S3 Control Unit User Guide

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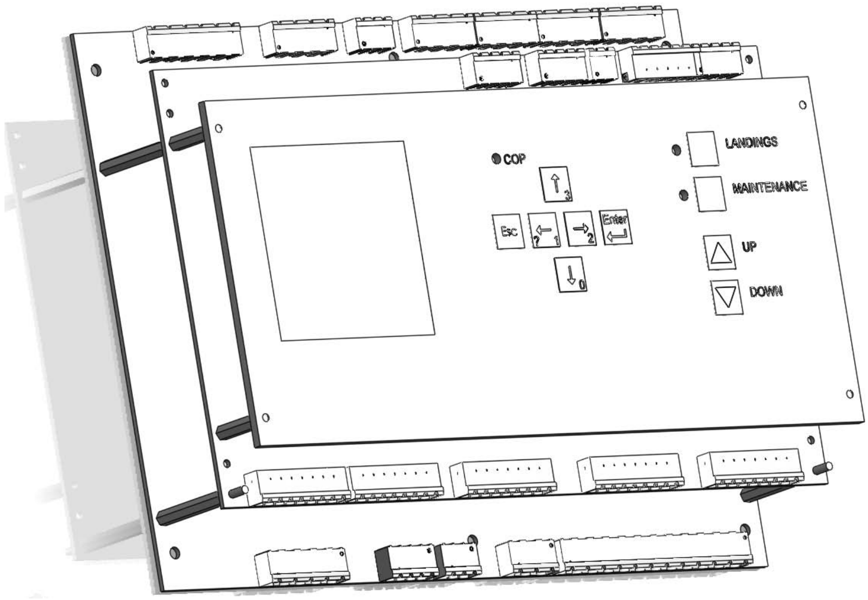


1 Contents

2 Preparations

2.1 Reading this manual

This manual is intended for lift technicians setting up a lift system controlled by the S3 Control Unit. Good knowledge of lift installation is required as is professional knowledge of electrical installation. The manual covers the general instruction for setting up the S3 for any system.

Only basic information is included for how to install peripheral equipment.

2.2 Handling the Hardware

The system has been tested according to lift standards EN12015 and EN12016 so they fulfill the requirements imposed on a safety product, i.e. the highest level of requirements. On connection blocks and panels, the ESD can handle up to 15 kV air discharge and 8 kV contact discharge. On signals and power cables, the ESD can handle up to 4 kV (burst).

⚠ CAUTION

Despite a high tolerance to EMC, the individual components/cars should be handled at an ESD-secure workplace.

2.3 Installation

The S3 should be mounted with six M4 spacer bolts type M4x15mm, M4x20mm or M4x25mm. After fitting and connection of all its functions, the system is programmed.

2.4 Service and maintenance

The control system has no parts that require changing at regular intervals. It should be ensured that no moisture or similar collects in the S3. When servicing the lift, check that the trigger circuits for small pit and headroom are working, the function is tested by emergency opening the doors.

2.5 S3 Type Designation

S3- X X X X S X X

- Main Voltage Supply
  - **2** 230VAC
  - **4** 420VAC
- Safety Circuit
  - **1** 24VAC
  - **2** 48VAC
  - **3** 60VAC
  - **4** 100-130VAC
  - **5** 220-240VAC
- Relay Configuration
  - **A** RE1-RE6, RE11-RE13
  - **B** RE1-RE6, RE11-RE15
  - **C** RE1-RE13
  - **D** RE1-RE15
- IO Configuration
  - **0** I11-I18, O11-O18
  - **1** I11-I18, O11-O18, B11-B18
  - **2** I11-I18, O11-O18, B11-B28
  - **3** I11-I18, O11-O18, B11-B38
  - **6** I11-I18, O11-O18, B11-B38 x 2
- Type of Display
  - **S** Large Display
- Positioning System
  - **I** Incremental Decoder System
  - **P** Flag System
- CAN-Bus Configuration
  - **0** No CAN-Bus
  - **1** CAN 1
  - **2** CAN 2
  - **3** CAN 1 and 2

3 Introduction

The S3 system with software Multiplex 2.x is based on a Motorola processor. The hardware is specially produced to give good economy for both simple and complex lift systems. The hardware is available in a number of versions to meet different requirements. The software is written in C and is event-controlled. This ensures fast response times and good function in a distributed environment.

The system has many different built-in functions. For example the number of floors can be specified, whether the lift is direct or group-controlled, door times etc. These settings are stored in the computers memory. The parameters are stored in a non-volatile memory, which means that no power is required to retain the parameter values.

3.1 Base functions

3.1.1 Starting and stopping

When the lift is stopped in normal operation, the automatic door system, safety circuit, sending system and overload are activated. The floor counter is inactive during stops but a floor flag must be detected at the stop or the system will indicate an error. On its next journey the lift will not stop until the lift reaches an end position and the Limit Down (LD) or Limit Up (LU) counters will be reset.

For the lift to start, the safety circuit must be closed, the door times expired and the lift must not be overloaded. When all conditions a re fulfilled the lift starts when the start time has elapsed. The start time only delays the start to prevent the retiring cam etc. from activating too early. For more information see ”17.3 Start Conditions” on page 50.

3.1.2 Normal Operation

When the lift is running, the safety circuit, run time high speed (P 521) or low speed (P 522), contactor control, full load, floor counter and door monitoring are activated.

3.1.3 Maintenance Running

To activate inspection running, set input MT low. During inspection running the floor counter is not active. Input signals for inspection are Limit Down (LD), Limit Up (LU), pulse down (PD), door opening (DOLA1), safety circuits and input signals for the direction concerned. The direction is given with the two-bottom car destinations where down is floor 1 and up floor 2. The output signals are retiring cam (RC), occupied light, motor and door control. Door control works on the dead man’s handle principle during inspection running. Start options inspection running is used for inspection running, see ***Start Value***.

IMPORTANT!
For lifts with automatic doors, the doors can be opened with the door button between floors

3.1.4 Priority

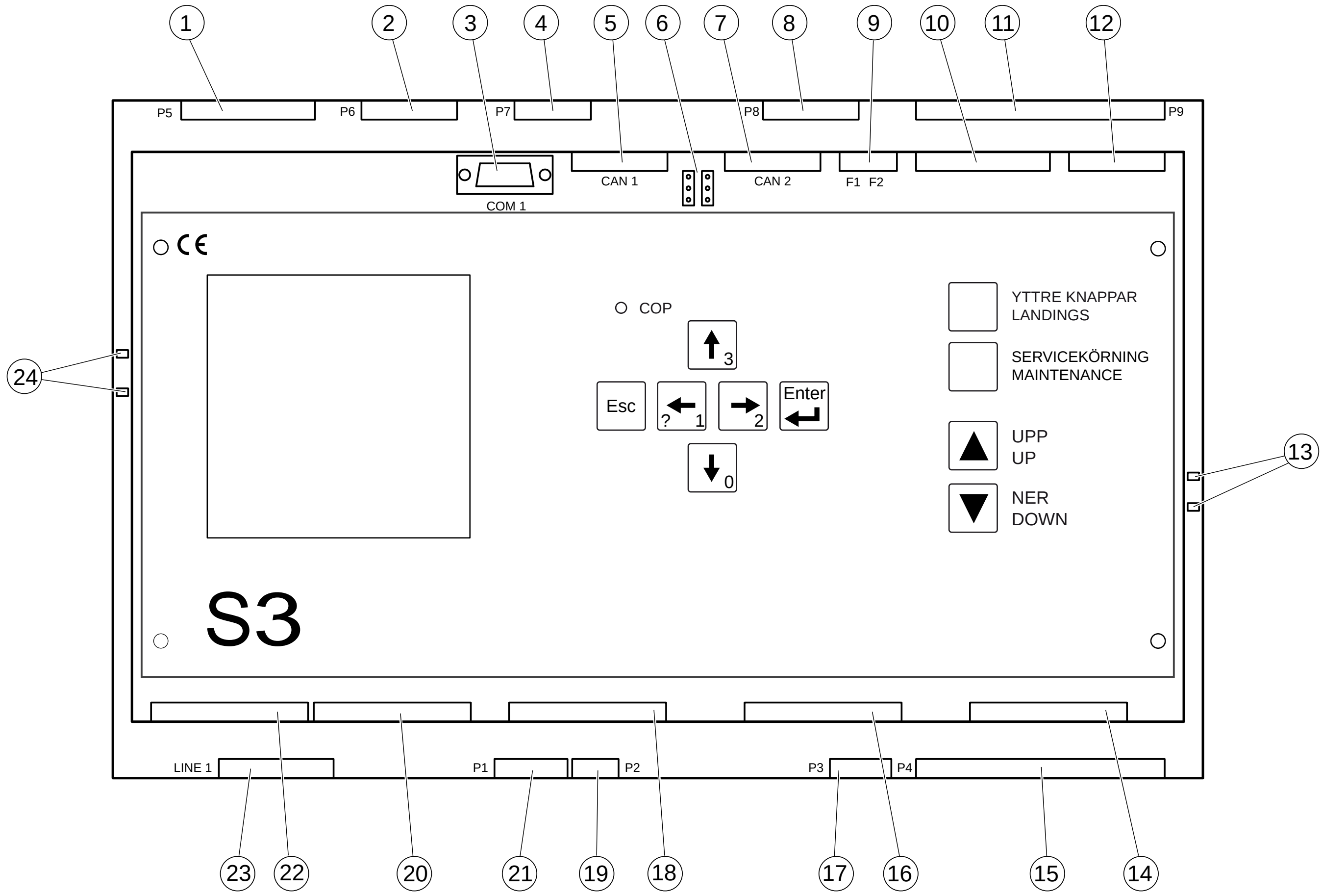
Falling priority	
Maintenance run	**Top priority**
Overload	
Blocked	
Fireman running	
Fire running	
Prioritized running	
Run from button set S3	
Shut down external buttons	
Full load (not available for further call)	
Normal running/shuttle	**Lowest priority**

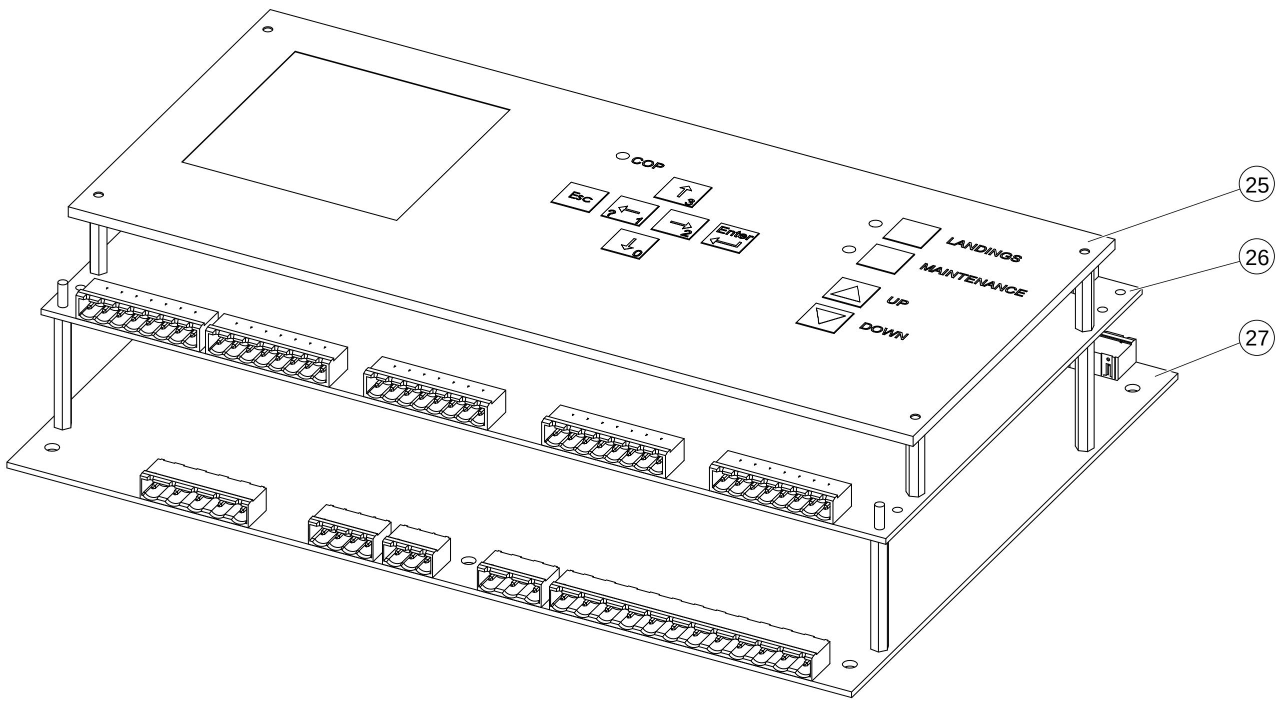
3.2 Parameter Fault

When a new lift control is first commissioned, no parameters are set. When the system is started, the parameters are checked (always done when the power is connected), if the test is unsuccessful the display shows “`Parameter fault!`”. The software cannot start and must be reset by running `\System\Erase Memory`.

4 S3 Layout

4.1 S3 Front Layout





Number	Connector	Port/Pin/Nbr	Description
1	P5	SN	0V Safety Circuit
		S1	Safety Circuit Motor Protection Input
		S2	Safety Circuit Emergency Connection Input
		S3	Safety Circuit Door Contact
		S4	Safety Circuit Photocell Curtain Input
		S5	Safety Circuit
2	P6	IP1 1-2	Input 1 Latent Open Connection
		IP2 1-2	Input 2 Latent Open Connection
3	COM1		D-Sub RS232
4	P7	T1	Input 1 for Supervision of Temperature and other Alarms
		T2	Input 2 for Supervision of Temperature and other Alarms
		T3	Input 3 for Supervision of Temperature and other Alarms
5	CAN1	0V	0V CAN Bus
		+24V	+24V CAN Bus
		C11	Data Channel 1
		C12	Data Channel 2
6		JC1	CAN1 Termination Jumper
		JC2	CAN2 Termination Jumper
7	CAN2	0V	0V CAN Bus
		+24V	+24V CAN Bus
		C11	Data Channel 1
		C12	Data Channel 2
8	P8	RE13 1-2	Connection for RE13
		RE13 3-4	Connection for RE13
9	F1/F2	F1/0V	0V Fan Connection
		F2	+24V Fan Connection
10		0V	0V for Incremental Encoder
		+24V	+24V for Incremental Encoder
		P1	Input for Pulse Down/Incremental Channel A
		P2	Input for Pulse Up/Incremental Channel B
		P3	Input for Limit Down
		P4	Input for Limit Up
11	P9	RE7 1-2	Connection for RE7
		RE8 1-2	Connection for RE8
		RE9 1-2	Connection for RE9
		RE10 1-2	Connection for RE10
		RE11 1-2	Connection for RE11
		RE12 1-2	Connection for RE12
12		RE16 1-2	Connection for RE16 (Connected when P3 is high)
		RE17 1-2	Connection for RE17 (Connected when P4 is high)
13		+24V	Power Supply Indicator before PTC resistor
		+24V Fused	Power Supply Indicator after PTC resistor
14		B31-B38	Digital I/O 24VDC for Car Floor Calls
15	P4	RE1 1-2	Connection for RE1
		RE2 1-2	Connection for RE2
		RE3 1-2	Connection for RE3
		RE4 1-2	Connection for RE4
		RE5 1-2	Connection for RE5
		RE6 1-2	Connection for RE6
16		B21-B28	Digital I/O 24VDC for Car Floor Calls
17	P3	RE14 1-2	Connection for RE14 (Safety Relay Slot)
		2	Common for RE14 and RE15
		RE15 3-2	Connection for RE15
18		B11-B18	Digital I/O 24VDC for Car Floor Calls
19	P2	Z1 ↔ Z3	Zone System Inputs
20		O11-O18	Digital Outputs PNP 24VDC
21	P1	1 ↔ 24V	1-2: Input 19VAC/0V - 24V; 1-2: Output 24VDC
22		I11-I18	Digital Inputs PNP 24VDC
23	LINE1	PE ↔ N	Current 2x230V/3x230V/3x400V (+ ground)
24		+5V CPU	CPU Voltage Indicator
		+5V COM	COM Voltage Indicator
25	Front Panel		
26	S3-UD03		
27	S3-KR01		

6 Hardware

The hardware is based on the 16-bit processor MC68HC812A4, flash memory, RAM memory, real time clock, dedicated processors for graphics, communication and positioning and IO units. In total the S3 can be fitted with five processors.

6.1 Power Supply

The system has three separate power units. One power unit for the processor, CPU (5VDC), one for communication (5VDC) and one for I/O (24VDC). The CPU and communication units are supplied from a three-phase transformer. The system measures the voltage and the phase angle. There are no fuses that require changing in the system. All fuses take the form of PTC resistors. The PTC resistor for 24VDC is indicated on the short right-hand side of the base card. Here there are two yellow LED's as indicators before and after the PTC resistor - marked +24V, fused +24V. Both should be on in normal operation. On the short left-hand side there are also two yellow LEDs. One LED for voltage for the communication port COM1 and one LED for the processor. These should be on in normal operation.

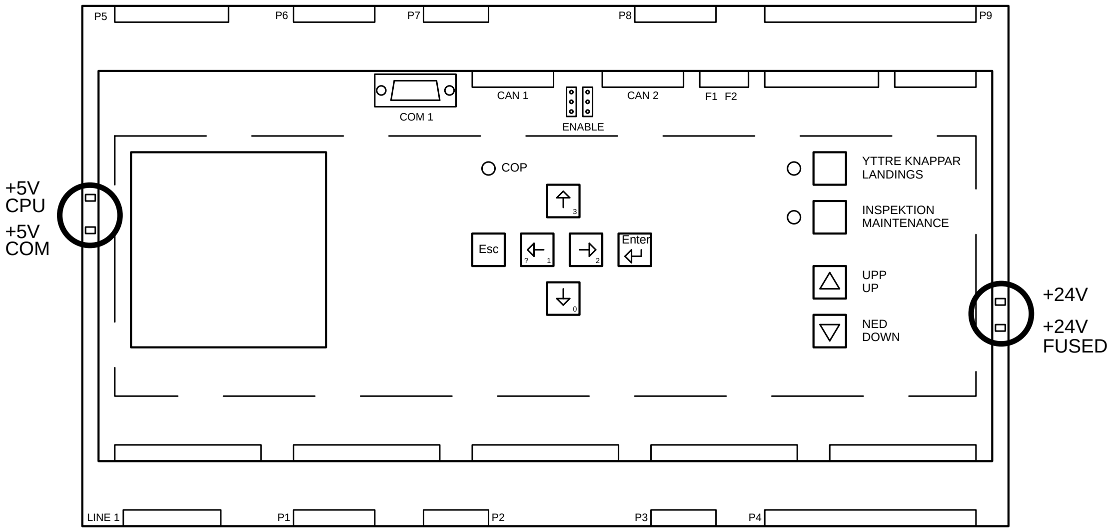


Figure 6.1 Voltage indicators

6.2 Real-time Clock/Statistics

The real-time clock keeps track of the date and time. The real-time clock and statistics memory are in operation even if the power is disconnected for several days, during which power is supplied by a capacitor.

6.3 COP - Function Check

The computer has an LED that indicates whether the computer is running, as it should and whether the software has discovered any fault. Normally the COP LED flashes at the rate of 1 Hz.

6.4 Jumper Settings

6.4.1 CAN-bus Jumpers

The system has two CAN buses. Each CAN bus has a jumper for enabling the bus end resistor. The Jumper JC1 controls CAN1 and JC2 controls CAN2. The location for the jumpers is between the CAN bus connectors. The jumper shall be in `ON` position if the computer is the last node on the bus.

6.4.2 Programming Jumpers

During Software upgrade the system has to be set to programming mode. This is established through the E3 jumper. See the ***Updating Software*** section for instructions how to upgrade the S3 Multiplex software.

7 S3 Multiplex Operation

7.1 Key Functions

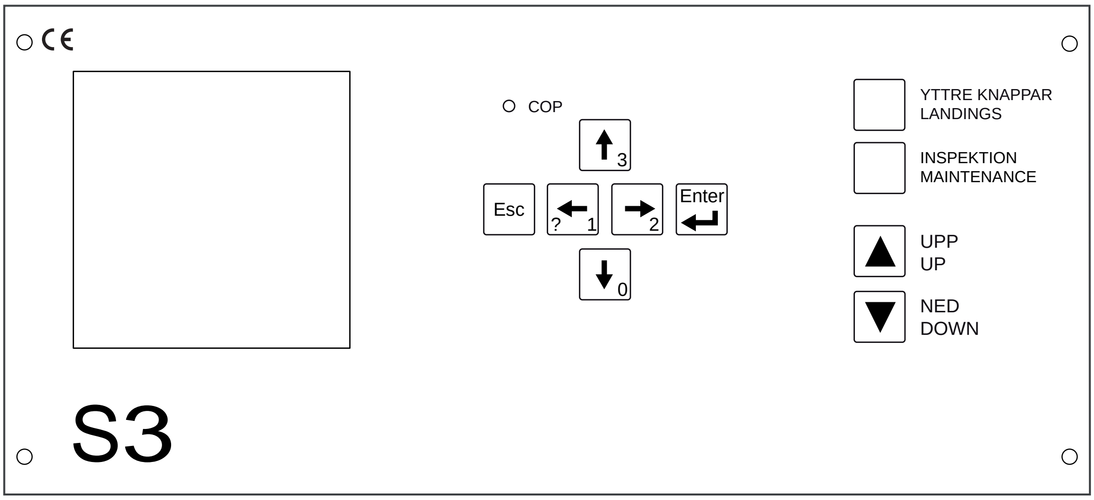
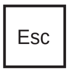
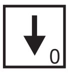


Figure 7.1 S3 Panel



- Leave menus
- Cancel changes.



- Move down in menu
- Reduce value of parameters etc
- Enter password (0)

- Move left in change field
- Help. If help is available the symbol “?” is shown prior to the menu choice or selection
- Enter password (1).

- Move the right in change field
- Function lock (only if locked with main password)
- Enter password (2).

- Move up in the menu
- Increase value of parameters etc.
- Enter password (3)

- Select/confirm.

Landings

- Enables/Disabled external calls

Maintenance

- Activate maintenance running

- Sends the car up one floor
- 3 second push send car to top floor

- Sends the car down one floor
- 3 second push send car to bottom floor

7.2 Menu System

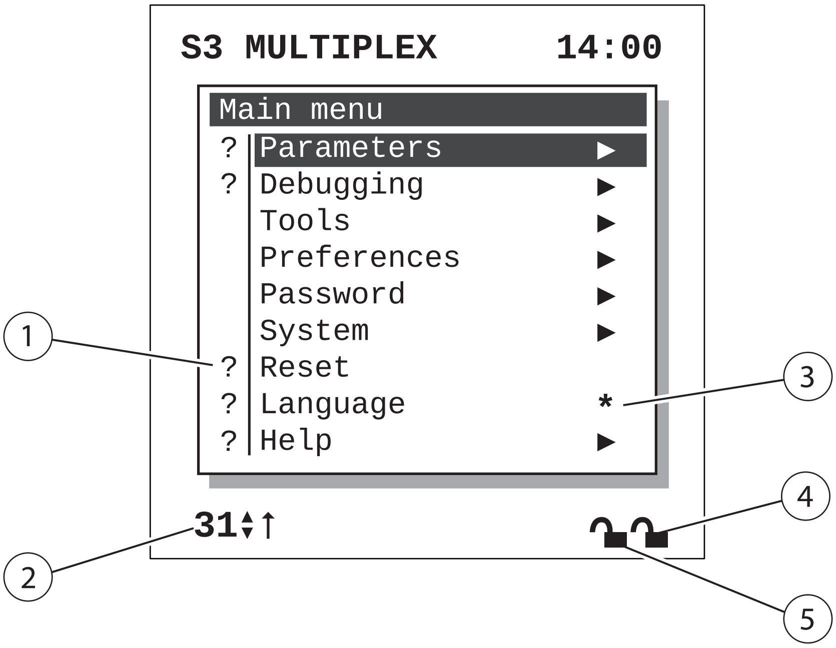


Figure 7.2 S3 Menu

1 The question mark in front of the option means that there is help text available for the option. Press the Key with a question mark to display help text.

2 The current floor of the lift and available directions. For lift in motion the direction of the lift is displayed with an arrow (encoder only).

3 An asterisk after a parameter indicates that the parameter has been changed from the default value.

4 Symbol indicates if lift parameters are password protected.

5 Symbol indicates if system parameters are password protected.

7.3 Navigating the Menu

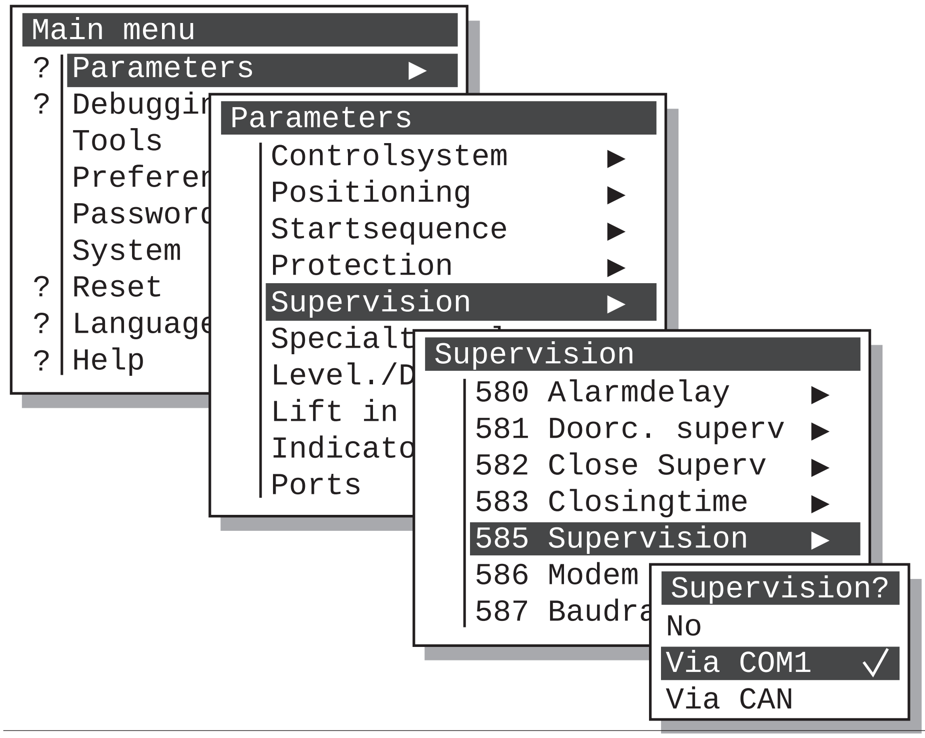


Figure 7.3 Menu Structure

The S3 has an easy-to-use menu system combined with a large number of options that enables you to set up the lift system of your choice.

To be able to handle the several hundreds of parameters the system is at places divided into as many as six levels. Navigation is done by using the panel keys as described in ***Key Functions*** section and as the figure above describes navigation is quite simple.

The highest level of the menu system is where you set the parameter and parameters can be set in several ways:

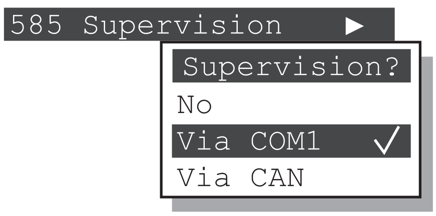


Figure 7.4 Predefined options
Options are set by selecting the desired option. Selected options are checked.

Figure 7.5 Setting numeric values
Options are set by using the left/right button to select which value to set and the up/down button to increase/decrease the value.

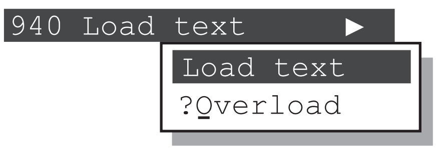


Figure 7.6 Setting alphanumeric values
Options are set by using the left/right button to select what letter to set and the up/down button to increase/decrease browse between letters.

7.4 Menu System

- Parameters
  - Controlsystems
  - Positioning
  - Startsequence
  - Protection
  - Supervision
  - Specialtravels
  - Level./Doors
  - Lift in group
  - Indicators
  - Ports
- Debugging
  - History
  - Eventlist
  - Start Conditions
  - Door Status
  - Status
  - Floorcount
  - Landings
- Tools
  - Auto tuning
  - Pendulate
  - Send Lift
  - Show direction
  - Encoder
  - KEB
- Preferences
  - Doubleclick
  - Clock
  - Buzzer
  - Screensaver
  - Screen light
- Password
  - Programming
  - Safety
  - System techn.
- System
  - Erase memory
  - Update memory
  - Copy memory
  - Explore memory
  - Hardware
  - Software
- Reset
- Language
- Help
  - Help
  - About

Figure 7.7 S3 Multiplex Menu System

This section covers the menu system of the S3 Multiplex and is structured the same way as the menu system.

7.5 Parameters

In this user guide, parameters are referenced to using `P nnn`, where nnn is the number of the parameter.

For a complete list of parameters, see the ***Parameter List*** section.

Parameters are listed at the end of each sub section with options where applicable, default values are written in italics.

Below is a list of symbols used in the parameter lists. The symbols display the input type used to set the value of the parameter.

Symbol	Meaning
	Alphanumeric value
	Binary value
	Numeric value
	Time in seconds

8 Basic Setup

8.1 Control System

(Parameter 100-112)

The basic features of the lift is set in the Control System section, such as number of floors, system type and a number of other control functions.

Note: Car time and landing time (`P102` and `P103`) is controlled by door times if lift is fitted with automatic doors.

Parameters

100	Systemtype	Not collective, PB/Landing queue, *Oneway collective*, Twoway collective
101	Floors	2..32
102	Car time	
103	Landing time	
110	Carfantime	
111	At travel	*On*, Off
112	Car light time	

System type (P100)

`Not collective`	No queue is possible, the first landing button pressed when the lift is unoccupied is chosen. Car calls are prioritized.
`PB/Landing queue`	Landing calls are placed in queue and processed in the order they are received. Car calls are prioritized.
`Oneway collective`	Lift stops on each called floor and cancels the current floor call when the lift stops. The lift stops on every floor and it is not possible to chose direction with the landing button.
`Twoway collective`	It is possible to select direction on each non end floor and lift will stop on landing calls from each floor in its direction.

Floors (P101)

The number of floors is given by `P101` and can be set from 2 to 32. The floor number also includes concealed floors.

Car time and Landing time (P102 and P103)

There are two different adjustable stop times, one for car signals and one for landing signals (`P102`, `P103`). If the lift stops only for the car signal, the time for the car signal is used, otherwise the time for the landing signal is used. To allow a new passenger to continue in the lift direction, the lift does not change direction during the stop time.

Note: For lifts with automatic doors, the stop time is controlled primarily by the door times. The stop time is used to control the change in running direction.

Car fan time (P110)

The time the car fan is active after the lift is in inactive state is set with `P110`.

At travel (P111)

Turns on/off the car fan.

Car light (P112)

The time the car light is on after the lift is in inactive state is set with `P112`.

9 Positioning

9.1 Positioning

(Parameter 150-369)

Positioning of the lift can be done in two different ways, either by using flag counting or by using an incremental encoder.

Flags is a more traditional way of lift positioning where flags are positioned in the shaft to indicate ”action points” where changes to the operation of the lift should occur, i.e. slowdown, floor stops, floor counting, door opening etc. The flags are read with photocells fitted on the car and signals are sent back to the control unit. The actions performed when a certain flag is reached are then programmed into the appropriate parameter of the S3.

The incremental encoder allows for a more high precision positioning by using a belt fitted to the shaft and the car. When the car is running the belt run through a wheel of the encoder, which then read the exact position of the car. The position is then programmed to the appropriate action point. The `Tools/Encoder` menu includes a number of tools used when setting the position of the lift.

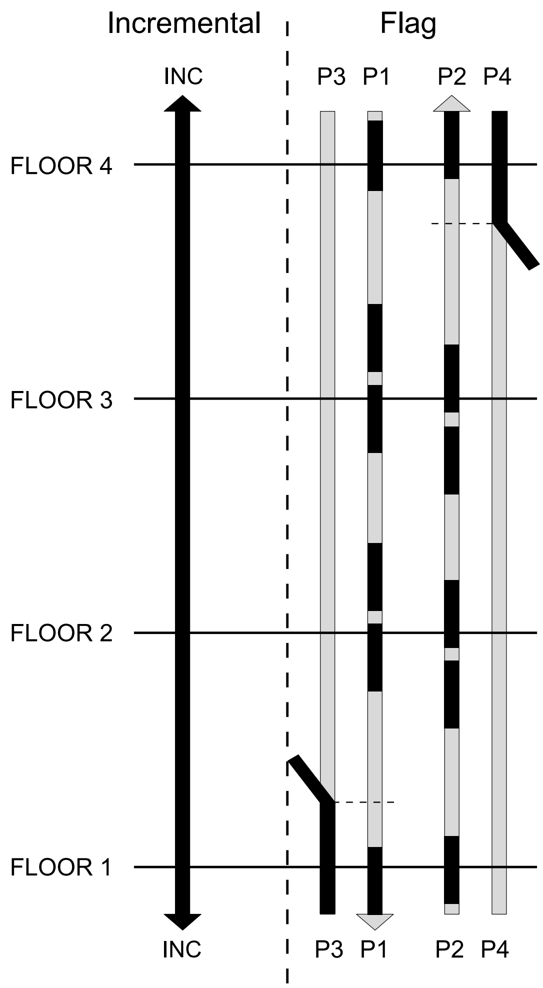


Figure 9.1 Lift Positioning

The incremental encoder reads the exact position of the lift regardless of direction.

A flag counting system uses photocells to count flags positioned in the shaft. P1 counts flags when the lift moves down and P2 counts flags when the lift moves up.

P3 and P4 are limit switches that keep track of the end in each direction for both incremental and flag counting systems. P3 keeps track of the first floor and P4 keeps track of the last floor. The limit switches also handles slowdown for the first and last floor.

9.2 Positioning Ports

Below is a table showing what ports are used to connect PD (Pulse Down), PU (Pulse Up), LD (Limit Down), LU (Limit Up), Incremental Channel A and Incremental Channel B.

	Flag Counting	Incremental
P1	PD	Inc Channel A
P2	PU	Inc Channel B
P3	LD	LD
P4	LU	LU

9.3 Positioning with Flag Counting

The floor counter is controlled by four signals, upper limit LU (Limit Up), lower limit LD (Limit Down), pulse up (PU) and pulse down (PD). The limit signals set the values for the various counters at the end floors, therefore there should be *no* slow-down flags at the end floor.

Upper limit counter and lower limit counter are active in both upward and downward travel. The pulse signals are always active (even during maintenance). On stop, the flags must be received in a predetermined order. Normally the system is programmed so that when the lift stops on upward running, the down flag is found first and on downward running the up flag first. If reversed, `P153` must be changed to *reversed*.

The system has three counters, two flag counters and a floor counter. On upward running the lift uses the flag counter for upward running and the equivalent for downward running. The two flag counters count the flags independently in both directions, but the system uses their values only for the direction concerned. When the lift is running normally the values of the flag counters for the current direction are compared with the floor position for the floor that the lift is approaching. When the flag counter receives the value for the next floor slow-down position, a change of floor counter occurs.

On miscounting by any flag counter, the system cannot find the next floor slow-down position, so no change of floor counter occurs but the lift goes to an end floor to reset itself, then a restart is made to the floor to which the lift was travelling. The system allows setting of adjustment of the flags for the floor concerned but it is also possible to set three different options for slow down. Start can take place in three ways e.g. start at low, medium or high speed, alternatively it can be programmed so that at the next floor, the distance between the floors can be taken into account. The system allows the setting of 255 flags in each direction and slow-down can take place on a maximum 15 flags within a floor.

9.3.1 Flag Length

The computer reads the inputs every 10 ms. For the signal to be regarded as low or high, the computer must read the same value twice in succession. This means that the computer does not react to a signal of less than 10 ms. A signal must be longer than or equal to 20 ms for a secure reading. Signals in the range 10 to 20 ms will be interpreted at random by the computer. The flag length together with the pulse sensors will not give signals longer than 20 ms in all situations. The inputs are programmable; the reaction time can be increased but not reduced. See the table below for ratio between speed and flag length.

Speed m/s	Length mm
0.5s	>10
1m/s	>20
1.6m/s	>32
2.0m/s	>40

9.3.2 Flag Distance

It’s important to consider stop speed when placing flags in the shaft. Below is a table showing recommended stop speeds depending on lift system used. The distance shown is recommended minimum distance from slow down to full stop.

For lifts with Zone System (automatic levelling), the Zone System is initiated when the lift exits the stop flag. There need to be at least 100 ms between the end of the Zone flag to the end of the stop flag for the levelling to function.

For more information about Zone System, see ”Zone System and Doors” on page 34.

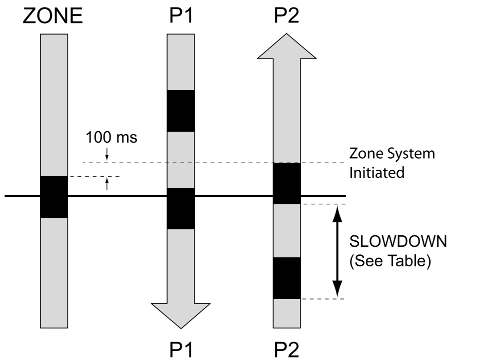


Figure 9.2 Flag Distance

Speed m/s	**Variable Speed**	**Two Speed**	**Hydraulic**
	Stop Distance in m		
0,3		0,30	0,30
0,5	0,65	0,50	0,50
0,6	0,80	0,60	0,60
0,7	0,95	0,70	0,70
0,8	1,10	0,80	0,80
0,9	1,25	0,9	0,9
1,0	1,35	1,00	1,00
1,2	1,60		
1,4	1,85		
1,6	2,10		

9.3.3 Floor position

(Parameter 200-263)

Positions are set by entering the flag number to the appropriate floor into P200-P231 for Floor Position Down and into P232-P263 for Floor Position Up. Floor positions are counted starting from zero at the first floor.

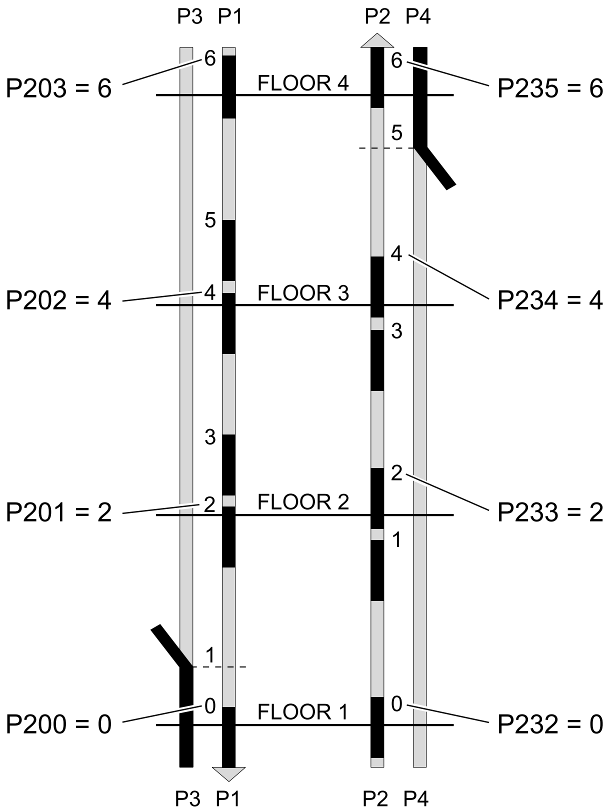


Figure 9.3 Example Floor Position
The position of the floor is set by entering the number of the flag at the floors parameter. Flag number is entered for both Upward (P2) and Downward (P1) running.

Parameters

200-231	Position Down	Floor 1 - Floor 32
232-263	Position Up	Floor 1 - Floor 32

9.3.4 Position Limits

(Parameter 151-153)

P151 and P152 set the position for the limit paths, which are given in the same way as the floor positions. When LD or LU is activated, the value from P151 and P152 is read into the flag counter and the floor counter is adjusted. When LD or LU is activated, the value is read again but corrected by 1 so that it agrees with the value which the counters had before LD or LU were activated.

LD is usually set to 0 and LU is usually set to highest flagnumber (which is usually the number of flags used in one direction).

Parameters

151	LD Pos Up	#
152	LU Pos Down	#
153	Flaginst.	*Normal*/Reversed

9.3.5 Floor Control

(Parameter 264-295)

Floor control parameters describe how the lift will start if the lift has an adjacent floor. Usually normal slow down is used, P264-P295=00 00 00 00, but with floor control parameters the system can be controlled to use medium or low speed to the adjacent floor.

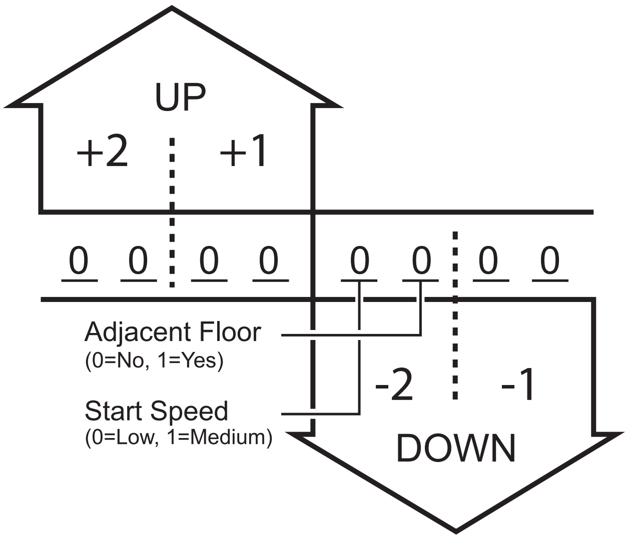


Figure 9.4 Adjacent Floors
P264-P295 sets how the lift will start if the floor has adjacent floors. The figure describes how the binary values of P264-P295 control the lift. Default value is set to 000000 - no adjacent floor.

The figure describes how the binary values of the parameters are used. The sequence is divided into four pairs as shown in the figure. The first number indicate if there is an adjacent floor and the second number indicate the speed the lift will use to travel to the adjecent floor from the selected floor.

Parameters

264-295	Position Control (Floor 1 - Floor 32)	0101 1100

9.3.6

9.3.7 Slowdown

(Parameter 296-359)

To control when the speed of the lift will change from high to low speed, the `P296-P359` is used. The value set in these parameters is the number of flags before a floor flag that the speed will change to low.

Normally the parameters `P296-P327` are used, but depending of the values set for the floor control parameters (see ***Floor Control*** (`P264-P295`)) the value `P328-P335` can also be used.

`P296-327` should be programmed to 11 for a two-speed lift, i.e. lift slows down 1 flag before the stop on upward and downward running, 00 for a one-speed lift (slow down and stop at the same flag).

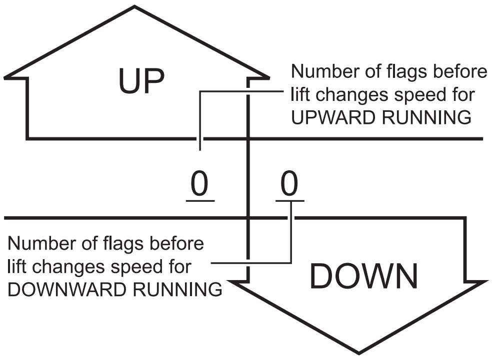


Figure 9.5 Slowdown
Show how the values of P296-359 are used. First value (pos 0) sets the number of flags for upward running before change of speed second value (pos 1) sets the number of flags for downward running before change of speed.

Parameters

296-327	Slowdown Medium	Floor 1 - Floor 32	#
328-359	Slowdown High	Floor 1 - Floor 32	#

9.3.8 Setting up an Lift with Adjacent Floors

This example show how a lift with adjacent floors is set up:

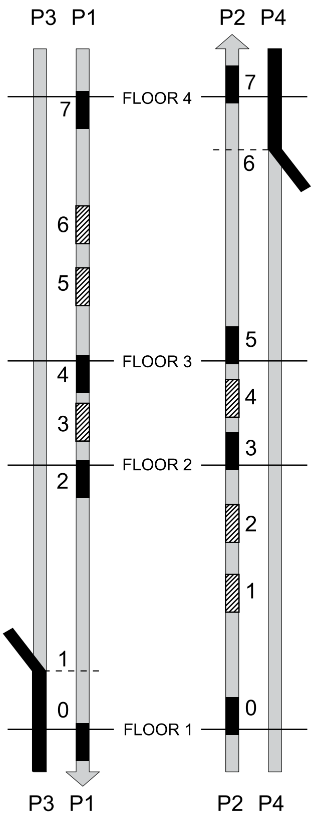


Figure 9.6 Setting up Adjacent Floors

The figure show a lift with 4 floors where floor 2 and 3 is adjacent. The parameters should be filled in like this:

Position Limits

P152	7

Floor Positioning

P200	0	P232	0
P201	2	P233	3
P202	4	P234	5
P203	7	P235	7

Floor Control

P264	00 00 00 00
P265	00 11 00 00
P266	00 00 00 11
P267	00 00 00 00

Slowdown

P296	0 1	P328	0 0
P297	2 3	P329	0 1
P298	3 2	P330	1 0
P299	1 0	P331	0 0

9.4 Positioning with Incremental Encoder

The incremental encoder uses a belt running through a sensor to read the position of the lift. The encoder reads pulses from the sensor and translates them into distance with the help of the lift speed and a number of calibrating tools. The position of each floor is set in mm with `P200-P231`.

Parameters

200-231	Position Down	Floor 1 - Floor 32	#

9.4.1 Synchronization and Slowdown

(Parameter 154-160)

To keep the incremental encoder synchronized a zero position need to be set up. The zero position is usually the LD position and is read by the Limit Down Input (P3), but a second path can be installed before the LD position if the bottom floor is rarely used and no synchronization is performed.

Synchronization is set in mm with `P154`. If synchronization is the same as LD, `P155` is set to `Sync./Slowdown`, and if a second path is used to synchronize the incremental encoder, `P155` is set to `Sync.`

Slowdown with incremental encoder is set for all floors with parameters from the `Parameters/Positioning/General` menu. The parameters concerns all floors rather than Flag Counting where slowdown is set for each floor individually.

Parameters

154	Synchronization	#
155	Synchronization Config.	Sync./Slowdown, Sync.
156	Stop Low Down	#
157	Stop Low Up	#
158	Stop Medium	#
159	Stop High	#

9.4.2 Installation of Incremental Encoder Lift System

Below is a case for installation of a lift with incremental encoder. Menus refer to `\Tools\Encoder` unless otherwise specified.

1. Preparation

   If the lift is fitted with frequency converter, program this and run autotuning for the Inverter. Fit the paths and incremental encoder. Check that the encoder direction matches the lift direction (`\Tools\Show direction`).

2. Activate

   Activate setting of incremental encoder by setting `..\Active` to YES.

   IMPORTANT!

   When the function is activated and on inspection running in the car, limit relays are shut off in the upper and lower position i.e. you can run to limit switches. Slow speed time is shut down for easier setting of any frequency inverter and the lift always starts at slow speed within two seconds for easier setting of the floor.

3. Enter lift speed/s under `..\Preferences`.

   If the lift has no medium speed, set to 0.0 m/s.

   Run calculate under `..\Settings\Calculate`, computer calculates where the synchronisation path (LD) should be fitted in relation to the lowest floor. Adjust path.

4. Set lift to ***Normal running***, restart the computer (i.e. shut down ***maintenance running***).

5. Check that the lift has a relatively long creep section at the lower end position. If necessary adjust synchronisation path LD , enter the new value (`P154`) .
6. Set lift to ***maintenance running*** (***Inspection*** on computer, ***Normal*** on roof).
7. Program the position of each floor by travelling to each floor. At each floor, press the stop/door button at the same time as the current floor button. When floor position is stored the acknowledge lamp is lit for two seconds and the computer gives an audible signal.

Note: All floors must have a positive position, if the floor has a negative position increase the value on `P154`, restart computer and reprogram the floor positions.

---

8. Set lift to ***Normal Running,*** restart the computer (i.e. stop ***maintenance running***).
9. If the lift is fitted with frequency control (or other motor control which requires setting), set the frequency control between two intermediate floors. Run settings as accurately as possible. Change the slowdown parameters `P158` and `P159` if necessary.
10. Run the lift to the bottom floor, check stop fault.
11. Enter stop fault in `..\Sync.Pos.adjust\Floor 1` and run `..\Sync.Pos.adjust\Calculate`, the computer now calculates how far the synchronisation path (or similar) must be moved,
12. Move path according to calculation.
13. Restart computer.
14. Run `Stop adjustment`, the computer checks the stop distances from creep running to stop. It runs to all floors up and down. When finished, the main value of the stop distances is calculated (S3 calculates the new value on `P156` and `P157`).
15. Restart computer.
16. Check stop fault by running lift to each floor and noting the stop fault. Run to the bottom floor on downward running and all others on upward running.
17. Enter stop fault under `..\Floor setting\Floor setting\Floor N` (where N is the floor) and run `\Floor setting\Calculate` (S3 calculates new value on `P201-`)
18. Restart computer.
19. Test run.

    If the stop distance has changed (brakes have been adjusted or frequency converter reprogrammed), rerun Stop adjustment (step 14) and restart computer.

    If stop positions still is incorrect, recheck stop fault, reenter corrected values and recalculate (see step 17). Restart computer.
20. Note down the values of the adjusted parameters in the parameter lists, `P153-P158` and `P201-`.

IMPORTANT!
Deactivate programming of incremental sensors by setting `..\Active` to NO.

Tip: If values for slow down and/or floor positions are known, these can be entered manually and the setting of these values can be omitted from the steplist (floor positions step 6-8 and .

---

10 Start Sequence

This section describes how to set up the start procedure of the lift.

10.1 General

(Parameter 400-408)

`P400` states which of the bits in the start sequences should be activated on downward running. `P401` states which should be activated for upward running.

`P403-P406` controls the feedback between the contactors (CC) and zero-servo (ZS).

Parameters

400	Mask downwards	#	
401	Mask upwards	#	
402	Auto tuning	#	
403	CC at start	Yes, No	If the start is shall wait for contactor control, CC
404	ZS at start	#	If the start is shall wait for ZS
405	ZS at stop	#	If stop is shall be shorten by ZS
406	ZS trigger		If ZS is flank- (if pulse at start and stop) or level-triggered (ZS goes high on start and low at stop).
407	Brake ctrl	Yes, *No*	Set up if the computer should wait for brake control.
408	Startseq.err.	Off, *On*	

10.2 Start Values

(Parameter 410-483)

The start values set which signal should be activated/deactivated when running the lift, irrespective of direction. The code is entered in binary form in the parameter concerned. The start sequence starts with every signal in OFF position. Each time a binary one is sent the signal changes from OFF to ON or from ON to OFF. This means that only changes are supplied.

Output	v7	v6	v5	v4	v3	v2	v1	v0
Byte	0	0	0	0	0	0	0	0
S3-KR03 Output	RE8	RE7	RE6	RE5	RE4	RE3	RE2	RE1

Example: Start star/delta

RE1 = v0 → Value Down
RE2 = v1 → Main Connector Up/Down
RE3 = v2 → High Speed
RE4 = v3 → Star Connector
RE5 = v4 → Delta Connector

400	00000111
401	00111110

410	00001111	Start step 1	V3-V0 activated, Start Star
411	1.0s	Time 1	Wait 1s
412	00011000	Start step 2	V3 falls, V4 active, Star to Delta
413	0.0s	Time 2	
414	00000000	Start step 3	
415	0.0s	Time 3	
416	00000000	Start step 4	
417	00000100	Slow down value	V2 falls, lift slows down
418	00000000	Stop 1	
419	0.0s	Time 1	
420	00000010	Stop 2, security	V1 falls, main contactor falls
421	0.5s	Time 2	
422	00010001	Stop 3, Defstop	Wait 0.5s at VMP valve (supplied from Delta contactor
423	0.0s	Time 3	

V0=Down, V1=Main contactor UP/DOWN, V2=High, V3=Star, V4=Delta

Parameters

410-423	Start Values Highspeed	Floor 1 - Floor 32	
430-443	Start Values Mediumspeed	Floor 1 - Floor 32	
450-463	Start Values Lowspeed	Floor 1 - Floor 32	
470-483	Start Values Maintenance	Floor 1 - Floor 32	

10.3 Delay

(Parameter 490-491)

The start delay is increased if the start procedure is too fast, e.g. if a door does not close fully before the retiring cam turns. The stop delay delays the stop flag so the lift runs further into the flag.

Parameters

490	Start	
491	Stop	

10.4 Quick Start

(Parameter 493-498)

The Quick start function make it possible to make a prestart of the main motor before the doors is fully closed. This is used for slower frequency converters that need a startup time. The quickstart sequence starts when the doors start to close, the sequence starts with a delay `P494`. When the delay time has passed, the quick start sequence starts with the start value `P496` and it will be fully active after a time set with `P495`. If a reopening door command is recieved the Quick start is discarded. To discard the Quick start the computer uses the stop sequence parameters `P497` and `P498`. If the Quick start sequence is successful it runs the normal start sequence (`P410` etc).

To avoid overheating the lift motor the quickstart is disabled if lift hasn't started after ten door openings. The lift will then start normally (with delay) once door is properly closed.

Parameters

493	Active	Yes, *No*	
494	Delay		Delay from start of closing to start of quick start sequence
495	Max time		Maximum time of quick start sequence. Time from quick start sequence to normal start
496	Start 1		Start value
497	Stop 1		Stop value
498	Time 1		Stop value active time

11 Safety and Protection

This section covers safety and protection settings of the S3 control unit.

11.1 Control

(Parameter 500-503)

Start time S3 (Parameter 500)

The S3 need 1 s to start and this parameter adds time to computer start up. Slow starting external units might need more time to start and for the S3 to be able to detect all connected units at startup the time might need to be extended.

`P500` default value is set to 0.0 s.

Safety Circuit Time (Parameter 501)

Delay the fault code ML (Maint Limit) normally programmed on S2 (Emergency Connection Input).

Delay of Retiring Cam (Parameter 502)

If the stop circuit in the car is activated (by car emergency stop button and/or photocell curtain) outside the normal stop zone, the retiring cam will be activated after a time specified with *P502* time.

Blocking of Landing Buttons (Parameter 503)

Pressing the stop button can reset all landing calls. This parameter sets if reset can be made only when the lift is in travel or if it is always possible.

Parameters

500	Starttime S3	
501	Safetyc.time	
502	Delay of RC	
503	Block.fn	In travel, *Always On*

11.2 Contactor Control

(Parameter 510)

When contactor monitoring is activated, the lift does not start until the contactors have fallen. After the lift has started, the control checks whether the contactors are engaged. After an adjustable time (`P510`) normally 2.0 s, the check is performed. If the connectors are not engaged after the time elapsed, the lift interrupts the start procedure and a new attempt is begun. After ten failed start procedures all destinations and calls are reset. Contactor monitoring is also activated on maintenance running. If the contactor monitoring is broken during running, the stop sequence begins and a new start sequence is started after the minimum time for the stop.

Parameters

510	Time	

11.3 Travel Time

(Parameter 520-523)

The run time is calculated from when the lift starts (input for contactor monitoring goes high). The run time is adjustable between 0 - 999.9 s (`P521`) and is set to the time required for the lift between end positions plus 10 s but total not less 20 s. When the run time expires the lift stops. The lift remains stopped or resumes operation (`P520`). If `P520` is set to `Locked`, the computer sends an alarm by flashing COP and buzzer.

If the lift has a step fault, there is a risk that the lift will be forced to creep long distances at low speed. If the lift has a very low speed in slow running, this can take a long time. To reduce the risk of this, the system has special low speed monitoring. After a positioning fault, the lift attempts to restart to the floor to which the lift was travelling (`P522`).

Tip: Do not enter too high a value for the low speed run time. Too long a time can mean that the high speed run time triggers and the lift becomes locked.

IMPORTANT

Parameters 520 is not allowed to be set to unlocked according to EN81.

Parameters

520	Config	*Locked*, Unlocked
521	Time normal	
522	Time lowspeed	
523	Movement ctrl	*Yes*, No

11.4 Phase Detection

(Parameter 530-533)

The phase monitor measures the voltage and angle asymmetry between the phases, and the phase sequence. The measured values are shown in `\Debugging\Status`.

Parameters

530	Phase monitor	*Yes*, No
531	Number of measurements	#
532	Permitted voltage asymmetry in %	#
533	Permitted angle asymmetry in %	#

11.5 Temperature

(Parameter 540-542)

S3 has a built-in thermometer that measures the temperature of the computer. At high temperature of the computer the computer activates the fan output. If the temperature rises further the lift is shut down.

Parameters

540	Temperature monitor	*Yes*, No
541	Lift on/off	#
542	Fan cabinet on/off	#

11.6 Service Counter

(Parameter 545)

Sets the maximum number of lift starts until the next service occasion.

Parameters

545	Service counter	#

11.7 Fan Lift Motor

(Parameter 550/FAN)

The output is active as long as the lift is running and keep running for an additional time set by `P550`.

Parameters

550	Time	

11.8 External Fault Input

(Parameter 560-565/EXT1-3)

External fault inputs are used for connecting thermostats, monitoring frequency inverters etc. Each input can be configured to determine whether it should stop travel on upward or downward running. If the input is programmed not to interrupt running, it merely prevents a new start in the door zone.

Parameters Input 1

560	Stop in travel	*No,* Downwards, Upwards, Down/Upwards
561	Config	*Unlocked*, Locked

Parameters Input 2

562	Stop in travel	*No,* Downwards, Upwards, Down/Upwards
563	Config	*Unlocked*, Locked

Parameters Input 3

564	Stop in travel	No, Downwards, Upwards, *Down/Upwards*
565	Config	*Unlocked*, Locked

Input

EF1
EF2
EF3

11.9 Pawl Device (Hydraulic Lifts)

(Parameter 571-573/PD1-2)

To keep hydralic lifts levelled, a pawl device an be used. When the lift has reached a desired floor the pawl device is extended and stops the lift from sinking out of zone, and no relevelling is necessary. If the lift is resting at the pawl, the lift first has to ascend to release the lift from the pawl before the pawl can be retracted and allow downward travel.

There are three positions for the blocking device in relation to the pawl device: above the pawl, at the pawl and against the pawl. For the lift to start in all positions, a rerun function is built into the control system. To start the lift downwards the pawl must be in the open position before the start and on starting, the lift starts downward only after the computer has received acknowledgement that the blocking device has engaged. On rerunning start at medium speed is used.

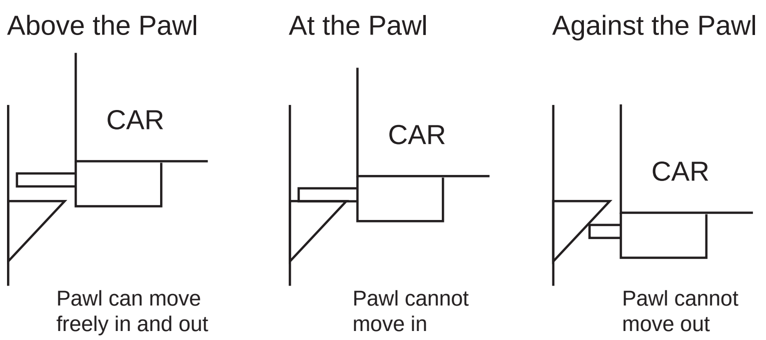


Figure 11.1 Pawl Device

Above the Pawl Device

The contactor for lifting the block is engaged. When acknowledgement from the block is received, the lift starts downward. If there is no acknowledgement from the block and the lift is at a floor, i.e. on pulse up flag (flag counter) or in a floor zone (incremental encoder), the lift interrupts the start attempt and zeroes all destinations; if the lift is not at a floor it is interpreted as if the lift was positioned at the mark.

At the Pawl Device

The contactor for lifting the block is engaged (`P571`). The computer is waiting for acknowledgement, acknowledgement does not occur as the lift is standing at the mark. After two seconds (adjustable, `P572`) it starts up for rerunning. The lift stops at the nearest pulse up flag (flag counter) or in a floor zone (incremental encoder). The lift then stops to start downwards.

Against the Pawl Device

The lift starts immediately upwards to the next pulse up flag (flag counter) or in the floor zone (incremental encoder). The lift then stops to start downward.

Parameters

571	Startmask	0101 1100
572	Controltime	
573	Park on pawl	Yes, *No*

Input

PD1
PD2

11.10 External Unit A/B

(Parameter 575-578)

There are two identical external units, `External Unit A` and `External Unit B`. The purpose for the external units is to check a device, such as a speed governor solenoid or a photocell unit. The unit has one output to activate the device and two inputs to check the resting and active position of the device. `P575/P577` set the action of the device if the device isn't working properly. If a delay of the release of the output is needed `P576/P578` is used.

Parameters

575/577	Reaction	*None*, Car Emerg. Stop, Restart S3
576/578	Delay output	

Input

EUA1
EUA2
EUB1
EUB2

Output

EUA
EUB

11.11 Supervision

(Parameter 580-587)

11.11.1 Out of Service Alarm

(Parameter 580/OOS)

The out of service alarm is to be connected to the alarm centre or alarm panel. The outlet for the out of service alarm is activated when all criteria are fulfilled for the lift to start. In this way the system can also indicate that the system is powered and the fuses etc are intact.

The following faults mean that the output is not activated:

- Power supply interrupted
- Fuse for 24VDC
- Computer cannot start
- Parameter fault caused by faulty parameter memory
- Zone contactors have hung on normal start (if zone system used)
- Main contactors have hung on stop (if run time locks system)
- Run time normal running (if programmed)
- Run time levelling (if programmed)
- Door circuit broken
- Doors cannot be closed by door automatic system [1)]

[1)] Reset automatically if door circuit intact.

Parameters

580	Alarm delay	⏲	Applies only to door circuit/safety circuit
	Other alarms deactivate the output immediately		

Output

OOS

11.11.2 Monitoring

(Parameter 581-587)

The S3 can be connected to an operating sensor via a short-range modem, telephone modem or GSM modem.

Parameters

581	Doorc. superv	*Yes*, No
582	Close superv	*Yes*, No
583	Closingtime	⏲
585	Supervision	*No*, Via COM1, Via CAN
586	Modem	*None*, GS-01 GSM Modem, TD-33 (Hayes)
587	Baudrate	110 → 38400

12 Special Travels

12.1 Sending

(Parameter 591-596)

Automatic send can take place to any floor. The function handles two different sending floors. One input selects the floor at which the lift should park. If the input is low, the floor is selected according to P592, if the input is high P594 is selected. The send time is adjustable to 0 - 999.9s (P591), the time is calculated from when the stop time elapses depending on any door opening or not (P596). The send time also cancels door-opening 4 (door opening at loading).

Parameters

591	Time	◔
592	Destination 1	*Not Active*, Floor 1 → Floor 32
593	Side A, B, A/B	*Not Active*, Side A, Side B, Side A/B
594	Destination 2	*Not Active*, Floor 1 → Floor 32
595	Side A, B, A/B	*Not Active*, Side A, Side B, Side A/B
596	New time on door opening	Yes, *No*

Input

PFL

12.2 Landing off

(Parameter 600-606)

Landing off let you disconnect the external buttons. Disconnection of external buttons can be used for training, transport, prioritized running or just to stop the lift.

Parameters

600	Input	*Monostable*, Bistable
601	Doors	*Closed*, Open on arrival, Park with open doors
602	Sending Time	◔
603	Resend	*Yes*, No
604	Destination	*Not Active*, Floor 1 → Floor 32
605	Side	*Not Active*, Side A, Side B, Side A/B
606	Landing open	*Yes*, No

Input/Output

OFL

12.3 Fireservice

(Parameter 610-617)

If fire running is activated via input, the lift completes its last journey and starts to the selected floor. If the lift has stopped when the fire running is activated and the evacuation floor is not selected, the lift will only open the doors.

Parameters

610	Destination 1	*Not Active*, Floor 1 → Floor 32
611	Side	*Not Active*, Side A, Side B, Side A/B
612	Destination 2	*Not Active*, Floor 1 → Floor 32
613	Side	*Not Active*, Side A, Side B, Side A/B
614	Stop in Travel	*No*, Downward, Upward, Down/Upward
615	Door	Not active, *O. at arrival*, Open in Floor
616	DOLx1 Opens	*Yes*, No
617	DOLx2 Opens	Yes, *No*

Input

FS1
FS2

12.4 Fireman Service

(Parameter 620-622)

Fireman service allow the lift to run during fire alarm. The fireman service can be accessed with a keylock. The key have three settings: `0`, `1` and `Start`, the start position is fitted with a spring and if key is released the key will return to the `1` position. There are three different types of fireman service:

FMS1

To access service the key need to be put in the 1 position. To be able to use the lift the key need to be turned to the start position, then press floor button and when doors have closed the key kan be released.

To open doors a dead-mans-grip is used and the door opening button need to be pressed until the door is fully opened, if released the door closes. Door closes automatically if a new destination is selected.

FMS3

As with FMS1 except FMS3 allows the lift to run with open doors.

Parameters

620	Door	Not active, *O. at arrival*
621	DOLx2 Opens	Yes, *No*
622	Resend	Yes, *No*

Input

FMS1
FMS2
FMS3

12.5 Power Failure

(Parameter 623-628)

Power failure parameters control the lift during power failure. If lift is equipped with a UPS the destination floor of the lift can be set in case of power failure. `P625` and `P626` sets destination floor and destination side, in case of power failure.

Parameters

623	UPS Switchtime	
624	UPS Maxtime	
625	Destination	*Floor 1* → Floor 32
626	Side	*Not Active*, Side A, Side B, Side A/B
627	Max time	
628	In service	Yes, *No*

Input

PF
PFN
PFU
PFUD
PFUU

Output

PFI
PFN
PFU

12.6 Keylock

(Parameter 630-640/KC1,KC2,KC0-9)

In order to lock car calls from unauthorised use, the lift has the option of two built-in code locks for locking destinations. For each code lock a code is selected, which floor and which side will be locked. It is also possible to activate the code lock from an external signal e.g. time channel from a building monitoring system or similar.

The code is entered using the floor call buttons.

Note: The floor call buttons are listed as I^1 to I^9 which is input 1 to input 9.

Parameters

630/635	Keycode	The code use can be either the destination buttons or a separate code lock button KKn
631/636	Floor	Not active, All, Floor number
632/637	Side	Not active, Side A, Side B, Side A/B
640	Time	Max time for locking, max time between button pressing

Input

KC1
KC2

12.7 Priority

(Parameter 645-646)

The maximum time for priority travel is set with P645 and P646 set return action after priority travel is completed.

Parameters

645	Max time	
646	Return	Auto, *Manual*

Input/Output

PSC
PSxx

13 Zone Systems and Doors

13.1 Zone System

(Parameter 650-651)

The zone system is used to bridge the door circuit for early door opening and adjustment.

13.1.1 Zone System with Flag Counting

The system is based on two safety relays RE14:1 and RE14:2, which bridge the safety circuit for the floor. The relays are controlled by three detectors (photocells, magnetic sensors), **ZONE**, **P**ulse **D**own (floor calculation down) and **P**ulse **U**p (floor calculation up). Relay RE14:1 is controlled by ZONE (input S3 P2:Z1) and RE14:2 by both **PD** (input S3 P2:Z2) and **PU** (input S3 P2:Z3). To check that the sensor and contactors work correctly, the lift control computer monitors the system and imposes requirements for sequence, response times etc.

For the lift to enter the zone the following is required:
In the example the lift is assumed to go from floor 1 to floor 2.

Step	Event	Comment
1	Lift reaches PU	Slows down
2	Lift enters slow speed	
3	Lift reaches PD	
4	S3 activated minus side on relays RE14:1 and RE14:2	
5	RE14:2 engages	Minimal time between 5 and 6 - 100ms
6	Lift hits ZONE	
7	RE14:1 engages	Provisional door opening
8	Lift hits PU	Lift stops

13.1.2 Zone System with Incremental Encoder

The system is based on two safety relays RE14:1 and RE14:2, which bridge the safety circuit for the floor. Relay RE14:1 is controlled by **ZONE** (input S3 P2:Z1) and RE14:2 by the incremental encoder. To check that the encoder and contactors work correctly, the lift control computer monitors the system and imposes requirements for sequence, response times etc.

For the lift to enter the zone the following is required:
In the example the lift is assumed to go from floor 1 to floor 2.

Step	Event	Comment
1	Lift reaches slow down	Slows down position for floor 2
2	Lift reaches slow down position	
3	Lift reaches incremental encoder door zone	
4	S3 activated minus side on relays RE14:1 and RE14:2	
5	R14:2 engages	Min time between 5 and 6 - 100ms
6	Lift hits ZONE	
7	RE14:1 engages	Provisional door opening
8	Lift reaches floor position	Lift stops

For the lift to be given starting permission, the following is required:

Step	Event	Comment
1	Lock path engages	
2	RE14:1 and RE14:2 deactivated	Max time between 2 and 3 - 200ms
3	Both RE14:1 and RE14:2 switch	
4	Other systems initiated	
5	Start	

If step 4 or 5 fails, at the start the lift automatically goes to the zone if the zone function was activated in step 1. This prevents a person or goods being locked into the lift car if the safety circuit is not intact or if other tests are not functioning (photocell tests, block tests).

On Power Connection After Maintenance Running

Step	Event	Comment
1	Voltage connected	
2	Maintenance switches at normal	
3	Lift parked in floor 1	
4	RE14:1 and RE14:2 activated	Max time between 4 and 5 - 200ms
5	RE14:1 and RE14:2 engaged	

13.1.3 Risk Analysis

Event	Requirement	**Reaction**	
RE14:1	does not switch at start	Max 200ms after deactivation.	Lift stopped[1)]
RE14:1	does not engage	Min 100ms after slow down.	Door system shut down
RE14:2	does not switch at start	Max 200ms after deactivation.	Lift stops[1)]
RE14:2	does not engage	Min 100ms after slow down and Z1.	Door system shut down
ZON	does not engage	Min 100ms after activation.	Door system shut down
ZON	does not switch	ZONE effected on slow down.	Door system shut down
Start	Not ok	Start procedure not completed.	New start attempt. Door system shut down[2)]
Contactors	Do not switch	Max 1s after stop	Lift stopped[1)]
Run	time elapses	Adjustable time	Lift shut down[1)]
PD/PU	does not engage	Floor counting does not function	Door system shut down[3)]
PD/PU	does not switch	D/PU affected on slow down	Door system shut down[3)]
Miscount	Stops at wrong floor	Does not enter zone[4)]	

[1)] The computer indicates this through LED COP flashing at 2Hz, the buzzer sounding; the fault is stored in the list of recent faults. The lift runs for maintenance. Disconnection of zone system performed

[2)] On adjustment.

[3)] On pulse counter with photocell or similar.

[4)] On pulse counter with incremental encoder.

According to the requirements and reasoning above, the requirement must be fulfilled that if a fault occurs, the lift will not be able to be used for personal or goods traffic.

Parameters

650	Zone system	Yes, *No*

13.1.4 Door Zone

(Parameter 651)

Three alternatives for zone, mechanical (NO), PD/PU via pulse flags or zone system, see below. PD/PU is controlled by pulse flags PD/PU and lower/upper limit LD/LU. The lift is within a zone if any one of PD/PU, PD/LD, PD/PU/LD, PU/LU or PD/PU/LU is activated. After the lift has entered the zone, the lift must give both flags for the lift to interpret this that the lift has left the zone. If parameter zone system is set to YES and door zone PD/PU, both flags/incremental encoders and the zone system function as a zone for the doors. This combination can be used on lifts where it is not a requirement for the zone system to function before the doors open.

Parameters

651	Zone door	External, Pulse down/up, Zonesystem

13.2 Levelling

(Parameter 660-662)

`P660` is selected for adjustment with open and/or closed doors. The start value is programmed according to ***"Start Sequence" on page 24*** and direction with `P153`. A built-in delay to prevent adjustment beginning before the lift has stopped is set with `P661`. The time is calculated from when the input for the contactor monitoring went low. To prevent the main contactors engaging when adjustment is in progress, the adjustment contactors should also be connected to the contactor monitor (applies in the case where separate contactors are used for adjustment).

Parameters

660	Active	*Not Active*, Open, Closed, Open/closed
661	Starttime	
662	Delay stop	

13.2.1 Relevelling with Incremental Encoder

(Parameter 154-160)

To keep the lift levelled and inside the zone where the lift doors can be opened, the lift needs to correct its position. This is mainly for hydraulic lifts that loose height due to hydraulic fluid ”leakage”.

Relevelling sets the values for where the lift needs to adjust its position.

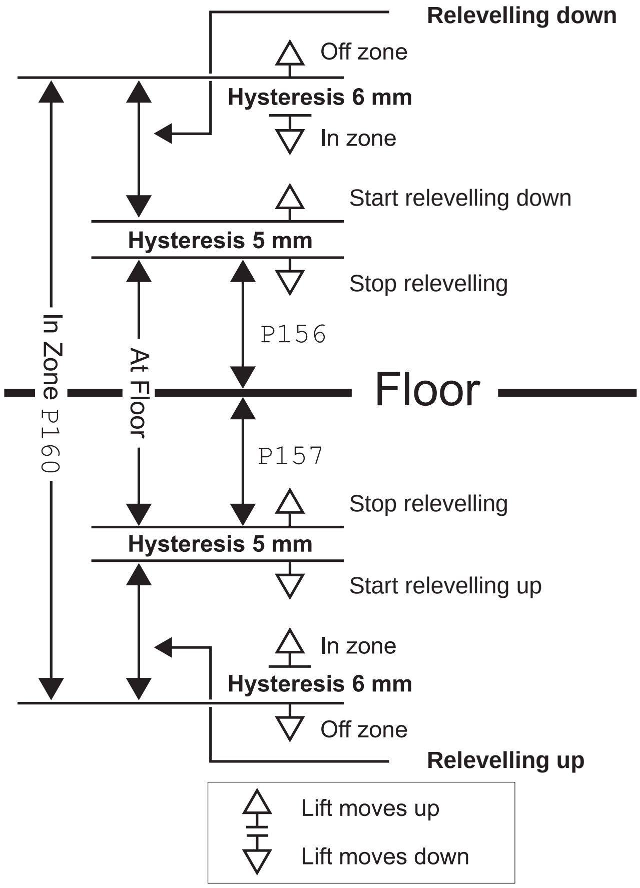


Figure 13.1 Relevelling
Correction to keep the lift levelled is performed with the help of relevelling.

P160 sets the size of the Zone where the lift need to be placed in order for the doors to be able to open and P156 and P157 sets the distance upward and downward before relevelling is performed.

P160 default value is set to 250 mm and P156 and P157 is set to 10 mm. This means that the lift starts to relevelling if it's positioned less than 119 mm (P160 + 6 mm hysteresis) and more than 15 mm (P157 (or P157) + 5 mm hysteresis) from the floor. It stops to relevel when it enters within the values set by P156 or P157.

Parameters

154	Synchroniz.	#	Position in mm for synchronizing sensor (reset position counter)
155	Config sync	Sync., Slowdown	If the synchronizing mark shall force the speed down or not
156	Stop low speed down	#	Distance for low speed to stop on downward running
157	Stop low speed up	#	Distance in low speed to stop on upward running
158	Stop medium speed	#	Distance in medium speed to stop
159	Stop high speed	#	Distance in high speed to stop
160	Zonesize	#	Door zone size shall be at least 100 mm higher than the zone flag for the zone system

13.3 Door Control

This section let you control door and level behaviour.

13.3.1 Door I/O Ports

There are a number of I/O ports used by the door system:

Door opening 1 (DOLA1, DOLB1)
Input for door button internal and external. Door opening 1 activates door time 1.

Door opening 2 (DOLA2, DOLB2)
Input for photocell and momentary arm etc. Door opening 2 activates door time 2.

Door opening 3 (DOLA3, DOLB3)
Door opening 3 is used for door automatic systems to give protection for people who have difficulty moving. If the door system is activated, the door opening input is active as long as the door is open. The input is connected suitably to a photocell in the door opening or an IR sensor. The door is open as long as the sensor is activated and closes after door time 2 has elapsed.

Door opening 4 (DOLA4, DOLB4)
Door opening 4 is used for loading. Normally door opening 4 is selected bi-stable. The door closes automatically when the send time elapses. Door opening 4 can also be controlled from the normal door buttons (DOLA1, DOLB1). If the door button is held down for more than 3s, door opening 4 and door time 4 are activated. To reset/close doors press the door button for less than 3 seconds.

Door opening 5 (DOLA5, DOLB5)
Door opening 5 is used for external motion detectors guarding the front of the lift. This is most commonly used for loading lefts where doors should remain open for wagons, trolleys, carts etc. The sensor accepts signals for three door openings before door is closed.

	Side A			**Side B**		
	Parameter	**Input**	**Output**	**Parameter**	**Input**	**Output**
Door Opening 1	P681	DOLA1		P691	DOLB1	
Door Opening 2	P682	DOLA2		P692	DOLB2	
Door Opening 3	P682	DOLA3		P692	DOLB3	
Door Opening 4	P683	DOLA4		P693	DOLB1	
Door Opening 5	P682	DOLA5		P692	DOLA5	
Door Closing			CLA			CLB
Door Opening			OLA			OLB

13.3.2 General

(Parameter 670-679)

This section covers the general parameters for controlling the doors.

Active (P670)
Sets behaviour of door. If `Off` is selected, there is no automatic door opening. If `On` is selected the door remains closed until the door is opened with the car or floor door opening button. If `automatic` is selected, normal operation is used.

Car Opens (P671)
Car calls also opens car doors.

Car Closes (P672)
Car calls also closes car doors

Land Opens (P673)
Landing call button also opens car doors if no destination is selected..

Doorclosing (P674)
Delay before door close button can be pushed (or car calls if `P672` is set to `Yes`).

Doors open (P675)

Floor door at current floor remain open if this parameter is set to `Active`. All floors or a single floor can be set to be active. **This parameter is not permitted to be active according to EN81-1/2.**

Side (P676)

Doors can be opened at Side A, Side B or at both sides. This parameter is not permitted to be active according to EN81-1/2.

Retiring Cam deactivation (P677)

Set the deactivation of the retiring cam. `Early` is only possible if the lift has zone system.

Forced Close (P678)

Forced Close monitors CLA (Close Limit A - Limit Shaft Door Close). If inactive the door is closed.

Block Door Open (P679)

Door open button is locked and require code (see ”Keylock” on page 33).

Parameters Common side A and side B

670	Active	Off, On, *Auto*
671	Car opens	*Yes*, No
672	Car closes	Yes, *No*
673	Land opens	No, No Carsignals, Yes
674	Doorclosing	
675	Doors open	*Not Active*, All, Floor 1 → Floor 32
676	Side	Side A, Side B, Side A/B
677	Ret.cam deact.	*At Stop*, Early
678	Forced cl.	Yes, *No*
679	Block dooropenb	Yes, *No*

13.3.3 Side A/B

(Parameter Side A:680-688 / Side B:690-698)

Side A/B parameters let you control the doors on respective side.

Door type (P680/P690)

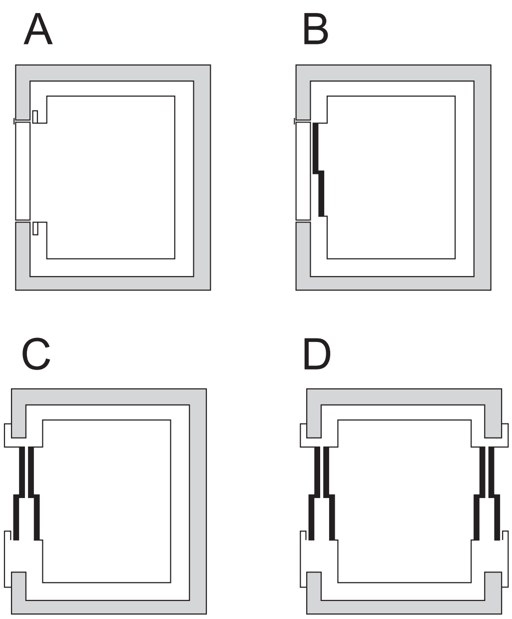


Figure 13.2 Door Types
There are three main door types supported by S3.
A - Swing Door
B - Swing Door (in combination w. Telescopic Door)
C - Telescopic Door
D - Telescopic Tunnel

Time 1 - Door Time On Stop (P681/P691)
Door open time on stop, internal/external buttons.

Time 2 - Door Time at Photocell Activation and Overload (P682/P692)
Door open time at overload. Normal protection in door opening - photocells, momentary arm etc. Time 3 uses same value as Time 2.

Door Time 4 - Door Time at Loading (P683/P693)
Door open time at loading.

Changetime (P684/P694)
Time between opening and closing and between closing and opening. The time is provided so that there is time between the opening contactor switching and the closing contactor engaging and vice versa.

Maxtime open/close (P685/P695)
Controls the maximum close time or maximum cycle time from full open to full close. Set the active time for open/close.

Input 1 (DOLA1) (P686/P696)
See Section ***Door I/O Ports*** below.

Input 4 (DOLA4) (P687/P697)
See Section ***Door I/O Ports*** below.

Door opening on arrival at floor (P688/P698)
Controls how the door will open when the lift arrive at a floor. Off disables automatic opening, at stop opens door when lift has reached the floor and stopped, early opens the door before the lift has reached full stop (early is only available if the lift has zone system).

Parameters Side A/B

680/690	Type	*Swingdoor*, Telescopic, Telescopic/ Tunnel	
681/691	Time 1		Stopping for Internal/External calls
682/692	Time 2		Overload of Photocells in Car Door Opening
683/693	Door time 4		
684/694	Changetime		
685/695	Maxtime o/c		
686/696	Input 1	*Monostable*, Bistable	
687/697	Input 4	*Monostable*, Bistable, DOLs1 delayed	
688/698	O. at arrival	Off, *At stop*, Early	

13.3.4 Cabindoor

Door Opening (P700)
Controls the door opening of the car. `Time limited` door opening for door control with two inputs. `Continuous` for door controls with one input.

Opening Time (P701)
Sets the opening time for `P700`. Only valid for `Time Limited` door opening.

Time Input(s) (P702)
Input time for car and floor calls, door open button, overload and photocells.

Change Time (P703)
Time between opening and closing and between closing and opening. The time is provided so that there is time between the opening contactor switching and the closing contactor engaging and vice versa.

Maxtime Close (P704)
Controls the maximum close time or maximum cycle time from full open to full close.

Open at arrival (P705)
Controls how the door will open when the lift arrive at a floor. Not active disables automatic opening, at stop opens door when lift has reached the floor and stopped, early opens the door before the lift has reached full stop (early is only available if the lift has zone system).

Parameters Cabindoor

700	Dooropening	Time limited/continuous
701	Openingtime	
702	Time input(s)	
703	Changetime	
704	Maxtime close	
705	O. at arrival	*At stop*, Early, Not Active

13.3.5 Cabin Doors
The Cabin Doors parameters let you set the door behaviour on each individual floor.

Parameters Cabindoors

710-741	Cabindoors	*Not Active* ,Side A, Side B, Side A/B

14 Lift in Group

To increase the effectiveness when there are two or more lifts side by side, the system can be supplemented with a communication link, which means that the lifts can divide external calls, a maximum of 8 lifts can be linked together. Each lift has a unique address and description of how the call acknowledge, door circuit, doors should be operated and their bottom floor.

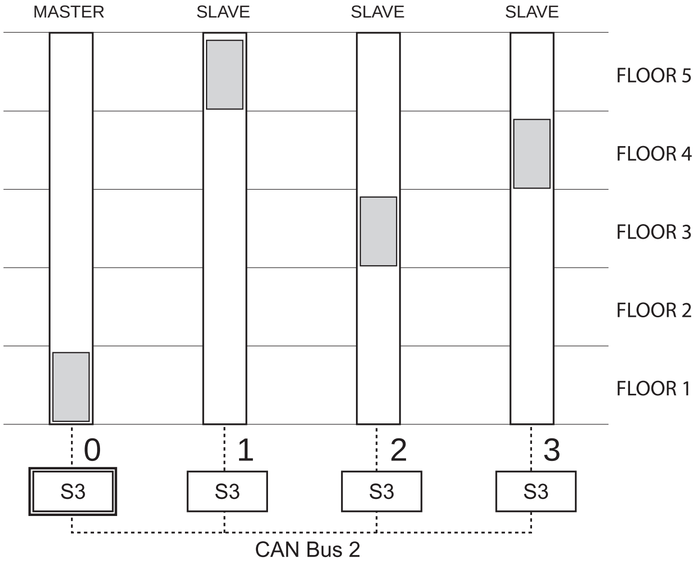


Figure 14.1 Lifts in Group
Up to eight lifts can be connected to run in group. One S3 Control Unit is required for each lift. The first S3 functions as the master Control Unit.

Parameters

750	Nr of lifts	0 → 8	
751	Address	0 → 7	
752	Coming light	Yes, *No*	
756	Bottomfloor	#	Set the bottom floor of the current lift. (Offset from bottom floor).
757	Servicefactor	#	Set factor of each lift in group. Lifts with lower factor receives fewer calls.
759	Zone bottom	*Not Active*, All, Floor 1 → Floor 32	If lift should mainly operate within a certain zone, the bottom floor of this zone is set with this parameter.
760	Zone top	*Not Active*, All, Floor 1 → Floor 32	If lift should mainly operate within a certain zone, the top floor of this zone is set with this parameter.
761	Time	🕓	
762	Long push	Not Active, Automatic, Lift 0 → Lift 7	Specifies if a certain lift can be called with a long push with floor call button
763	Quick closing	Yes, *No*	If there are more than 3 calls per lift in the group, ***Door closing time*** 2 is used.
764	Always open	*Yes*, No	Doors at all doors on a floor is opened.

14.1 Description of Lift Selection

For a lift to be selected the following is required:

- the lift can serve the call on the floor selected
- the maintenance is not activated
- the out of use of arm is not activated
- the call on the computer is on and external shut down is not on
- the fire alarm function is not activated
- the external blocking is not activated
- the safety circuit and door closure timeout are not activated
- the full load is not activated

The lift opens the doors in most of the above cases.

If the above are fulfilled, the system will select the lift in the following selection principle:

1. Nearest empty lift
2. Nearest lift approaching the call in the direction selected
3. Nearest lift approaching the call

If two or more lifts fulfil the above, any one is selected.

14.2 Fault Handling

If an error occurs and the group loses contact with a computer the others continue to function as normal. If the master computer stops functioning the computer with the lowest adress takes over and continue as master.

15 Indicators

15.1 Travel Arrows

(Parameter 780-781,TRD/TRU)

There are two outputs for direction indicator arrows - direction indicator down and up. The arrows can either come on when moving or not. It can also be selected whether both arrows should be lit when the lift is empty.

Parameters

780	At floor	Yes, *No*
781	In travel	Yes, Flash, Flash at lowspeed, *No*

15.2 Arrival Signal

(Parameters 790-797, ARS1,2)

There are two outputs for acoustic arrival. Arrival signal `1` is intended to be used for the arrival signal in the car and arrival signal `2` for external calls. The arrival signal can be programmed on door opening or arrival, `P790/P795`. You can also choose whether it should be active if external push buttons are on or off, `P791/P796`. The output gives a pulse. The length of the pulse can be programmed, `P792/P797`.

Parameters

790/795	Config	*At arrival*, At opening
791/796	Landings	Off, *on*, off/on
792/797	Time	

15.3 Occupied

(Parameters 800-801, OC)

Displays when the lift has a destination, the doors are open, the lift has stopped, maintenance running etc. This output also works on reduced and full collective. However the computer may receive more than one signal on the external buttons (does not work for lifts in a group). The occupied function is set with `P800`.

Note: For lifts in a group - the occupied lamp only indicates whether the individual lift is occupied.

Parameters

800	Occupied time	
801	Flash	Yes, *No*

15.4 Floor Indicator

(Parameter 805-947)

This section describes how to control the text displayed at each floor.

15.4.1 General

(Parameter 805)

Parameters

805	Config	*Standard*, Arrival/Parked

15.4.2 Side A/B Binary

(Parameter 810-873)

Parameters set which binary outputs (`DB0-DB7`) should be active on respective floor.

0	0	0	0		0	0	0	0
DB7	DB6	DB5	DB4		DB3	DB2	DB1	DB0

Side A			***Side B***		
Parameter	Floor	Binary	Parameter	Floor	Binary
P810	1	0000 0000	P842	1	0010 0000
P811	2	0000 0001	P843	2	0010 0001
P812	3	0000 0010	P844	3	0010 0010
...	...	...	...	...	...
P839	30	0000 1101	P871	30	0010 1101
P840	31	0000 1110	P872	31	0010 1110
P841	32	0000 1111	P873	32	0010 1111

Parameters

810-873	Floor number	

15.4.3 Side A/B Text (CAN Bus)

(Parameter 874-913)

Sets the text displayed at the selected floor by using alphanumeric values.

Parameters

874-913	Floor number	α

15.4.4 S3-DF03 (CAN Bus)

(Parameter 940-947)

Set the textmessages and font size of the texts displayed in the floor indicator.

Parameters

940	Load text	α
941	Lift off text	α
942	Font size	α
943	Loadmessage	α
944	Fireservice	α
945	Out of order	α
946	Powerfailure	α
947	Priority	α

16 Ports

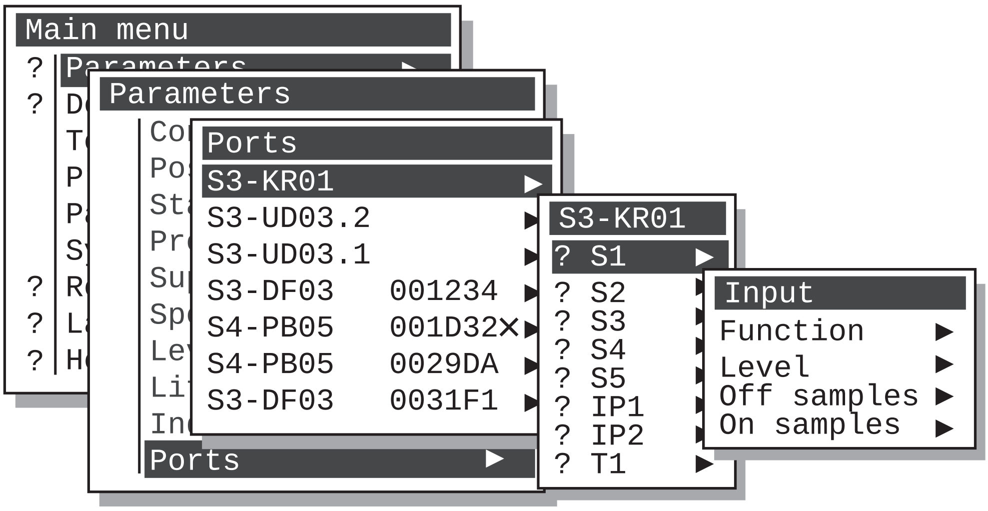


Figure 16.1 Ports Menu
Example of the ports menu with 2 S3-UD03 cards installed and how CAN-Bus connected accessories are displayed with node number. The X after node `001D32` indicates that a configured accessory has been disconnected.

Port setup is performed at the `Parameters/Ports` menu. The cards of the S3 are listed beginning with the bottom card (S3-KR01) up to the top card (S3-UD03). If the S3 is fitted with more than one S3-UD03 card, then the cards are numbered from top to bottom (see S3-UD03 card numbering in figure above).

The ports of each card are listed in the menu and each port is configured separately. `Function` determine the function of the connected device to the port. A list of input functions and a list of output functions are listed below.

Level normal or inverted can be set and for inputs you can also program the closure time and opening time by stating how many times the ports should be read before a change occurs. The ports are read every 10 ms, most ports are read three times before switching i.e. inputs must be stable for at least 20 ms.

16.1 CAN Port Connected Devices

The CAN Bus allows for automatic identification of connected devices. Once connected the device name is listed together with the node number of the device. Some devices have customized options listed while other has the default options: `Function, Level, Off samples` and `On samples`.

For more information about connected CAN-Bus devices, see the ***CAN-Bus*** section.

16.2 Function Inputs

LU	Upper Limit	
LD	Lower Limit	
PD	Pulse Down	
PU	Pulse Up	
A	Incremental Encoder channel A	
B	Incremental Encoder channel B	
MP	Motor Protection	
ML	Main Limit/low pit/top	
ES	Emergency Stop	
MC	Control Circuit	
DC	Door Circuit	
EC	Security Circuit, stop circuit	
PD1,PD2	Pawl Device Contacts	
CC	Contactor Control	
ED	Extra Door Contact	
MT	Maintenance Running	Active low
ZS	Zero servo, feedback from frequency converter	
OLn	Overload	
FL	Full Load	
FAN	Car Fan	
DOLs1	Door Opening Shaft Door 1	Door button
DOLs2	Door Opening Shaft Door 2	Photocells, moment
DOLs3	Door Opening Shaft Door 3	Swing door, protection for the disabled
DOLs4	Door Opening Shaft Door 4	Loading
DOLs5	Door Opening Shaft Door 5	Motion Detector
DCLA	Door Closing Button	
OLs	Door Opening Limit	
CLs	Door Closing Limit	
Prd	Presence Detector	
DOC	Door Opening Inner Door (gate)	Door button
DOCs	Door Opening Inner Door (gate)	Photocells, moment
FS1,FS2	Fire Running 1 and 2	
FMS1	Fireman Service	
FMS2	Fireman Override	
FMS3	Fireman Start	
ST	External Stop Signal for Definitive Stop	
PF	Power Failure	
PFN	Normal Relay	
PFU	UPS Relay	
PFUD	Rescue Operation Down	
PFUN	Rescue Operation Up	
PFL	Sending Destination Choice	
OFL	Shut Down External Buttons	
EXT1-3	Monitors - Temperature Protection etc	
BLR	Block Reset	
CC	Clear Car Calls	
C1-ns [1)]	Car Calls	
D2-ns [1)]	Landing Calls Down	
Vxx-ns [1)]	Landing Calls Up	
KC1, 2	Activate Code Lock 1 and 2	
KC0-9	Code buttons 0-9	
PSC	Prioritize running car	Prioritize from car
PSSn	Prioritize running external	
MVSn	Movement monitoring	
BRS1-4	Brake Supervision	
IO1-8	I/O Signal	
EVA1	External Unit A1	
EVA2	External Unit A2	
EVB1	External Unit B1	
EVB2	External Unit B2	
SG	Overspeed Governor	
LFns	Disable Landing/Car Calls	
EDns	Door supervision, Low Pit/Headroom	
RST	Reset of Computer	

16.3 Function Outputs

RC	Retiring Cam	
OC	Occupied Indicator	
ARSn	Arrival signal	
OL	Overload	
OLs [1]	Open shaft door	
CLs [1]	Close shaft door	
PRDs	Present	
OCs [1]	Open inner door (gate)	
SCA/B [1]	Close inner door (gate)	
PS	Prioritized running in progress	
V0-V7	Outputs for control of main motor	
OOS	Out of Service	
OFL	Landing Off	
EF1-3	External Fault	
LB	Landing Blocked	
FSO	Fire running	
FAN	Motor fan	
FAN	Car fan	
CLO	Car light	
FC1-6	Photocell monitoring	
TRD	Direction of running down	
TRU	Direction of running up	
Dns [1]	Output floor indicator	
DB0-7	Floor indicator binary coded	
C1-*ns* [1]	Acknowledgement (direct control)	
D2-ns [1]	Acknowledgement down (full collective)	
U1-ns [1]	Acknowledgement up (full collective)	
CL1, 2	Code lock 1 and 2 locked	
PSO	Prioritized	Common for all prioritized running
PS0n	Prioritized acknowledge	
KCO	Keylock	
PSns [1]	Prioritize Side	
IO1-8	IO-Signal	
EUn	Ext. unit out	
SG	Speed Governor	
RST	Reset	
PFI	Inverter	
PFN	Norm. Relay	
PFU	UPS Relay	
FS1	Fireservice 1	
FS2	Fireservice 2	
DBZ	Door Buzzer	
FD	Phasedetector	
EF3	Reset	
INS	In Service	
DZN	Door Zone	
DO	Door Off	
OFF	Lift Off	
LC	Landing Calls	

Outputs and inputs active high unless specified otherwise.

1) where n indicates the number or number of floors, s is door side A/B

17 Tools and Debugging

In connection with operation and in fault situations, information is collected. Information is stored in a RAM memory with a condenser back-up.

17.1 History

`History` has a number of different submenus. `Last 100 faults, Operating meter, Fault counter, System` and `Reset`.

`Last 100 faults` list the 100 latest faults with the most recent fault at the top. The faults are numbered from 0 to 100. Faults are stored together with date, time and name.

0	Fault 0 - latest fault
1....	Fault 1
98	Fault 98
99	Fault 99 - oldest fault

17.1.1 Fault types

Zone relay fault	When zone relays RE14:1-2 should switch, they do not. The lift is shut down.
Break zone	When the zone relays were activated they switch due to signals on Z1-Z3.
Adjustment	Adjustment did not work when the lifts were to be adjusted.
Normal run time	The normal run time was exceeded on running. Lift is shut down.
Control circuit	Interruption in the control circuit, which means the lift is blocked (>1.5s). Lift is shut down.
Contactor fault	Contactors did not switch on stoppage. Lift stopped.
Loose running	Fault when the lift is started from the floor. Acknowledge from blocking mark did not work.
Photocell fault	Photocell monitoring failed to check all photocells.
Movement monitoring	Computer could not record that the lift moved within 4 seconds.
Positioning fault	Fault in flag counter or incremental encoder for the system.
Slow speed fault in zone	When the lift must stop at a floor, it does not move before the slow speed time expires. The lift stopped in the zone. If the lift has adjustment, it starts automatically at the floor.
Slow speed fault	When the lift must stop at a floor, it does not move to the zone. The lift starts automatically.
Phase fault	Phase monitoring triggered, lift begins automatically as soon as all phases are OK.
+24V<16V	Internal voltage monitoring in the computer has triggered instead a supply of <16V.
+24V FUSED<16V	The internal surge current protection in the computer has triggered instead a voltage <16V.
Monitor 1	Input from monitor 1 low.
Monitor 2	Input from monitor 2 low.
Monitor 3	Input from monitor 3 low. Fault from monitor 3 does not give alarm if the lift has stopped.
Backup C	Condenser for statistics under 2.5V - Can mean that the statistics are incorrect
Temp. cabinet	High temperature in cabinet (computer)
Door fault in floor	Fault when automatic door should close
Start fault in floor	Fault when the lift should start. Contactors did not engage during contactor monitoring time.
Break MS	Break in motor protection circuit during running.
Break ML floor	Break in main limit switch low head/top during running. If Control limit fault (ML) is not triggered, the fault was shorter than 1.5s.
Break NS	Break in emergency stop circuit (emergency stop roof, pit, machine room, not car) during running
Break MK	Break in control circuit, circuit between control limit circuit and door circuit during running
Break DK floor	Break in door circuit during running
Break SK	Break in safety circuit (emergency stop car)
Break KK floor	Break in contactor monitoring during running
Break Zone	Break in zone system when the lift is in the floor.

Operating meter shows how many starts the lift has made and how long the motor has been in operation.
Fault counter shows how many faults have occurred of each type.
System shows system/counter faults. The counters count the number of starts made by the computer and the number of internal faults in the computer. If this risk count has a value significantly different from nil (all except reset), contact your system engineer.
Reset Operating counter and fault counter/fault memory can be reset individually.

Options

Last 100 errors		
Counters	Startcounter Traveltime Out of service Service counter	
Failcounters	Zonerelay fail Break in zone Levelling Normal TT Safetycircuit Contactor Pawldevice FC error 1-6 Positioning Lowspeed in zone Lowspeed Movement sup.1-3 Brake failure Ext. unit Speedgovernor	Start seq.error Phasedetector +24V<16V +24V FUSED<16V Ext.fault 1-3 Temp cabinet Door floor Start floor Break MP Break ML floor Break ES Break MC Break DC floor Break CC
System	Reset Pgm fail (COP) Pgm fail (CMF) Pgm fail (EXE) Pgm fail (MCCOP)	
Clear	Travel counter Failure counter Service counter	

17.2 Event List

The software is event controlled. Each event that occurs is stored in the RAM memory. The computer stores around 25000 events. An event could for example be when a button is pressed, when a pulse comes from the photocells for floor counting etc. For each event logged, the date and time of the event is stored. The event list is a useful aid for advanced fault tracing. It can be used to calculate times between different events and monitor systems while not on site. To use the event list, contact the system engineer to interpret the codes. There are around 2000 different events.

Options

Eventlist		
Clear		
On/Off		
Selection	Lift incoming Lift outgoing Group incoming Group outgoing Errormessage Serialcom.	On, Off On, Off On, Off On, Off On, Off On, Off

17.3 Start Conditions

This shows which conditions are missing for normal, reset, maintenance running and auto tuning. The computer shows only the conditions that are not fulfilled. If all conditions are fulfilled, the text `All conditions ok` is displayed. If the lift is in operation, conditions that are *not* fulfilled for a *new* start are displayed.

Fault	Explanation
Liftpgm not running	Lift program did not start when the computer started due to parameter fault or pressing <ESC> at start.
+24V < 16V	Power to the computer is missing or incoming fuses are tripped, voltage must be above 16V.
+24 Fused <16V	Fuse for external 24V triggered, voltage must be over 16V
Phasedetector	Phase monitor triggered, see Measured Value in \Debugging\Status
Errorstatus	A fault has occurred which requires reset, see \Debugging\History
Ext. fault 1	Input from monitor 1 not ok (input signal EXT1, normally connected to T1)
Ext. fault 2	Input from monitor 2 not ok (input signal EXT2, normally connected to T2)
Ext. fault 2	Input from monitor 3 not ok (input signal EXT3, normally connected to T3)
LD/LU activated	Upper limit and lower limit influenced together i.e. computer receives signal that the lift is both at the top and at the bottom simultaneously (signals LD, LU, normally connected to P3, P4).
Emergency stop	Emergency stop button broken, reset with destination or call button
CC activated	Main contactors engaged (input signal CC normally connected to 1I12)
Maint. active	Maintenance active
Maintenance S3	Maintenance running on S3
Maintenance roof	Maintenance running on roof (input signal MAINT, normally connected to 1I11)
Car emerg.stop	Lift is blocked for further calls as the safety circuit has broken, reset with internal destination
In travel	Lift running
Direction missing	Lift has no direction
Min. stoptime	Minimum stop time between start and stop
Overloaded	Overload (in signal OL, normally connected to 1I13)
Hidden door	Concealed door inputs not equal to door circuit (input signal ED, MC, DC)
Security circuit	Safety circuit broken
Stop time	Stop time outer or inner
Zone system	Zone system relays for connecting safety circuits are not engaged
Door open	Door open
Door closed	Door closed
Start time	Start time for adjustment

Options

Normal
Levelling
Maintenance
Auto tuning

17.4 Door Status

Displays the current status of the doors, if doors are closed and in Zone.

Options

Side A
Side B

17.4.1 Status

System information such as temperature, voltage, back-up condenser, external 24 V, processor utilisation and phase monitor.

Options

Temperature	Temperature in the shaft
Vcc	CPU voltage after the PTC resistor
Unreg.	CPU voltage before the PTC resistor
Backup C	Capacitor voltage for backup memory
External 24V	Voltage for I/O
Utilization	Processor load
Phasedet.	Status of the phase detection relays
Angle	Status of the angle
Voltage	Status of the 3-phase voltage

17.4.2 Floor Count

Information on floor counter and flag counter or position in mm, absolute and relative to the nearest floor.

Options

Floor	Floor number
Counter	On/Off
Down counter	Down Counter in mm
Up counter	Up Counter in mm

17.4.3 Landings

Information on lifts in the group. Lift status, position, direction, whether parked and side (for lifts with tunnel).

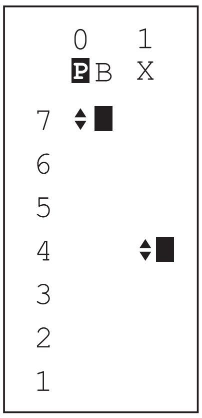


Figure 17.1 Landings
Displays lift information.
Symbols used:
P = Parked
A = Side A
B = Side B
X = Lift Out of Service
Flashing arrow = Moving direction of lift
Static arrow = Possible directions of lift

17.5 Tools

17.5.1 Auto Tuning

Engages output relays for control of frequency converters so auto tuning can be run on frequency converter. Shows which relays should be engaged during `start value`. Activate function with `active`. Stop function with `stop`.

Options

Start value
Activate
Stop

17.5.2 Pendulate

Pendulate let you run the lift between floors automatically. Either random running or between terminal floors.

Options

Config	*Terminal Floors*, Randomized	
Times	#	Number of times the lift should run
Stoptime		
Activate		Activates the test
Status		Displays the number of journeys the lift has made since test was activated, and whether the test is active or not

17.5.3 Send Lift

Sends the lift to the floor selected, shows destinations stored. Select side before new destination entered. Send the lift without door opening, select `not active` on side selection.

Options

Side	
Floor	- Floor number

17.5.4 Show Direction

Shows lift direction of movement.

17.5.5 Encoder

Set floor when lift is fitted with incremental encoder. For instruction about how to set up a lift with incremental encoder with the Encoder tools, see ”9.4.2 Installation of Incremental Encoder Lift System” on page 22.

Options

Active	
Preferences	- Highspeed - Mediumspeed - Calculate
Syn.Pos.adjust	- Floor 1 - Calculate
Stop adjust	
Floor adjust	- Floor adjust - Calculate

17.5.6 KEB

Options

Parameters LF	- LF list
Operation data ru	- ru list
Information In	- In list
Settings CAN	- CAN Baudrate - Save

18 Preferences and Passwords

Doubleclick
The time between two key pressings to be regarded as a double click. Sometimes equal to 10 ms. On double click the cursor jumps several steps in the menu and lists etc.

Clock
Set date and time.

Buzzer
Buzzer can be turned off.

Screen Saver
Time before screen saver is activated.

Screen light
On, Off or Auto. On = always on, Off = always off, Auto = on if all phases in are correct (standard). Can only be set if the system engineer password is given.

Password
The password protects the lift users. For the lift to fulfil the requirements imposed in different standards, protection has been fitted against incorrect parameters changes. It is important that access to the system is only granted to technicians with adequate knowledge of rules and regulations that apply to the lift industry. Passwords should only be available to the the person responsible for the lift installation and professional lift technicians.

⚠ WARNING

Passwords should be used to avoid unauthorized access to the lift control system. Unauthorized changes to the settings could affect the safety of the lift and its passengers.

Programming	Protects all programming.
Safety	Protects security functions such as adjustment, trigger running from mark etc.
System techn.	Protection against change of hardware-specific parameters and calibrations.

Options

Change	Change password and lock. The new password must be confirmed..
Lock	Lock computer with previously stored password, old password must be confirmed.
Unlock	Unlock computer after entering correct password.

19 System

This section is used to configure and test the system.

19.1 Erase memory

Erases the memory parameter. The memory is divided into two systems, lift memory that stores all functions related to the lift system, and the system memory that stores all control system related data. The memories can be erased separately or both together.

Options

Lift	Clears all functions relating to the lift system
System	Clears all system data
System//lift	Clears both system data and all functions relating to the lift system

19.2 Update memory

Run this function when a program change has been made on the computer. All changed parameters and vital parameters are updated so the lift retains its function. For more information see ”20 Software Operations” on page 59..

19.3 Copy memory

Copy memory. For more information see ”20 Software Operations” on page 59.

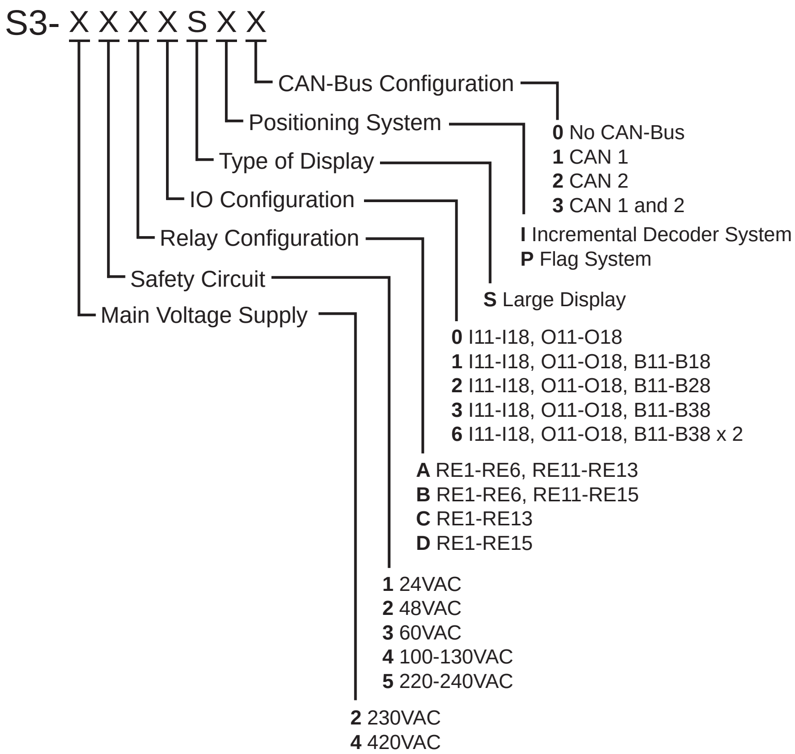
19.4 Explore memory

This function enables you to browse and search the RAM memory. This function is for advanced fault tracing and require good knowledge of the S3 system.

19.5 Hardware

Type Description

The type description of the computer is given below. Set on production of hardware. Controls configuration of I/O circuits.



Example:

S3-4A3SP0 S3 with main voltage 400VAC, 8 relays, 24 double direction ports, graphic display, positioning with photocells, no field bus.

Note: Not all combinations are produced

CAN IC

Setting of type of field bus circuit. Set on production of hardware.

Calibration

Calibration of hardware - requires peripheral equipment. Requires expert knowledge of the S3 Control Unit System.

Test

Test input and output ports. Show computer interpretation of input ports and possibility of changing/testing output port status. Output ports can also be changed during operation. To test outputs lift program must be turned off. Press <Esc> at computer start.

CAUTION

To test the ports, turn off the lift program or press the stop button. Check that the outputs for contactors that must not be engaged together are not engaged e.g. Y/D and N/U.

Options

Type	
Serie-/nodenumber	
CAN IC	
CAN Baudrate	
SPI Memory IC	
Config ports	- Ports
Calibrate	- Phasedet.
Test ports	- Ports
Test COP-timeout	

19.6 Software

Program

Select program to be run - Normal lift program. Requires expert knowledge of the S3 Control Unit.

Lift

Show status of lift program.

Multiplex

Shows status of group control program.

Incremental Encoder

Shows status and software in incremental encoder processor.

Load flags

Requires expert knowledge of the S3 Control Unit.

Options

Program
Lift
Multiplex
Encoder
Update ext. CPU
Uploadflag
SCI Debug
Status

20 Other Menu Functions

20.1 Reset

Restart computer.

20.2 Language

Select language. At present Swedish, English, German, Polish, Dutch and French are supported.

20.3 Help

Help
Shows help text on how to obtain help in the system. Help is available for menus and choices. When help is available for a menu choice, this is shown by a question mark at the left hand edge of the line. Press the left hand arrow - the help window appears - close with Esc.

About
Shows the program version, type and serial number.

20.4 Monitoring Safety Circuit

20.4.1 Inspection

Maintenance running is activated when an input goes low. When the input is activated, the inspection buttons on the computer are disconnected i.e. priority is given to the roof.

20.4.2 Door Circuits and Safety Circuits

If the safety circuit is broken during operation, the lift stops immediately, external buttons are disconnected, internal acknowledgement extinguished and the destinations stored internally, i.e. the destinations remain in the system but the acknowledgement lamps go out. For lifts with direct control, the occupied lamp stays lit. The system then waits for a reset from the internal destination buttons or door circuit, after the reset the stored internal destinations are lit again and the lift starts in the direction selected.

Note: The lift starts in the direction pressed, not according to the former destinations. This prevents further jamming.

20.4.3 Definitive Stop

As an alternative to the lift stopping at the stop flags, instead it can be selected to stop at a separate switch or relay from a frequency converter or thyristor control.

If the definitive stop function is used, you can choose to program the flag settings as one-speed or two-speed lifts. The stop flags for a two-speed lift work as a normal door zone, they also act as security if the external signals do not arrive - then the lift stops immediately after the floor.

20.5 Overload/Full Load

20.5.1 Overload (OL)

On overload, the lift does not start until the unloading has occurred at the floor where the lift is standing, when the overload function is activated a door opening pulse is given automatically to the door unit (only for lifts with automatic doors) if opening on arrival at floor is activated (`P688/P698`) and the doors remain open. The overload function is only active when the lift stops in the door zone.

20.5.2 Full Load (FL)

On full load the lift does not stop at the floor when only the outer signal is stored, the floor is served after the lift has been unloaded. The full load function acts when the lift has a load corresponding to 75% of its rated load.

20.6 Photocell Monitoring (FC1-4)

20.6.1 Function

When all conditions for the lift to start are fulfilled, the photocells are checked that the locking path is engaged. If the check fails, the locking paths switch and all calls and destinations are zeroed. Before the lift can perform a new start attempt, a new destination or new call is required.

When the start condition is fulfilled, the lock path is engaged to prevent the door opening. The computer unit then shuts off all photocell transmitters at once. The computer checks whether the safety circuit is broken or closes when the photocell transmitters are reset, the number of photocells is given with `P300`. If the photocells do not work correctly, the computer waits a maximum of 2 seconds.

20.6.2 Security

If any relay "hangs" in the system or if the input for the Emergency Stop circuit does not work, the lift will not start, as both closure and break are required before a start can take place.

21 Software Operations

21.1 Updating the S3 Software

The S3 software is stored in a flash memory. The flash memory can be programmed using the PC and serial 9-pin D-Sub, null modem cable and software S3 Burner.

Note: Three-phase feed is needed to perform upgrade and phase detectors need to be disconnected.

Requirements

Files can be downloaded from the P Dahl website.

- Mp2_x_xxx.sw - software for the S3
- Null modem cable
- PC with COM-port (RS-232)
- Operating System Windows 98, Windows ME, Windows 2000, Windows XP

Installing S3 Burner on a PC

S3 burner can be retrieved from our homepage www.pdahl.se. To retrieve it you need a user ID and password that you can get from our sales or support department.

1. Load the ZIP file S3BURNER.ZIP in a temporary directory
2. Run Setup

Updating the software

3. Connect communication cable between PC and the S3, COM1 to COM1
4. Disconnect the power to the S3
5. Move the programming jumper E3:A, to the B position (see figure below)

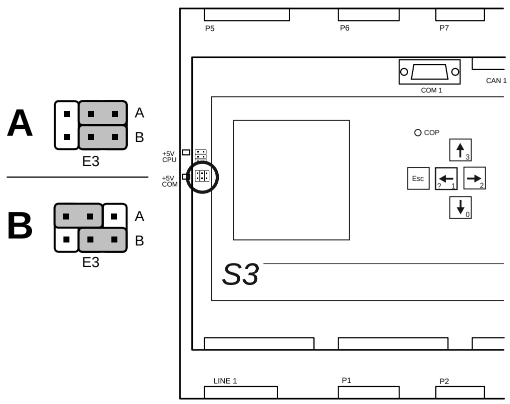


Figure 21.1 Jumper Settings
A = Normal Mode
B = Programming Mode

6. Connect the power, note that the screen of the S3 is blank during software upgrade.
1. Start the program **S3 burner**
2. If your computer is fitted with several COM-ports, set the connected COM-port under Archive/Settings
3. Run Erase in ***S3 burner,*** wait until erase is confirmed
4. Select file to be loaded (MP2*.sw)
5. Run Upload in ***S3 burner***. On some computers an error message might display when upgrade is started, do not click ”OK” - update is not affected by this error message. Wait for confirmation that software has been upgraded.
6. Disconnect power
7. Move back jumper, E3:A to the A position (see figure above)
8. Reconnect power

9. I a message is displayed on the S3 that the memory need to be updated - run `\System\Update memory`
10. Run `\Reset`

21.2 Copying Parameters between S3 Control Units

It is possible to copy parameter data between two S3 control units. This could be useful if two identical lift systems are used or if a S3 unit need to be replaced.

Requirements

S3 Control Unit Software version MP2.1.64 or higher

Null modem cable

Connection

Connect the two computers with a null modem cable. Both computers need 3x400V or 3x230V voltage supply (24 V voltage supply is not necessary).

Programming

1. Set the parameter `Parameters/Supervision/585  Supervision` on **BOTH** computers to `Via COM1`
2. Restart both computers

Copying parameters

IMPORTANT!

The following instructions are ONLY performed on the computer the parameters need to be copied **TO**. This procedure will overwrite the parameters on the computer this operation is performed on.

1. On the computer the parameters are copied **to** run `System\Copy memory`
2. When the S3 is done copying, restart the computer for the system to be updated with the new settings.
3. If a message is diplayed that the memory need to be updated, run `System\Update memory`

22 CAN Bus

22.1 Controller Area Network (CAN)

CAN is a broadcast serial bus standard for connecting electronic control units. The system allows for a large number of units to be interconnected via a single cable. The system also allows for longer cables where the length of the cables depends on the required bit rate.

The S3 has a relatively low bit rate and a combined cable length of up to 1000 metre is possible.

Due to power consumption of each connected CAN device the recommended number of connected devices shouldn't exceed 50 devices.

22.2 CAN-Bus Devices

22.2.1 CAN Connectors

There are a variety of CAN connectors available. Figure below shows two different connectors, together with information about the wires.

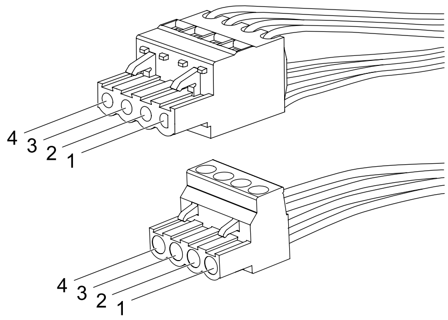


Figure 22.1 CAN Connector
Two connectors.
1. 0 V
2. +24 V
3. C1 Signal
4. C2 Signal

22.2.2 CAN01 CAN-Bus Repeater

The CAN01 device is a repeater that boost the CAN Bus signal and allows for more devices to be connected.

The CAN01 also works as a termination device. It allows for short-circuits to be isolated within the limits of the termination device.

This is especially important for group lift systems, where a short-circuited lift system can be isolated and the other lifts in the system can operate as normal. The figure below shows three different ways to use the CAN01 to protect parts of the lift system from short circuits.

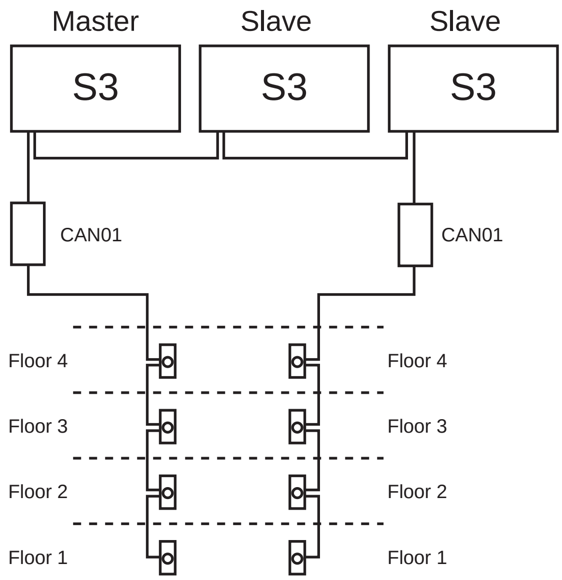


Figure 22.2 CAN01 Redundancy 1
Two CAN01 fitted in a three group system isolating the landing calls circuits from the computers. A short circuit in any of the two landing calls circuits will affect only the short circuited circuit. Landing calls will still be received from the other circuit.

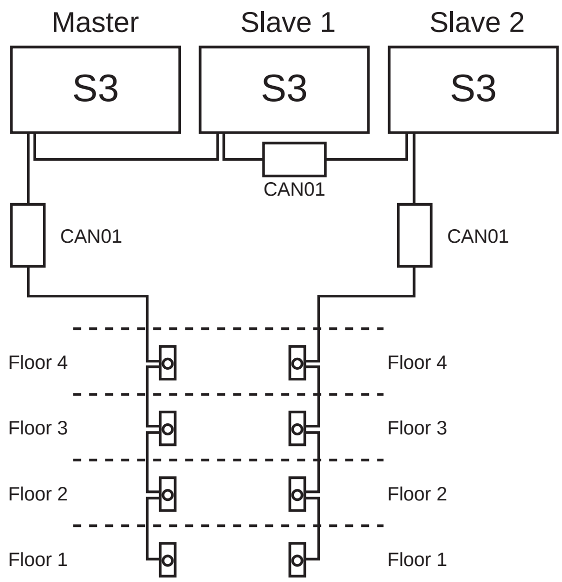


Figure 22.3 CAN01 Redundancy 2
Three CAN01 fitted in a three group system isolating the landing calls circuits and one computer. A short circuit in any of the two landing calls circuits will affect only the short circuited circuit. A short circuit in the computer circuit will affect only one or two computers. Landing calls will still be received by one or two computers.

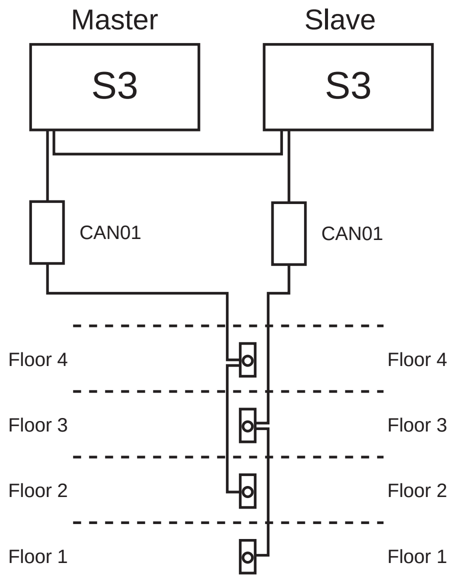


Figure 22.4 CAN01 Redundancy 3
Two CAN01 fitted in a two group system. The landing call buttons have been fitted every so that one circuit controls every other floor.
The CAN01's isolates the landing call circuits from the computers. A short circuit will affect only every other floor. This could be useful in tall buildings where a short circuited "floor" mean that you only have to go to an adjacent floor to find a functional landing call button.

22.3 Replacing a CAN-Bus Device

Follow these instructions to replace a CAN-Bus device.

1. Note the node number of the CAN-Bus device that needs to be replaced.
2. On the S3 Control Unit locate the CAN-Bus device that need to be replaced in the `Parameters/Ports` list. The device is listed under its node number. If the S3 can't communicate with the device the device should be marked with an `X`
3. Press the right button on the S3 keypad to display the `Cut and Paste` menu.
4. To copy the settings of the device chose `Cut`
5. Return to the `Parameters/Ports` list and select the new device. The new device should be marked with a ?
6. Press the right button on the S3 keypad to display the `Cut and Paste` menu.
7. To paste the settings of the old device onto the new device chose `Paste`
8. Restart the system

22.4 Adding a new CAN-Bus Device

Buttons and I/O cards are programmed the same way as I/O ports on the S3 Control Unit. For Floor Indicators the floor the indicator is installed on is chosen (floor designations are programmed under the `Parameters/Indicators` menu). Master buttons are listed under their unique node number and the slave buttons are listed under the master button, where the action of the button is configured. Slave buttons can be replaced without the need for a reset.

22.4.1 Programming a Button (S4-PB05)

1. Connect the button to the CAN-Bus
2. On the S3 Control Unit locate the button in the `Parameters/Ports` list. The button is listed under its node number and should be followed by a ?
3. Press `enter` to display the `Configure Button Menu`. SW1 is the master button and SW2 is the first slave-button, and so on.
4. Select `SW1` and press `enter`
5. Select `Function` and press `enter`
6. Select the desired function in the list
7. Program possible slave buttons on `SW2-7`
8. Reset the computer

22.4.2 Programming an I/O-card (S4-IO8)

1. Connect the I/O-card to the CAN-Bus
2. On the S3 Control Unit locate the I/O-card in the `Parameters/Ports` list. The I/O-card is listed under its node number and should be followed by a ?
3. Press `enter` to display the `B11-18 Ports Menu`. B11-18 represents the I/O ports of the I/O card.
4. Select `B11` and press `enter`
5. Select `Function` and press `enter`
6. Select the desired function in the list
7. Reset the computer

22.4.3 Programming a Floor Indicator (S3-DF03, S3-DF04, S4-MIO2, S4-MIO3)

1. Connect the floor indicator to the CAN-Bus
2. On the S3 Control Unit locate the floor indicator in the `Parameters/Ports` list. The floor indicator is listed under its node number and should be followed by a ?
3. Press `enter` to display the `Floor Menu`.
4. Select the floor the floor indicator is installed on and press `enter`
5. Reset the computer

23 Parameter List

Param.	Default	Obj. value	Description
Controlsystem			
100	Oneway	__________	System type
			PB/LandingQueue
			One way collective
			Two way collective
101	2	__________	Floors
102	3.0s	__________	Stop time car
103	6.0s	__________	Stop time landing
110	30.0s	__________	Car fan time
111	No	__________	Car fan at travel
112	600.0	__________	Car light time

Positioning

General

Param.	Default	Obj. value	Description
151	0	__________	LD pos flag UP
152	2	__________	LU pos flag DOWN
153	Normal	__________	Direction
			Normal
			Inverse
154	0	__________	Sync. pos.
			Encoder
155	Sync/ slowdown	__________	Configuration sync
156	10	__________	Stop low speed down
157	10	__________	Stop low speed up
158	500	__________	Stop from med. speed
159	1000	__________	Stop from high speed
160	250	__________	Zone size

Floorpositions down

Param.	Default	Obj. value	Description
200	0	__________	Floor 1
201	2	__________	Floor 2
202	4	__________	Floor 3
203	6	__________	Floor 4
204	8	__________	Floor 5
205	10	__________	Floor 6
206	12	__________	Floor 7
207	14	__________	Floor 8
208	16	__________	Floor 9
209	18	__________	Floor 10
210	20	__________	Floor 11
211	22	__________	Floor 12
212	24	__________	Floor 13
213	26	__________	Floor 14
214	28	__________	Floor 15
215	30	__________	Floor 16
216	32	__________	Floor 17
217	34	__________	Floor 18
218	36	__________	Floor 19
219	38	__________	Floor 20
220	40	__________	Floor 21
221	42	__________	Floor 22
222	44	__________	Floor 23
223	46	__________	Floor 24
224	48	__________	Floor 25
225	50	__________	Floor 26
226	52	__________	Floor 27
227	54	__________	Floor 28
228	56	__________	Floor 29
229	58	__________	Floor 30
230	60	__________	Floor 31
231	62	__________	Floor 32

Floorpositions up

Param.	Default	Obj. value	Description
232	0	__________	Floor 1
233	2	__________	Floor 2
234	4	__________	Floor 3
235	6	__________	Floor 4
236	8	__________	Floor 5
237	10	__________	Floor 6
238	12	__________	Floor 7
239	14	__________	Floor 8
240	16	__________	Floor 9
241	18	__________	Floor 10
242	20	__________	Floor 11
243	22	__________	Floor 12
244	24	__________	Floor 13
245	26	__________	Floor 14
246	28	__________	Floor 15
247	30	__________	Floor 16
248	32	__________	Floor 17
249	34	__________	Floor 18
250	36	__________	Floor 19
251	38	__________	Floor 20
252	40	__________	Floor 21
253	42	__________	Floor 22
254	44	__________	Floor 23
255	46	__________	Floor 24
256	48	__________	Floor 25
257	50	__________	Floor 26
258	52	__________	Floor 27
259	54	__________	Floor 28
260	56	__________	Floor 29
261	58	__________	Floor 30
262	60	__________	Floor 31
263	62	__________	Floor 32

Floorcontrol

Param.	Default	Obj. value	Description
264	00000000	__________	Floor 1
265	00000000	__________	Floor 2
266	00000000	__________	Floor 3
267	00000000	__________	Floor 4
268	00000000	__________	Floor 5
269	00000000	__________	Floor 6
270	00000000	__________	Floor 7
271	00000000	__________	Floor 8
272	00000000	__________	Floor 9
273	00000000	__________	Floor 10
274	00000000	__________	Floor 11
275	00000000	__________	Floor 12
276	00000000	__________	Floor 13
277	00000000	__________	Floor 14
278	00000000	__________	Floor 15
279	00000000	__________	Floor 16
280	00000000	__________	Floor 17
281	00000000	__________	Floor 18
282	00000000	__________	Floor 19
283	00000000	__________	Floor 20
284	00000000	__________	Floor 21
285	00000000	__________	Floor 22
286	00000000	__________	Floor 23

287	00000000		Floor 24
288	00000000		Floor 25
289	00000000		Floor 26
290	00000000		Floor 27
291	00000000		Floor 28
292	00000000		Floor 29
293	00000000		Floor 30
294	00000000		Floor 31
295	00000000		Floor 32

Slowdown highspeed

296	01		Floor 1
297	11		Floor 2
298	11		Floor 3
299	11		Floor 4
300	11		Floor 5
301	11		Floor 6
302	11		Floor 7
303	11		Floor 8
304	11		Floor 9
305	11		Floor 10
306	11		Floor 11
307	11		Floor 12
308	11		Floor 13
309	11		Floor 14
310	11		Floor 15
311	11		Floor 16
312	11		Floor 17
313	11		Floor 18
314	11		Floor 19
315	11		Floor 20
316	11		Floor 21
317	11		Floor 22
318	11		Floor 23
319	11		Floor 24
320	11		Floor 25
321	11		Floor 26
322	11		Floor 27
323	11		Floor 28
324	11		Floor 29
325	11		Floor 30
326	11		Floor 31
327	10		Floor 32

Slowdown medium speed

328	0		Floor 1
329	0		Floor 2
330	0		Floor 3
331	0		Floor 4
332	0		Floor 5
333	0		Floor 6
334	0		Floor 7
335	0		Floor 8
336	0		Floor 9
337	0		Floor 10
338	0		Floor 11
339	0		Floor 12
340	0		Floor 13
341	0		Floor 14
342	0		Floor 15
343	0		Floor 16
344	0		Floor 17
345	0		Floor 18
346	0		Floor 19
347	0		Floor 20
348	0		Floor 21
349	0		Floor 22
350	0		Floor 23
351	0		Floor 24
352	0		Floor 25
353	0		Floor 26
354	0		Floor 27
355	0		Floor 28
356	0		Floor 29
357	0		Floor 30
358	0		Floor 31
369	0		Floor 32

Starts sequences

Masks for motor control

400	11111101		Mask down
401	11111110		Mask up
402	00000000		Autotunning
403	Yes		CC at start
404	Yes		ZS at start
405	Yes		ZS at stop
406	Flank		ZS trigger
407	No		Brake control

Start highspeed

410	00000000		Start 1
411	0.0s		Time 1
412	00000000		Start 2
413	0.0s		Time 2
414	00000000		Start 3
415	0.0s		Time 3
416	00000000		Start step 4
417	00000000		Low speed value
418	00000000		Stop 1
419	0.0s		Time 1
420	00000000		Stop 2,Safety
421	0.0s		Time 2
422	00000000		Stop 3, Def stop
423	0.0s		Time 3

Start mediumspeed

430	00000000		Start 1
431	0.0s		Time 1
432	00000000		Start 2
433	0.0s		Time 2
434	00000000		Start 3
435	0.0s		Time 3
436	00000000		Start 4
437	00000000		Low speed value
438	00000000		Stop 1
439	0.0s		Time 1
440	00000000		Stop 2, Safety
441	0.0s		Time 2
442	00000000		Stop 3, Def. stop
443	0.0s		Time 3

Start lowspeed

450	00000000		Start 1
451	0.0s		Time 1
452	00000000		Start 2
453	0.0s		Time 2
454	00000000		Start 3
455	0.0s		Time 3
456	00000000		Start 4
457	00000000		Low speed value
458	00000000		Stop 1
459	0.0s		Time 1
460	00000000		Stop 2, Safety

461	0.0s	__________	Time 2
462	00000000	__________	Stop 3, Def. stop
463	0.0s	__________	Time 3

Start maintenance

470	00000000	__________	Start 1
471	0.0s	__________	Time 1
472	00000000	__________	Start 2
473	0.0s	__________	Time 2
474	00000000	__________	Start 3
475	0.0s	__________	Time 3
476	00000000	__________	Start 4
477	00000000	__________	Lowspeedvalue
478	00000000	__________	Stop 1
479	0.0s	__________	Time 1
480	00000000	__________	Stop 2, Safety
481	0.0s	__________	Time 2
482	00000000	__________	Stop 3, Def. stop
483	0.0s	__________	Time 3

Delay start/stop

490	0.5s	__________	Start delay
491	0.0	__________	Stop delay

Quick Start

493	No	__________	Active, Yes/No
494	5.0s	__________	Delay
495	1.0s	__________	Max time
496	00000000	__________	Start 1
497	00000000	__________	Stop 1
498	0.0s	__________	Time 1

Protections

Controltimes

500	0.0s	__________	Start time S3
501	1.5s	__________	Safety circuit time

Contactors

510	2.0s	__________	Contactor surveillance

Traveltime

520	Locked	__________	Configuration Not Locked Locked after max travel time
521	45.0s	__________	Time highspeed
522	6.0s	__________	Time low speed
523	Yes	__________	Movement control

Phase detection

530	Yes	__________	Phase detection Yes/No
531	2	__________	Nr of measurement
532	3	__________	Voltage asymmetry
533	3	__________	Angle asymmetry

Temperature

540	Yes	__________	Surveillance temperature
541	60	__________	On/off lift
542	40	__________	On/Off fan cabinet

Service Counter

545	0	__________	Max Starts

Fan control lift motor

550	30.0s	__________	Time fan motor

Config external fault input

Input 1

560	No	__________	Stop in travel No Down direction Up direction Up/Down direction
561	Unlocked	__________	Config Unlocked/Locked

Input 2

562	No	__________	Stop in travel No Down direction Up direction Up/Down direction
563	Unlocked	__________	Config Unlocked/Locked

Input 3

564	Up/Down No	__________	1 st. travel Down direction Up direction Up/Down direction
565	Unlocked	__________	Config Unlocked/Locked

Pawl device

571	00000010	__________	Start value
572	2.0s	__________	Control time

External unit A

575	None	__________	Reaction None Car emergency stop Restart S3
576	0.0s	__________	Delay output

External unit B

577	None None,	__________	Reaction Car emergency stop, Restart S3
578	0.0s	__________	Delay output

Supervision

External alarm

580	600.0s	__________	Alarm delay, out of order
581	Yes	__________	Doorcircuit supervision Yes/No
582	Yes	__________	Doorclosing supervison Yes/No
583	60.0s	__________	Closing time
585	No	__________	Supervison No, Via COM1, Via CAN
582	None	__________	Modem type None, GS-01 GSM Modem,TD-33 (Hayes comp.)
583	9600	__________	Baud rate 110-38400bps

Specialtravels

Sending

591	300.0s	__________	Time
592	No	__________	Destination 1 No, Floor 1-32
593	Side A	__________	Side A, B, A/B
594	No	__________	Destination 2 No, Floor 1-32
595	Side A	__________	Side A, B, A/B
596	No	__________	New time at door opening

Landings off

600	Monostabil	__________	Configuration Monostabile Bistabile
601	Off	__________	Doors Off Opens at arrival Parking with open doors
602	10.0s	__________	Time for sending
603	Yes	__________	Resend Yes, No
604	No	__________	Destination Noj, Floor 1-32
605	Side A	__________	Side A, B, A/B
606	Yes	__________	Door opening with Landings

Fireservice

610	Floor 1	__________	evacuation floor alternative 1
611	Not active	__________	Side A, B, A/B
612	Floor 1	__________	evacuation floor alternative 2
613	Not active	__________	Side A, B, A/B
614	No	__________	Stop in travel No Down direction Up direction Down/up direction
615	O.at arriv.	__________	Door Not active, Opening at arrival Open in floor
616	Yes	__________	DOLx1 Opens No/Yes
617	Yes	__________	DOLx2 Opens No/Yes

Firemanservice

620	O.at arriv.	__________	Door Not active, Opening at arrival
621	No	__________	DOLx2 Opens No/Yes
622	No	__________	Resend

Power failure

623	1.0s	__________	UPS Switchover time
624	0.0s	__________	UPS Maxtime 0.0s Not active
625	Floor 1	__________	Destination Not active, Floor 1-32
626	Not active	__________	Side Not active, Side A, Side B, Side A/B
627	60.0s	__________	Max wait time
628	No	__________	In service

Keycode

Keycode 1

630		__________	Code (max 7 digits)
631	Not active	__________	Floor
632	Not active	__________	Side A, B ,A/B

Keycode 2

635		__________	Code (max 7 digits)
636	Not active	__________	Floor
637	Not active	__________	Side A, B ,A/B

General

640	5.0s	__________	Keycode time

Priority calls

645	0.0s	__________	Max time
646	Auto	__________	Return Auto, Manuel

Level./Doors

Zonesystem

650	No	__________	Zone system
651	PD/PU	__________	Door zone No Yes PD/PU Yes Zone system

Relevelling

660	No	__________	Active No Door open Door closes Open/Closed
661	2.0s	__________	Start time
662	0.0s	__________	Stop delay

General

Common parameters for Side A and B

670	Automatic	__________	Doorautomatic Off, On , Automatic
671	Yes	__________	Opening with car pushbuttons
672	No	__________	Closing with car pushbuttons
673	Yes	__________	Opening with landing pushbuttons
674	2.0s	__________	Delay for activating dorrclosing pushbuttons
675	No	__________	Door open in floor No, Floor 1-32, All
676	Side A	__________	Side A, B
677	At stop	__________	Retiering cam At stopp, Early
678	No	__________	Forsed doorclosing

Side A

680	Swingdoor	__________	Doortype Swingdoor, Telescopic, Tunnel
681	5.0s	__________	Door time 1
682	2.0s	__________	Door time 2

683	30.0s	__________	Door time 4
684	0.2s	__________	Time betwwen O-C
685	10.0s	__________	Maxtime closing
686	Monostabil	__________	Input 1 config Monostabil/Bistabil
687	Monostabil	__________	Input 4 config Monostabil/Bistabil
688	At stop	__________	Dooropening at arrival No/At stop/Early

Side B

690	Swingdoor	__________	Doortype Swingdoor, Telescopic, Tunnel
691	5.0s	__________	Doortime 1
692	2.0s	__________	Doortime 2
693	30.0s	__________	Doortime 4
694	0.2s	__________	Time between 0-C
695	10.0s	__________	Maxtime closing
696	Monostabil	__________	Input 1 config Monostabil/Bistabil
697	Monostabil	__________	Input 4 config Monostabil/Bistabil
698	At stop	__________	Dooropening at arrival No/At stop/Early

Cabindoor

700	Timelim.	__________	Dooropening Timeslimited, Continuous
701	5.0s	__________	Doortime arrival
702	3.0s	__________	Doortime Pushbutton
703	0.2s	__________	Time between 0-C
704	10.0s	__________	Maxtime closing
705	At stop	__________	Dooropening at arrival At stop/Early

Cabindoors

710	No	__________	Cardoor floor 1 No Side A Side B Side A/B
711	No	__________	Cardoor floor 2
712	No	__________	Cardoor floor 3
713	No	__________	Cardoor floor 4
714	No	__________	Cardoor floor 5
715	No	__________	Cardoor floor 6
716	No	__________	Cardoor floor 7
717	No	__________	Cardoor floor 8
718	No	__________	Cardoor floor 9
719	No	__________	Cardoor floor 10
720	No	__________	Cardoor floor 11
721	No	__________	Cardoor floor 12
722	No	__________	Cardoor floor 13
723	No	__________	Cardoor floor 14
724	No	__________	Cardoor floor 15
725	No	__________	Cardoor floor 16
726	No	__________	Cardoor floor 17
727	No	__________	Cardoor floor 18
728	No	__________	Cardoor floor 19
729	No	__________	Cardoor floor 20
730	No	__________	Cardoor floor 21
731	No	__________	Cardoor floor 22
732	No	__________	Cardoor floor 23
733	No	__________	Cardoor floor 24
734	No	__________	Cardoor floor 25
735	No	__________	Cardoor floor 26
736	No	__________	Cardoor floor 27
737	No	__________	Cardoor floor 28
738	No	__________	Cardoor floor 29
739	No	__________	Cardoor floor 30
740	No	__________	Cardoor floor 31
741	No	__________	Cardoor floor 32

Lift in group

750	0	__________	No group: 0 Slave: 1 Master: Nr of lifts 751
	0	__________	Address 0-7
752	No	__________	Landing lamps/leds
756	0	__________	Firstfloor
757	7	__________	Servicefactor 1-7
758	60.0s	__________	Maxtime for dooropen
759	No active	__________	Zone bottom Not active, Floor 1-32
760	No active	__________	Zone top Not active, Floor 1-32
761	30.0s	__________	Zone time
762	Not Active	__________	Long Push Not Active Automatic Lift 0-7

Indicators

Travel arrows

780	No	__________	Travelarrows at floor No/Yes
781	No	__________	Travelarrows in travel No/Yes

Arrivalsignal 1

790	No	__________	Config At arrival/ At dooropening
791	On	__________	Landing calls Off, On, On/Off
792	1.0s	__________	Time

Arrivalsignal 2

795	No	__________	Config At arrival/ At dooropening
796	On	__________	Landing calls Off, On, On/Off
797	1.0s	__________	Time

Occupied signal

800	5.0s	__________	Occupied time

Floor indicators

General

805	Standard	__________	Config floorind Standard Arrival/Parked

Side A Binary

810	00000000		Code for floor 1
811	00000001		Floor 2
812	00000010		Floor 3
813	00000011		Floor 4
814	00000100		Floor 5
815	00000101		Floor 6
816	00000110		Floor 7
817	00000111		Floor 8
818	00001000		Floor 9
819	00001001		Floor 10
820	00001010		Floor 11
821	00001011		Floor 12
822	00001100		Floor 13
823	00001101		Floor 14
824	00001110		Floor 15
825	00001111		Floor 16
826	00010000		Floor 17
827	00010001		Floor 18
828	00010010		Floor 19
829	00010011		Floor 20
830	00010100		Floor 21
831	00010101		Floor 22
832	00010110		Floor 23
833	00010111		Floor 24
834	00011000		Floor 25
835	00011001		Floor 26
836	00011010		Floor 27
837	00011011		Floor 28
838	00011100		Floor 29
839	00011101		Floor 30
840	00011110		Floor 31
841	00011111		Floor 32

Side A Text

874	1		Floor 1
875	2		Floor 2
876	3		Floor 3
877	4		Floor 4
878	5		Floor 5
879	6		Floor 6
880	7		Floor 7
881	8		Floor 8
882	9		Floor 9
883	10		Floor 10
884	11		Floor 11
885	12		Floor 12
886	13		Floor 13
887	14		Floor 14
888	15		Floor 15
889	16		Floor 16
890	17		Floor 17
891	18		Floor 18
892	19		Floor 19
893	20		Floor 20
894	21		Floor 21
895	22		Floor 22
896	23		Floor 23
897	24		Floor 24
898	25		Floor 25
899	26		Floor 26
900	27		Floor 27
901	28		Floor 28
902	29		Floor 29
903	30		Floor 30
904	31		Floor 31
905	32		Floor 32

Side B Binary

842	00100000		Code for floor 1
843	00100001		Floor 2
844	00100010		Floor 3
845	00100011		Floor 4
846	00100100		Floor 5
847	00100101		Floor 6
848	00100110		Floor 7
849	00100111		Floor 8
840	00101000		Floor 9
851	00101001		Floor 10
852	00101010		Floor 11
853	00101011		Floor 12
854	00101100		Floor 13
855	00101101		Floor 14
856	00101110		Floor 15
857	00101111		Floor 16
858	00110000		Floor 17
859	00110001		Floor 18
850	00110010		Floor 19
861	00110011		Floor 20
862	00110100		Floor 21
863	00110101		Floor 22
864	00110110		Floor 23
865	00110111		Floor 24
866	00111000		Floor 25
867	00111001		Floor 26
868	00111010		Floor 27
869	00111011		Floor 28
860	00111100		Floor 29
871	00111101		Floor 30
872	00111110		Floor 31
873	00111111		Floor 32

Side B

906	1		Floor 1
907	2		Floor 2
908	3		Floor 3
909	4		Floor 4
910	5		Floor 5
911	6		Floor 6
912	7		Floor 7
913	8		Floor 8
914	9		Floor 9
915	10		Floor 10
916	11		Floor 11
917	12		Floor 12
918	13		Floor 13
919	14		Floor 14
920	15		Floor 15
921	16		Floor 16
922	17		Floor 17
923	18		Floor 18
924	19		Floor 19
925	20		Floor 20
926	21		Floor 21
927	22		Floor 22
928	23		Floor 23
929	24		Floor 24
930	25		Floor 25
931	26		Floor 26
932	27		Plan 27
933	28		Plan 28
934	29		Plan 29
935	30		Plan 30
936	31		Plan 31
937	32		Plan 32

S3-DF03

940	Load	__________	Load text
941	Lift off	__________	Lift off text
942	Font size	__________	Font size Small font Big font
943	Overload	__________	Loadmessage Overload Fullload
944	Fireservice	__________	Firealarm text
945	Out of order	__________	Out of order text
946	Powerfail	__________	Powerfail text
947	Priority	__________	Priority text

Ports

KR01

S1	MP	__________
S2	ML	__________
S3	DC	__________
S4	None	__________
S5	None	__________
IP1	None	__________
IP2	None	__________
T1	EF1	__________
T2	None	__________
T3	None	__________
RE1	V0	__________
RE2	V1	__________
RE3	V2	__________
RE4	V3	__________
RE5	V4	__________
RE6	V5	__________
RE7	V6	__________
RE8	V7	__________
RE9	None	__________
RE10	None	__________
RE11	OLA	__________
RE12	CLA	__________
RE13	RC	__________

UD03.1

P1	PD	__________
P2	PU	__________
P3	LD	__________
P4	LU	__________
I11	MT	__________
I12	CC	__________
I13	OL	__________
I14	DOLA1	__________
I15	DOLA2	__________
I16	None	__________
I17	None	__________
I18	None	__________
O11	D1A	__________
O12	D2A	__________
O13	D3A	__________
O14	D4A	__________
O15	D5A	__________
O16	D6A	__________
O17	D7A	__________
O18	D8A	__________
B11	C1A	__________
B12	C2A	__________
B13	C3A	__________
B14	C4A	__________
B15	C5A	__________
B16	C6A	__________
B17	C7A	__________
B18	C8A	__________
B21	U1A	__________
B22	D2A	__________
B23	D3A	__________
B24	D4A	__________
B25	D5A	__________
B26	D6A	__________
B27	D7A	__________
B28	D8A	__________
B31	None	__________
B32	None	__________
B33	None	__________
B34	None	__________
B35	None	__________
B36	None	__________
B37	None	__________
B38	None	__________

UD03.2

I11	None	__________
I12	None	__________
I13	None	__________
I14	None	__________
I15	None	__________
I16	None	__________
I17	None	__________
I18	None	__________
O11	None	__________
O12	None	__________
O13	None	__________
O14	None	__________
O15	None	__________
O16	None	__________
O17	None	__________
O18	None	__________
B11	None	__________
B12	None	__________
B13	None	__________
B14	None	__________
B15	None	__________
B16	None	__________
B17	None	__________
B18	None	__________
B21	None	__________
B22	None	__________
B23	None	__________
B24	None	__________
B25	None	__________
B26	None	__________
B27	None	__________
B28	None	__________
B31	None	__________
B32	None	__________
B33	None	__________
B34	None	__________
B35	None	__________
B36	None	__________
B37	None	__________
B38	None	__________

S3-IO8 Node

Nodenumber: __________

B11	None	__________
B12	None	__________
B13	None	__________

B14 None ________
B15 None ________
B16 None ________
B17 None ________
B18 None ________

S3-IO8 Node

Nodenumber: ________
B11 None ________
B12 None ________
B13 None ________
B14 None ________
B15 None ________
B16 None ________
B17 None ________
B18 None ________

S3-IO8 Node

Nodenumber: ________
B11 None ________
B12 None ________
B13 None ________
B14 None ________
B15 None ________
B16 None ________
B17 None ________
B18 None ________

S3-IO8 Node

Nodenumber: ________
B11 None ________
B12 None ________
B13 None ________
B14 None ________
B15 None ________
B16 None ________
B17 None ________
B18 None ________

S3-IO8 Node

Nodenumber: ________
B11 None ________
B12 None ________
B13 None ________
B14 None ________
B15 None ________
B16 None ________
B17 None ________
B18 None ________

S3-IO8 Node

Nodenumber: ________
B11 None ________
B12 None ________
B13 None ________
B14 None ________
B15 None ________
B16 None ________
B17 None ________
B18 None ________

S3-IO8 Node

Nodenumber: ________
B11 None ________

B12 None ________
B13 None ________
B14 None ________
B15 None ________
B16 None ________
B17 None ________
B18 None ________

S3-IO8 Node

Nodenumber: ________
B11 None ________
B12 None ________
B13 None ________
B14 None ________
B15 None ________
B16 None ________
B17 None ________
B18 None ________

S3-IO8 Node

Nodenumber: ________
B11 None ________
B12 None ________
B13 None ________
B14 None ________
B15 None ________
B16 None ________
B17 None ________
B18 None ________

S3-IO8 Node

Nodenumber: ________
B11 None ________
B12 None ________
B13 None ________
B14 None ________
B15 None ________
B16 None ________
B17 None ________
B18 None ________

S4-PB05

Node number: ________
SW1 None ________
SW2 None ________
SW3 None ________
SW4 None ________
SW5 None ________
SW6 None ________
SW7 None ________
SW8 None ________

S4-PB05

Node number: ________
SW1 None ________
SW2 None ________
SW3 None ________
SW4 None ________
SW5 None ________
SW6 None ________
SW7 None ________
SW8 None ________

S4-PB05

Node number: ____________
SW1 None ____________
SW2 None ____________
SW3 None ____________
SW4 None ____________
SW5 None ____________
SW6 None ____________
SW7 None ____________
SW8 None ____________

S4-PB05

Node number: ____________
SW1 None ____________
SW2 None ____________
SW3 None ____________
SW4 None ____________
SW5 None ____________
SW6 None ____________
SW7 None ____________
SW8 None ____________

S4-PB05

Node number: ____________
SW1 None ____________
SW2 None ____________
SW3 None ____________
SW4 None ____________
SW5 None ____________
SW6 None ____________
SW7 None ____________
SW8 None ____________

S4-PB05

Node number: ____________
SW1 None ____________
SW2 None ____________
SW3 None ____________
SW4 None ____________
SW5 None ____________
SW6 None ____________
SW7 None ____________
SW8 None ____________

S4-PB05

Node number: ____________
SW1 None ____________
SW2 None ____________
SW3 None ____________
SW4 None ____________
SW5 None ____________
SW6 None ____________
SW7 None ____________
SW8 None ____________

S4-PB05

Node number: ____________
SW1 None ____________
SW2 None ____________
SW3 None ____________
SW4 None ____________
SW5 None ____________
SW6 None ____________
SW7 None ____________
SW8 None ____________

S4-PB05

Node number: ____________
SW1 None ____________
SW2 None ____________
SW3 None ____________
SW4 None ____________
SW5 None ____________
SW6 None ____________
SW7 None ____________
SW8 None ____________

S4-PB05

Node number: ____________
SW1 None ____________
SW2 None ____________
SW3 None ____________
SW4 None ____________
SW5 None ____________
SW6 None ____________
SW7 None ____________
SW8 None ____________

S4-PB05

Node number: ____________
SW1 None ____________
SW2 None ____________
SW3 None ____________
SW4 None ____________
SW5 None ____________
SW6 None ____________
SW7 None ____________
SW8 None ____________

S4-PB05

Node number: ____________
SW1 None ____________
SW2 None ____________
SW3 None ____________
SW4 None ____________
SW5 None ____________
SW6 None ____________
SW7 None ____________
SW8 None ____________

S4-PB05

Node number: ____________
SW1 None ____________
SW2 None ____________
SW3 None ____________
SW4 None ____________
SW5 None ____________
SW6 None ____________
SW7 None ____________
SW8 None ____________

S4-PB05

Node number: ____________
SW1 None ____________
SW2 None ____________
SW3 None ____________
SW4 None ____________
SW5 None ____________
SW6 None ____________
SW7 None ____________
SW8 None ____________

S4-PB05

Node number: ____________
SW1 None ____________
SW2 None ____________
SW3 None ____________
SW4 None ____________
SW5 None ____________
SW6 None ____________
SW7 None ____________

SW8 None ____________

S4-PB05

Node number: ____________
SW1 None ____________
SW2 None ____________
SW3 None ____________
SW4 None ____________
SW5 None ____________
SW6 None ____________
SW7 None ____________
SW8 None ____________

S4-PB05

Node number: ____________
SW1 None ____________
SW2 None ____________
SW3 None ____________
SW4 None ____________
SW5 None ____________
SW6 None ____________
SW7 None ____________
SW8 None ____________

S4-PB05

Node number: ____________
SW1 None ____________
SW2 None ____________
SW3 None ____________
SW4 None ____________
SW5 None ____________
SW6 None ____________
SW7 None ____________
SW8 None ____________

S4-PB05

Node number: ____________
SW1 None ____________
SW2 None ____________
SW3 None ____________
SW4 None ____________
SW5 None ____________
SW6 None ____________
SW7 None ____________
SW8 None ____________

S4-PB05

Node number: ____________
SW1 None ____________
SW2 None ____________
SW3 None ____________
SW4 None ____________
SW5 None ____________
SW6 None ____________
SW7 None ____________
SW8 None ____________

S4-PB05

Node number: ____________
SW1 None ____________
SW2 None ____________
SW3 None ____________

SW4 None ____________
SW5 None ____________
SW6 None ____________
SW7 None ____________
SW8 None ____________

S3-DF03 Node

Node number: __________
Plan Car __________ Placement floor
Floor, Floor 1-32
Side Side A __________ Placement side
Side A, Side B

S3-DF03 Node

Node number: __________
Plan Car __________ Placement floor
Floor, Floor 1-32
Side Side A __________ Placement side
Side A, Side B

S3-DF03 Node

Node number: __________
Plan Car __________ Placement floor
Floor, Floor 1-32
Side Side A __________ Placement side
Side A, Side B

S3-DF03 Node

Node number: __________
Plan Car __________ Placement floor
Floor, Floor 1-32
Side Side A __________ Placement side
Side A, Side B

S3-DF03 Node

Node number: __________
Plan Car __________ Placement floor
Floor, Floor 1-32
Side Side A __________ Placement side
Side A, Side B

S3-DF03 Node

Node number: __________
Plan Car __________ Placement floor
Floor, Floor 1-32
Side Side A __________ Placement side
Side A, Side B

S3-DF03 Node

Node number: __________
Plan Car __________ Placement floor
Floor, Floor 1-32
Side Side A __________ Placement side
Side A, Side B

S3-DF03 Node

Node number: __________
Plan Car __________ Placement floor
Floor, Floor 1-32
Side Side A __________ Placement side
Side A, Side B

S3-DF03 Node

Node number: __________

Plan	Car	__________	Placement floor Floor, Floor 1-32
Side	Side A	__________	Placement side Side A, Side B

S3-DF03 Node

Node number: __________

Plan	Car	__________	Placement floor Floor, Floor 1-32
Side	Side A	__________	Placement side Side A, Side B

S3-DF03 Node

Node number: __________

Plan	Car	__________	Placement floor Floor, Floor 1-32
Side	Side A	__________	Placement side Side A, Side B

S3-DF03 Node

Node number: __________

Plan	Car	__________	Placement floor Floor, Floor 1-32
Side	Side A	__________	Placement side Side A, Side B

S3-DF03 Node

Node number: __________

Plan	Car	__________	Placement floor Floor, Floor 1-32
Side	Side A	__________	Placement side Side A, Side B

S3-DF03 Node

Node number: __________

Plan	Car	__________	Placement floor Floor, Floor 1-32
Side	Side A	__________	Placement side Side A, Side B

24 Standards and Technical Data

24.1 EMC

The system has been tested according to lift standards EN12015 and EN12016 so they fulfil the requirements imposed on a safety product, i.e. the highest level of requirements. On connection blocks and panels, the ESD can handle up to 15 kV air discharge and 8 kV contact discharge. On signals and power cables, 4 kV (burst).

⚠ CAUTION

Despite a high tolerance to EMC, the individual components/cars should be handled at an ESD-secure workplace.

24.2 Temperature

The system is tested to IEC68-2-1, 2 with EN81 F6 as reference. Suitable for working temperature between 0EC and 65EC.

24.3 Mechanics

The system is tested to IEC68-2-6, 27, 28, 29 with F6 as the reference.

24.4 Environmental Requirements

Pollution degree:	III
Temperature:	0-65°C, non-condensing

24.5 Standards

EMC	EN12015 Emission	
	Airborne interference:	30-1000 MHz - class B
	Line-borne:	0.15-30 MHz - class B
	EN12016 Immunity	
	EN61000-4-2 ESD	
	Air discharge:	15kV
	Contact discharge:	8kV
	EN61000-4-3 Irradiated radio frequency magnetic field	
Frequency:	27-500MHz, GSM, NMT	
	Field strength:	10V/m, (modulation for GSM, NMT)
	EN61000-4-4 Line-borne interference	
	Power:	4kV
	Signal lines	4kV
	EN61000-4-11 Voltage drops	
	Reduction:	30%/60%
	Duration:	10ms/100ms
	EN61000-4-11 Voltage interruption	
	Reduction:	>95%
	Duration:	5000ms
Lift:	EN81-1 Line lift	
	EN81-2 Hydraulic lift	
Temperature:	IEC 68-2-1/2 0-65°C	
Mechanics:	IEC-68-2-6 Vibration	
	Frequency range:	10-55Hz
	Amplitude:	0.35mm

Number of axes:	3 at right angles to each other
Duration:	20 double sweeps per axis
IEC-68-2-27 Half sine	
Pulse form:	Half sine
Acceleration:	30g
Pulse length:	11ms
Number of axes:	3 at right angles to each other
Number of pulses:	3 positive and 3 negative per axis
IEC-68-2-29 partial vibration	
Pulse form:	Half sine
Acceleration:	15g
Pulse length:	11ms
Number of axes:	3 at right angles to each other
Number of pulses:	1 positive and 1 negative per axis
IEC-68-2-29 repeated vibration	
Pulse form:	Half sine
Acceleration:	10g
Pulse length:	16ms
Number of axes:	3 at right angles to each other
Number of pulses:	1000 positive and 1000 negative per axis
Shock frequency:	2 pulses per second

Sample card:	IEC664 insulation distance
Creep distance:	8mm between contrary voltages, corresponds to double insulation in 230VAC circuit
Air gap:	5.5mm between contrary voltages, corresponds to double insulation in 230VAC circuit
	All output relay contacts fulfil the requirement for double insulation between the relays at rated voltage.
Encapsulation:	IP20 protection against contact

24.6 Power Supply

Power supply:	230VAC 3-phase with/without phase monitor
	400VAC 3-phase with/without phase monitor
	230VAC single phase without phase monitor
Power:	Own consumption P_{max}=10VA

24.7 Data Inputs

Ix, Bx, Px, Tx:	
Current:	I_{in}=6.7 mA @ 24VDC
Voltage:	U_H=8.3V (typical)
	U_L=6.7V (typical)
IPx:	
Current:	I_{in}=6.7 mA @ 24VDC
Voltage:	U_H=8V (typical)
	U_L=4V (typical)
Sx:	
Current:	I_{in}=5.2 mA @ 230VDC
Voltage:	U_H=130V (typical)
	U_L=70V (typical)

24.8 Data Outputs

24VDC:	
Current:	I_{max}=3A, short term, short-circuit-protected
	I_{max}=ca 2A, continuous temperature-dependent
Bx:	
Current:	I_{max}=170mA, short-circuit-protected
Power:	P_{max}=4W
RE1-RE12, RE15, RE16, RE17	
Voltage:	U_{max}=230V
Power:	P_{max}=2000VA

RE13	
Current:	I_{max}=10A
Voltage:	U_{max}=230V
Power:	P_{max}=2000VA
RE14:1-2	
Current:	I_{max}=8A
Voltage:	U_{max}=230V
Power:	P_{max}=2000VA

24.9 Dimensions

Width x height:	Base card 296mmx210mm + space for connectors	
Depth:	Without front panel:	approx 46 mm (does not fulfil IP20 when removed)
	With front panel:	approx 60 mm
	with extra IO:	approx 77mm

25 Index

26 Appendix

26.1 Telephone modem TD22

Setting of modem TD22 for 2400bps to telephone network:

SW1:	1-4	off
SW2:	1-8	off
SW3:	1	on
	2	off
	3	on
	4-8	off
SW4:	1-2	off
	3	on
	4	off
	5-7	on
	8	off
SW5:	1	on
	2	off
	3	on
	4-8	off

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