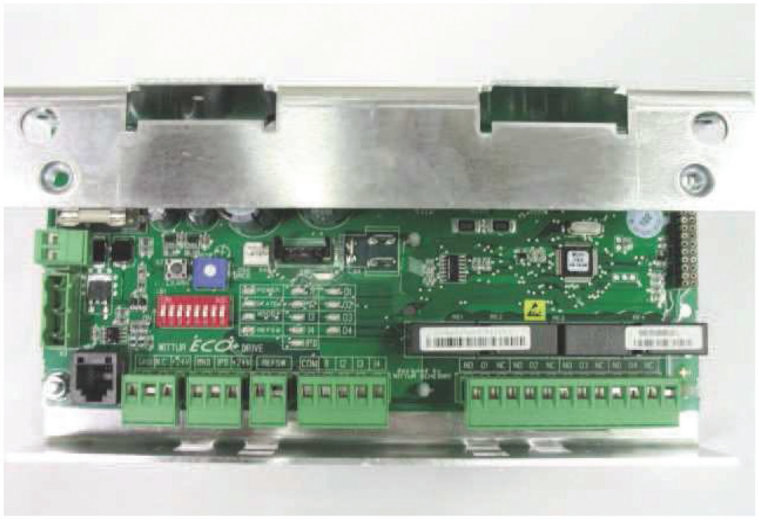
INSTRUCTION MANUAL

WITTUR

ECO+

Code	**GM.2.001045.EN**
Version	**G**
Date	**16.02.2018**

INSTRUCTION HANDBOOK FOR CONTROLLER



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MOD.	DESIGNATION	DATE
G	Added paragraph 11.5	16/02/18
F	Updated document's Lay-out	25/05/17
E	Front page updated, modfied pages 15, 16, 17	20/09/16
D	Up-dated document's Lay-out and the following pages: 14; 16	05/10/15

INDEX

The points that are important under the safety viewpoint and danger warnings are indicated with these symbols:

 Danger general

 Important warnings

 Risk of personal injury (e.g. sharp edges, protruding parts)

 Risk of damage to mechanical parts (e.g. incorrect installation)

 Live parts

Congratulations on choosing a **WITTUR** product!
Before starting the installation of this product, read the information contained in this document.
Before installation work begins, it is in your own interests to clarify what structural and spatial conditions are available for installation work, so that you can see which installation procedures should/must be carried out. Therefore it is recommended that all circumstances be taken into consideration, and to mentally plan the installation sequence before any rash or badly planned work is carried out. Check the goods or parts for correct and full delivery upon receipt.
You will find important warnings on how to assemble and maintain your **WITTUR** product in good operating conditions and to get the maximum of your investment.
You will also find important information concerning the product care and maintenance which are an important factor to ensure safety at all times.
WITTUR has long been involved in research aimed at reducing noise level and in design that takes into due consideration the product quality and the conservation of environment.

 This document is an integral part of the supply and must be available in the lift power room at all times.
All products are provided with identification type label and in case with certification marks in accordance with the current rules.
In case of need concerning the product, the identification data on the label must be always communicated to us.
We hope you will get full satisfaction from this **WITTUR** product. Yours faithfully.

WITTUR

WARNINGS

- **WITTUR** will not be held liable for any damage caused by tampering of the packing material by thirds.
- Before starting assembly, check that the product received corresponds to the order and to the packing list and that no damage has occurred in transit.
- Within its policy of continual research, **WITTUR** reserves to make changes to its products without notice. The figures, descriptions and data contained in this manual are intended as purely indicative and not binding.
- To ensure the safety of the product, avoid any alteration or tampering.
- **WITTUR** liability will be limited to the original components only.
- **WITTUR** product is intended for use in the lift sector only, therefore **WITTUR** liability shall be limited to such use.
- This product is intended for professional use. Any improper use, including for hobby or DIY, is prohibited.
- In order to prevent any injury to persons and damage to property, the handling, installation, adjustment and maintenance must be carried out by suitably trained personnel, using appropriate clothing and equipment.
- Any masonry work connected with the correct installation of the product must be executed in a workmanlike manner according to the applicable laws.
- The connection of the electric/electronic units to the local power supply must be executed in a workmanlike manner according to the applicable laws.
- All metal parts supporting the electric/electronic units must be connected to an earth system in a workmanlike manner according to the applicable laws.
- Before connecting the product to the power supply check that the product's requirement corresponds with the power supply available.
- Before starting any work on the electric/electronic components disconnect power from the system.
- **WITTUR** shall have no responsibility on the execution of masonry works or the connection of electric/electronic components to the power supply.
- **WITTUR** shall not be liable for damages/injury to property/persons caused by improper use of the emergency opening devices.

SUGGESTIONS

- Keep the material in the original packing, protected from bad weather and direct exposure to sun during the storage period in order to avoid the accumulation of water/condensation inside the packing material.
- Never dispose of packing material in the environment.
- Once dismantled, the product should be conveniently disposed as provided for by the local laws; never dispose of in the environment.
- Whenever possible, re-cycling is preferable to disposal in dump sites.
- Before re-cycling check the nature of the various materials and re-cycle in the appropriate way.

INSTALLATION TOOLS

Following tools are needed:

- "T"-handled hexagon keys 4 mm, 5 mm and 6 mm
- Screw drivers (flat and crossheaded)

The drive unit is preadjusted at the factory. No other mechanical and electrical adjustments other mentioned in this instruction are required at site!

DELIVERY

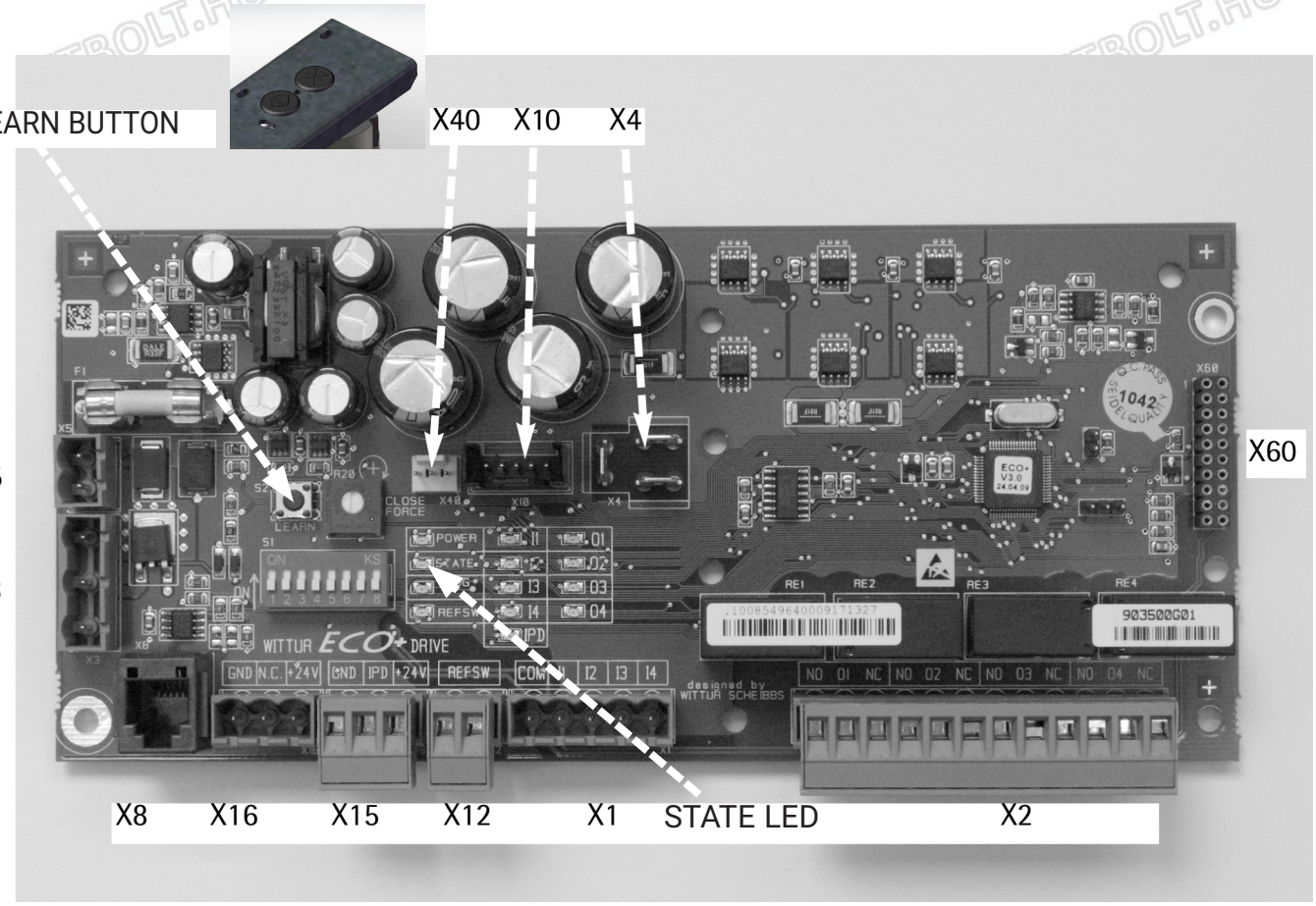
Complete preassembled drive unit. Only to be stored in the original package (plastic wrap). The components must not be unpacked until the installation begins.

1. GENERAL INFORMATION PRIOR TO INSTALLATION

1.1 DESCRIPTION AND FUNCTION

ECO+ door drives are used for low and mid duty elevators. The Drive can move panel masses up to 130kg complete door package weight.

2. ELECTRONIC ASSEMBLY LAYOUT



Plug description:

X1 - Inputs
X2 - Outputs
X3 - Transformer secondary winding
X4 - Motor
X5 - Battery supply
X8 - RS485 interface for WPT (Wittur Programming Tool)
X10 - Motor encoder
X12 - Reference switch
X15 - Photo Cell (Curtain of light) Receiver
X16 - Photo Cell (Curtain of light) Transmitter
X40 - Test drive buttons
X60 - Extension plug

2.1 INSULATION TEST

☞ Caution: Before carrying out tests on system's insulation, connector X5 must be disconnected.

3. COMMISSIONING

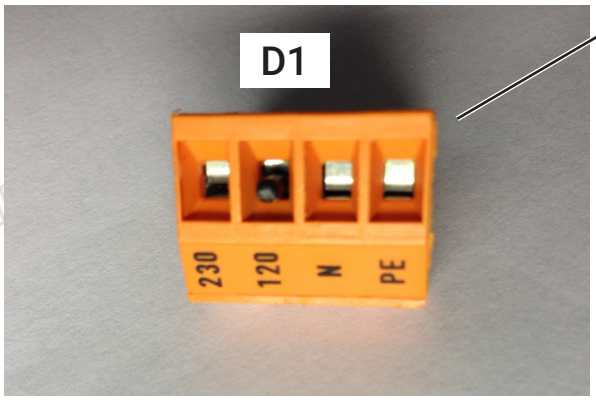
☞ The ECO+ electronic can be used as replacement for old ECO electronics using DC Motor.
The door operators supplied directly from the factory are pre-adjusted: it is not necessary to carry out the door CO (Clear Opening) learning.
The ECO+ drive at first installation or after switch-off /switch-on will use the first two complete closing / opening cycles to optimize door CO: STATE LED off ⟶ CO optimized.

3.1 POWER SUPPLY

- The ECO+ - drive provides transformers for both different voltage ranges and can supply with 127VAC or 230VAC.
- Select the recommended fuse for the nominal voltage range, see table

Nominal Supply Voltage Range:	127VAC	230VAC
Automatic fuse slow (in control panel)	2A	1A
Minimum cable required	1mm²	0,75mm²

- Line in supply is connected to a plug with screw terminals (D1).



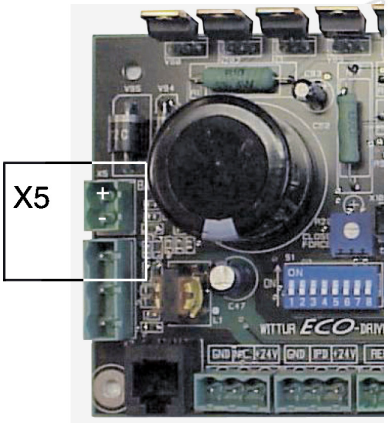
PE =	Connect ground wire
N =	Connect neutral wire
120 =	Connect 127 VAC phase wire
230 =	Connect 230 VAC phase wire
Remove the plastic block before connecting the terminal **120**	

3.1.1 Emergency supply

Battery voltage	24VDC-4Ah
Min. cable sq. measure	1,5mm²

- The battery's supply takes place through the X5 connector.

Pay attention: the battery has to be connected only in case of absence of the supply indicated on point 3.1.



3.1.2 Emergency procedure in automatic mode (specialized technical staff not present):

If mains power is removed, to ensure correct operation of the emergency procedure in automatic mode via the control panel supplied by the buffer battery, it is necessary to supply the ECO+ drive with power from a battery (24 Vdc 4 Ah) via connector X5: the battery power must be supplied immediately after mains power is removed (the ECO+ drive must not be switched off).
The opening of doors for opening I1 (OPENING) will be managed by the control panel. Fig.1 shows the recommended wiring diagram.
Door opening will be automatic (without the help of the lift controller), if relay K3 is used to activate input I1 (OPENING), or the lift controller will have to manage input I1 (OPENING) to activate door opening: Fig.1 recommended wiring diagram.

NOTE:

1. **Input I1 is activated via contact K3 by a micro-switch installed inside the shaft. The micro-switch is activated by the arrival of the car to the floor where it was installed and the ECO+ card will control input I1 via contact K3, only when powered by a battery.**

2. **If power is removed while the car is in line with the floor and the closing limit switch of the ECO+ card is not activated, it will be possible to open the door manually at that floor, as the ECO+ card will leave the motor unpowered.**

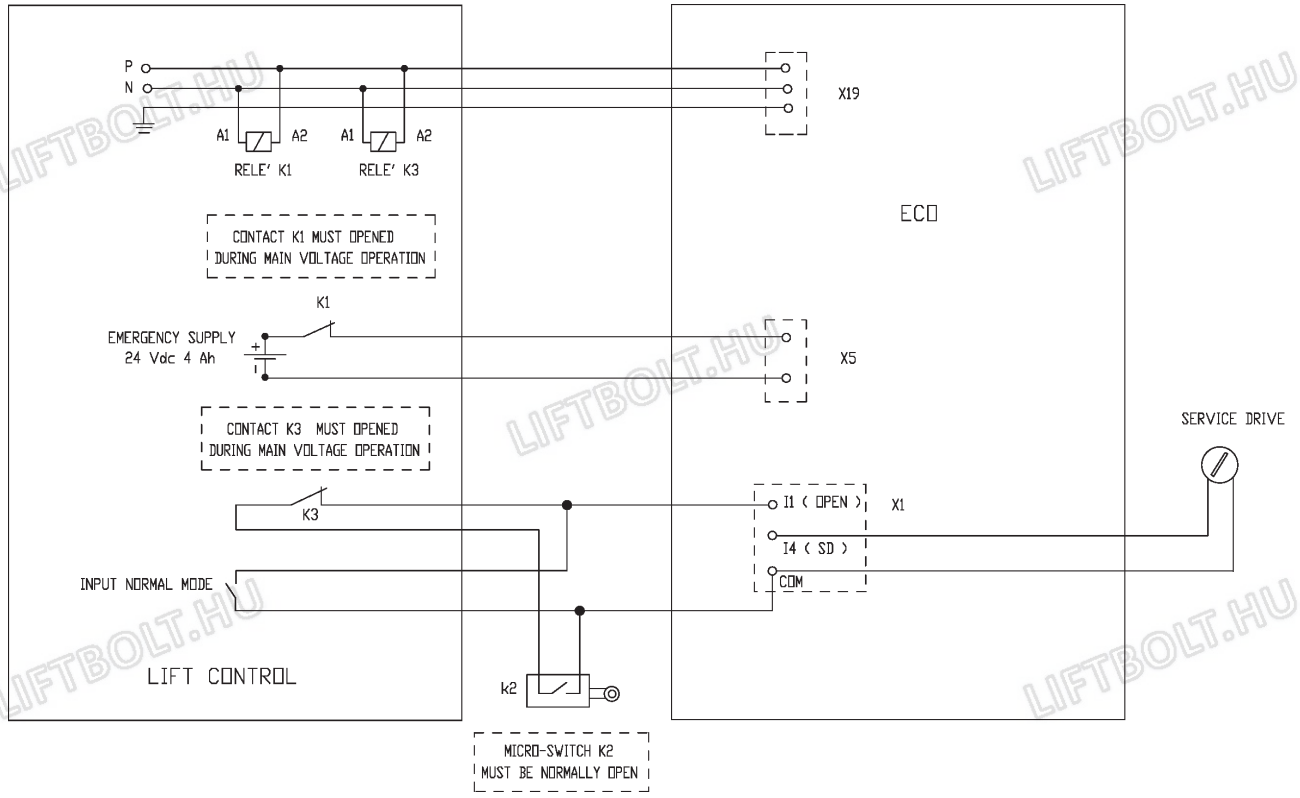


Fig. 1

3.1.3 Emergency procedure in manual mode (specialized technical staff present):

1. If mains power is removed, to ensure correct operation of the emergency procedure in manual mode, we recommend supplying the ECO+ drive with battery power (24 Vdc 4 Ah) via connector X5: the battery power must be supplied immediately after mains power is removed (the ECO+ drive must not be switched off). This way it will be possible to align the elevator cabin with the desired floor by means of a manual operation: the doors can only be opened manually: Fig.2 recommended wiring diagram.

NOTE:
If the operator is equipped with retractable cam with car door locking, to ensure correct operation of the emergency procedure in manual mode, we recommend the possibility of removing battery power (e.g. via a manual or time-operated switch) when the cabin has been aligned with the desired floor manually: it will then be possible to open the doors manually without any problem.

If the ECO+ card is not supplied with power from a battery (24 Vdc 4 Ah) via connector X5, the following situation will occur:

1. If there is an automatic operator with off-floor locking, the car can be manually aligned only to the nearest floor, as the floor lock will be opened by the retractable cams which will be extended to their maximum length due to the removal of power: the doors can only be opened manually.
2. If you have an automatic operator without off-floor locking, it will be possible to align the car with the desired floor using a manual procedure: the doors can only be opened manually. This is possible because the automatic operators without off-floor locking are fitted with a standard mechanic/magnetic device which allows the retractable cams to remain closed.

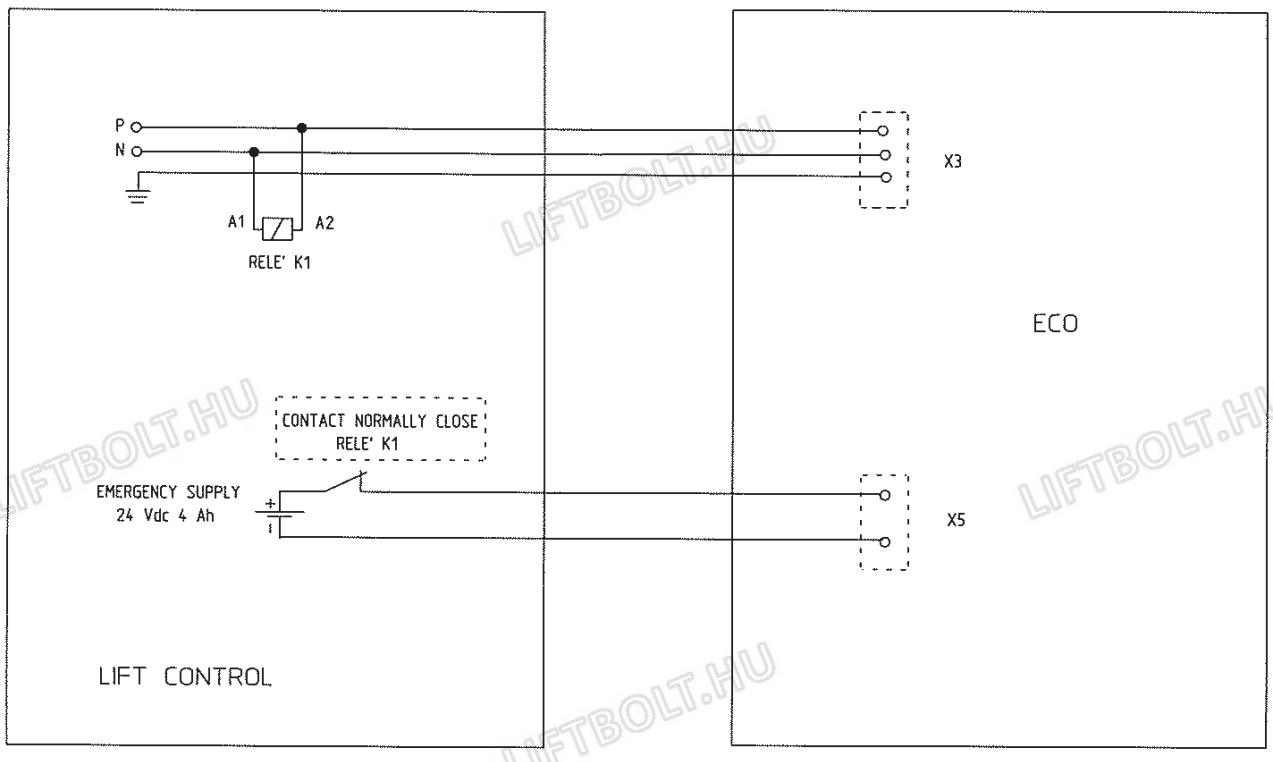
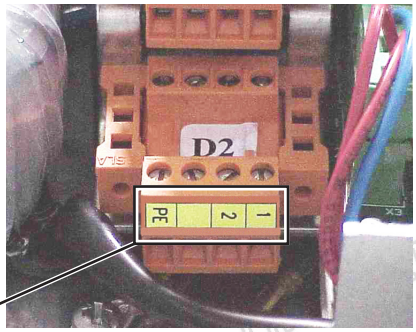


Fig. 2

3.2 SAFETY CIRCUIT

- The door contacts are prewired to a terminal plugwith screw terminals D2.
- Safety contact ratings: Min. 5VDC - Max. 250VAC 2A.

PE =	Connect ground wire
1 & 2 =	Connect safety circuit wires



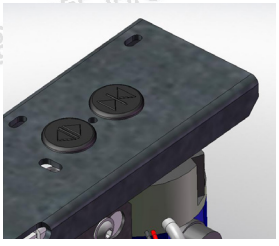
4. EXCHANGE OF ELECTRONIC BOX

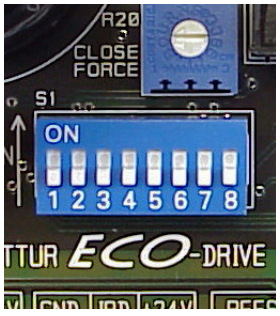
4.1 PREPARATION AND LEARNING OF DOOR PARAMETERS

☞ Carry out only in event of replacement.

1 DIP-Switch setting has to be copied from the replaced board, see chapter 8: “DIP-Switches”.
2 In case of need adjust the reference switch so, that switch and magnet are opposite one each other when the door panels are closed (clearance between switch and magnet should be 5÷6 mm).

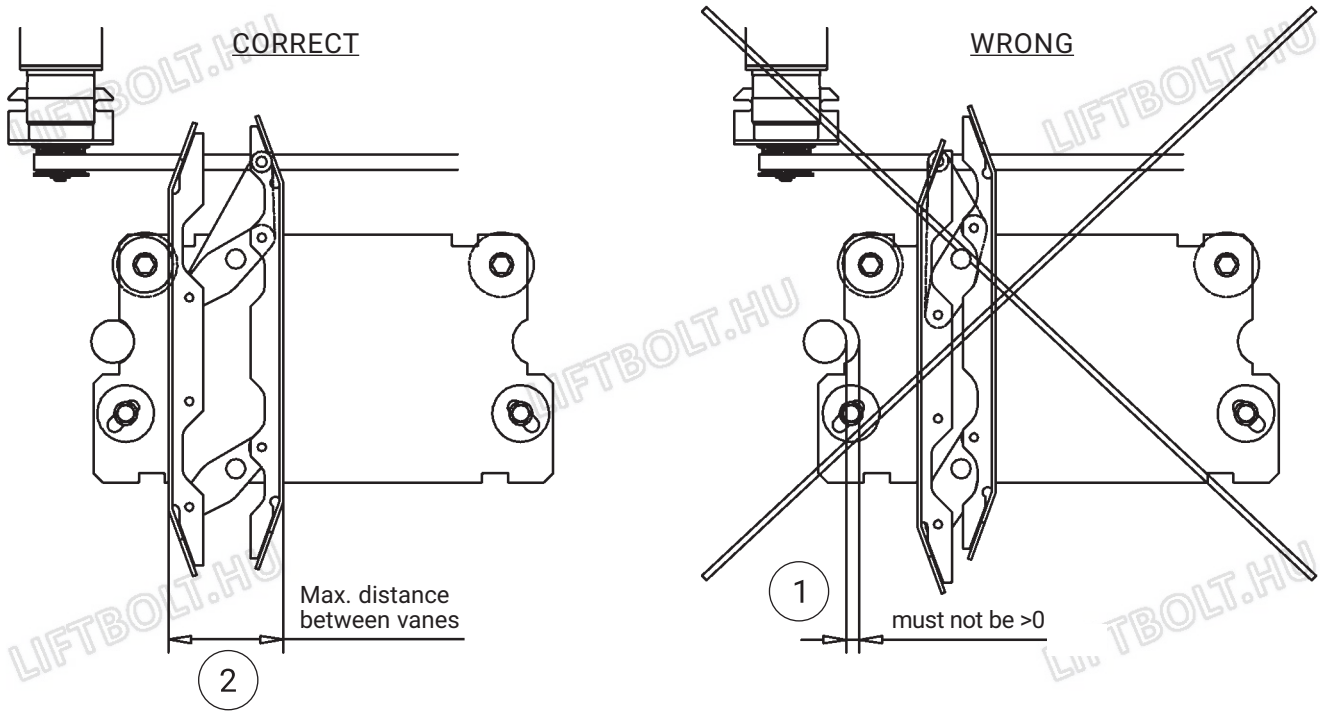
3 The DIP Switch S1/1 (Test Button Operation) must be activated.





4 Set the panels of the car door in closing position (1) and ensure that the cams are rigorously open (2). Therefore open the door panels by handand push them manually to closed position. The hanger plate (truck) must touch the close end buffer. See picture below (1).

Strut-Coupler System



5 Activate the alimentation through the D1 connector as indicated at par.3.1.

Press the LEARN push-button **for one second only,** immediately after switching on.

6 Now the door must be driven in close direction by Test Drive Button.

7 The door might now run in wrong direction in respect to command. Use that test drive button which drives the door in close direction and drive until door panels are fully closed (REF SWITCH LED must be on).

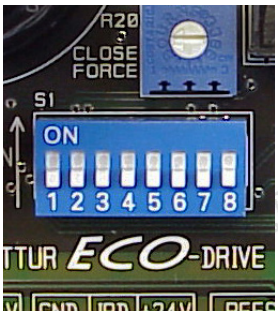
8 If the motor is running in wrong direction the electronics rectifies the motor rotation direction when the "Ref Switch" is closed and a new learning procedure will re-start.
Is no reference switch available the direction of the motor rotation has to be changed by crossing the motor cables, if necessary (Press the LEARN button again).

9 Now the learning of door width is done during 2 consecutive full door width movement cycles (STATE LED off --> learning done).
Take care, that the commands are available in end position for more than one second, that the electronic has time enough to detect the mechanical end position.

10The parameters are stored automatically after learning procedure.

4.2 DRIVING THE DOORS WITH THE ELEVATOR CONTROLLER

- Connect the signals from the elevator controller to connector X1 and X2 of the door operator.
- Refer to the project delivery documents for the wiring diagram between the elevator controller and door operator (see also circuit diagram in chapter 10).
- Check if Test Button operation Switch is OFF S1/1.



- If the door is not at the reference switch (near by close end) in power up and CLOSE is active (connected with COMMON) it will move at low speed as long as the reference (close end) position is found.
- After finding the reference switch the door drive will start with the next OPEN command in direction open with normal speed drive until the mechanical end is found.
- Then the door will drive with normal speed in both directions.
- Check that the safety devices (open button, photo cells and close force limiter) reopen the door (see DIP-switch description).
- According to the DIP-Switch adjustment (S1/2) the door is reopend by the elevator control or automatically by the door.

4.3 DRIVING THE DOORS BY THE SERVICE DRIVE BUTTONS

- The Test Buttons only work when the Test button operation switch (S1/1) is active.
- Check that the door is moving open and close when the test buttons are pressed.
- In this mode of operation the reopening of the door by a safety device is not activated (enables the adjustment of the closing force).

4.4 RESET OF COUPLER WIDTH

If the coupler parameter must be reset (e.g. remove or change of coupler system, coupler width wrong.....) continue like described below:

⚠ Before “Reset of coupler width” is done, do preparation for learning described in paragraph 4.1, item 1, 2, 3 and 4 (manual closing of door panels, but don’t close coupler vanes!).

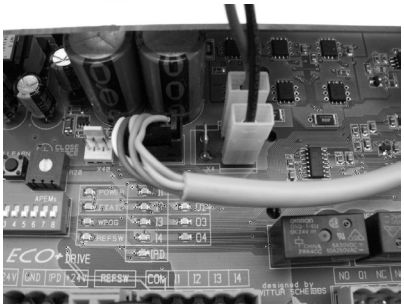
By pressing the learn button for at least 10 seconds (until State LED flashes fast) the coupler width is cleared and a new learning is started.
After resetting the coupler width, continue with start-up procedure like described in paragraph 4.1 “Learning of door parameter” starting with item 5.

4.5 RESET OF ALL DOOR PARAMETERS

(this function can only be activated by service tool, see item “11.4.2.2 Reset to default”).

4.6 CONNECTION OF DC MOTOR (E.G: REPLACEMENT OF OLD ELECTRONIC)

The ECO+ electronic can be used as spare for the old ECO electronic. Connect the DC motor (blue) as shown in next picture.



5. ADJUSTMENTS ALWAYS TO BE DONE

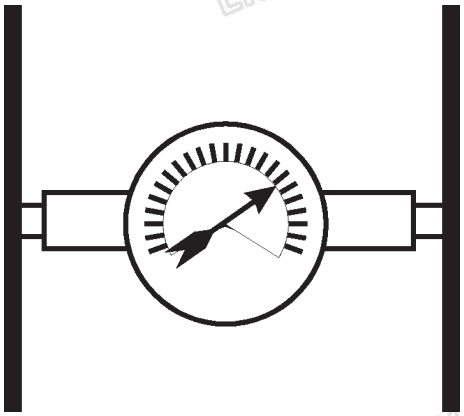
5.1 CLOSING FORCE ADJUSTMENT

An adjustment of too high closing force may cause serious injury to passengers. The max. allowed force can be found in the code valid for your country (EN81: max. 150N).

The adjustment must be done by use of a force measuring device.

Do not attempt to measure the force of a moving door, stop it first to avoid damage of the force measuring device!

- Open and close the door manually and check that there is no mechanical obstruction.
- Put a force measuring device between the door panels (center opening) or between door panel and slam post (side opening).



For centre opening the measuring device will show half of the actual close force. For side opening the measuring device will show the actual close force.

- Drive the door with the close button (or close command) to the close direction. The Test Buttons only function when the Test button operation DIP-Switch (S1/1) is ON.
- The close command should be applied for less than 10sec period's, than remove the close command for a short time, before continue the adjustment procedure.

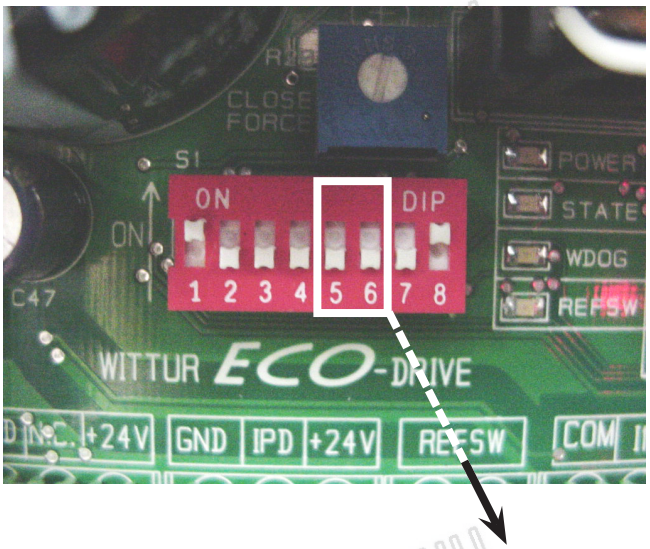
- Adjust the closing force according codes using potentiometer CLOSE FORCE. The Closing Force will increase by turning the potentiometer clockwise!

5.2 ADJUSTMENT OF THE SPEED

- The drive electronic offers to select one out of four different speed levels (for handicap elevators or other purpose).
- Look at DIP-SWITCHES description (chapter 8).

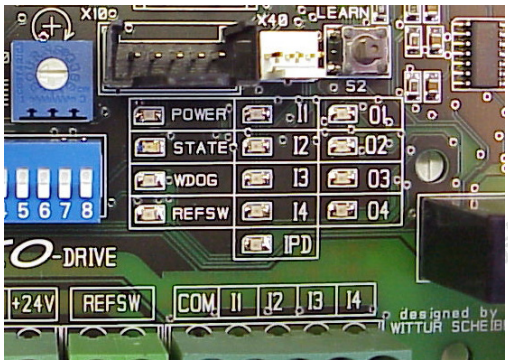
5.3 SETTING SPEED ACCORDING TO DISABLED PEOPLE REGULATIONS

- The DIP-SWITCHES S1/5 and S1/6 must be set to OFF.



DIP-SWITCHES S1/5 and S1/6 SET TO OFF

6. DESCRIPTION OF LED´S



6.1 LED'S INPUTS

Name	LED illuminated if
I1	Input 1 is connected to COM
I2	Input 2 is connected to COM
I3	Input 3 is connected to COM
I4	Input 4 is connected to COM
IPD	Input Passenger- Protection Device (Photo cell.....)

6.2 LED'S OUTPUTS

Name	LED illuminated if
O1	Output 1 relay is operated
O2	Output 2 relay is operated
O3	Output 3 relay is operated
O4	Output 4 relay is operated

6.3 DIFFERENT LED'S

Name	LED illuminated if
POWER	the power supply is switched on
WATCH DOG	the microprocessor does not work
STATUS	Light: during start up and learning Flashes: if an error is detected 1x Motor / encoder fault 3x internal fault 4x abnormal operation 5x learning error Details see page 19, item 9.3 Off: normal operation
REFSW	the door is in Close end area

7. ELECTRICAL INTERFACES

7.1 INPUTS

The Inputs are activated if they are switched at COM.

Terminal	Symbol	Name of the terminal	Explanation
COM	COM	COMMON	Common line for I 1..4
I1	◁▷	OPEN	This command will drive the door in open direction until the open position is reached. Depending on the setting of DIP-Switch S1/8 the door is kept open by motor torque also without command.
I2 *	▷◁	CLOSE	This command will drive the door in close direction until close position is reached and coupler is opened. Depending on the setting of DIP-Switch S1/8 the door is kept closed by motor torque also without command.
I3	NDG	NUDGING	Nudging input, puts the door to slow speed drive in close direction. Smoke sensitive devices like photo cell or light barrier (Input IPD) will be ignored.
I4	SD	SERVICE DRIVE	If set to TEST it enables the service keys. If set to RUN it enables the lift controller commands.

*** Attention:**

1) To comply to new EN81-20 (5.3.15.1) standard it is mandatory that the elevator controller removes the “CLOSE COMMAND (I2 = OFF)” when parking/resting on floor level.
   As a consequence the door operator motor is unpowered and ensures that the car door lock is in unlocked state.
2) While moving the elevator car it is mandatory that the “CLOSE COMMAND (I2 = ON)” is active to ensure that car door lock is in locked state.

SERVICE DRIVE SWITCH

- RUN position: accepts commands from operation panel,
- TEST position: accepts commands from service keys (X40).

N.B.: The **SERVICE DRIVE SWITCH** can be adjusted with a screwdriver; rotate clockwise/ anticlockwise.

The DIP-SWITCH S1/1 must be strictly set in the OFF position.

Optical couplers are mounted on the inputs, supplied directly from the ECO+ drive:

Technical data:

- Voltage: 24 VDC ± 10 %
- Power: 12 mA each input

7.2 PASSENGER PROTECTION DEVICE INPUT AND SUPPLY

The Input is activated if put at GND. For parameterset xE (EN81-20) the IPD input have to be active if no obstacle is detected by the detection device. See 10.3 Wiring Diagram for EN81-20.

Terminal	Symbol	Name of the terminal	Explanation
+24V	PH+	+24V	+24V DC supply for photo cell or curtain of light (max. 150mA)
IPD	REV	PHOTO CELL	Input for Photo Cell or curtain of light, light barrier or other passenger protection device
GND	PH-	GND	Ground for supply of photo cell or curtain of light (light barrier)
N.C.	L		Can be used as terminal for light barrier

7.3 OUTPUTS

The outputs are relais where the 3 connections of the contacts are feed to the terminals.
(O1 to O4: COMMON = COM, normally open contact = NO, normally close contact = NC)

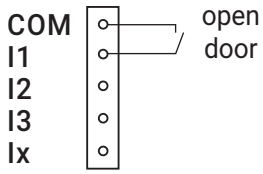
Terminal	Symbol	Name of the terminal	Explanation
O1	◁‖▷	OPEN END	The open end output indicates the fully open position of door panels.
O2	▷◁	CLOSE END	The close end output indicates the fully closed position of door panels
O3	REV	REOPEN	The reopen output indicates if a reopen request, coming from photo cell or close/open force limiter is pending or an automatic reopen/close is done.
O4 *	POS	Position	This Output shows the reference switch signal. Output is On in Referenceswitch area. * With Parameter set E (EN81-20) the output 04 is set in reference area.

Technical data:
- Voltage: 230 VAC / 30 VDC
- Power: max 2A continuous load

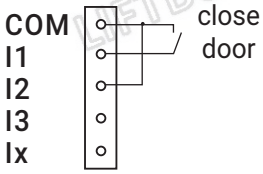
8. DIP-SWITCHES

	ON	OFF
S1/1	Test Button operation (buttons active)	Normal operation (command inputs on X1 active) Activate SERVICE DRIVE SWITCH
S1/2 *****	Automatic reopen on obstruction or IPD (Reopen O3 is switched)	No automatic reopen/reclose (only Reopen O3 is switched)
S1/3 **	Electric shoe operation (swing door mode)(*)	Normal operation (command inputs on X1 active)
S1/4	Not used	
S1/5 S1/6	Speed selection, binary coded, see figure	
S1/7 ****	Open force limitation active	No open force limitation
S1/8 ***	Automatic end keeping	Hold open/closed only on active open/close command

(*) Mode 1:
I1 = ON -> door opens
I1 = OFF -> door closes



(*) Mode 2:
I1 = ON -> door closes
I1 = OFF -> door opens



SPEED ADJUSTMENT

	MIN	SPEED		MAX
	1	2	3	4
S1-5	OFF	ON	OFF	ON
S1-6	OFF	OFF	ON	ON

** For the compliance to EN81-20 (part. 5.3.15.1) the switch S1/3 must be OFF

*** For the compliance to EN81-20 (part. 5.3.15.1) the switch S1/8 must be OFF

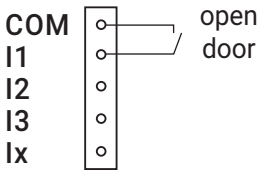
**** For the compliance to EN81-20 (part. 5.3.6.2.2.1 only glass doors) the switch S1/7 must be ON

***** In case of automatic reopen/reclose, 03 is set if an obstacle is detected and switch off after reopen/reclose
In case of no automatic reopen/reclose, 03 switch on when an obstacle is detected and switch off when the obstacle is removed or a reopen/reclose command is applied from the liftcontroller.

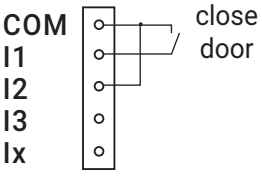
8.1 DIP SWITCH FOR ECO BUS 2.0 DOORS

	ON	OFF
S1/1	Test Button operation (buttons active)	Normal operation (command inputs on XI active)
S1/2	Automatic reopen/reclose on obstruction or IPD (Reopen 03 is switched)	No automatic reopen/reclose (only Reopen 03 is switched)
S1/3	Electric shoe operation (swing door mode)(*)	Normal operation (command inputs on XI active)
S1/4	POS. Function on Output 04	
S1/5	Close pulse (Medium) (Only on when Dip-Switch 51/7 is on)	Close pulse (Strong) (Only on when Dip-Switch 51/7 is on)
S1/6	Doorspeed slow (0,27m/s)	Doorspeed fast (0,4m/s)
S1/7	Close pulse off (For W-Folding Doors)	Close pulse on (see 51/5)
S1/8	Hold open/close only on active open close command	Automatic end keeping

(*) Mode 1:
I1 = ON -> door opens
I1 = OFF -> door closes



(*) Mode 2:
I1 = ON -> door closes
I1 = OFF -> door opens



9. TROUBLESHOOTING

There is a fault if the State LED is blinking. The faults can be read by WPT.

9.1 THE DOOR DOES NOT MOVE

9.1.1 The door does not move at all

- Check that the power is ON. The POWER LED H80 must light up if D1 is connected and the circuit breaker in the elevator control panel is ON
- Check WATCHDOG LED H20, switch OFF/ON or replace board in case it lights up.
- Check that the motor and encoder wires are connected correctly (plug X4 and X10) and the motor is not overheated (<= 60° C).
- Check that the control panel is sending an Open or Close command (I1-I2/X1, Led I1, I2).
- Check if there is too high friction if door is moved manually. If the state LED flashes read the faults by using WPT, switch ON/OFF or replace board in case it flashes.
- Check if the open force limitation is deactivated (S 1/7 OFF).

9.1.2 The door does not open

- Check that the OPEN command LED I1 lits up when an open command is present (I1/X1 low).
- Check that the CLOSE command LED I2 does not light up (I2/X1 not low). A close command overrides the open command.
- Check that the landing door lock is not jammed.
- Check if the open force limitation is active (S 1/7 ON) and the friction is too high.

9.1.3 The door does not close

- Check that the CLOSE command LED I2 lits up or the Input I2/X1 is switched on COM.
- The closing force may be too low (or friction too high). Turn CLOSE FORCE potentiometer slightly clock-wise to increase the closing force, but watch the maximum allowed force!

9.1.4 The door only partly opens or closes

- Check that the open and close signal times (LEDs I1, I2) from the elevator controller are long enough. The door moves only as long as command is set.

9.2 THE DOOR DOES NOT REOPEN/RECLOSE

- If no automatically reopen/reclose is selected (DIP Switch S1/2 is OFF):
- To reopen/reclose the door, the elevator controller must receive either a reopen/reclose request signal from the door electronics (REOPEN) or from an independently wired safety device (e.g. Photocell or Curtain of Light).
- For reopening/reclose the elevator controller must remove the close/open command and activate the open/close command
- If automatic reopen/rerclose is selected (DIP Switch S1/2 is ON):
- An automatic reopen/reclose process is caused by the Input IPD or by the closing force limiter.

☞ Check the following reopen devices

- Photocell or light cell (defect or dirty).
- Closing force limiter (force adjusted too high).

9.3 FAULTS CAUSING RESET OR SWITCH OFF (STATE LED IS BLINKING, BLINKCODE (X))

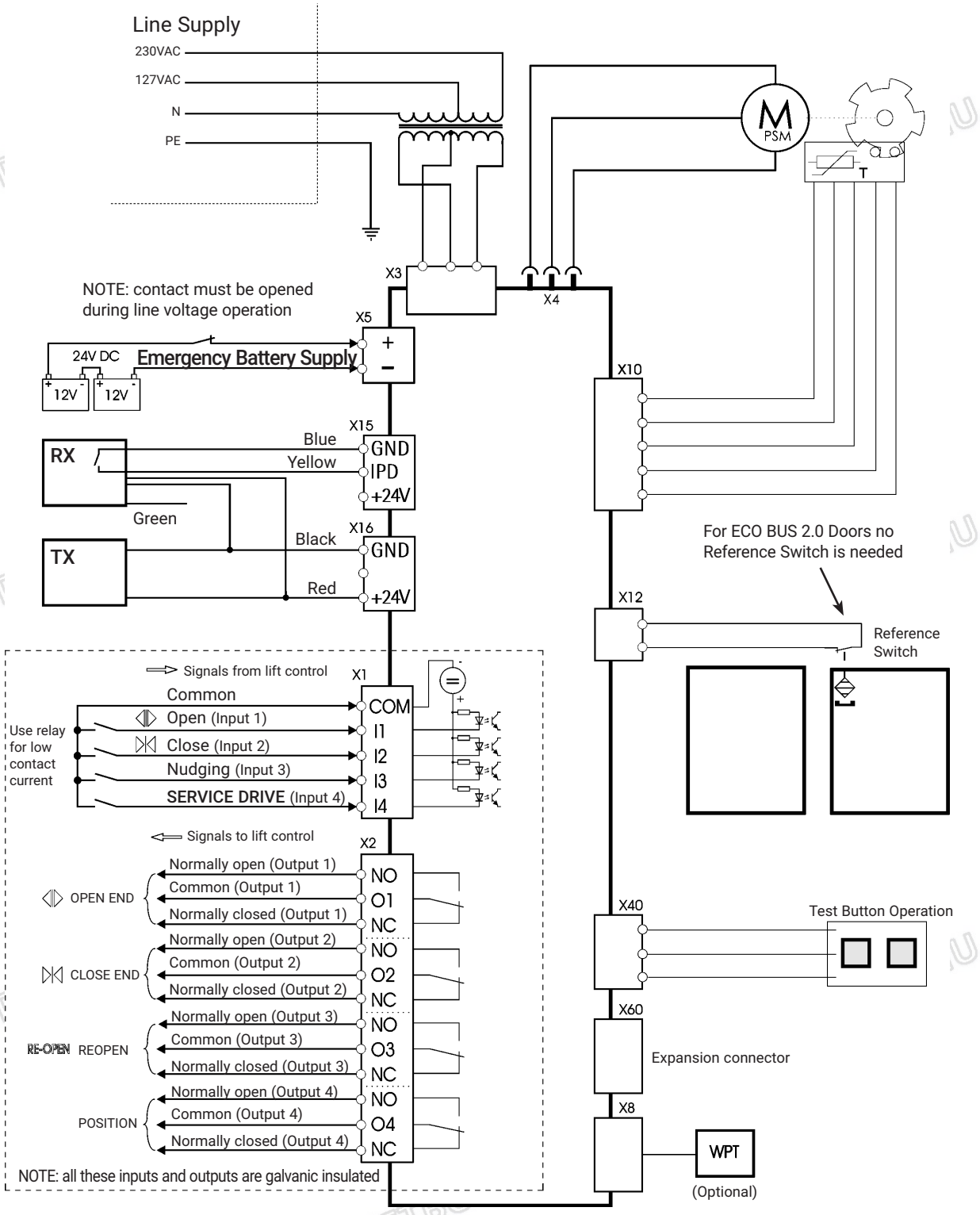
- Over current (power stage short circuit).
- motor or encoder short circuit, open wires and/or missing signals.
- Internal electronic fault.
- Under voltage (supply voltage is measured and the power stage switches off if the voltage is too low).
- mechanical end not found (>=5m).
- door mechanically blocked.

9.4 FAULTS DECREASING PERFORMANCE OF DOOR

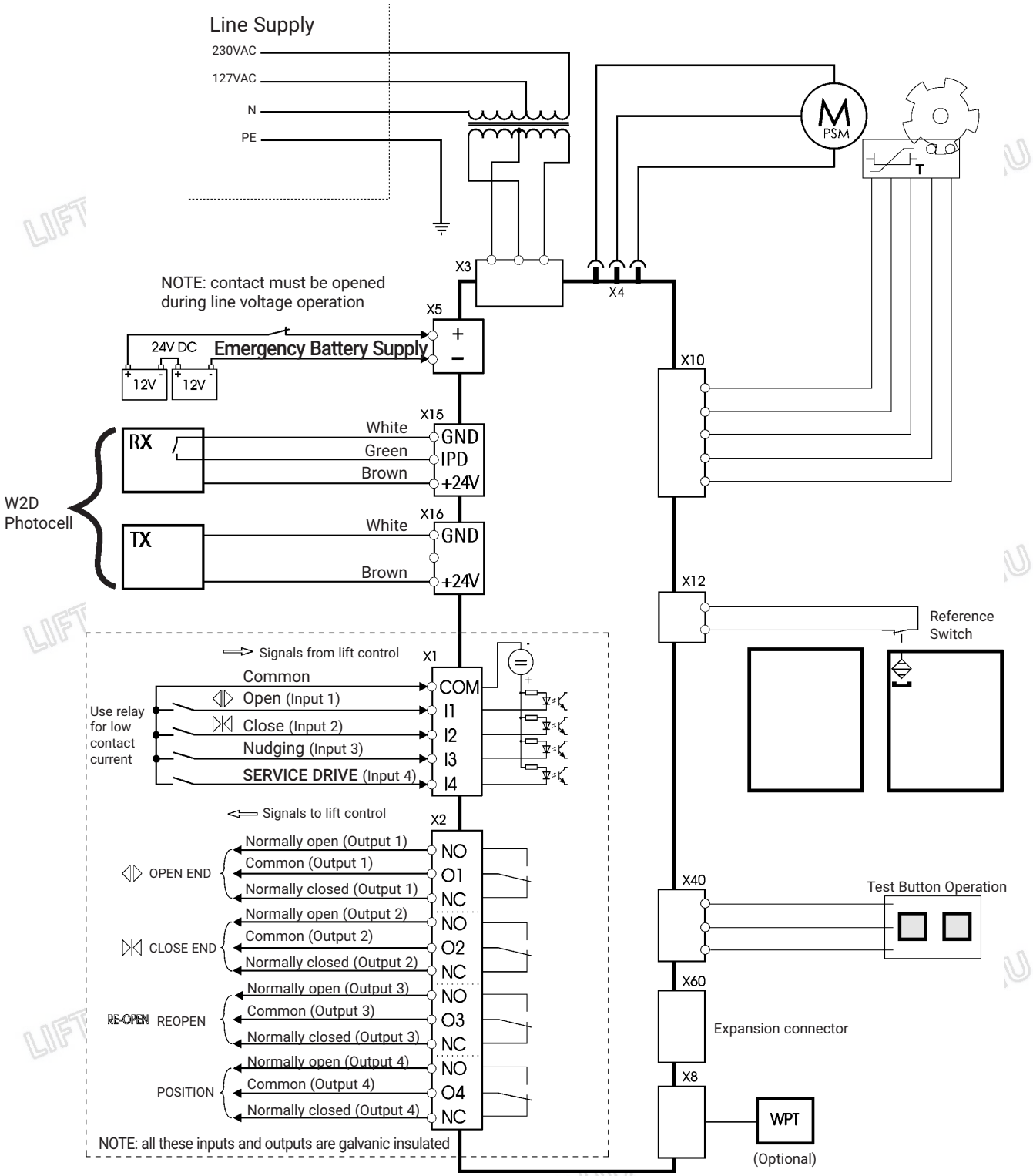
- Motor and/or power stage temperature too high. The software reduces the power of the motor (power stage). If temperature is nevertheless exceeding a higher limit, power stage is shut down for cooling down a certain time.
- Low voltage supply like battery drive or low line voltage supply.
- Reference switch faulty.

10. ECO+ WIRING DIAGRAM DRIVE

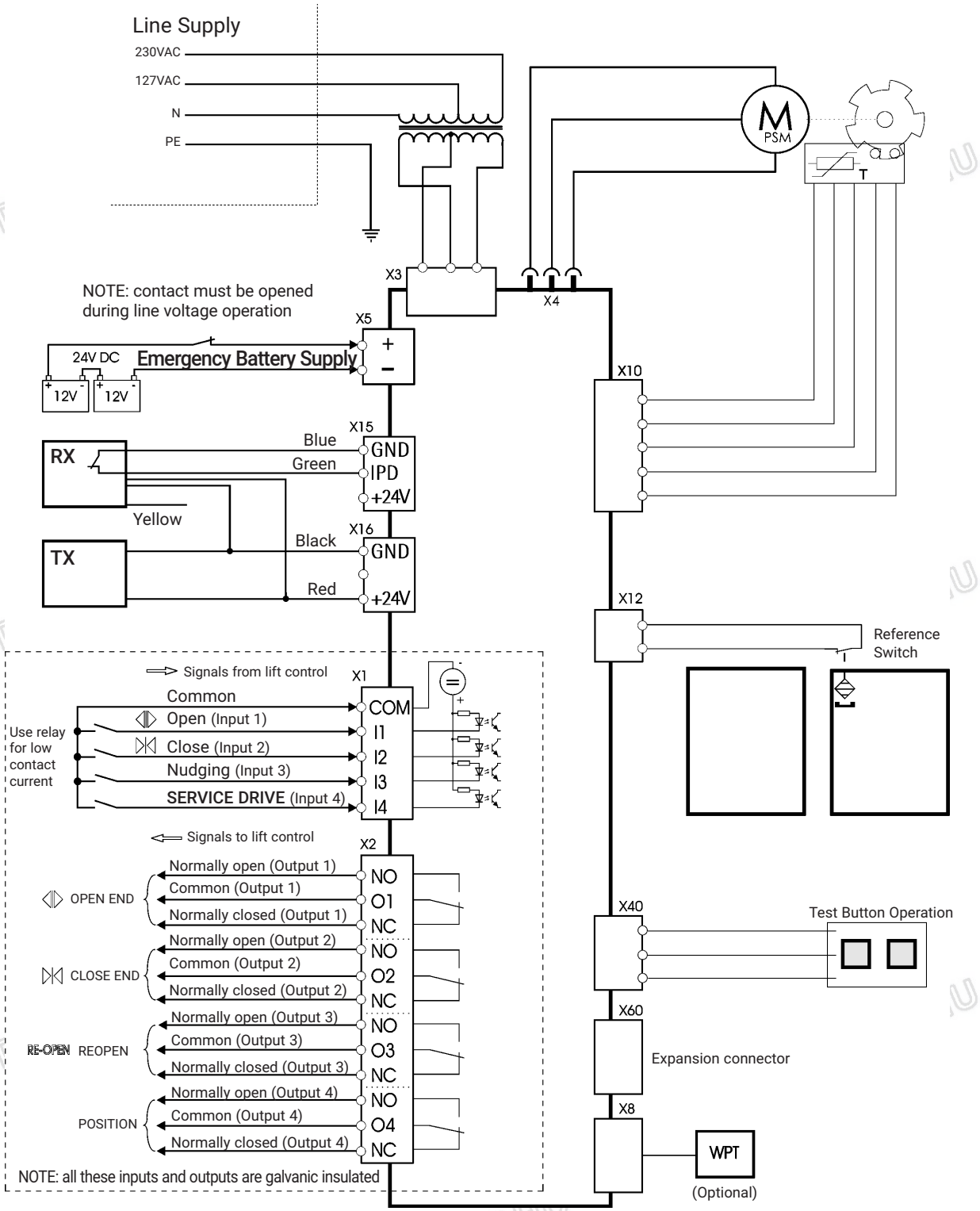
10.1 WITH DETECTOR (NO EN 81-20)



10.2 WITH W2D PHOTOCELL (NO EN 81-20)



10.3 WITH DETECTOR EN 81-20



For Parameterset xE (EN81-20) the IPD input have to be always active for noraml operation.
If no detection device is connected to the door drive, the IPD input have to be activated by a wire bridge from IPD to GND.
If a detection device is used, a normal close contact have to be connected from GND to IPD, to work with parameter set xE (EN81-20).

11. WITTUR PROGRAMMING TOOL INTERFACE SOFTWARE DESCRIPTION

Valid for software revision starting from „WHD ECO+ Vx.x, dd.mm.jjjj“

11.1 INTRODUCTION

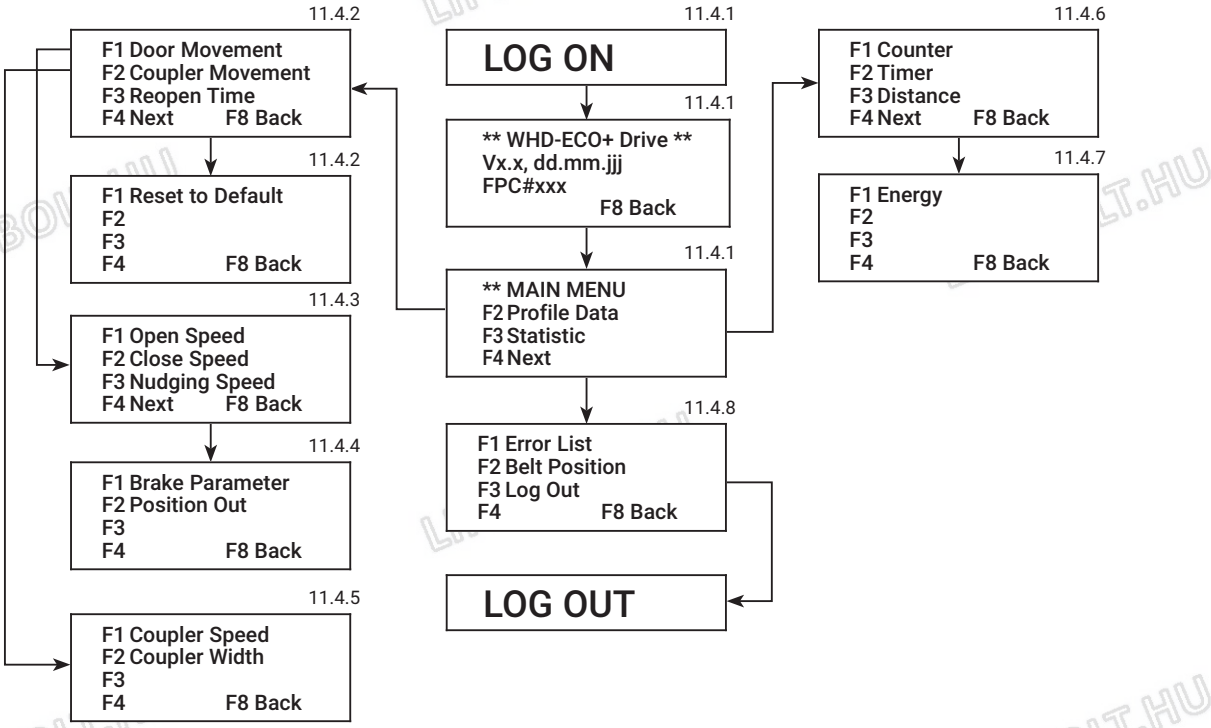
The ECO+ - electronic is equipped with a serial communication interface RS 485 to watch/modify data stored in the electronic. Some data (for example the speed values) are stored in a memory which is independent from power supply, this memory is called EEPROM. For use of the Wittur programming Tool see Operating instructions D276Mxx.

Wrong adjustments may damage the door mechanic.

11.2 CONNECTING THE WITTUR PROGRAMMING TOOL TO THE ECO+ - ELECTRONIC

The Programming Tool can be connected directly to the ECO+ platine at the plug X8, there are no further adjustments necessary. Switch off the WPT before connecting to door drive.

11.3 MENU STRUCTURE OF PROGRAMMING TOOL



11.4 DOOR ADJUSTMENT WITH THE PROGRAMMING TOOL

11.4.1 Login of the Programming Tool

- Press the 'ON'-button longer than 2 seconds until you can see the Log-in Display.

```
WPT software V1.3
19.09.2001, 11:15

Logging on .
```

- The screen after power on login shows the door drive software revision and date.

```
** WHD-ECO+ DRIVE **

Vx.x, dd.mm.jjjj
FPC#xxx    F8 Back
```

- After pressing 'F8' the initial menu screen appears.

```
** MAIN MENU
F2 Profile Data
F3 Statistic
F4 Next
```

- Press 'F1' to 'F3' to select one of the menu items or use 'F4' to view additional screens

```
F1 Error List
F2 Belt Position
F3 Log Out
F4         F8 Back
```

- 'F8' jumps back to last screen.

11.4.2 'F2': Profile Data

```
F1 Door Movement
F2 Coupler Movement
F3 Reopen Time
F4 Next    F8 Back
```

This menu allows you to call up 2 further cascading menus: 'F1' Door Movement (11.4.3) and 'F2' Coupler Movement (11.4.5).

11.4.2.1 'F3': Reopen Time

Reopen Time is the waiting period after the reopen in open end, before the door close again.
By pressing 'F3' the parameter Reopen Time can be watched and changed.

```
Reopen Time:
 0000.0 s

ENTER Ch.  F8 Back
```

To enter a new value press the number keys, after that press 'ENTER'. This value is taken over in a buffer and carried out.

```
Reopen Time:
 0001.5 s

ENTER Ch.  F8 Back
```

By leaving this menu with 'F8' you will be asked if the entered value shall be stored permanently to the memory

```
Use changed Value?


YES/NO     F8 Back
```

By pressing the keys 'YES' / 'NO' the value can be used / rejected.

11.4.2.2 'F4': Next (Profile Data)

```
F1 Reset to Default
F2
F3
F4         F8 Back
```

The door parameter are resetted to its initial value by pressing the button 'F1'.

11.4.2.3 'F1': Reset to default

```
Reset to Default?

YES/NO     F8 Back
```

By pressing the 'YES' button all the factory adjusted parameters are cleared and overwritten by default values.

Before resetting the door electronic to default values the two items 4.1, clause 3 and 4 must be followed (manual closing of door panels without opening of coupler!).
After the "Reset to Default" is done, continue the start-up procedure like described in item 4.1 clause 6 to 10.

11.4.3 'F1': Door Movement

```
F1 Open Speed
F2 Close Speed
F3 Nudging Speed
F4 Next    F8 Back
```

This menu allows you to watch/modify values described in the following chapters by pressing the corresponding function key.
See chapter 11.4.2.1 how to enter values.
All these variables are stored in the EEPROM. Speed values for speed setting 1-3 are calculated from values of speed setting 4 by multiplying with fix constants (see chapter 12).

11.4.3.1 'F1 Open speed' - Open speed

Top speed for open movement; speed setting 4.

11.4.3.2 'F2 Close speed' - Close speed

Top speed for close movement; speed setting 4.

11.4.3.3 'F3 Nudging speed' - Close speed for nudging

Top speed for close movement with nudging command; speed setting 4.

11.4.4 'F4': Next (Door Movement)

```
F1 Brake Parameter
F2 Position Out
F3
F4          F8 Back
```

This menu allows you to watch/modify values described in the following chapters by pressing the corresponding function key.
See chapter 11.4.2.1 how to enter values.
This value is stored in the EEPROM.

11.4.4.1 'Brake Parameter'

Because of the adjustment of this parameter the delay and creep to the open/close end is influenced (pre-adjusted at '5'). The possible adjustment is '0'..'9', but the earliest brake is reached with parameter '0' and the latest delay is reached with parameter '9'.

11.4.4.2 'Position Out' Relay output

By entering this parameter the Position relay can be adjusted to switch at any door position. Standard adjustment is 0 (deactivated).

11.4.5 'F2': Coupler Movement

```
F1 Coupler Speed
F2 Coupler Width
F3
F4          F8 Back
```

This menu allows you to watch/modify values described in the following chapters by pressing the corresponding function key.
How to enter values see in chapter 11.4.2.1.
This value is stored in the EEPROM.

11.4.5.1 'F1 Coupler Speed'

Adjustment of the maximum speed in the coupler area. It is the same for open and close.

11.4.5.2 'F2 Coupler Width'

The parameter coupler width shows the distance which the belt is moving in close end without moving the door panels.

⚠ If this value is changed the door is stopped until the learn button is pressed!

11.4.6 'F3': Statistic

```
F1 Counter
F2 Timer
F3 Distance
F4 Next    F8 Back
```

This menu allows you to watch values described in the following chapters by pressing the corresponding function key.

11.4.6.1 'F1 Counter'

This counter shows the number of the driven door cycles.

11.4.6.2 'F2 Timer'

This counter shows the power-on time of the door electronic.

11.4.6.3 'F3 Distance'

This counter measures the absolute movement of the drive belt in meter, but not the coupler movement.

11.4.7 'F4': Next (Statistic)

```
F1 Energy
F2
F3
F4         F8 Back
```

This menu allows you to watch values described in the following chapters by pressing the corresponding function key.

11.4.7.1 'F1 Energy'

This counter counts the electric power feed to the drive in KWh.

11.4.8 ‘F4’: Next (Main Menu)

```
F1 Error List
F2 Belt Position
F3 Log Out
F4          F8 Back
```

This menu allows you to watch values described in the following chapters by pressing the corresponding function key.

11.4.8.1 ‘F1 Error List’

Errors are coded with numbers or letters. The Error List can be deleted with the key ‘F5’.
Possible Faults are:
'EC' : Fault by Encoder
'EE' : EEprom writing or reading fault
'OC' : Over current
'RS' : Faulty reference switch
'IE' : Internal software fault
'AP' : Fault by position counter, door width > 5m
'TS' : Faulty temperature sensor
'NE' : Encoder not connected
'CF' : Closing force potentiometer defect
'ME' : Fault by motor or encoder
'SS' : Standstill fault, door is blocked
'TH' : temperature of the electronic or motor too high
‘FE’ : is set during manual change of coupler movement parameter.
‘BM’: mechanical balancing error, rotor position can not be found.
‘MD’: wrong motor movement direction.

11.4.8.2 ‘F2 Belt Position’

Actual position of the belt, positive- door panels open (then it is the door panel position), negative - coupler area

11.4.8.3 ‘F3 Log Out’

By pressing F3 the communication between door drive and WPT is stopped and the WITTUR Programming Tool switches off.

Mod.

11.5 WPT PREVENTIVE MAINTENANCE TOOL

With the Preventive Maintenance tool it is possible to monitor the maintenance state of the car door and landing doors.
This function is available since software Version 5.0 19.01.2018

11.5.1 Cycle counter

The Preventive Maintenance tool has following counters:
'CAR': the car door
'BAS': the basment landing doors
GND: the ground floor landing door
G01...G10: up to 10 groups for all landing doors above ground floor. Depending on the number of upper floors, the landing doors are devided in these groups. One floor per group up to 5 upper floors, two floors per group up to 10 upper floors, 5 floors per group up to 50, if there are more than 50 upper floors, there are 10 floors per group.

11.5.2 Car door mechanism

The car door mechanism is devided in following parts:
'TR': top roller
'BR': bottom roller
'SH': shoes
'CO': contact
'WR': wire rope
'BE': belt
'MO': motor
'CN': controller
'BA': battery
'SP': synchronisation pulley
All of these parts together are refered to as FM: Full mechanism.

11.5.3 Landing door mechanism

The landing door mechanism is devided in following parts:
'TR': top roller
'BR': bottom roller
'LR': lock roller
'CD': closing weight/closing spring
'SH': shoes
'CO': door contact
'WR': wire rope
'SP': synchronisation pulley
All of these parts together are refered to as FM: Full mechanism.

11.5.4 Navigation to the Preventive Maintenance tool

After the log on, you start in main menu

```
** Hauptmenue
F2 Profil Daten
F3 Statistik
F4 Weiter
```

Press F4 to get in following menu:

```
F1 Fehlerliste
F2 Riemenposition
F3 Abmelden
F4 Weiter
```

Press again F4 and following screen well be shown:

```
F1 Prev. Maint.
F2
F3
F4
```

Press F1to enter the Preventive Maintenance:

```
F1 PM Setup
F2 PM view
F3 PM Counter
F4 Next       F8 Back
```

Press F4 to enter the next site of the preventive maintenance tool:

```
F1 PM maint.
F2 PM Repl. List
F3 PM Warn. List
             F8 Back
```

11.5.5 Navigation through the Preventive Maintenance tool

starting screen:

```
F1 PM Setup
F2 PM View
F3 PM Counter
F4 Next       F8 Back
```

Press F1 to enter the preventive maintenance setup, in this setup you have to type in the floor information.

```
**** Prev Maint ****
Reset all counters
and start setup
YES/NO        F8 Back
```

Press YES to reset all cycle counters (first installation). Press NO or F8 to stop the setup.

If you press YES following screen will be shown:

```
**** Prev Maint ****
1: Comm    2: Resi
3: Frei    4: HiRi
              F8 Back
```

1: Comm means Commercial
2: Resi means Residential
3: Frei means Freight
4: HiRi means High Rise

Press the number of the market segment you have, and confirm it with pressing Enter.
Now following screen will be shown:

```
**** Prev Maint ****
UpFloorCnt?
```

Type in the number of floors above ground floor, and confirm with pressing Enter.
Now following screen will be shown:

```
**** Prev Maint ****
UpFloorCnt?
BaseFloorCnt?
```

Type in the number of floors below ground floor, and confirm with pressing Enter.
Type in 0 if no floor is below ground floor.

Now following window is shown:

```
**** Prev Maint ****
Parallel output?

YES/NO          F8 Back
```

In this menu point you can select the parallel output function. This function will show Maintenance Warning on the output O4. Output O4 will than work like follows:

If no event happens, O4 will be off.
If an error in the door electronic happens, then O4 will be on for 1sec.
If a warning (at least one component has to be changed in the next time) is activated, then O4 is activated for 3sec every door cycle.
If an error (at least one component has to be changed) is activated, then O4 is activated.

Normaly this function is deactivated, it should be only activated when the standard functionality of O4 is not needed. Confirm with YES/NO, following screen will be shown:

```
**** Prev Maint ****
Go to ground floor!
Apply Setup?
YES/NO          F8 Back
```

Travel with the cabine to ground floor. When you are in ground floor press YES.

Following screen will be shown if the setup was sucessfull:

```
**** Prev Maint ****
Setup done

                F8 Back
```

11.5.6 Preventive Maintenance View

Starting screen:

```
F1 PM Setup
F2 PM View
F3 PM Counter
F4 Next         F8 Back
```

Press F2, to get in the PM View menu.

```
**** Prev Maint ****
Market: Comm; PO: Y
Up: +005 = 05G * 01F
Down: -0;      F4 Next
```

In the first line the choosen market segment is shown, in this case it is Comm. Also in the first line it is shown if PO(Parallel output) is activated. Y means Yes, N means No. By pressing YES/NO you can deactivate this function.

In the second line the floors above ground floor are shown. In this case „+005 = 05G * 01F“ means 5 upper floors in 5 groups with one floor.

In the third line the floors below Groundfloor are shown. In this case „Down. 0“ means 0 floors below grond floor.

Press F4 to enter the next site, following screen will be shown:

```
**** Prev Maint ****
CAR: 02,763,039
Floor: ???
PO: 0;         F8 Back
```

„CAR: 02.739.039“ means, the car door cycle value is 2739039.

„Floor“ means the actual floor information. If the door drive did not receive a floor information, it will be shown by „???“.

„PO“ means parallel output, here is the status of the parallel output function shown. This is equivalent to the status O4 when Parralel Output function is activated. That means PO=1 means O4 is active. PO=0 means O4 is deactivated.

11.5.7 Preventive Maintenance Counter

In this menu it is possible to check all counters of car door and landing doors.

```
**** Prev Maint ****
ACT: CAR N
CNT: 02.763.039
F4 Next        F8 Back
```

„ACT“ means the actual choosen door. In this case the Car door(CAR) is not („N“) choosen. Press YES to choose the counter/group. A choosen counter can be set to maintenanced in the menue point Preventive Maint. By pressing F4 you can switch between the different counters.

11.5.8 Prev. Maint

In this case you can reset counters during maintenance. The shown counters in this case, are the counters which were choosen in menu PM Counter menu.

```
**** Prev Maint ****
Land: FM (all)

F4 Next        F8 Back
```

In this case the landing door(Land) Full mechanism(FM) is selected. if you want to select other components press F4, to switch through the list. The description of the parts you can find in 12.5.2 and in 12.5.3. You have to mark all parts which you have changed with Y(YES). Press F8 to confirm, following screen will be shown:

```
**** Prev Maint ****
Apply maintenance?

YES/NO         F8 Back
```

Press Yes to confirm or NO to go back. If you press YES following screen will be shown:

```
**** Prev Maint ****
Maintenance done.

               F4 Next
```

11.5.9 PM Repl. List

in this menu you can find all components which should be exchanged.

```
**** Prev Maint ****
replacement list 01:
CAR,SH 00.764.00 N
F4 Next       F8 Back
```

11.5.10 PM Warn. List

This menu has the same functionality as the PM Repl list, but it shows components that should be changed in the next time.

12. DEFAULT ADJUSTMENT OF ECO+ SOFTWARE

The max. close (nudging) speed must always be set according codes. EN81 requires the energy limit of E = 10J for closing (E = 4J for nudging), this must be calculated by the formula:

$$E = \frac{m\_equ * v\_belt^2}{2}$$

Because of the different speeds of door panels (e.g. for telescopic doors) the mass m_equ has to be calculated as virtual mass seen from belt.

$$m\_equ = m\_antr + \\ + \text{sum of } (m\_panel * (v\_panel / v\_belt)^2)$$

m_antr virtual mass of operator
m_panel mass of the panel
v_panel speed of the panel
v_belt speed of the belt
The operator mass m_operator is about 10kg including motor, hanger plate and coupler.
The table below shows the default parameters for different speed settings. Close and nudging speeds are calculated according EN81 energy limitation (Max. mass = m_equ).

Speed settings (acc. EN81)	Max. Mass [kg]	Open speed [m/s]	Close speed [m/s]	Nudging speed [m/s]
1	130	0,25	0,2	0,12
2	130	0,33	0,26	0,17
3	130	0,42	0,33	0,21
4	130	0,5	0,39	0,25

The max. door speed setting is calculated with mass m_equ of 130kg. The close and nudging speed is then limited to the panel energy of 10J and 4J respectively.
This door times will also vary depending on:
- Door masses.
- Friction.
- Mechanical adjustments.
- Alignment of landing doors.
- User Interface SW parameters.

The time for coupler and lock movement is about 0.7 sec. in open and close direction.

WARNINGS ON HOW TO KEEP THE DOORS IN GOOD OPERATING CONDITIONS

In order to prevent failures or incorrect operation and to maintain the system in good conditions, the technical efficiency of the system should periodically be checked, to ensure compliance with the applicable laws.
The technical efficiency depends on various factors such as:

- Work load
- Years of operation
- Door weight
- Climatic and environmental conditions
- Cleanness of environment
- Correct maintenance
- Etc.

And it can affect:

- Clearance/interference between the doors, and between the doors and posts according to the applicable laws
- Clearance of coupling device
- Status/conditions of fixing and coupling elements
- Conditions of parts affected by wear
- Efficiency of the lock and relevant contacts
- Any other parts that may be affected by the type of application.

For these reasons it is not possible to establish a general part replacement programme beforehand.

All screws used for the assembly of our product are screwed by means of a tightening torque as shown on following table:

Screw	Max torque (Nm)	Min torque (Nm)
M3	1,1	0,9
M4	2,6	2,1
M5	5,1	4,1
M6	9	7
M8	21	17
M10	42	34
M12	71,4	57,1

In case of need please refer to above table.

WITTUR

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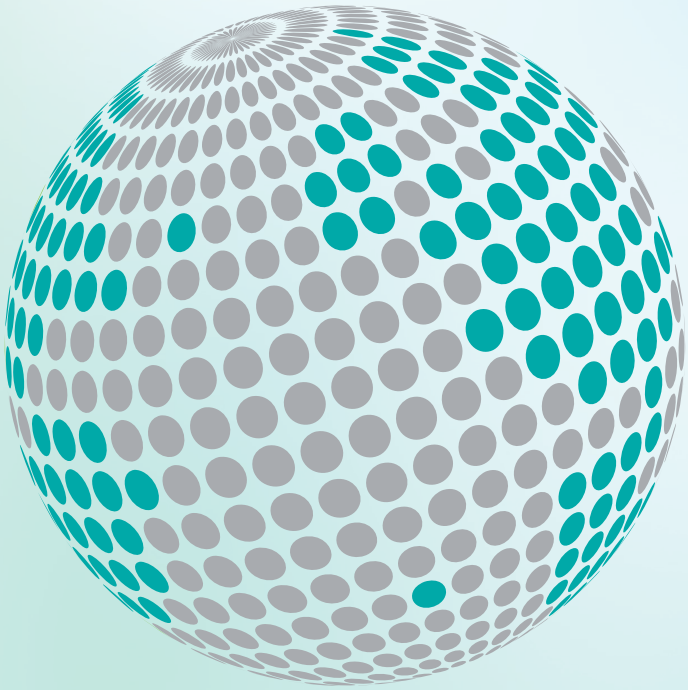

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