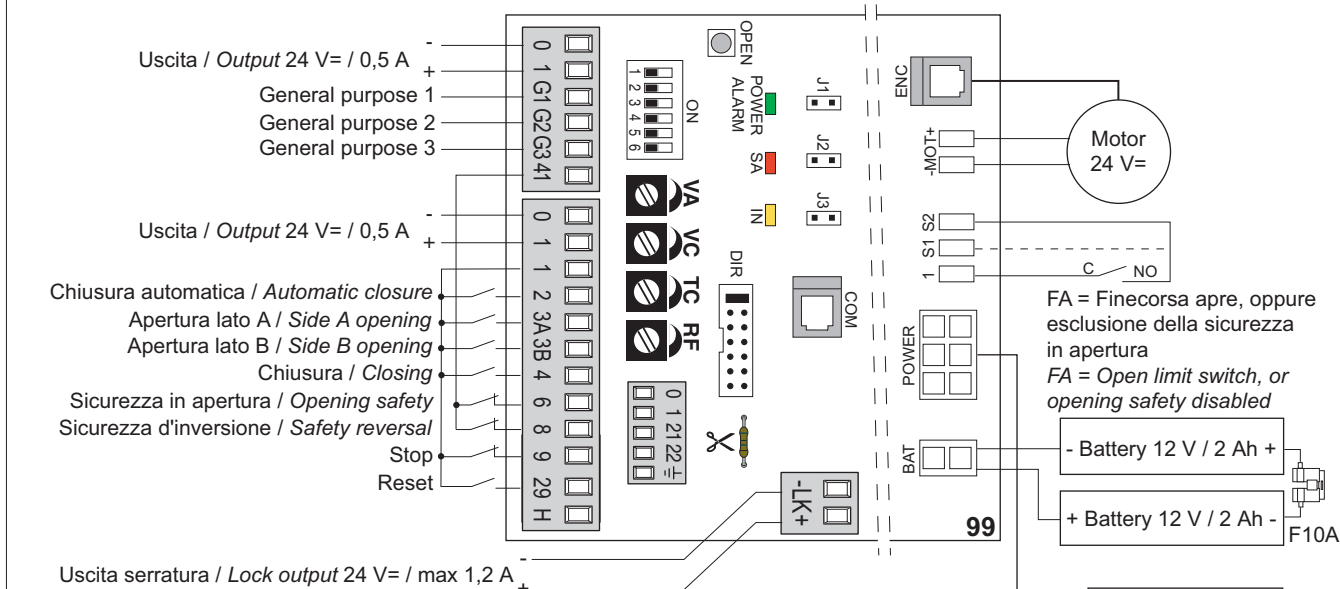
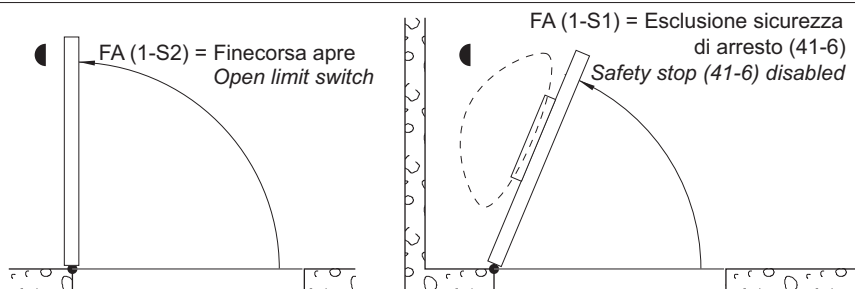


- I** Manuale di installazione quadro elettronico 99 per automazione WEL.
- GB** Electronic control panel 99 installation manual for WEL automations.
- F** Notice d'installation de la carte électronique 99 pour automatisme WEL.
- D** Installationsanleitung für Steuerung 99 für WEL.
- E** Manual de instalación cuadro electrónico 99 para automación WEL.
- P** Manual de instalação do quadro electrónico 99 para a automação WEL.

WELM Fig. 1

	OFF	ON
J1	Braccio articolato <i>Articulated arm</i>	Braccio scorrevole <i>Sliding arm</i>
J2	Con molla <i>With spring</i>	Senza molla <i>Without spring</i>
J3	USO FUTURO / <i>FUTURE USE</i>	



	DIP1	DIP2
Resistenza alla spinta del vento <i>Resistant to wind load</i>	OFF	OFF
Porta con serratura / <i>Door with electric lock</i>	OFF	ON
Apertura a spinta con resistenza al vento <i>Push&Go and resistant to wind load</i>	ON	OFF
Apertura a spinta / <i>Push&Go</i>	ON	ON

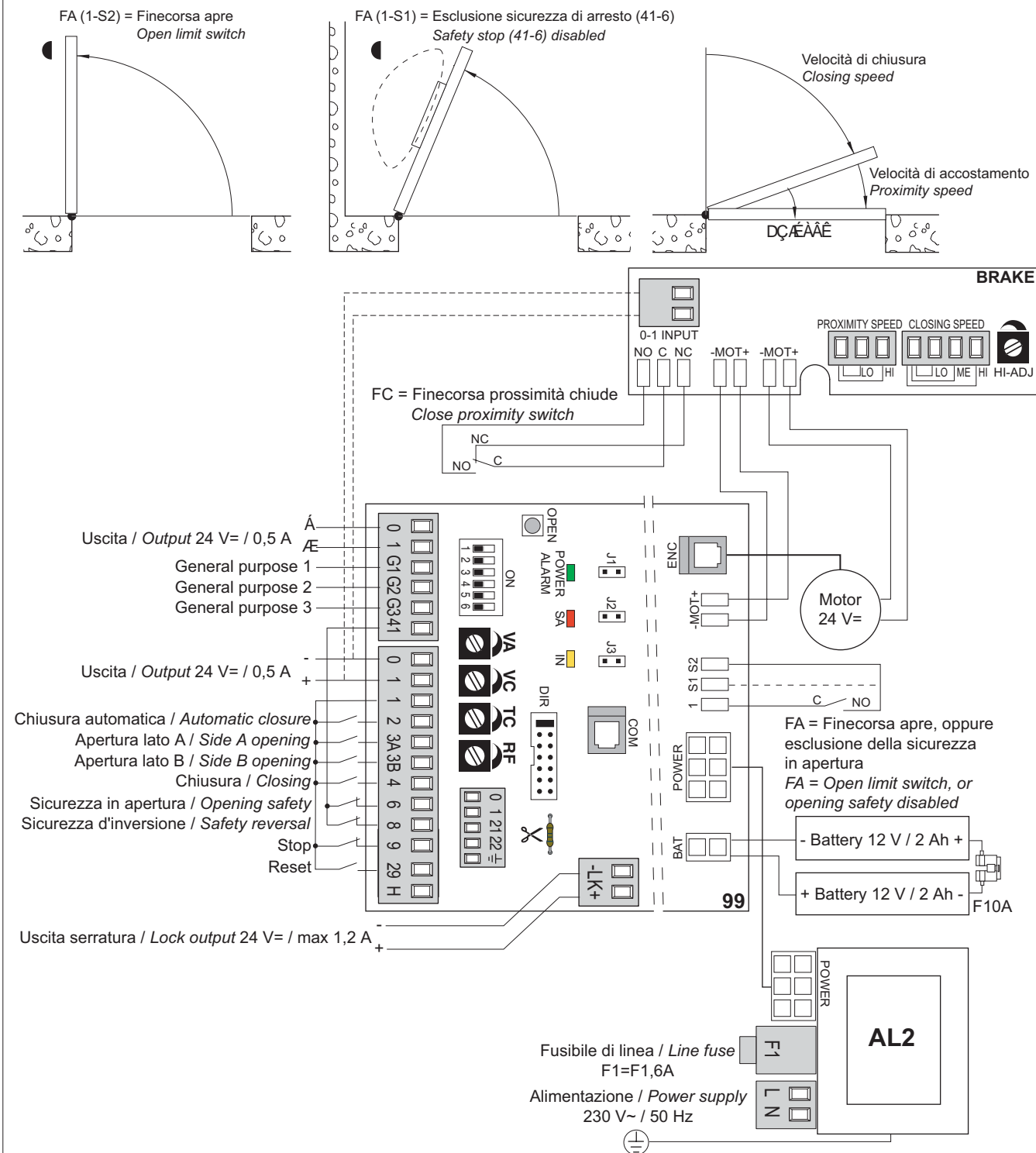
		OFF	ON
DIP3	Aggancio elettroserratura <i>Closing click</i>	Disabilitato <i>Disabled</i>	Abilitato <i>Enabled</i>
DIP4	Tipo elettroserratura <i>Electric lock type</i>	Normale <i>Fail secure</i>	Antipanico <i>Fail safe</i>
DIP5	Chiusura <i>Closing</i>	a molla <i>by spring</i>	a motore <i>by motor</i>
DIP6	Low energy	Disabilitato <i>Disabled</i>	Abilitato <i>Enabled</i>

Fusibile di linea / *Line fuse*
F1=F1,6A

Alimentazione / *Power supply*
230 V~ / 50 Hz

		MIN	MAX
TC	Tempo chiusura autom. <i>Automatic closure time</i>	0 s	30 s
RF	Forza motore <i>Motor thrust</i>	60%	100%
VA	Velocità apre <i>Opening speed</i>	20 °/s 4,5 s/90°	60 °/s 1,5 s/90°
VC	Velocità chiude <i>Closing speed</i>	20 °/s 4,5 s/90°	60 °/s 1,5 s/90°

WELS Fig. 2




	DIP1	DIP2
Resistenza alla spinta del vento Resistant to wind load	OFF	OFF
Porta con serratura / Door with electric lock	OFF	ON
Apertura a spinta con resistenza al vento Push&Go and resistant to wind load	ON	OFF
Apertura a spinta / Push&Go	ON	ON
	OFF	ON
DIP3 Aggancio elettroserratura Closing click	Disabilitato Disabled	Abilitato Enabled
DIP4 Tipo elettroserratura Electric lock type	Normale Fail secure	Antipanico Fail safe
DIP5 Chiusura Closing	a molla by spring	a motore by motor
DIP6 Low energy	Disabilitato Disabled	Abilitato Enabled

	OFF	ON
J1	Braccio articolato Articulated arm	Braccio scorrevole Sliding arm
J2	Con molla With spring	Senza molla Without spring
J3	USO FUTURO / FUTURE USE	

		MIN	MAX
TC	Tempo chiusura autom. Automatic closure time	0 s	30 s
RF	Forza motore Motor thrust	60%	100%
VA	Velocità apre Opening speed	20 °/s 4,5 s/90°	60 °/s 1,5 s/90°
VC	Velocità chiude Closing speed	20 °/s 4,5 s/90°	60 °/s 1,5 s/90°

GENERAL SAFETY PRECAUTIONS

 This installation manual is intended for professionally competent personnel only. Installation, electrical connections and adjustments must be performed in accordance with Good Working Methods and in compliance with applicable regulations. Before installing the product, carefully read the instructions. Bad installation could be hazardous. Before installing the product, make sure it is in perfect condition. For repairs or replacements of products only original spare parts must be used.


1. TECHNICAL DATA

Refer to technical data and CE declaration of conformity contained in the manuals for WEL automations.

2. ELECTRICAL CONNECTIONS


Attention: link up all N.C. contacts (if not used) by means of jumpers. The terminal bearing the same number are equivalent.

2.1 Controls

Control		Function	Description
1 — 2	N.O.	AUTOMATIC CLOSING	A permanent contact enables the automatic closing. Selector switches COMH-K and COME automatically select the automatic closing.
1 — 3A	N.O.	OPENING SIDE A	The opening manoeuvre starts when the contact is closed.
1 — 3B	N.O.	OPENING SIDE B	The opening manoeuvre starts when the contact is closed.
1 — 4	N.O.	CLOSING	The closing manoeuvre starts when the contact is closed.
41 — 6	N.C.	OPENING SAFETY	It stops movement during opening. With contact 41-6 closed, the interrupted opening operation is restored. If the automation is closed, contact 41-6 opened prevents opening operation.
41 — 8	N.C.	REVERSAL SAFETY CONTACT	The opening of the contact during the closure manoeuvre causes the movement to invert (opening).
1 — 9	N.C.	STOP	All movements are stopped when the contact is opened. All normal or emergency operations are excluded when the contact is opened. <i>Warning: when the contact closes again the door proceeds with the interrupted manoeuvre.</i>
1 — 29	N.O.	RESET	All acquired data is annulled when the contact is closed. The automation can start acquisition again after 3 seconds.
H — 3A	N.O.	OPENING SIDE A FOR HANDICAPPED PEOPLE	It triggers opening operation. The time the door remains open is 30 s longer than TC.
H — 3B	N.O.	OPENING SIDE B FOR HANDICAPPED PEOPLE	It triggers opening operation. The time the door remains open is 30 s longer than TC.
OPEN 		OPENING	Press shortly to activate opening operation.
		COME AND REMOTE SETTING RESET	Keep OPEN button pressed for 4 s, until IN led starts flashing. Press again (within 4 s) the OPEN button for 2 s to confirm operation. This operation allows trimmer and dip-switch settings to prevail over any DMCS software setting or remote setting by TEL2. Any setting by means of COME function selector will be eliminated as well.

2.2 Autocontrolled safety devices

Control		Function	Description
1 — 6	N.C.	OPENING SAFETY	It stops movement during opening. With contact 1-6 closed, the interrupted opening operation is restored. If the automation is closed, contact 1-6 opened prevents opening operation.
1 — 8	N.C.	REVERSAL SAFETY CONTACT	The opening of the contact during the closure manoeuvre causes the movement to invert (opening).
41 —		SAFETY TEST	Connect terminal 41 of the control panel 99 to the corresponding test terminal on the safety device. Terminal 41 activates a test of the safety device on each cycle. If the test fails the SA led flashes and the test is repeated.



Output	Value	Description
1 • — + 0 • — -	24 V = / 0.5 A (max)	Accessories power supply. External accessories power supply output. <i>Note: 0.5 A max current absorption corresponds to the sum of all terminals 1.</i>
0 • — - 1 • — + G1 • — G2 • — G3 • —	24 V = / 0,1 A	General Purpose. See hardware key instructions.
41 • —		Safety test.
- LK +	24 V = / 1,2 A (max)	Electric lock. Output for electric lock or electric block supply. <i>Note: 12 V electric lock output can be used up to 1,2 A max current.</i>
0 • — - 1 • — + 21 • — 22 • — ⊥ • —		It allows 1 or 2 COME selectors connection, or DMCS software connection, or network connection of a maximum of 4 WEL automations. <i>Note: use data-transfer-type shielded cable.</i>
COM		This allows the connecting of any rearranged control devices (COME).
		If more than 2 WEL automations are networked, follow the instructions in the DMCS software manual and, where necessary, cut the resistance of the electronic panels.
DIR		Hardware key coupling connector.
- MOT + ENCODER		Motor-encoder connection. Connect motor and encoder to electronic panel by means of supplied cables (as shown in fig. 1-2).
POWER		AL2 power supply device connection.
1 — S1		Opening stop safety excluded. Contact closing causes the safety device mounted on the wing to be excluded during opening stage, so that the wall is not detected.
1 — S2		Limit switch open. Contact closing causes the movement to stop during opening stage before the wing reaches the mechanical stop (thus avoiding contact between the wing and the mechanical stop). <i>Note: after adjusting the limit switch, reset the automation (1-29 or POWER OFF).</i>
BAT	2 x 12 V / 2 Ah	Batteries kit. WELBAT battery kit connection enables operation in continuity mode also in the event of power failure. The electronic control panel connects the battery only if power supply is present and keeps it charged; it uses it as a buffer battery or in the event of power failure and disconnects it when voltage drops under 22 V after 30 s. To charge battery, connect mains and battery kit at least 30 min. before starting up the system. To stop powering the electronic panel, turn off power supply and disconnect battery. <i>Warning: to allow recharge, battery kit must be always connected to electric control. Regularly check for battery kit efficiency.</i> Battery anti-panic mode or continuity mode operation can be selected by means of a remote control or DMCS software (pc) with last operation either as opening or closing. With anti-panic mode, in the event of power failure, the automation carries out a low-speed opening operation. (Only for WELM) When the door is open, battery and electronic control panel are disconnected from mains. <i>Note: the electronic control panel is set in continuity mode and the last operation closes.</i>

2.4 Trimmer

	Description	MIN.	MAX.
TC	Automatic closure time. It adjusts the time that elapses between the ending of opening control and the beginning of the automatic closing. Time is renewed by controls 1-3A, 1-3B, H-3A, H-3B and 41-8.	0 s	30 s
RF	Motor torque. It adjusts motor torque. RF trimmer also adjusts thrust on obstacles. If an obstacle is present, during opening operation it stops movement, whereas during closing operation it reverts movement. After the obstacle has been removed, the door automatically searches for its stop and continues its stroke at learning speed. If an opening control is given with the door locked, the following opening operation will be disabled for 30 s.	60 %	100 %
VA	Opening speed. Adjust the opening speed.	20 °/s 4,5 s/90°	60 °/s 1,5 s/90°
VC	Closing speed. Adjust the closing speed. <i>Note: in WELS automations, the VC trimmer adjust the closing speed only when contact 0-1 is connected to the BRAKE card and DIP5=ON.</i> Adjustments according to the operating forces. Only for WELS automations without 0-1 connection to the BRAKE card and DIP5=OFF. Perform the following steps: - Set the trimmer VC=MAX. Adjust the correct closing speed as indicated in chapter 3 and ensure that the manoeuvring force and the thrust between the door and the obstacle is lower than the values set out by regulation DIN 18650-1. - Reduce the trimmer VC adjustment and perform the opening and closing manoeuvres. Repeat this step until you find the VC trimmer position that causes the POWER ALARM LED to light up. - Increase by approx. 20% the VC trimmer adjustment.	20 °/s 4,5 s/90°	60 °/s 1,5 s/90°

2.5 Dip-Switches

Description	DIP1	DIP2
Doors with no electric lock and subject to strong winds. If the wind blows the door open, a closing thrust is triggered by the motor or by the spring.	OFF	OFF
Doors with electric lock. When the door is closed a closing force is maintained by the motor or the spring. The electric lock connected to the LK terminals is powered with a 0.1 advance before door opening.	OFF	ON
Push&Go doors (without electric lock) and subject to strong winds. Manual pushing of the door activates automatic opening. When the door is closed a closing force is maintained by the motor or the spring.	ON	OFF
Push&Go doors (with no electric lock). Manual pushing of the door activates automatic opening.	ON	ON

	Description	OFF 	ON 
DIP3	Electric lock fastening.	Disabled.	Enabled. At approx. 20° from the closing stop, the door thrust/speed increases to allow proper fastening when electric locks or electric blocks are present.
DIP4	Electric lock type.	Standard. The electric lock or electric block is generally powered off. When powered it allows door opening.	Anti-panic. The electric lock or electric block is generally powered. When powered off it allows door opening.
DIP5	Spring closing. (Only for WELS with J2=OFF)	Spring closing. With 0-1 not connected to BRAKE card.	Motor closing. With 0-1 connected to BRAKE card. With power supply present the door is closed by motor whereas with power supply off by spring.
DIP6	Low energy.	Disabled.	Enabled. See chapter 4

2.6 Jumper



	Description	OFF	ON
J1	Arm type.	WELBA articulated arm	WELBS sliding arm - WELBRAS
J2	Closing spring	WELS	WELM
J3	FUTURE USE	/	/

2.7 Signals

LED	ON	Flashing
POWER ALARM	24 V= power supply.	Encoder / automation fault.
SA	Safeties 41-6 and 41-8 open.	Safety test failure.
IN	During the commands: 1-3A, 1-3B, H-3A, H-3B and 1-4.	Flashes once each time the dip switch and command 1-2 status changes.

3. BRAKE CARD CONTROLS AND OUTPUT

BRAKE card is a component of the WELS automation and allows door spring closing.

	Description
C NC NO	Closing proximity limit-switch. It causes door speed to change during closing operation. <i>Note: adjust limit switch as it is shown in the WEL automation manual.</i>
- MOT +	Motor connection. Connect motor, BRAKE card and 99 electronic control panel as shown in fig. 2.
 0-1 INPUT	BRAKE card power supply. By connecting the 99 electronic control panel 0-1 terminals to their respective BRAKE card terminals (as shown in fig. 2) and by setting DIP5=ON, WELS automations can have function diversification: <ul style="list-style-type: none"> - with power supply present, closing is by motor and it is regulated by 99 electronic control panel VC trimmer; - with power supply off, closing is by spring and it is regulated by BRAKE card closing trimmer and contacts, as indicated below.
 PROXIMITY PROXIMITY	Low closing approaching speed selection contact (for doors without electric lock); or high closing approaching speed selection contact (for doors with electric lock).
 CLOSING SPEED CLOSING SPEED CLOSING SPEED	Low closing speed selection contact; or medium closing speed selection contact; or high closing speed selection contact.
 HI-ADJ	It adjusts closing speed only when high closing speed is selected.

GB 4. DOORS REQUIREMENTS FOR HANDICAPPED PERSONS USE

If the WEL is used on doors for use also by handicapped persons, set DIP6=ON.

In this way the adjustments are changed as shown in the table. When you use the opening for disabled persons control (H-3A and H-3B), the door open time is extended by 30 s as compared with the TC setting.

Adjust the RF motor force so as to obtain a reading of any obstacles in the door's path.

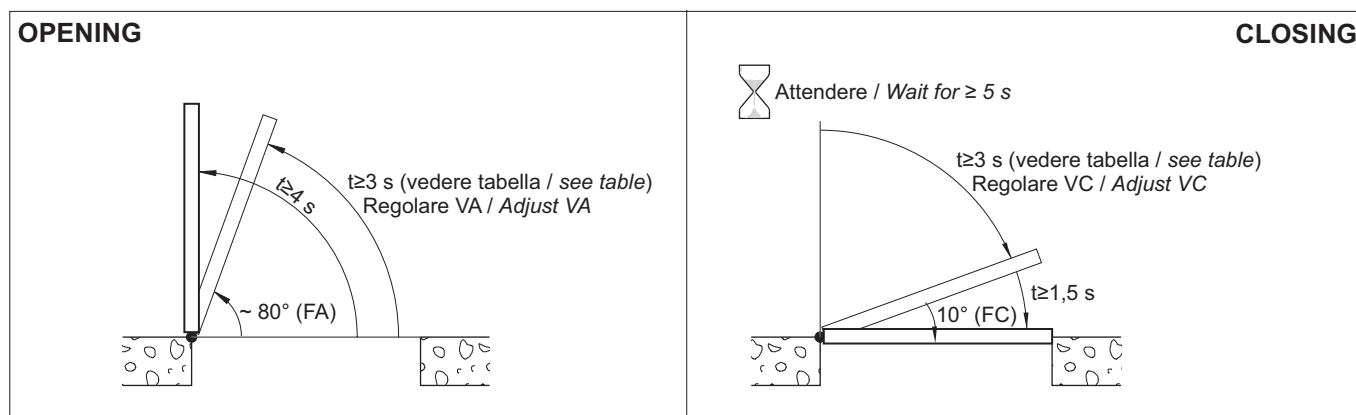
Adjust the VA (opening) and VC (closing) so that the opening and closing times (excluding slow-down) are the same as or greater than those indicated in the following table.

In the case of WELS, reduce the spring's closing force as indicated in the WEL manual, and adjust the closing speed (with no power) as explained in chapter 3.

	Description	MIN	MAX
VA	Opening speed	4 °/s	44 °/s
	Opening time	22 s/90°	2 s/90°
VC	Closing speed	4 °/s	44 °/s
	Closing time	22 s/90°	2 s/90°
TC	Automatic closure time	5 s	30 s
RF	Motor torque	60 %	100 %

Door wing length	Door wing weight				
	50 kg	60 kg	70 kg	80 kg	90 kg
750 mm	3 s	3.1 s	3.2 s	3.3 s	3.5 s
850 mm	3.1 s	3.1 s	3.2 s	3.4 s	3.6 s
1000 mm	3.2 s	3.4 s	3.7 s	4 s	4.2 s
1200 mm	3.8 s	4.2 s	4.5 s	4.8 s	5.1 s

Perform also the adjustments indicated in figure:



5. START UP



ATTENTION: Before performing any procedure, make sure that the device is not powered and that the batteries are disconnected.

The operations regarding point 5.5 are without safety devices. The trimmer can only be adjusted with door not moving.

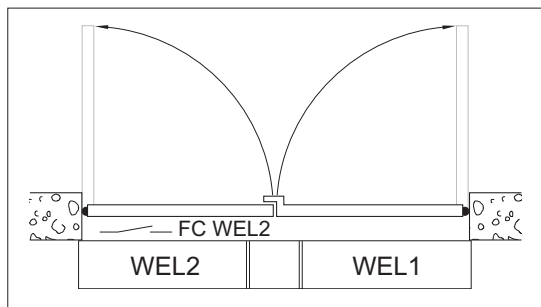
- 5.1 Set dip-switches and jumpers according to door types (with or without electric lock), arm type (articulated or sliding) and automation types (with motor or spring closing).
- 5.2 Set TC, VA, VC trimmers at minimum and RF at mid position.
- 5.3 Short circuit the safety devices (41-6, 41-8) and the stop (1-9).
- 5.4 (Only for WELS) Adjust desired spring closing speed by means of CLOSING SPEED LO-ME-HI jumper and HI-ADJ trimmer. Adjust approaching speed by means of PROXIMITY LO jumper for doors without electric lock and by means of PROXIMITY HI jumper for doors with electric lock.
- 5.5 Power and by means of controls 1-3 and 1-4 check that the automation is working properly. Set the automation's speed by means of the VA and VC trimmer.
Attention: upon each turning on the control panel automatically RESETs so as to permit the first opening and closing to be made at low speed in order to learn the end-of-travel positions (acquisition phase).
- 5.6 Adjust thrust on obstacles and motor torque by means of RF trimmer, in order to guarantee proper and safe operation.
- 5.7 Make an estimate of the risks present and install and connect all the necessary safety devices (41-6, 41-8) to the electronic control panel. Check for their efficiency.
- 5.8 Adjust automatic closing (enabled by 1-2 control or by COME-H-K function selector) by means of TC.
- 5.9 Connect any control devices and function selectors. Check for their efficiency.
- 5.10 If the automation meets an obstacle during closing stroke, it detects it and opens again. If the obstacle is detected twice, this is considered to be the new stop position until it is removed.
Attention: ensure that the manoeuvring force and the thrust between the door and the obstacle is lower than the values set out by regulation DIN 18650-1.

6. TROUBLESHOOTING

Problem	Possible Causes	Remedy
The door does not open or close or else it does not carry out set functions.	COME-H-K function selector with wrong setting.	Check and adjust COME-H-K function selector settings.
	COME-H-K function selector not working.	Replace COME-H-K function selector.
The door does not open or close.	Power failure.	Make sure electric control panel is powered. (POWER ALARM led on).
	Accessories short circuit.	Disconnect accessories from terminals 0-1 (with 24 V= voltage) and connect them again one at a time.
	Burnt line fuse.	Replace line fuse.
	Safety devices are triggered. (SA LED on).	Check terminals 6 and 8 of the electronic control panel. Make sure photocells and safety devices are clean and efficient.
	Radars are not triggered. (IN LED off).	Make sure radars are working properly.
	The door is blocked by bolts and locks.	Make sure the wing can move freely.
	WELS with incorrect VC trimmer adjustment. (POWER ALARM LED flashing)	Check the correct adjustment of the VC. (see chapter 2.3)
The door opens but does not close.	Radars are triggered. (IN LED on).	Make sure the radar is not subject to vibrations, nor carrying out false detections or detecting moving objects within its range of action.
	Automatic closing does not work.	Check 1-2 jumper and (if present) function selector position.
External safeties are not triggered.	Wrong connections between safety devices and electronic control panel.	Connect in series N.C. safety contacts and remove any jumper.
The door opens by itself.	The radars are unstable or detect moving objects.	Make sure the radar is not subject to vibrations, nor carrying out false detections or detecting moving objects within its range of action.
The door opens/closes for a short interval than stops.	Encoder not working. (POWER ALARM led flashing).	Replace encoder.
	Inverted motor wires. (POWER ALARM led flashing).	Check motor wires.
	Some friction is present.	Check manually that the wing can move freely. Make sure there is no dirt or grit under the wing.

7. EXAMPLE OF APPLICATION

7.1 Automations in parallel



If the door has two overlapping leaves, two automations can be controlled in parallel [WEL1] and [WEL2], using the connections indicated in the drawings.

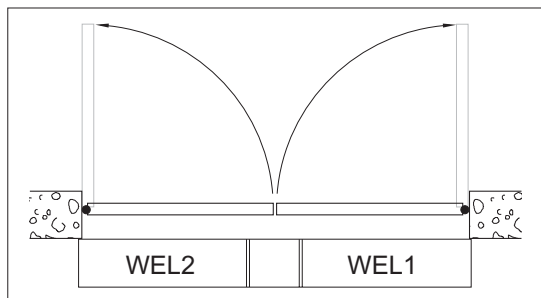
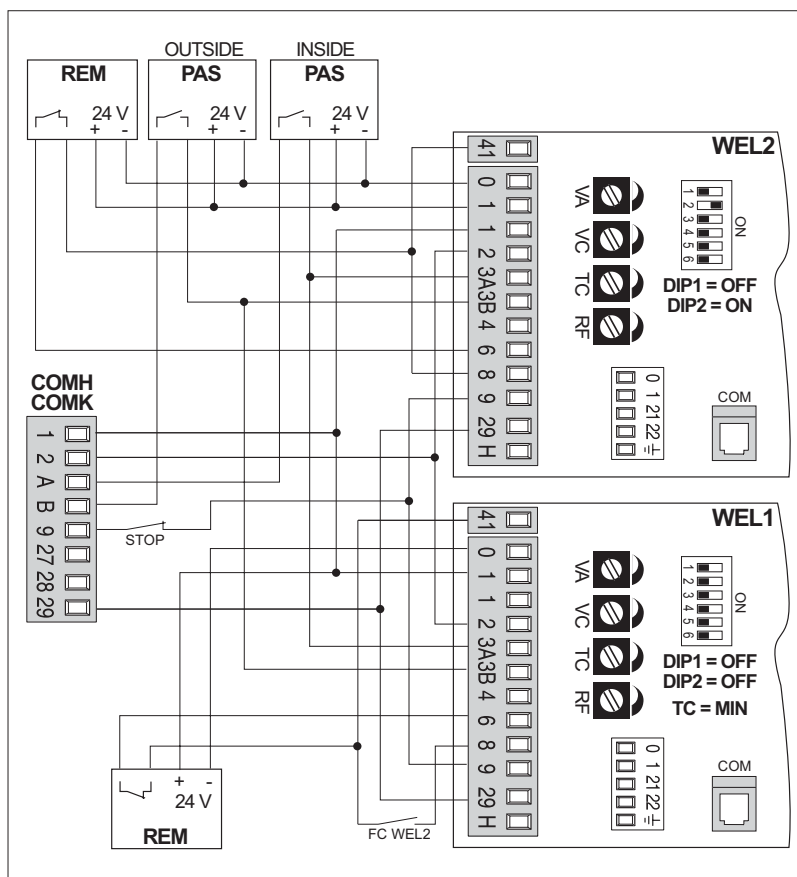
The movement of the two leaves is not synchronised, the first leaf [WEL1] only closes when the second leaf [WEL2] is completely closed.

The opening speed trimmer (VA) must be adjusted in the same position in both automations.

The TC trimmer for the automation that closes the first leaf [WEL1] should be adjusted to minimum.

For automatic closing of the first leaf [WEL1], a limit switch must be installed that will be activated when the second leaf [WEL2] is closed. Connect the limit switch as shown in the diagram.

Note: the closure limit switch [FC WEL2] is available with WELM automation, while it is not supplied by us with WELS automations which must be applied to the leaf.

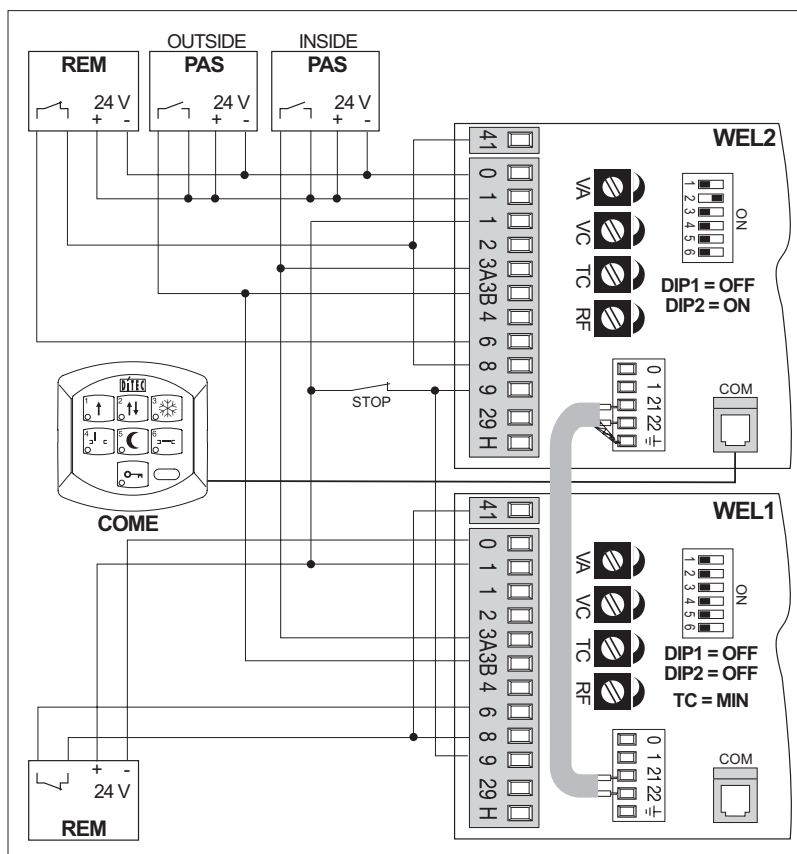


In case of a swing door with two doors without overlap, it is possible to control 2 automations [WEL1] and [WEL2] concurrently, making sure that the connections, as indicated in the figures, have the following variants:

- Set the VA, VC, TC trimmers in the same positions.
- Do not install the limit switch FCWEL2.

The movement of the two doors is not synchronised.

Attention: in case of doors with two doors without overlap, the weight of each door should not exceed 150 kg.

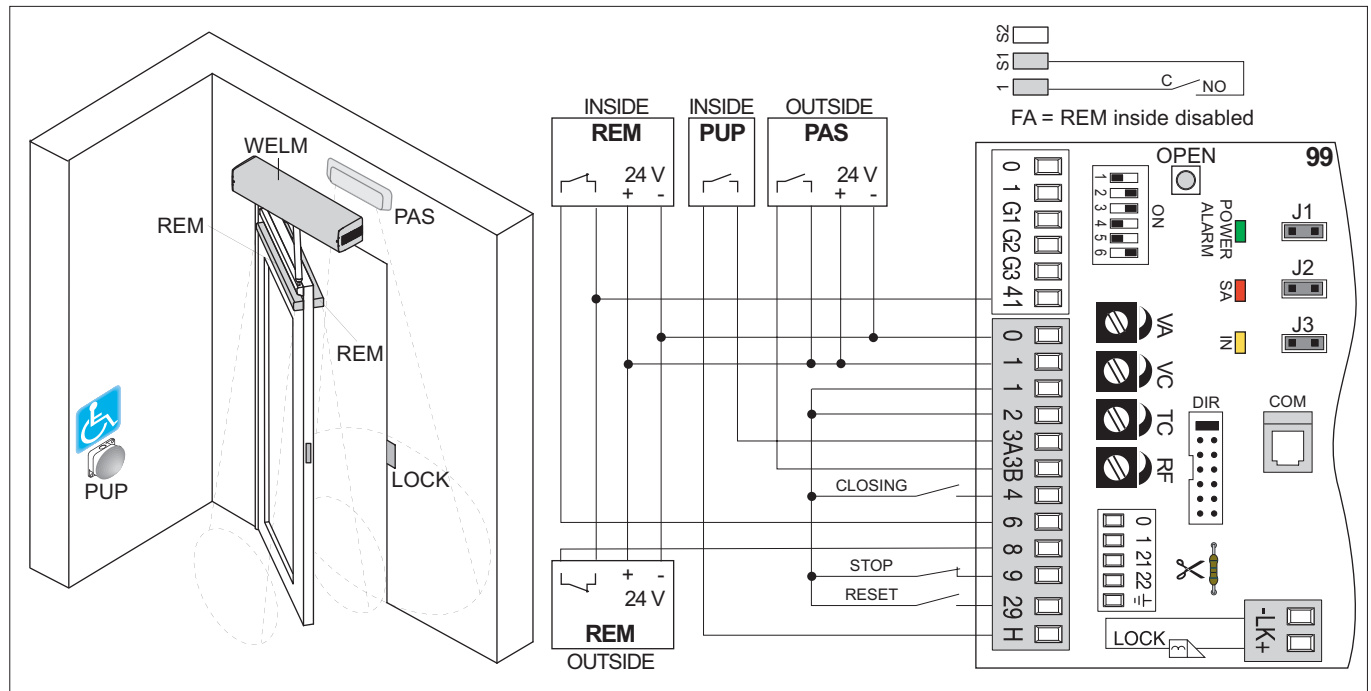


7.2 Door with electric lock, sliding arm (WELBS), motor closing (WELM) and control for disabled people.

The door opens by PAS radar control (1-3B) and PUP push-button (H-3A), closes automatically (1-2), operates opening safety by means of REM device (1-6) and closing safety by means of REM device (1-8).

It is possible to connect a PSE (1-9) emergency stop, a closing control (1-4) and a RESET (1-29) contact.

Note: set dip-switches and jumpers as shown in the figure.



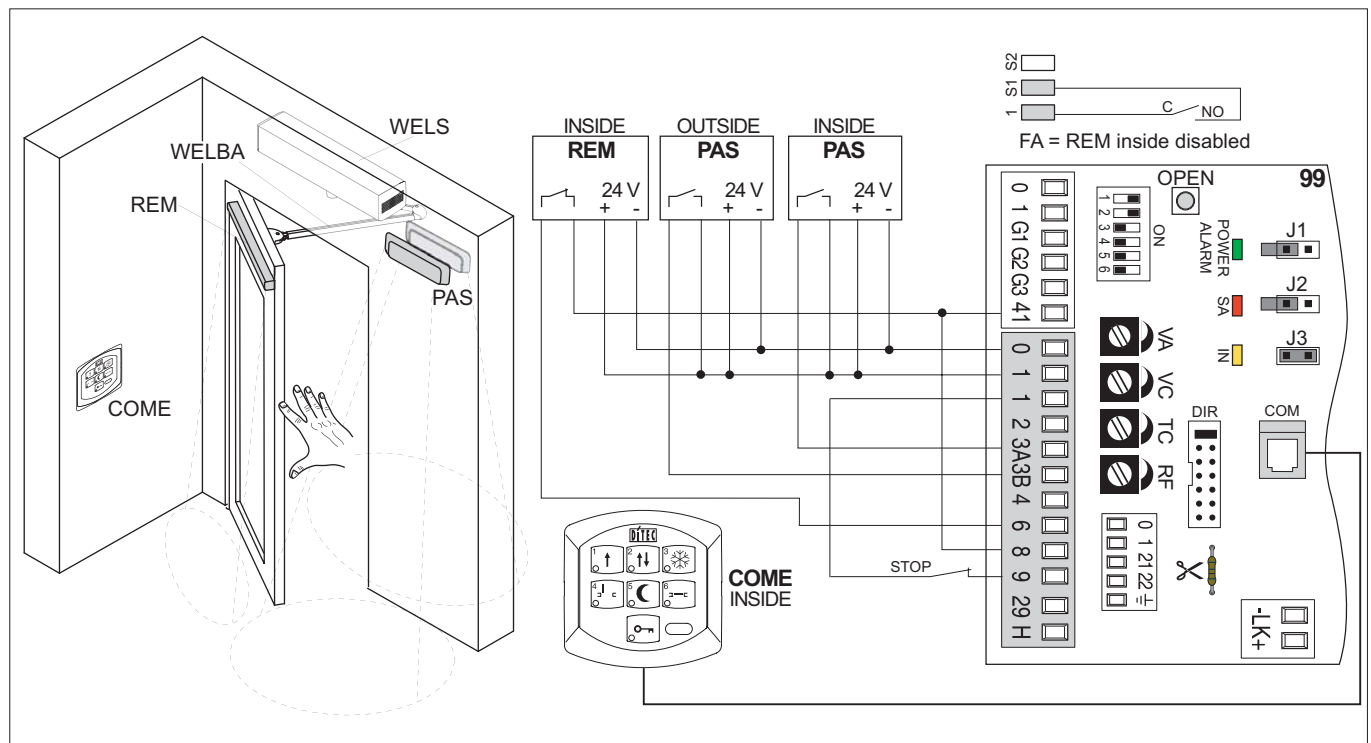
7.3 Door without electric lock, with Push&Go opening, articulated arm (WELBA), spring closing (WELS) and COME function selector.

The door opens with PAS (1-3A and 1-3B) radar controls and triggers opening safety by means of REM (1-6) device.

Door function mode is set by means of COME function selector.

Manual pushing (or pulling) of the door triggers motorized opening.

Note: set dip-switches and jumpers as shown in the figure.



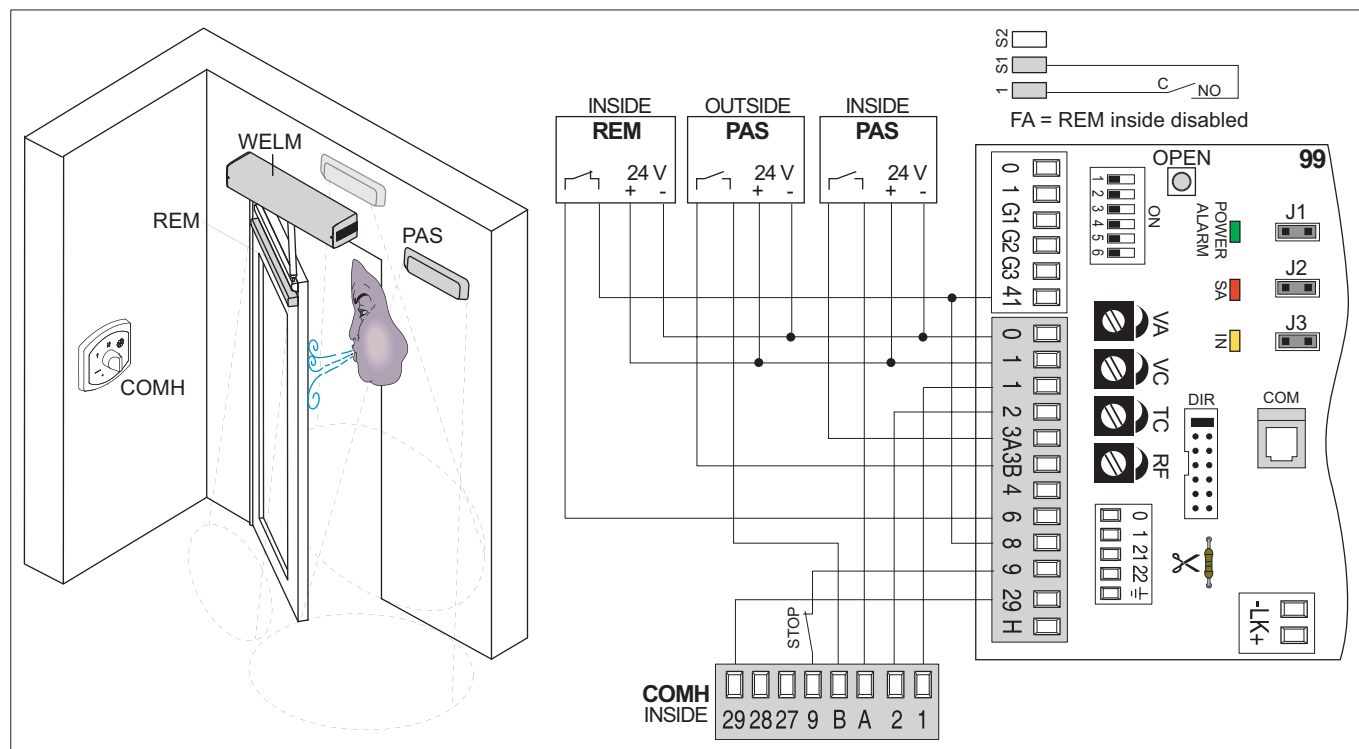
7.4 Door without electric lock, subject to strong winds, articulated arm (WELBS), motor closing (WELM) and COMH function selector.

The door opens with PAS (1-3A and 1-3B) radar controls and triggers opening safety by means of REM (1-6) device.

Door function mode is set by means of COMH function selector.

In the event of the wind blowing the door open, a closing thrust is triggered by the motor.

Note: set dip-switches and jumpers as shown in the figure.

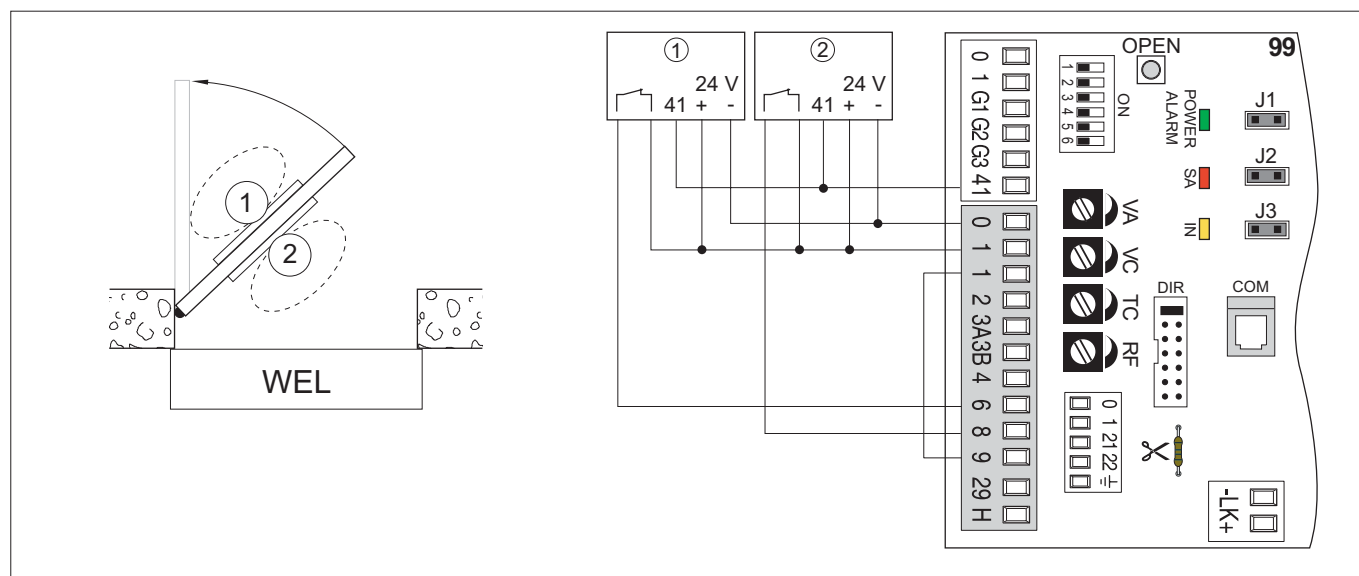


7.5 Door with autocontrolled safety devices

Autocontrolled safety devices can be connected as illustrated in the diagram.

Device 1 performs the safety control during opening.

Device 2 performs the reverse safety contact on the passage opening during the closing operation.



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