CONTROLLER

Intelligent Door Management

# Parameter Description

## TST FUZ2

-B / -C / -CX

-CGH / -CXGH / -LGH

FEIG ELECTRONIC

**⚠ Attention!**

This document is a detailed documentation of the associated door controller.

The safety instructions and installation recommendations of the controller manual shall be followed.

The functional description uses the following characters to indicate the different danger areas and useful tips.

**⚠ Attention!**

**indicates a risk to persons if the procedure is not carried out as described**.

**⚠ Warning!**

**indicates that the controller is at risk**.

**points out information which is IMPORTANT to the operation of the door controller and/or the door**.

points out information which is useful but not essential for the use of the door controller TST FUZ2.

# Contents

## 1 Door Cycle Counter

| P. | [Unit] Range | Function | Description/ Note |
|---|---|---|---|
| P.000 rrrrr | [Cycles] | cycle counter | The content of this parameter indicates the number of previously counted cycles. |

## 2 Maintenance counter

| P. | [Unit] Range | Function | Description/ Note |
|---|---|---|---|
| P.005 rrr | [Cycles] | Maintenance counter | The content of this parameter indicates the number of cycles remaining until maintenance is due.<br><br>*The setting -1 means that the maintenance counter has not yet been activated.* |
| P.973 -ww | 0 ... 1 | Resetting the maintenance counter | By setting this parameter to 1 the maintenance counter is reset. |

## 3 Hold open times / Auto close times

*Which Auto close time runs depends on the arrived end position and on the OPEN command used. For each OPEN command you can use Parameter P.5x4 to set separately whether and which Auto close time runs*
*(X = Number of used input).*

| P. | [Unit] Range | Function | Description/ Note |
|---|---|---|---|
| P.010 www | [Seconds] 0 ... 9999 | Auto close time 1 | The door is held in the end position door OPEN for the set time. The door is then automatically closed. |
| P.011 www | [Seconds] 0 ... 9999 | Auto close time 2 | The door is held in the end position Intermediate Stop / Partial open for the set time. The door is then automatically closed. |

## 4 Pre-warning time before door movement / Clearance time

| P. | [Unit] Range | Function | Description/ Note |
|---|---|---|---|
| P.025 -rr | [Seconds] 0 ... 20 | Pre-warning time before closing | The closing move is delayed following receipt of a CLOSE command or after expiration of the auto close time (forced close) by the time specified in this parameter. |
| P.026 --r | 0 ... 1 | Pre-warning time before closing from between the end positions | By activating this parameter the pre-warning time runs always before closing, undependend from the input, also between end positions and not only in end position OPEN. The used time is set by P.025.<br><br>0: Pre-warning time set by input<br>1: Pre-warning time always active |

## 5 Oncoming traffic

| P. | [Unit] Range | Function | Description/ Note |
|---|---|---|---|
| P.892 -zz | 0 ... 1 | Oncomming traffic control | With this parameter the oncoming traffic function is activated. If activated the direction imformation of an open command (P.5x6) is used to control the traffic lights and the hold open time.<br><br>0: The oncomming traffic function is deactivated. The programmed direction with P.5x6 of relevant commands is not evaluated. Internal the direction is set to "both directions" (P.5x6 = 3).<br>1: The oncomming traffic function is active. The direction set by P.5x6 is evaluated. Traffic lights and hold open time are influenced by the used direction. |

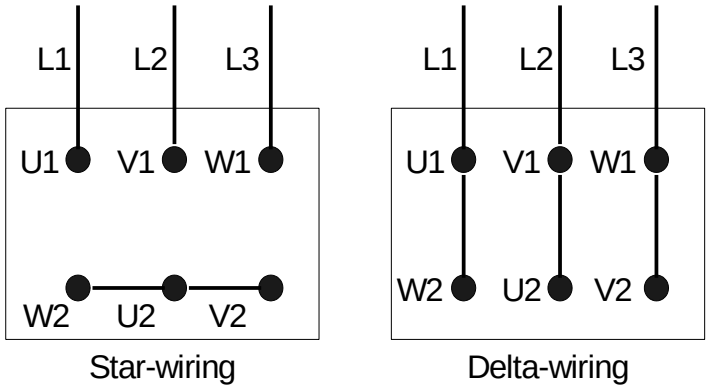
## 6 Forced closing time

| P. | [Unit] Range | Function | Description/ Note |
|---|---|---|---|
| P.012 -ww | [Seconds] 0 ... 200 | Forced closing time | The closing starts after the time set with this parameter. The time starts as soon as no opening or closing is active. The hold open time and the clearance time have a higher priority. That means if one of these times is running the forced closing time will not run. The same is if the door or barrier is in the open position by switching on the controller. |

# 7 Motor settings

The motor ratings are used to teach the door controller what it needs to know about the motor used.

*The setting -1 means that this parameter is automatically queried during start-up of the door controller.*

| P. | [Unit] Range | Function | Description/ Note |
|---|---|---|---|
| P.100 -ww | [Hz] 30 ... 200 | Motor rated frequency | The motor rated frequency indicated on the nameplate is entered here. |
| P.101 -ww | [A] 0,0 ... 9,9 | Motor rated current | The motor rated current indicated on the nameplate is entered here.<br>  <br><br>**Figure 1 Star / Delta wiring**<br>**Note Star / Delta wiring of the motor !** |
| P.102 -ww | [%] 40 ... 100 | Power factor cos Phi | The power factor indicated on the nameplate is entered here.<br>**The entry is made without the leading "0".**<br>**63 thus means cos Phi 0.63.** |
| P.103 -ww | [Volt] 100 ... 500 | Motor rated voltage | The motor rated voltage indicated on the nameplate is entered here.<br>**Note Star /Delta switching of the motor !**<br>**(see Fig. In parameter P.101: Star / Delta wiring)**<br>**Switching the motor windings to 400V operation makes no sense with 230 V supplied controllers, since they can output a maximum of 230V !** |

| P. | [Unit] Range | Function | Description/ Note |
|---|---|---|---|
| P.110 -zz | 0 ... 0 | Drive profile | This profile is used to set the motor rated data for a known motor.<br><br>0: Manual setting of the motor rated data<br><br>*The exact settings which this profile involves can be found in Appendix: Drive Profile.* |
| P.115 -ww | 1,0 ... 3,0 | Motor current regulator | The motor current regulator starts working at the set factor of the motor nominal current and tries to go below this value.<br><br>*0 = Deactivated* |
| P.116 --w | [%] 1 ... 100 | DC bus current limiter | The parameter specifies at what percentage, of the long-term permitted value, the DC bus current is limited.<br><br>*0 = Deactivated* |
| P.117 -ww | 0 ... 1 | cos phi Regulator - (Eco Modus) | The cos phi regulator regulates the phase angle between current and voltage to the nominal cos phi (P.102) in the part-load operational range of the motor by reducing the motor voltage. This function prevents thermal loss in the motor and frequency inverter.<br><br>0: cos phi regulator turned off<br>1: cos phi regulator turned on<br><br>*For very small nominal current of the motor used may be a proper operation of the controller is no longer possible. The motor might possibly remain.*<br><br>*In individual cases it may be necessary to slightly reduce the setting to P.102 to make the door running dynamic.* |
| P.130 -ww | 0 ... 1 | Motor rotary field | This parameter specifies the rotary field of the motor for OPEN move.<br><br>0: Right rotating<br>1: Left rotating |

# 8 Boost

Boost is used to increase the power of drives in the lower speed range.

Either a too little or a too high boost setting can result in improper door movement. If too much boost is already set, this will result in an overcurrent error (F.510/F.410). In this case you must reduce the boost. If the boost is low or 0 and the motor still has insufficient force to move the door, you must increase the boost.

Due to the large number of possible door/gate types, the correct boost setting should be determined experimentally. The diagnostic function for motor current (see Parameter P.910) can be helpful here. By using the current indicator you can easily determine whether the changed setting has achieved the desired results.

*The boost should always be set as low as possible, but high enough to do the job.*

| P. | [Unit] Range | Function | Description/ Note |
|---|---|---|---|
| P.140 -ww | [%] 0 ... 30 | Boost for OPEN | The boost increases the output voltage and thus the power in the lower speed range until the cutoff frequency (P.100) is reached. The voltage is increased by the value in percent of the motor rated voltage (P.103) entered in the parameter. |

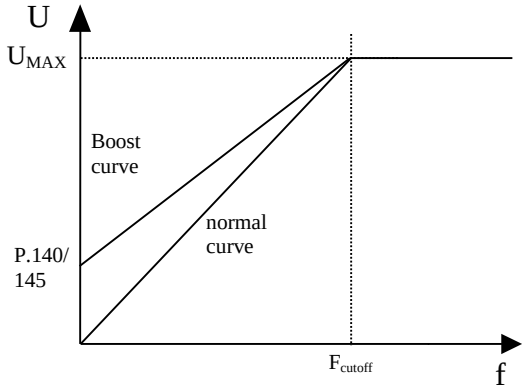



**Figure 2 Boost characteristic**

| | | | |
|---|---|---|---|
| P.145 -ww | [%] 0 ... 30 | Boost for CLOSE | see Parameter P.140 |

## 9 I x R compensation

I x R compensation increases the voltage and with it the motor power only in the lower speed range.

| P. | [Unit] Range | Function | Description/ Note |
|---|---|---|---|
| P.142 --w | [Hz] 0 ... 20 | IxR compensation for OPEN | In this parameter you specify the frequency up to which I x R compensation is in effect. The voltage is held to the same value below this frequency. The voltage value is derived from the voltage which is normally output for the frequency set here. |

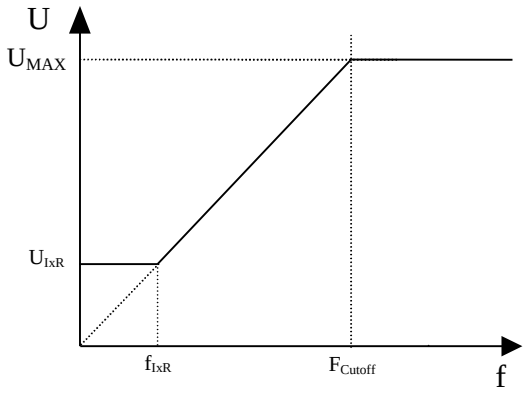



**Figure 3 IxR compensation characteristic curve**

| | | | |
|---|---|---|---|
| P.147 --w | [Hz] 0 ... 20 | IxR compensation for CLOSE | see Parameter P.142 |

## 10 Voltage reduction

Reducing the motor voltage which is output prevents over-excitation of the motor. This reduces power dissipation and noise.

| P. | [Unit] Range | Function | Description/ Note |
|---|---|---|---|
| P.143 --w | [%] 35 ... 100 | Voltage reduction for OPEN | The indicated value specifies what percent of the output voltage is given out. |

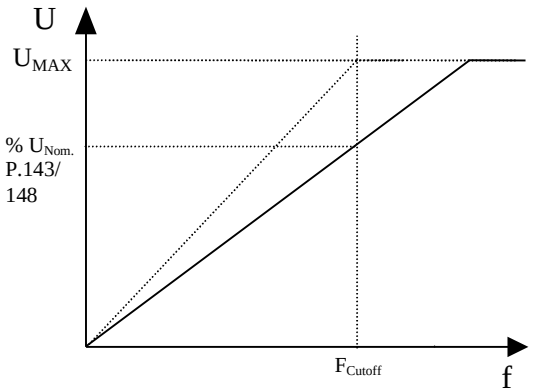



**Figure 4 Voltage reduction characteristic curve**

| | | | |
|---|---|---|---|
| P.148 --w | [%] 35 ... 100 | Voltage reduction for CLOSE | see Parameter P.143 |

## 11 Selecting the positioning system

| P. | [Unit] Range | Function | Description/ Note |
|---|---|---|---|
| P.202 -rr | 0 ... 17 | Transmission ratio | With this parameter the transmission ratio of the encoder to the motor is set.<br>As faster the drive shaft is as higher has the parameter value to be.<br><br>*This parameter is only visible in case of TST PD is connected and set as limit switch.* |
| P.205 -ww | 0000 ... 0900 | Selecting the positioning system profile | This profile sets the limit switch system.<br>Select from the following settings:<br><br>0000: Mechanical limit switches 1. The absolute limit switches are processed as normally closed and the pre-limit switches as normally open.<br>0001: Mechanical limit switches 2. All limit switches are processed as normally closed.<br>0300: Absolute encoder DES-A (GfA)<br>0700: Absolute encoder DES-B (Kostal)<br>0800: Absolute encoder TST PD / TST PE<br>0900: Mechanical limit switches assists by timer (incremental mode)<br>*This function is working only in automatic mode*<br><br>*The exact settings which this profile involves can be found in Appendix: Position Sensor Profile.*<br><br>**In addition, the standard functions of the controller inputs are matched to the limit switch type in use.** |

## 12 End position correction

| P. | [Unit] Range | Function | Description/ Note |
|---|---|---|---|
| P.210 -ww | 0 ... 5 | New teaching of the end positions | This parameter is used to start a new teaching of the end positions.<br>The corresponding end positions are moved to in deadman mode after activating the procedure and saved by holding down the Stop key.<br>Select from the following settings:<br><br>0: Cancel, no end positions are taught.<br>1: Limit switch Lower, limit switch Upper and if appropriate limit switch Intermediate Stop are taught.<br>2: Limit switch Upper and if appropriate limit switch Intermediate Stop are taught.<br>3: Limit switch Lower and limit switch Upper are taught.<br>4: Limit switch Intermediate Stop is taught.<br>5: All limit switches and the turndirection are taught.<br><br>*Teaching the Intermediate Stop limit switch depends on the setting in Parameter P.244 (see section Partial Opening / Intermediate Stop).* |
| P.215 -ww | 0 ... 1 | Requesting correction of the pre-limit switch and limit switch bands | If automatic calculation of the pre-limit switch and limit switch bands (P.216) is activated, this parameter can be used to start a new teaching of the pre-limit switch and limit switch bands.<br><br>0: Make no correction.<br>1: Start correction of the pre-limit switch and limit switch bands.<br><br>*Correction of the pre-limit switch and limit switch bands is only possible if P.216 = 2.* |

| P. | [Unit] Range | Function | Description/ Note |
|---|---|---|---|
| P.216 --w | 0 ... 4 | Activating auto correction / Selecting the ramp setting mode | There are two basic ways to set the steepness of a ramp. The ramp time can be set in milliseconds, or the ramp acceleration can be set in Hz per second. In addition, the limit switch bands are automatically set when Automatic is activated.<br><br>0: Ramp times have to be set manuelly (as in earlier door controllers from FEIG ELECTRONIC GmbH).<br>1: Ramp acceleration has to be set manuelly.<br>2: Ramp acceleration has to be set and limit switches are automatically set.<br>⚠ **In case of changing the speed of the door or one of the ramp accelerations the automatically setting of the pre limit switches and limit switch bands will start again.The values set in the corresponding parameters are then overwritten.**<br>3: like 2, but no automatic correction by reaching the limit too fast (I.100 / I.150) after the teach in was ready one time.<br>4: Calculation of the pre-limit switch, even if the full speed cannot be achieved. Message I.520<br><br>ℹ *Automatic teaching of the limit switches and pre limit switches only functions if accelerations for ramps are set. You cannot use ramp times as they were defined in earlier versions of the controllers.*<br><br>**⚠ WARNING**<br>**Depending on the type of door and the used motor the limits can be overrun during automatic calculation of the limits (I.515). To prevent this P.217 has to adjust proper for the used door.** |
| P.217 --w | 0 ... 600 | Tolerance of automatic end switch correction | With this parameter an offset is set to the end position find out by the automatic end switch correction. Because of that the door is not able to overrun the end switch position of the door by the first move. The end switch position will move by the value (in percent) adjusted with this parameter. |

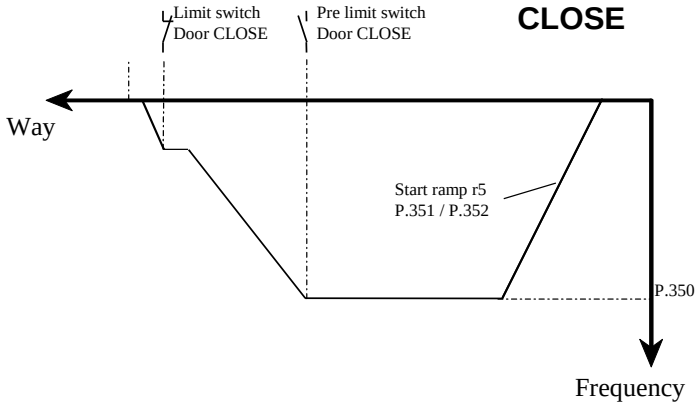
# 13 CLOSE

⚠ **If automatic setting of the pre-limit switches and limit switch bands is used (P.216 = 2), Parameters P.222 and P.223 are automatically changed.**
**The parameters are even changed if the speed of the door or the steepness of a ramp is changed, since this results in a new start of automatic limit switch correction.**
**If you want to set these ramps manually, P.216 must be < 2.**

## 13.1 End position door close modify

| P. | [Unit] Range | Function | Description/ Note |
|---|---|---|---|
| P.221 www | [Increments] -120 ... 120 | Correction value End position door CLOSE | This parameter is used to shift the entire lower end position, i.e., the end position is shifted together with the associated pre-limit switches.<br><br>A change in the parameter value in the positive direction causes the end position to shift up.<br><br>A change in the parameter value in the negative direction causes the end position to shift down. |

## 13.2 Start of Door Closing

| P. | [Unit] Range | Function | Description/ Note |
|---|---|---|---|
| P.350 -ww | [Hz] 6 ... 200 | Travel frequency for rapid CLOSE | Here you specify the maximum close speed in Hz.<br>Start ramp "r5" is used to accelerate to this speed.<br>The steepness of the ramp is set with Parameter P.351 or P.352.<br>  <br><br>**Figure 5 Start ramp, CLOSE** |
| P.351 --w | [10 ms] 20 ... 500 | Duration of start ramp "r5" | Time of start ramp "r5" in milliseconds.<br>The door is accelerated within the specified time from 0Hz to the maximum close speed (P.350).<br><br>Smaller values result in greater acceleration of the door.<br>Larger values result in diminished acceleration of the door.<br><br>*This parameter is only visible and settable if Parameter P.216 is set to 0.* |

| P. | [Unit] Range | Function | Description/ Note |
|---|---|---|---|
| P.352 --r | [Hz/s] 5 ... 300 | Acceleration of start ramp "r5" | Acceleration during start ramp "r5" in Hertz per second.<br><br>Smaller values result in diminished acceleration of the door.<br>Larger values result in greater acceleration of the door.<br><br>*This parameter is only visible and settable if Parameter P.216 is greater than 0.* |

## *13.3 Slow down after Pre-limit switch during Door CLOSE*

| P. | [Unit] Range | Function | Description/ Note |
|---|---|---|---|
| P.222 --w | [Increments] 0 ... 2100 | Pre-limit switch position Door CLOSE | The parameter value specifies the distance to the absolute limit switch Door CLOSE in increments.<br>The pre-limit switch is used to initiate the brake ramp "r6".<br>The steepness of the ramp is set with Parameter P.361 or P.362. |

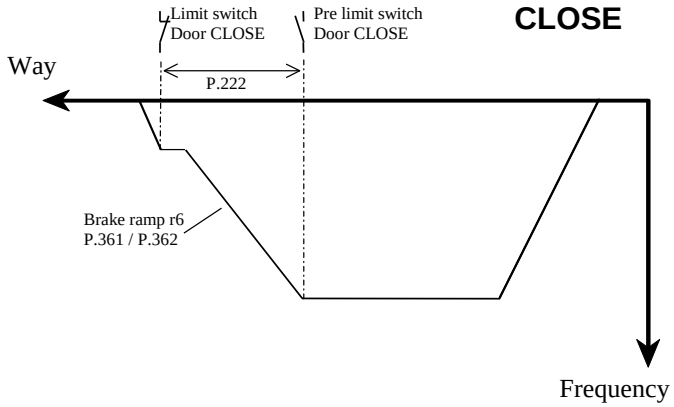
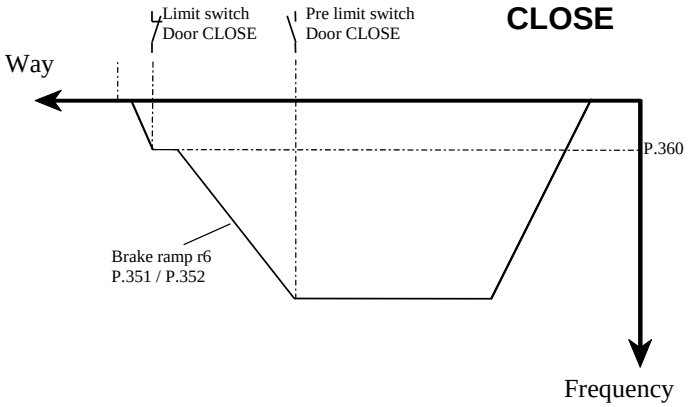



**Figure 6 Pre-limit switch position Door CLOSE**

| P. | [Unit] Range | Function | Description/ Note |
|---|---|---|---|
| P.360 --w | [Hz] 6 ... 200 | Creep speed frequency for CLOSE | Brake ramp "r6" is used to slow to creep speed frequency, and is initiated after activation of the pre-limit switch Door CLOSE.<br>The steepness of the brake ramp "r6" is set with Parameter P361 or P.362.<br>  <br><br>**Figure 7 Creep move for CLOSE** |
| P.361 --w | [10 ms] 15 ... 500 | Duration of brake ramp "r6" | This parameter specifies the time of brake ramp "r6" in milliseconds.<br>The door is decelerated from maximum close frequency (P350) to creep frequency (P.360) within this time.<br><br>Smaller values result in greater deceleration of the door.<br>Larger values result in diminished deceleration of the door.<br><br>*This parameter is only visible and settable if Parameter P.216 is set to 0.* |
| P.362 --r | [Hz/s] 5 ... 300 | Acceleration of brake ramp "r6" | This parameter specifies the acceleration of the door during brake ramp "r6" in Hertz per second.<br><br>Smaller values result in diminished deceleration of the door.<br>Larger values result in greater deceleration of the door.<br><br>*This parameter is only visible and settable if Parameter P.216 is greater than 0.* |

### *13.4 Stopramp after stop is triggered (CLOSE)*

| P. | [Unit] Range | Function | Description/ Note |
|---|---|---|---|
| P.382 --r | [Hz/s] 5 ... 600 | Acceleration of stop ramp "r STOP-Z" after stop is triggered | Acceleration during stop ramp "r STOP-Z" in Hertz per second.<br>The door is decelerated from maximum close speed to 0 Hz after a stop command is given.<br><br>Smaller values result in diminished acceleration of the door.<br>Larger values result in greater acceleration of the door.<br><br>*This parameter is only visible and settable if Parameter P.216 is greater than 0.* |

## 14 Open

**If automatic setting of the pre-limit switch and limit switch bands is used (P.216 = 2), Parameters P.232 and P.233 are automatically changed.**
**The parameters are even changed if the speed of the door or the steepness of a ramp is changed, since this results in a new start of automatic limit switch correction.**
**If you want to set these ramps manually, P.216 must be < 2.**

### *14.1 Adjust the end position Door open*

| P. | [Unit] Range | Function | Description/ Note |
|---|---|---|---|
| P.231 www | [Increments] -60 ... 60 | Correction value End position Door OPEN | This parameter is used to shift the entire Door OPEN end position, i.e., the end position is shifted together with the associated pre-limit switches.<br>A change in the parameter value in a positive direction causes the end position to shift up.<br>A change in the parameter value in the negative direction causes the end position to shift down. |

## *14.2 Start Door Opening*

| P. | [Unit] Range | Function | Description/ Note |
|---|---|---|---|
| P.310<br>-ww | [Hz]<br>6 ... 200 | Travel frequency for rapid OPEN | Here you specify the maximum open speed in Hz.<br>Start ramp "r1" is used to accelerate to this speed.<br>The steepness of the ramp is set with Parameter P.311 or P.312. |

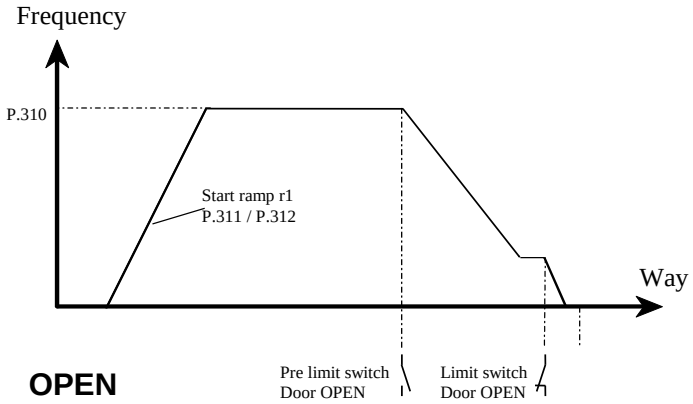



**Figure 8 Start ramp, OPEN move**

| | | | |
|---|---|---|---|
| P.311<br>--w | [10 ms]<br>20 ... 500 | Duration of start ramp "r1" | Time of start ramp "r1" in milliseconds.<br>The door is accelerated within the specified time from 0Hz to the maximum open speed (P.310).<br><br>Smaller values result in greater acceleration of the door.<br>Larger values result in diminished acceleration of the door.<br><br>*This parameter is only visible and settable if Parameter P.216 is set to 0.* |
| P.312<br>--r | [Hz/s]<br>5 ... 300 | Acceleration of start ramp "r1" | Acceleration during start ramp "r1" in Hertz per second.<br><br>Smaller values result in diminished acceleration of the door.<br>Larger values result in greater acceleration of the door.<br><br>*This parameter is only visible and settable if Parameter P.216 is greater than 0.* |

## *14.3 Slow down after pre-limit switch is triggered during Door OPEN*

| P. | [Unit] Range | Function | Description/ Note |
|---|---|---|---|
| P.232 --w | [Increments] 0 ... 2100 | Pre-limit switch position Door OPEN | The parameter value specifies the distance to the Door OPEN absolute limit switch in increments. The pre-limit switch is used to initiate the brake ramp "r2". The steepness of the ramp is set with Parameter P.321 or P.322. |

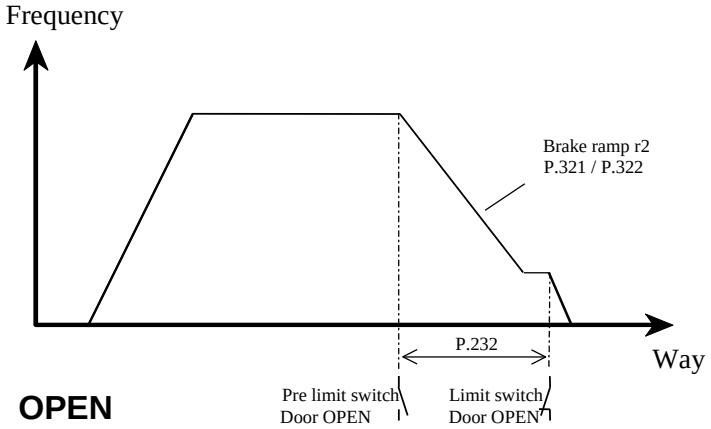



**Figure 9 Pre-limit switch position Door OPEN**

| | | | |
|---|---|---|---|
| P.320 --w | [Hz] 6 ... 200 | Creep speed frequency for OPEN | Brake ramp "r2" is used to slow to creep speed frequency, and is initiated after activation of the pre-limit switch Door OPEN. The steepness of the brake ramp "r2" is set with Parameter P321 or P.322. |

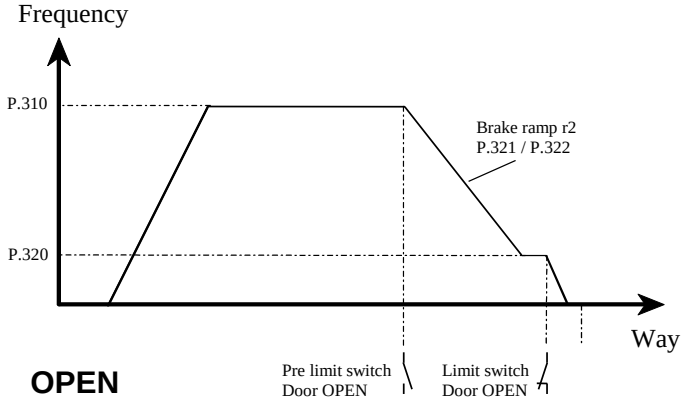
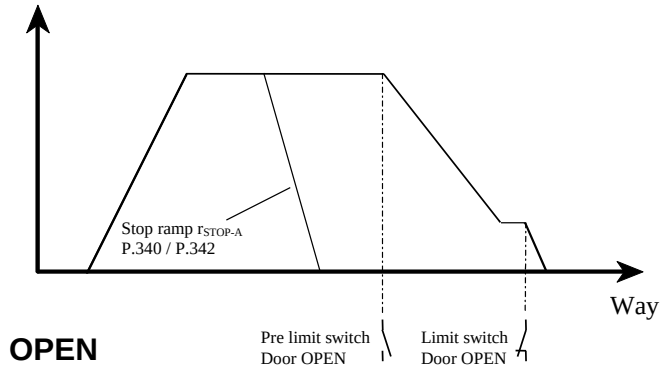



**Figure 10 Creep move for OPEN**

| P. | [Unit] Range | Function | Description/ Note |
|---|---|---|---|
| P.321 --w | [10 ms] 15 ... 500 | Duration of brake ramp "r2" | This parameter specifies the acceleration of the door during brake ramp "r2" in Hertz per second.<br><br>Smaller values result in diminished deceleration of the door.<br>Larger values result in greater deceleration of the door.<br><br>*This parameter is only visible and settable if Parameter P.216 is greater than 0.* |
| P.322 --r | [Hz/s] 5 ... 300 | Acceleration of brake ramp "r2" | This parameter specifies the acceleration of the door during brake ramp "r2" in Hertz per second.<br><br>Smaller values result in diminished deceleration of the door.<br>Larger values result in greater deceleration of the door.<br><br>*This parameter is only visible and settable if Parameter P.216 is greater than 0.* |

## *14.4 Stop ramp after stop is triggered (OPEN)*

| P. | [Unit] Range | Function | Description/ Note |
|---|---|---|---|
| P.340 --w | [10 ms] 15 ... 250 | Duration of stop ramp "r STOP-A" after stop is triggered | Time of stop ramp "r STOP-A" in milliseconds.<br>The door is decelerated in the specified time from maximum open speed to 0 Hz after triggering of a stop command.<br><br>Smaller values result in greater acceleration of the door.<br>Larger values result in diminished acceleration of the door.<br>Frequency<br>  <br><br>**Figure 11 Triggering of Stop for OPEN move**<br><br>*This parameter is only visible and settable if Parameter P.216 is set to 0.* |

| P. | [Unit] Range | Function | Description/ Note |
|---|---|---|---|
| P.342 --r | [Hz/s] 5 ... 300 | Acceleration of stop ramp " r STOP-A" after stop is triggered | Acceleration during stop ramp "r STOP-A" in Hertz per second.<br>The door is decelerated from maximum open speed to 0 Hz after a stop command is given.<br><br>Smaller values result in diminished acceleration of the door.<br>Larger values result in greater acceleration of the door.<br><br>*This parameter is only visible and settable if Parameter P.216 is greater than 0.* |

# 15 Incremental encoder / Synchronisation

## *15.1 Synchronization type*

| P. | [Unit] Range | Function | Description/ Note |
|---|---|---|---|
| P.25F -ww | 0 ... 10 | Synchronization type profile | This profile is used to set the reference switches and automatic synchronization mode.<br><br>0: Deactivated<br>1: Synchronization to reference switch in Door CLOSE Endposition.<br>2: Synchronization to to safety edge.<br>3: Synchronization to reference switch in Door OPEN endposition.<br>4: Synchronization to mechanical stop in Door OPEN endposition.<br>5: Synchronization to safety edge and then to mechanical stop in Door OPEN endposition.<br>6: Synchronization to safety edge and then to reference switch in Door OPEN endposition.<br>7: Synchronization to reference switch in Door CLOSE endposition and then to mechanical stop in Door OPEN Endposition.<br>8: Synchronization to mechanical stop in Door CLOSE Endposition and then to mechanical stop in Door OPEN Endposition.<br>9: Manual synchronization to Door CLOSE Endposition and to Door OPEN Endposition.<br>10: Timer-limit switch-mode. Synchronisation is done automatically to end switch CLOSE and OPEN.<br><br>*The exact settings which this profile involves can be found in Appendix: Synchronization Type.* |

## 16 Specialization of safety functions

| P. | [Unit] Range | Function | Description/ Note |
|---|---|---|---|
| P.8BA --w | 0 ... 4 | Specialization of a safety function A to E in operating mode 7 | Specialization of a safety function in operating mode 7. When function is activated, after tripping the safety edge during opening, a close command is generated. The behavior after reaching the end position door close can be selected by the control options.<br><br>0: Disabled, tripping the safety edge during opening will just stop the door.<br>1: Door closes after safety is free and opens again when door is closed.<br>2: Door closes slowly after safety is free and opens again when door is closed.<br>3: Door closes slowly after safety is free and stops in endposition close.<br>4: Door closes after safety is free, without opening when door is closed. |

## 17 Light Curtain

| P. | [Unit] Range | Function | Description/ Note |
|---|---|---|---|
| A.480 | 0 ... 1 | Application | This parameter activates the Light curtain and automatically sets all the necessary parameters and input functions.<br><br>0: Light curtain deactivated<br>1: Light curtain activated |

### *17.1 TST LGB*

| P. | [Unit] Range | Function | Description/ Note |
|---|---|---|---|
| P.44A -ww | [m] 0,5 ... 10,0 | Range | This parameter sets the beam intensity or the door width in increments of 0.5 m. |
| P.931 rrr | | Software version transmitter | Shows the software version of the transmitter. |
| P.932 rrr | | Software version receiver | Shows the software version of the receiver. |
| P.933 -rr | | Serial number transmitter | Displays the serial number of the transmitter. |
| P.934 -rr | | Serial number receiver | Displays the serial number of the receiver. |
| P.935 -rr | [Digits] | Error bit transmitter | Display the "System error bitmask" of transmitter. |
| P.936 -rr | [Digits] | Error bit receiver | Display the "System error bitmask" of receiver. |

| P. | [Unit] Range | Function | Description/ Note |
|---|---|---|---|
| P.937 -ww | | Aligning mode | Activation of the alignment mode in the light curtain (LED flashing codes).<br><br>0: Alignment mode deactivated.<br>1: Alignment mode activated. |
| P.938 -rr | | Light line quality | Diagnostic display for commissioning as alignment aid or for troubleshooting purposes. Requires activation of P.937. |
| P.93C zww | | Error counter RS485 | The number of faulty protocols of the RS485 interface between the transmitter and the receiver of the light curtain is displayed.<br><br>*The counter can be reset by holding the Stop key pressed.* |

## 18 Radio safety system

| P. | [Unit] Range | Function | Description/ Note |
|---|---|---|---|
| P.92A rrr | | Softwareversion FSx mobile unit | Software version of the mobile unit of the wireless safety device. |
| P.92B rrr | | Software version FSx stationary unit | Software version of the stationary unit of the wireless safety device. |
| P.9F0 -ww | [%] 0 ... 100 | Capacity of battery | This parameter shows the actuall capacity of the battery.<br><br>*In order to set the value back to 100%, e.g. after changing the battery, you have to press the stop key for a long time.* |
| P.9F1 -rr | [Volt] | Battery voltage of radio safety system | Shows the battery voltage of the mobile unit if the radio safety system. |
| P.9F2 -rr | [%] | Wireless status | Shows the quality of the radio link to the mobile unit of the radio safety system. |
| P.F00 -ww | 0 ... 1 | Activation of the wireless | Activation of the wireless<br><br>0: Deactivated<br>1: Activated |
| P.F01 -zz | [ms] 6 ... 250 | Timeout for the wireless | Defines the time in which the radio safety system is set as tripped in case of an radio interruption. |
| P.F05 -ww | 1 ... 10 | Channelgroup | Sets the channel group which the radio safety system is using. |

| P. | [Unit] Range | Function | Description/ Note |
|---|---|---|---|
| P.F07 -ww | 00000000 ... 0FFFFFFF | Address of the mobile unit | Address of the mobile unit with which the wireless security system should communicate<br><br>**ATTENTION**<br>**After entering the address it is necessary to check whether the controller is connected to and works with the selected mobile unit.**<br><br>*It is also possible to "learn" the address automatically. To do this, the parameter must be set to - then the mobile unit must be reset by removing the battery. The address is then entered into the parameter and can be saved* |
| P.F09 -ww | [Volt] 1,2 ... 3,6 | Battery nominal voltage | Here the nominal voltage of the battery is put in. |
| P.FF2 -zz | 0 ... 2 | Mode output 2 | Output mode of the output No. 2<br>Function is available from software version TST FSx-ST-V00-04.05 of the Stationary unit.<br><br>0: Automatic. If a digital Input is linked to this output, the output signal is digital. If a analogoue input or mixed inputs are linked to this output the output signal is analogoue.<br>1: Analogue output signal<br>2: Digital output signal |

## *18.1 FSx input profiles*

*The settings that may be necessary for these profiles are available from the attachments.*

| P. | [Unit] Range | Function | Description/ Note |
|---|---|---|---|
| A.F00 | 0000 ... 21BB | FSx Wireless safety system profile | This Profile activates the radio safety system TST FSx and sets configurations for the typical door applications.<br><br>0000: No profile set<br>10BB: Sectional door, WiCab PE_FSBS and FSBM<br>20AA: Rolling door, WiCab PD_FSAS and FSAM<br>20BA: Rolling door, WiCab PE_FSBS and FSAM<br>20BB: Rolling door, WiCab PE_FSBS and FSBM<br>21AA: Rolling door with breakaway sensor, WiCab PD_FSAS and FSAM<br>21BA: Rolling door with breakaway sensor, WiCab PE_FSBS and FSAM<br>21BB: Rolling door with breakaway sensor, WiCab PE_FSBS and FSBM |

| P. | [Unit] Range | Function | Description/ Note |
|---|---|---|---|
| P.F1F -ww | 0000 ... F302 | Function input 1 | Selection of the Input configuration for the input 1of the FSx unit.<br><br>0000: Deactivated<br>F101: Safety edge 8K2<br>F102: Dynamical optical safety edge<br>F103: Like F101 but takes effect to output 2 of the stationary unit<br>F104: 8K2 safety edge on output 3, for FSA digital put thru of an 8K2 input.<br>F201: Flap door switch digital<br>F202: Flap door switch 8k2<br>F203: Slack rope switch digital<br>F206: Thermo pill<br>F207: Crank switch<br>F301: Crash impulse switch with handshake<br>F302: crash static |
| P.F2F -ww | 0000 ... F302 | Function input 2 | Selection of the Input configuration for the input 2 of the FSx unit.<br><br>0000: Deactivated<br>F101: Safety edge 8K2<br>F102: Dynamical optical safety edge<br>F103: Like F101 but takes effect to output 2 of the stationary unit<br>F104: 8K2 safety edge on output 3, for FSA digital put thru of an 8K2 input.<br>F201: Flap door switch digital<br>F202: Flap door switch 8k2<br>F203: Slack rope switch digital<br>F206: Thermo pill<br>F207: Crank switch<br>F301: Crash impulse switch with handshake<br>F302: crash static |
| P.F3F -ww | 0000 ... F302 | Function input 3 | Selection of the Input configuration for the input 3 of the FSx unit.<br><br>0000: Deactivated<br>F101: Safety edge 8K2<br>F102: Dynamical optical safety edge<br>F103: Like F101 but takes effect to output 2 of the stationary unit<br>F104: 8K2 safety edge on output 3, for FSA digital put thru of an 8K2 input.<br>F201: Flap door switch digital<br>F202: Flap door switch 8k2<br>F203: Slack rope switch digital<br>F206: Thermo pill<br>F207: Crank switch<br>F301: Crash impulse switch with handshake<br>F302: crash static |

| P. | [Unit] Range | Function | Description/ Note |
|---|---|---|---|
| P.F4F -ww | 0000 ... F302 | Function input 4 | Selection of the Input configuration for the input 4 of the FSx unit.<br><br>0000: Deactivated<br>F101: Safety edge 8K2<br>F102: Dynamical optical safety edge<br>F103: Like F101 but takes effect to output 2 of the stationary unit<br>F104: 8K2 safety edge on output 3, for FSA digital put thru of an 8K2 input.<br>F201: Flap door switch digital<br>F202: Flap door switch 8k2<br>F203: Slack rope switch digital<br>F206: Thermo pill<br>F207: Crank switch<br>F301: Crash impulse switch with handshake<br>F302: crash static<br><br>*This parameter is visible only in connection with TST FSBM mobile unit.* |

## *18.2 FSx input 1*

| P. | [Unit] Range | Function | Description/ Note |
|---|---|---|---|
| P.F10 -zz | 0 ... 4 | Mode input 1 | Defines the operation mode of input 1 of the mobile unit.<br><br>0: Deactivated<br>1: Analogue evaluation with 8K2 Ohm<br>2: Analogue evaluation with 1K2 Ohm<br>3: Dynamic optical system<br>4: Digital evaluation |
| P.F11 -zz | 0 ... 2 | Safety | This parameter specifies how the input will work after the radio signal is missing.<br><br>0: Input active at missing radio signal and always in sleepmode.<br>1: Input active at missing radio signal<br>2: The last status of the input is given out (missing radio signal and sleepmode doesn`t change the output) |
| P.F12 -zz | 0 ... 1 | Contact type of the input | Specifies the contact type of the switch which is connected to the input.<br><br>0: Normally open<br>1: Normally closed |

| P. | [Unit] Range | Function | Description/ Note |
|---|---|---|---|
| P.F13 -zz | 0 ... 1 | Debouncing time | This Parameter determine the debouncing time for the Input<br><br>0: Short debouncing time (3 ms)<br>1: Long debouncing time (30 ms) |
| P.F16 -zz | 1 ... 3 | Output | With this parameter the allocation from the input 1 of the mobile unit to the stationary unit is done.<br><br>1: Output 1<br>2: Output 2<br>3: Output 3 |
| P.F17 -zz | 0 ... 2 | Direction 1 | Drive direction at which the safety, connected on input 1, must be activated (at the moment only for optical systems evaluated).<br><br>0: Both directions<br>1: Door opening<br>2: Door closing |
| P.F18 -zz | 0 ... 1 | Handshake | With this Parameter a Handshake between an input of the mobile unit and an controller input can be activated.<br>If the input of the mobile unit is tripped, the tripping will store and shown as long as the controller has confimed it. Because of this e.g. a crash tripping during switched off controller will not get lost.<br><br>0: Handshake deactivated<br>1: Handshake between input of mobile unit and controller activated.<br><br>⚠<br>**The software version of the mobile unit as well as the the software version of the stationary unit must support this function (from version Vxx-04.04 possible).** |
| P.F19 -zz | 0 ... 63 | LCD Messages | Select the LCD Messages which are shown in the Display<br><br>ℹ *The list of messages can be found in the Appendix LCD Messages* |

## *18.3 FSx input 2*

| P. | [Unit] Range | Function | Description/ Note |
|---|---|---|---|
| P.F20 -zz | 0 ... 4 | Mode input 2 | Defines the operation mode of input 2 of the mobile unit.<br><br>0: Deactivated<br>1: Analogue evaluation with 8K2 Ohm<br>2: Analogue evaluation with 1K2 Ohm<br>3: Dynamic optical system<br>4: Digital evaluation |
| P.F21 -zz | 0 ... 2 | Safety | This parameter specifies how the input will work after the radio signal is missing.<br><br>0: Input active at missing radio signal and always in sleepmode.<br>1: Input active at missing radio signal<br>2: The last status of the input is given out (missing radio signal and sleepmode doesn`t change the output) |
| P.F22 -zz | 0 ... 1 | Contact type of the input | Specifies the contact type of the switch which is connected to the input.<br><br>0: Normally open<br>1: Normally closed |
| P.F23 -zz | 0 ... 1 | Debouncing Time | This Parameter determine the debouncing time for the Input<br><br>0: Short debouncing time (3 ms)<br>1: Long debouncing time (30 ms) |
| P.F26 -zz | 1 ... 3 | Output | With this parameter the allocation from the input 2 of the mobile unit to the stationary unit is done.<br><br>1: Output 1<br>2: Output 2<br>3: Output 3 |
| P.F27 -zz | 0 ... 2 | Direction 2 | Drive direction at which the safety is activated<br>(Only for optical systems)<br><br>0: Both directions<br>1: Door opening<br>2: Door closing |

| P. | [Unit] Range | Function | Description/ Note |
|---|---|---|---|
| P.F28 -zz | 0 ... 1 | Handshake | With this Parameter a Handshake between an input of the mobile unit and an controller input can be activated.<br>If the input of the mobile unit is tripped, the tripping will store and shown as long as the controller has confimed it. Because of this e.g. a crash tripping during switched off controller will not get lost.<br><br>0: Handshake deactivated<br>1: Handshake between input of mobile unit and controller activated.<br><br>*The software version of the mobile unit as well as the the software version of the stationary unit must support this function (from version Vxx-04.04 possible).* |
| P.F29 -zz | 0 ... 63 | LCD Messages | Select the LCD Messages which are shown in the Display<br><br>*The list of messages can be found in the Appendix LCD Messages* |

## *18.4 FSx input 3*

| P. | [Unit] Range | Function | Description/ Note |
|---|---|---|---|
| P.F30 -zz | 0 ... 4 | Mode input 3 | Defines the operation mode of input 3 of the mobile unit.<br><br>0: Deactivated<br>1: Analogue evaluation with 8K2 Ohm<br>2: Analogue evaluation with 1K2 Ohm<br>3: Dynamic optical system<br>4: Digital evaluation |
| P.F31 -zz | 0 ... 2 | Safety | This parameter specifies how the input will work after the radio signal is missing.<br><br>0: Input active at missing radio signal and always in sleepmode.<br>1: Input active at missing radio signal<br>2: The last status of the input is given out (missing radio signal and sleepmode doesn`t change the output) |
| P.F32 -zz | 0 ... 1 | Contact type of the input | Specifies the contact type of the switch which is connected to the input.<br><br>0: Normally open<br>1: Normally closed |
| P.F33 -zz | 0 ... 1 | Debouncing time | This Parameter determine the debouncing time for the Input<br><br>0: Short debouncing time (3 ms)<br>1: Long debouncing time (30 ms) |

| P. | [Unit] Range | Function | Description/ Note |
|---|---|---|---|
| P.F36 -zz | 1 ... 3 | Output | With this parameter the allocation from the input 3 of the mobile unit to the stationary unit is done.<br><br>1: Output 1<br>2: Output 2<br>3: Output 3 |
| P.F37 -zz | 0 ... 2 | Direction 3 | Drive direction at which the safety is activated<br>(Only for optical systems)<br><br>0: Both directions<br>1: Door opening<br>2: Door closing |
| P.F38 -zz | 0 ... 1 | Handshake | With this Parameter a Handshake between an input of the mobile unit and an controller input can be activated.<br>If the input of the mobile unit is tripped, the tripping will store and shown as long as the controller has confimed it. Because of this e.g. a crash tripping during switched off controller will not get lost.<br><br>0: Handshake deactivated<br>1: Handshake between input of mobile unit and controller activated.<br><br>*The software version of the mobile unit as well as the the software version of the stationary unit must support this function (from version Vxx-04.04 possible).* |
| P.F39 -zz | 0 ... 63 | LCD Messages | Select the LCD Messages which are shown in the Display<br><br>*The list of messages can be found in the Appendix LCD Messages* |

## *18.5 FSx input 4*

*The input 4 of the mobile unit is only possible with TST FSBM. The following parameters are only visible by using this mobile unit.*

| P. | [Unit] Range | Function | Description/ Note |
|---|---|---|---|
| P.F40 -zz | 0 ... 4 | Mode input 4 | Defines the operation mode of input 4 of the mobile unit.<br><br>0: Deactivated<br>1: Analogue evaluation with 8K2 Ohm<br>2: Analogue evaluation with 1K2 Ohm<br>3: Dynamic optical system<br>4: Digital evaluation |

| P. | [Unit] Range | Function | Description/ Note |
|---|---|---|---|
| P.F41 -zz | 0 ... 2 | Safety | This parameter specifies how the input will work after the radio signal is missing.<br><br>0: Input active at missing radio signal and always in sleepmode.<br>1: Input active at missing radio signal<br>2: The last status of the input is given out (missing radio signal and sleepmode doesn`t change the output) |
| P.F42 -zz | 0 ... 1 | Contact type of the input | Specifies the contact type of the switch which is connected to the input.<br><br>0: Normally open<br>1: Normally closed |
| P.F43 -zz | 0 ... 1 | Debouncing time | This Parameter determine the debouncing time for the Input<br><br>0: Short debouncing time (3 ms)<br>1: Long debouncing time (30 ms) |
| P.F46 -zz | 1 ... 3 | Output | With this parameter the allocation from the input 4 of the mobile unit to the stationary unit is done.<br><br>1: Output 1<br>2: Output 2<br>3: Output 3 |
| P.F47 -zz | 0 ... 2 | Direction 4 | Drive direction at which the safety is activated<br>(Only for optical systems)<br><br>0: Both directions<br>1: Door opening<br>2: Door closing |
| P.F48 -zz | 0 ... 1 | Handshake | With this Parameter a Handshake between an input of the mobile unit and an controller input can be activated.<br>If the input of the mobile unit is tripped, the tripping will store and shown as long as the controller has confimed it. Because of this e.g. a crash tripping during switched off controller will not get lost.<br><br>0: Handshake deactivated<br>1: Handshake between input of mobile unit and controller activated.<br><br>*The software version of the mobile unit as well as the the software version of the stationary unit must support this function (from version Vxx-04.04 possible).* |
| P.F49 -zz | 0 ... 63 | LCD Messages | Select the LCD Messages which are shown in the Display<br><br>*The list of messages can be found in the Appendix LCD Messages* |

## *18.6 FSx stationary unit inputs*

*The stationary inputs are existing only on TST PE FSB stationary unit.*

| P. | [Unit] Range | Function | Description/ Note |
|---|---|---|---|
| P.FA9 -zz | 0 ... 63 | LCD- Messages | Select the LCD Messages which are shown in the Display<br><br>*The list of messages can be found in the Appendix LCD Messages* |
| P.FB9 -zz | 0 ... 63 | LCD Messages | Select the LCD Messages which are shown in the Display<br><br>*The list of messages can be found in the Appendix LCD Messages* |
| P.FC9 -zz | 0 ... 63 | LCD Messages | Select the LCD Messages which are shown in the Display<br><br>*The list of messages can be found in the Appendix LCD Messages* |

# 19 Safety Edges

The following parameters can be set both for integrated safety edge processing as well as for external safety edge processing (optional for different controllers) .

## *19.1 Integrated safety edge processing*

The controllers have a safety edge processor already on the motherboard.
No additional plug-in cards are necessary.

| P. | [Unit] Range | Function | Description/ Note |
|---|---|---|---|
| P.460 --r | 0 ... 6 | profile internal safety edge | With this profile the parameter´s for the function of the internal safety edge are set.<br><br>0: Deactivated<br>1: Electrical safety edge, redundantly processed, functioning as normally open<br>2: Electrical safety edge, redundantly processed, functioning as normally closed<br>3: Electrical safety egde with testing in Door close end position, functioning as normally open<br>4: Electrical safety egde with testing in Door close end position, functioning as normally closed<br>5: Dynamic optical system<br>6: Automatically detection of the connected safety edge. Electrical N.O. edges and dynamic optical systems are recognised automatically.<br><br>*The exact settings which this profile involves can be found in the Appendix :Safety egde profile* |

## 20 Input profiles

| P. | [Unit] Range | Function | Description/ Note |
|---|---|---|---|
| P.501 --w | 0000 ... 1804 | Function of Input 1 | This profile can be used to specify the function of the input. All parameters needed for the function of the input are changed in one step.<br><br>0000: Input deactivated<br>0101: OPEN1, NO contact, OPEN till final position is reached, with hold open time, with clearance time, both directions<br>0102: OPEN1, NO contact, till intermediate stop, with hold open time, with clearance time, both directions<br>0103: OPEN lockage, NO contact, till intermediate stop, with hold open time, with clearance time, both directions<br>0104: OPEN 1, NO contact, till intermediate stop, with hold open time, with clearance time, direction from the outside<br>0105: OPEN 2, NO contact, OPEN till final position is reached, with hold open time, with clearance time, both directions<br>0106: OPEN 2, NO contact, OPEN till final position is reached, with hold open time, with clearance time, direction from the inside<br>0107: OPEN 4, NO contact, OPEN till final position is reached, with hold open time, with clearance time, both directions<br>0108: OPEN 2, NO contact, till intermediate stop, with hold open time, with clearance time, both directions<br>0109: OPEN 3, NO contact, till intermediate stop, with hold open time, with clearance time, both directions<br>0110: OPEN 1, NO contact, OPEN till final position is reached, with hold open time, with clearance time, direction from the outside<br>0111: OPEN 1, NC contact, OPEN till final position is reached, without hold open time, without clearance time, both directions<br>0112: OPEN 1, NO contact, OPEN till final position is reached, without hold open time, with clearance time, both directions<br>0113: OPEN-legitimation, with hold open time, with clearance time<br>*OPEN command will performed if detector channel 1 is active at the same time (P.660 = 7)*<br>0114: OPEN lockage, not lockabel, NO contact, till final position is reached intermediate stop, with hold open time, with clearance time, direction from the inside<br>0116: OPEN 1, NO contact, OPEN till final position is reached, without hold open time, with clearance time, direction from the outside<br>0117: OPEN 1, NO contact, OPEN till final position is reached, without hold open time, with clearance time, direction from the inside |

| P. | [Unit] Range | Function | Description/ Note |
|---|---|---|---|
| | | | 0120: OPEN 2, NO contact, OPEN till final position is reached, with hold open time, without clearance time, direction from the inside |
| | | | 0121: OPEN 1, NO contact, OPEN till final position is reached, with hold open time, without clearance time, direction from the outside |
| | | | 0124: OPEN 2, NO contact, till intermediate stop, with hold open time, with clearance time, direction from the inside |
| | | | 0125: OPEN 2, NO contact, OPEN till final position is reached, with hold open time, with clearance time, direction from the inside |
| | | | 0129: OPEN 2, NO contact, till intermediate stop, with hold open time, with clearance time, direction from the outside |
| | | | 0152: OPEN Command wich starts additionally the emergency opening test. For this P.494 = 2 must be set. |
| | | | 0165: OPEN 1 may be locked. Special functions for traffic light switching behaviour in end position OPEN (selected by P.7x9> = 5) are ignored |
| | | | 0180: OPEN 5, deadman travel possible, N.O. contact, OPEN till final position is reached, with hold open time, with clearance time, direction from the inside |
| | | | 0201: Pull switch, OPEN-> final position-> CLOSE->OPEN, NO contact, 1. Intermediat stop 2. Final position OPEN, with hold open time, with clearance time, both directions |
| | | | 0202: Pull switch, OPEN-> final position-> CLOSE->OPEN, NO contact, 1. Intermediat stop 2. Final position OPEN, without hold open time, with clearance time, both directions |
| | | | 0204: Pull switch OPEN-> final position-> CLOSE->OPEN, NO contact, OPEN till final position is reached, without hold open time, with clearance time, both directions |
| | | | 0205: Pull switch, OPEN-> STOP -> CLOSE->OPEN, NO contact, Final position OPEN, without Hold open time, without clearance time, both directions |
| | | | 0223: Pull switch, OPEN-> STOP -> CLOSE->OPEN, NO contact, Final position OPEN, with Hold open time, with clearance time, both directions |
| | | | 0301: Permanent-OPEN, NO contact, 1. Intermediat stop 2. OPEN, without hold open time, without clearance time, both directions |
| | | | 0302: Permanent-OPEN (summer mode lock), NO contact, OPEN till final position is reached, without hold open time, with clearance time, both directions |
| | | | 0304: Permanent-OPEN, NO contact, OPEN till final position is reached, without hold open time, without clearance time, no direction |
| | | | 0401: Stop-command, NC contact |
| | | | 0402: Stop-command, NO contact |
| | | | 0403: Stop-command acknowledgement possible, NC contact |
| | | | 0404: Stop-command acknowledgement possible, NO contact |

| P. | [Unit] Range | Function | Description/ Note |
|---|---|---|---|

0407: Crash impulse as N.O. contact
0411: Crash impulse as N.C. contact
0501: Safety B reversing when CLOSING, NC contact, final position as before, hold open time as before, with clearance time
0502: Safety B reversing when CLOSING, NC contact, final position as before, hold open time as before, with clearance time
0504: Safety B reversing when CLOSING, NC contact, final position as before, at least with hold open time, with clearance time
0505: Safety B reversing when CLOSING, NO contact, final position as before, hold open time as before, with clearance time
0506: Safety B reversing when CLOSING, NC contact, final position as before , at least with hold open time, with clearance time
0507: Safety B reversing when CLOSING, NO contact, final position as before, with hold open time as before, with clearance time
0509: Safety B with reversing when closing, with open holding time, with clearance time
0511: Safety input B with reversing during closing in combination with light Curtain
0520: Safety B: Reversing when CLOSING, NO contact, with testing in end position OPEN
0522: Safety input B: Reversing when OPENING, 8K2 contact, End position as before, with Clearance time

*This Function works only with inputs for 8K2 evaluation, e.g. IN10*

0530: Security B reversing during the CLOSING run, normally closed, end position as before, open holding time, as before, with evacuation time, LC message Safety.
0601: Manual operation for OPENING and CLOSING, NO contact
0602: Manual operation for CLOSING, NO contact
0701: CLOSE-command, NO contact, with Clearance time
0703: CLOSE-command which interrups the OPENING and locks CLOSE commands, NO contact, with Clearance time
0704: CLOSE-command which interrups the OPENING, reversing is possible, NO contact, with Clearance time
0713: CLOSE command, N.C., with clearance time
0714: CLOSE command which stops the opening movement, Opening is possible, N.O., with clearance time.
0801: Interlock in final CLOSED position, no dead man move is possible, NO contact
0802: Interlock in final CLOSED position, dead man move is possible, NO contact
0803: Stop, followed by automatic OPENING, NO contact, wait for CLOSE-command
0804: Stop, followed by automatic CLOSING, NO contact
0901: Cross traffic, locking of OPEN 1 and detector 1 commands, NO contact

| P. | [Unit] Range | Function | Description/ Note |
|---|---|---|---|
| | | | 0902: Cross traffic, locking of OPEN 2 and detector 2 commands, NO contact |
| | | | 0903: Cross traffic, locking of OPEN 1 and OPEN 2 as well as detector 1 and detector 2 commands, NO contact |
| | | | 1001: Disable hold open time, NO contact |
| | | | 1002: Disable lockage, NO contact |
| | | | 1003: Disable intermediate stop, NO contact |
| | | | 1004: Disabled detector commands from the direction outside, NO contact |
| | | | 1005: Deactivation of detector open and close commands, the safety function of the detector remains active. |
| | | | 1101: Pre-limit switch light barrier, NO contact |
| | | | 1102: Limit switch intermediate stop, NO contact |
| | | | 1103: Pre-limit switch intermediate stop, NO contact |
| | | | 1104: Pre-limit switch safety edge, NO contact |
| | | | 1105: Pre-limit switch safety edge, NC contact |
| | | | 1106: Pre-limit switch door OPEN, NO contact |
| | | | 1107: Pre-limit switch door OPEN, NC contact |
| | | | 1108: Pre-limit switch door CLOSE, NO contact |
| | | | 1109: Pre-limit switch door CLOSE, NC contact |
| | | | 1110: Pre-limit switch door OPEN, NC contact |
| | | | 1111: Limit switch door CLOSE, NC contact |
| | | | 1114: Crash switch, NO contact |
| | | | 1116: Limit switch door CLOSE, NO contact |
| | | | 1401: Safety A, stop during CLOSING, NC contact |
| | | | 1402: Safety A, reversing when CLOSING, NC contact, final position as before, hold open time as before, with clearance time |
| | | | 1403: Safety A, stop when CLOSING after release, move continues when CLOSED, NC contact, with Clearance time |
| | | | 1404: Safety A, stop when OPENING and CLOSING, NC contact |
| | | | 1405: Safety A, stop when OPENING and CLOSING, after release, the CLOSING move continues until CLOSED, NC contact, with Clearance time |
| | | | 1406: Safety A, reversing when OPENING, NC contact, final position as before, hold open time as before, with clearance time |
| | | | 1407: Safety A, stop when OPENING, NC contact |
| | | | 1408: Safety A, pull-in protection, stop when OPENING, then only dead man CLOSING possible, NC contact, final position as before, auto-close time as before, without clearance time |
| | | | 1418: Safety A, stop when OPENING or CLOSING, N.C. contact |
| | | | 1420: Safety A, reversing when CLOSING, 8K2 contact, Final position as before, with clearance time<br>*This Function works only with inputs for 8K2 evaluation, e.g. IN10* |
| | | | 1422: Safety A, reversing when OPENING, 8K2 contact, End position as before, with clearance time<br>*This Function works only with inputs for 8K2 evaluation, e.g. IN10* |
| | | | 1501: Simulation foil key pad OPEN |
| | | | 1502: Simulation foil key pad CLOSE |

| P. | [Unit] Range | Function | Description/ Note |
|---|---|---|---|
| | | | 1506: Simulation foil key pad STOP<br>1612: Safety C when OPENING, free ride as long as input is active, 8K2 contact, Final position OPEN, without Clearance time<br>*This Function works only with inputs for 8K2 evaluation, e.g. IN10*<br>1613: Safety C, reversing when CLOSING, 8K2 contact, End position as before, with Hold open time, with Clearance time<br>*This Function works only with inputs for 8K2 evaluation, e.g. IN10*<br>1615: Safety C. Reversing when closing, NC<br>1624: Safety C, Safety durng OPENING: reversing in CLOSE- direction during automatic OPENING, Stop during dead man OPENING, no reaction during CLOSING, N. C. contact, endposition as before, hold open time as before, with clearance time<br>1701: Driving to intermediate stop / partial open from each position, NO contact, with Hold open time, with Clearance time, both directions<br>1801: External detector channel 1<br>*To adjust the detector the parameters P.66x are used*<br>1802: External detector channel 2<br>*To adjust the detector the parameters P.67x are used*<br>1803: External detector channel 3<br>*To adjust the detector the parameters P.6Cx are used*<br>1804: External detector channel 4<br>*To adjust the detector the parameters P.6Dx are used*<br><br>*The exact settings which this profile involves can be found in Chapter "Overview of Input Profiles"* |
| P.502 --w | 0000 ... 1804 | Function of Input 2 | see P.501 |
| P.503 --w | 0000 ... 1804 | Function of Input 3 | see P.501 |
| P.504 --w | 0000 ... 1804 | Function of Input 4 | see P.501 |
| P.505 --w | 0000 ... 1804 | Function of Input 5 | see P.501 |
| P.506 --w | 0000 ... 1804 | Function of Input 6 | see P.501 |
| P.507 --w | 0000 ... 1804 | Function of Input 7 | see P.501 |
| P.508 --w | 0000 ... 1804 | Function of Input 8 | see P.501 |
| P.509 --w | 0000 ... 1804 | Function of Input 9 | see P.501 |
| P.50A --w | 0000 ... 1804 | Function of Input 10 | see P.501 |

## 20.1 Input profiles with expansion board

**The expansion board is activated by P.800**

**The expansion board can not be used with all controllers.**

| P. | [Unit] Range | Function | Description/ Note |
|---|---|---|---|
| P.A01 --w | 0000 ... 1804 | Function of Input 21 | see P.501 |
| P.A02 --w | 0000 ... 1804 | Function of Input 22 | see P.501 |
| P.A03 --w | 0000 ... 1804 | Function of Input 23 | see P.501 |
| P.A04 --w | 0000 ... 1804 | Function of Input 24 | see P.501 |
| P.A05 --w | 0000 ... 1804 | Function of Input 25 | see P.501 |
| P.A06 --w | 0000 ... 1804 | Function of Input 26 | see P.501 |

## 20.2 OPEN commands P.5x0 / P.Ex0 / P.Ax0 = 1

Parameter P.5x0 / P.Ex0 / P.Ax0 must be set to 1 in order to activate the basic function OPEN command for this input.

X = number of the input you wish to configure

| P. | [Unit] Range | Function | Description/ Note |
|---|---|---|---|
| P.893 -zz | 0 ... 1 | Executing open commands while closing | While the door is closing, open commands can be ignored and repeated when it reaches the closed position<br>0: An open command that is issued when closing reverses the door when it has opened (except for specially configured close commands, e.g. for barriers )<br>1: An open command that is issued when closing does not reverse the door, the open command is repeated when reaching the lower final position |

## 21 Induction loop detector VEK MNST

| P. | [Unit] Range | Function | Description/ Note |
|---|---|---|---|
| L.100 | 0 ... 1 | VEK MNST | With this parameter a detector VEK MNST can be activated.<br><br>0: deactivated<br>1: VEK MNST |
| L.101 | | VEK MNST Assignment | This parameter explicitly selects a detector (VEK MNST) for the given sensor-actuator interface slot. The slot number is the first digit of the parameter number for the L parameter range. For the user, the lowest four digits of the serial number are displayed and the currently selected detector flashes with its LEDs. |
| L.102 | 0 ... 1 | VEK MNST Deactivate | This parameter can be used to temporarily deactivate the detector without deleting the slot assignment.<br><br>0: Detector Inactive<br>1: Detector activ |
| L.111 | 0 ... 1 | VEK MNST Request new adjustment | A new adjustment of all loops is made.<br><br>0: No function<br>1: Ask for retuning |

### *21.1 VEK MNST diagnostic*

| P. | [Unit] Range | Function | Description/ Note |
|---|---|---|---|
| L.150 | 1 ... 4 | VEK MNST detector channel selection for diagnosis | The channel of the VEK MNST detector to be diagnosed is selected here. Subsequently, the parameters L.152 to L.155 can be used to call up various diagnostic data for the set channel.<br><br>1: Retrieve diagnostic data for channel 1<br>2: Retrieve diagnostic data for channel 2<br>3: Retrieve diagnostic data for channel 3<br>4: Retrieve diagnostic data for channel 4 |
| L.152 | 0 ... 65535 | Current frequency of the VEK MNST detector channel | This parameter displays the current frequency of the oscillating circuit of the channel of the VEK MNST detector selected via parameter L.150. |
| L.153 | 0 ... 65535 | Current detuning of the VEK MNST detector channel | This parameter indicates the current detuning of the channel of detector VEK MNST selected via parameter L.150. |
| L.154 | 0 ... 9999 | Maximum detuning of the VEK MNST detector channel | This parameter indicates the maximum detuning caused by the last metallic object that occupied the loop of the detector channel VEK MNST selected by parameter L.150. |

| P. | [Unit] Range | Function | Description/ Note |
|---|---|---|---|
| L.155 | 0 ... 65535 | Presence counter of the VEK MNST detector channel | This parameter displays the presence counter of the channel of detector VEK MNST selected via parameter L.150. |
| L.160 | | Serial number Detector VEK MNST | Displays the serial number of the inserted VEK MNST detector. |
| L.162 | | Software version Detector VEK MNST | Displays the software version of the inserted VEK MNST detector. |
| L.164 | | Hardware version Detector VEK MNST | Displays the hardware version of the inserted VEK MNST detector. |
| L.166 | 0 ... 255 | Bus protocol version Detector VEK MNST | Displays the bus protocol version of the inserted VEK MNST detector.<br>This version is used to determine which parameters objects the detector supports. |

## 22 Output Profiles

| P. | [Unit] Range | Function | Description/ Note |
|---|---|---|---|
| P.701<br>--w | 0000 ...<br>3202 | Function of Output 1 | The function of the output relay can be specified using this profile. All parameters needed for the function of the output are changed in one step.<br><br>*The exact settings which this profile involves can be found in Apendix Output Profile.* |
| P.702<br>--w | 0000 ...<br>3202 | Function of Output 2 | see P.701 or P.704 |
| P.70F<br>--w | 0000 ...<br>3202 | Function of output 15 | see P.701 or P.704 |
| P.D0A<br>-ww | 0000 ...<br>3202 | Function of output 2A | see P.701 or P.704 |
| P.D0B<br>--w | 0000 ...<br>3202 | Function of output 2B | see P.701 or P.704 |
| P.D0C<br>--w | 0000 ...<br>3202 | Function of output 2C | see P.701 or P.704 |
| P.D0D<br>--w | 0000 ...<br>3202 | Function of output 2D | see P.701 or P.704 |
| P.D0E<br>--w | 0000 ...<br>3202 | Function of output 2E | see P.701 or P.704 |
| P.D0F<br>--w | 0000 ...<br>3202 | Function of output 2F | see P.701 or P.704 |

## *22.1 Door profiles with expansion card*

| P. | [Unit] Range | Function | Description/ Note |
|---|---|---|---|
| P.705 --w | 0000 ... 3202 | Function of Output 5 | see P.701 or P.704 |
| P.706 --w | 0000 ... 3202 | Function of Output 6 | see P.701 or P.704 |
| P.707 --w | 0000 ... 3202 | Function of Output 7 | see P.701 or P.704 |
| P.708 --w | 0000 ... 3202 | Function of Output 8 | see P.701 or P.704 |
| P.709 --w | 0000 ... 3202 | Function of Output 9 | see P.701 or P.704 |
| P.70A --w | 0000 ... 3202 | Function of Output 10 | See P.701 or P.704 |
| P.70B --w | 0000 ... 3202 | Function of Output 11 | see P.701 or P.704 |

# 23 Airlock function

An airlock consists of two doors. These are locked against each other so that only one door can be opened at same time. In addition, after the first door has been closed, an OPEN command is sent to the second gate via an interface. This means that OPEN command switches can be saved inside the airlock.

An OPEN command is issued at the first door. The input of the OPEN command must have the direction "from outside". When the airlock function is activated, the airlock operation is initiated.
The first door opens, the hold-open time expires and the door closes again. While the door is opened, the second door is locked in the end position door CLOSED.
The locking of the second door can optionally be canceled by pressing the stop button on the locked door in order to deliberately deactivate the airlock for one operation.
After reaching the end position door CLOSED, the interlock of the second door is released again and, in addition, an OPEN command is issued to the second door.
Optionally, it is also possible to activate a drive through detection by means of a light barrier. If no vehicle enters the airlock, the process is interrupted.
This door will now be opened and closed again. The airlock operation is now complete.
If the second door can not open, e.g. by an actuated EMERGENCY STOP, the first door re-opens to allow the person or vehicle inside the airlock to exit the airlock.

| P. | [Unit] Range | Function | Description/ Note |
|---|---|---|---|
| A.830 | 0000 ... 0301 | Airlock mode | This parameter specifies the mode of the airlock system.<br>0000: Airlock deactivated<br>0200: Comfortable Airlock Slave, Commands will be forwarded.<br>0201: Comfortable Airlock Master<br>0300: Comfortable Airlock with drive thru recognition by photo eye, Slave<br>0301: Comfortable Airlock with drive thru recognition by photo eye, Master |

## 24 Diagnostics display

| P. | [Unit] Range | Function | Description/ Note |
|---|---|---|---|
| P.910 -ww | 0 ... 41 | Display mode selection | With the aid of this parameter you can show the variables listed below in the display of the door controller.<br><br>The following variables are displayed<br><br>0: The control sequence is displayed (Automatic)<br>1: [Hz] The current travel speed<br>2: [A] The current motor current<br>3: [V] The current motor voltage<br>4: [A] The current DC-Bus current<br>5: [V] The current DC-Bus voltage<br>6: Power stage module temperature °Celsius<br>7: Power stage temperature in °Fahrenheit<br>8: [s] The run-time of the motor during the last door operation<br>9: [Increments] The current position<br>10: [Increments] The position of the reference<br>11: [Dig] Channel 1 value of the absolute encoder<br>12: [Dig] Channel 2 value of the absolute encoder<br>13: [V] Current reference voltage<br>14: [°C] Temperature inside the housing in °Celsius<br>15: [°F] Temperature inside the housing in °Fahrenheit<br>16: Transmission ratio from motor to encoder during opening<br>17: Transmission ratio from motor to encoder during closing<br>21: Number of position requisition without answere from encoder<br>22: Number of wrong received signs in TST PD encoder<br>(activates also the output in P.955)<br>23: Radio quality of the wireless safety device in %.<br>24: Number of errors of the wireless safety device during the last door drive.<br>25: Time of the real time clock module<br>29: Address of the partner controller (only in Master mode sensefull)<br>39: Shows the current cos phi<br>40: Display of the momentary DC bus current in percent of maximum continuously permissible DC bus current.<br>41: Display of the load of the motor protection switch in percent |

## 25 Error Memory

| P. | [Unit] Range | Function | Description/ Note |
|---|---|---|---|
| P.920 rww | | Error Memory | The controller stores the last eight errors in the error memory.<br>After opening Parameter P.920:<br>- Change level using OPEN and CLOSE keys<br>- Opening the error memory with the STOP key<br>- Closing the error memory with the STOP key<br>- Exiting Parameter P.920 with Eb -<br><br>*Er- in the display means that no error was entered.* |

## 26 Software Version

| P. | [Unit] Range | Function | Description/ Note |
|---|---|---|---|
| P.925 rrr | | Software Version | This parameter displays the version of the currently used software. |
| P.926 rrr | | Software version of additional board | This parameter shows the current used software version of the additional board. |
| P.927 -rr | | Serial number | Display of serial number. The serial number can be set on highest password level. As long no serial number is set "Not Set" is displayed |
| P.929 rrr | | RFUxIO software version | Software version of the TST RFUxIO expansion board |

## 27 Door run-Time

| P. | [Unit] Range | Function | Description/ Note |
|---|---|---|---|
| P.930 -rr | [Seconds] | Motor run-time | In this parameter the time required for the last drive operation is stored. |

## 28 Testing of emergency opening

This function is used to make sure that the emergency opening is working. For that the time that the door needs for a full opening, is measured. If it takes to long, the erroemessage F.021 appears and a user intervention is necesarry.

The testing happens every time from endposition close, under the following conditions:
1. After power on with the first message door is close.
2. After the door cycles set in P.492, after power on or after the last testing.
3. After the time set in P.493, after power on or after the last testing.

| P. | [Unit] Range | Function | Description/ Note |
|---|---|---|---|
| A.490 | 0 ... 1 | Application emergency opening test | With this application the checking of the emergency opening test is set.<br>0: Deactivation emergency opening test<br>1: Mechanical emergency opening test |

## 29 Input Voltage Measurement

| P. | [Unit] Range | Function | Description/ Note |
|---|---|---|---|
| P.940 -rr | [Volt] | Input voltage | In this parameter the amount of the currently present input voltage is displayed. |

## 30 Activation of the Expansion Board

| P. | [Unit] Range | Function | Description/ Note |
|---|---|---|---|
| P.800 -ww | 0 ... 8 | Activate Expansion board | The expansion board is activated with this parameter.<br>0: Board deactivated<br>5: TST RFUxK<br>8: TST RFUxIO |
| P.802 -ww | 0000 ... 0400 | Function of the expansion slot | This parameter defines the hardware that was inserted into the expansion slot.<br>0000: Expansion slot deactivated<br>0101: TST SURA1 activated<br>0106: TST SURA6 activated<br>0202: Radio module activated<br>0302: Detector activated<br>0400: TST MNST activated |

## 31 Operating Mode of the Controller

| P. | [Unit] Range | Function | Description/ Note |
|---|---|---|---|
| P.894 --w | 0 ... 1 | Automatic open command | This parameter can be used to generate an automatic OPEN command if the door has not reached the end position CLOSED.<br><br>0: No automatic open command<br>1: Automatically open command if end position CLOSED has not been reached<br><br>*This function is only active if the operating mode automatic (P.980 = 0) or semi-automatic (P.980 = 1) has been set.* |
| P.980 -ww | 0 ... 4 | Operating mode | This parameter is used to set the operating mode for the controller.<br><br>The following modes are possible:<br><br>0: OPEN and CLOSE move in self-holding (Automatic)<br>1: OPEN move in self-holding, CLOSE move in manual mode (partial automatic)<br>2: OPEN and CLOSE move in Manual mode (deadman)<br>3: Deadman emergency operation<br>**ATTENTION**<br>**All safety devices and limit switches are ignored.**<br>*After turning off the controller, the controller changes in the operating mode "deadman"*<br>4: Endurance test with safety devices<br>Automatic OPEN and CLOSE operation. Before each new operation the hold-open time P.010 is in effect.<br>*The endurance test setting is lost after turning off the controller. The controller then reverts to manual mode.* |

## 32 Display Text Language

| P. | [Unit] Range | Function | Description/ Note |
|---|---|---|---|
| P.984 -ww | 0 ... 1 | Screensaver | Scrolling text specifically for use with OLED displays to protect against premature aging of individual pixels.<br><br>0: Deactivated<br>1: Activated |

## 33 Password

*The password is not setable on the customer level*

| P. | [Unit] Range | Function | Description/ Note |
|---|---|---|---|
| P.999 www | 0000 ... FFFF | Password | The password provides access to the various parameter levels.<br><br>**There are different parameters visible depending on the password level.**<br>**A changing of parameters without to know there functionality is forbidden.**<br>**In order to avoid failure and endangering because of unauthorized access passwords are only allowed to give to trained staff.** |

## 34 Factory Setting / Defaults

| P. | [Unit] Range | Function | Description/ Note |
|---|---|---|---|
| P.990 -zz | 0 ... 3 | Factory setting | By setting and saving this parameter all parameter values are restored.<br><br>1: Load parameter set, which are adjusted ex works<br>2: Loads parameter set, which was stored before with P.997 = 2, from the internal storage.<br>*After a software update the stored parameter set should not fit to the new program strukture.*<br>3: Load the second duplicated parameter set that was previously saved with P.997 = 3 from internal memory.<br>*After a software update the stored parameter set should not fit to the new program strukture.* |
| P.997 -ww | 0 ... 3 | Storage of actul parameter settings | The actual parameter settings are stored in the internal storage.<br><br>0: The current parameter set is not saved.<br>2: The current parameter set is saved and can be loaded via P990 = 2 again.<br>3: The current parameter set is saved and can again be loaded via P 990 = 3 |

# 35 Softwareupdate with RS485 Interface

The controller software can be updateted with the RS485 Interface of the positionn encoder.

| P. | [Unit] Range | Function | Description/ Note |
|---|---|---|---|
| P.989 -ww | 0 ... 1 | Start a software update | Starts the boot loader. Now the firmware update can be programmed via the encoder interface. The Cycle LED flashes while the bootloader is running.<br><br>1: With saving this setting the bootloader will start. |

# 36 Digital timer

## *36.1 Real time clock*

| P. | [Unit] Range | Function | Description/ Note |
|---|---|---|---|
| P.C00 rrr | | The current time and date is shown. | The current time and date of the clock device is shown. This parameter is "read only". The shown text can be scrolled by pressing the OPEN or CLOSE key. |

# 37 Breakaway-function

In case of an tripped breakaway input the breakaway counter will count up by 1.
In case of breakaway only dead man move is possible. The breakaway error must be resetet manually.

| P. | [Unit] Range | Function | Description/ Note |
|---|---|---|---|
| P.871 rrr | | Breakaway counter | This parameters shows the number of counted crashes. |

## 38 Parameter Summary

| P. | Function | Default | Changed of: at: | Page |
|---|---|---|---|---|
| A.480 | Application | 0 | | 23 |
| A.490 | Application emergency opening test | 0 | | 45 |
| A.830 | Airlock mode | 0000 | | 42 |
| A.F00 | FSx Wireless safety system profile | 0000 | | 25 |
| L.100 | VEK MNST | 1 | | 40 |
| L.101 | VEK MNST Assignment | 0 | | 40 |
| L.102 | VEK MNST Deactivate | 1 | | 40 |
| L.111 | VEK MNST Request new adjustment | 0 | | 40 |
| L.150 | VEK MNST detector channel selection for diagnosis | 1 | | 40 |
| L.152 | Current frequency of the VEK MNST detector channel | ND | | 40 |
| L.153 | Current detuning of the VEK MNST detector channel | ND | | 40 |
| L.154 | Maximum detuning of the VEK MNST detector channel | ND | | 40 |
| L.155 | Presence counter of the VEK MNST detector channel | ND | | 41 |
| L.160 | Serial number Detector VEK MNST | ND | | 41 |
| L.162 | Software version Detector VEK MNST | ND | | 41 |
| L.164 | Hardware version Detector VEK MNST | ND | | 41 |
| L.166 | Bus protocol version Detector VEK MNST | ND | | 41 |
| P.000 | Door cycle counter | ND [Cycles] | | 6 |
| P.005 | Maintenance counter | ND [Cycles] | | 6 |
| P.010 | Auto close time 1 | 10 [Seconds] | | 6 |
| P.011 | Auto close time 2 | 10 [Seconds] | | 6 |
| P.012 | Forced closing time | 0 [Seconds] | | 7 |
| P.025 | Pre-warning time before closing | 0 [Seconds] | | 7 |
| P.026 | Pre-warning time before closing from between the end positions | 0 | | 7 |
| P.100 | Motor rated frequency | ZW [Hz] | | 8 |
| P.101 | Motor rated current | ZW [A] | | 8 |
| P.102 | Power factor cos Phi | ZW [%] | | 8 |
| P.103 | Motor rated voltage | ZW [Volt] | | 8 |
| P.110 | Drive profile | 0 | | 9 |
| P.115 | Motor current regulator | 2,5 | | 9 |
| P.116 | DC bus current limiter | 100 [%] | | 9 |
| P.117 | cos phi Regulator (Eco Modus) | 1 | | 9 |
| P.130 | Motor rotary field | 1 | | 9 |
| P.140 | Boost for OPEN | 0 [%] | | 10 |
| P.142 | IxR compensation for OPEN | 0 [Hz] | | 11 |
| P.143 | Voltage reduction for OPEN | 100 [%] | | 11 |
| P.145 | Boost for CLOSE | 0 [%] | | 10 |
| P.147 | IxR compensation for CLOSE | 0 [Hz] | | 11 |
| P.148 | Voltage reduction for CLOSE | 100 [%] | | 11 |
| P.202 | Transmission ratio | ND | | 12 |
| P.205 | Selecting the positioning system profile | ZW | | 12 |
| P.210 | New teaching of the end positions | 5 | | 13 |
| P.215 | Requesting correction of the pre-limit switch and limit switch bands | 0 | | 13 |
| P.216 | Activating auto correction / Selecting the ramp setting mode | 4 | | 14 |
| P.217 | Tolerance of automatic end switch correction | 50 | | 14 |
| P.221 | Correction value End position door CLOSE | 0 [Increments] | | 15 |
| P.222 | Pre-limit switch position | 400 | | 16 |

| P. | Function | Default | Changed of: at: | Page |
|---|---|---|---|---|
| | Door CLOSE | [Increments] | | |
| P.231 | Correction value End position Door OPEN | 0 [Increments] | | 18 |
| P.232 | Pre-limit switch position Door OPEN | 500 [Increments] | | 20 |
| P.25F | Synchronization type profile | ND | | 22 |
| P.310 | Travel frequency for rapid OPEN | 60 [Hz] | | 19 |
| P.311 | Duration of start ramp "r1" | 60 [10 ms] | | 19 |
| P.312 | Acceleration of start ramp "r1" | 100 [Hz/s] | | 19 |
| P.320 | Creep speed frequency for OPEN | 20 [Hz] | | 20 |
| P.321 | Duration of brake ramp "r2" | 50 [10 ms] | | 21 |
| P.322 | Acceleration of brake ramp "r2" | 80 [Hz/s] | | 21 |
| P.340 | Duration of stop ramp "r STOP-A" after stop is triggered | 75 [10 ms] | | 21 |
| P.342 | Acceleration of stop ramp " r STOP-A" after stop is triggered | 150 [Hz/s] | | 22 |
| P.350 | Travel frequency for rapid CLOSE | 40 [Hz] | | 15 |
| P.351 | Duration of start ramp "r5" | 50 [10 ms] | | 15 |
| P.352 | Acceleration of start ramp "r5" | 80 [Hz/s] | | 16 |
| P.360 | Creep speed frequency for CLOSE | 20 [Hz] | | 17 |
| P.361 | Duration of brake ramp "r6" | 50 [10 ms] | | 17 |
| P.362 | Acceleration of brake ramp "r6" | 40 [Hz/s] | | 17 |
| P.382 | Acceleration of stop ramp "r STOP-Z" after stop is triggered | 150 [Hz/s] | | 18 |
| P.44A | Range | 4,0 [m] | | 23 |
| P.460 | profile internal safety edge | 6 | | 33 |
| P.501 | Function of Input 1 | 0101 | | 34 |
| P.502 | Function of Input 2 | 0401 | | 38 |
| P.503 | Function of Input 3 | 0701 | | 38 |
| P.504 | Function of Input 4 | 0201 | | 38 |
| P.505 | Function of Input 5 | 0501 | | 38 |
| P.506 | Function of Input 6 | ND | | 38 |
| P.507 | Function of Input 7 | ND | | 38 |
| P.508 | Function of Input 8 | ND | | 38 |
| P.509 | Function of Input 9 | ND | | 38 |
| P.50A | Function of Input 10 | 1001 | | 38 |
| P.701 | Function of Output 1 | 0101 | | 41 |
| P.702 | Function of Output 2 | 0201 | | 41 |
| P.705 | Function of Output 5 | 1220 | | 42 |
| P.706 | Function of Output 6 | 1201 | | 42 |
| P.707 | Function of Output 7 | 1250 | | 42 |
| P.708 | Function of Output 8 | 1210 | | 42 |
| P.709 | Function of Output 9 | 0000 | | 42 |
| P.70A | Function of Output 10 | 0000 | | 42 |
| P.70B | Function of Output 11 | 0001 | | 42 |
| P.70F | Function of output 15 | 0001 | | 41 |
| P.800 | Activate Expansion board | 0 | | 45 |
| P.802 | Function of the expansion slot | 0202 | | 45 |
| P.871 | Breakaway counter | ND | | 48 |
| P.892 | Oncomming traffic control | 1 | | 7 |
| P.893 | Executing open commands while closing | 0 | | 39 |
| P.894 | Automatic open command | 0 | | 46 |
| P.8BA | Specialization of a safety function A to E in operating mode 7 | 0 | | 23 |
| P.910 | Display mode selection | 0 | | 43 |
| P.920 | Error Memory | 0 | | 44 |
| P.925 | Software Version | ND | | 44 |
| P.926 | Software version of additional board | ND | | 44 |

| P. | Function | Default | Changed of: at: | Page |
|---|---|---|---|---|
| P.927 | Serial number | 0000000000 | | 44 |
| P.929 | RFUxIO software version | ND | | 44 |
| P.92A | Softwareversion FSx mobile unit | ND | | 24 |
| P.92B | Software version FSx stationary unit | ND | | 24 |
| P.930 | Motor run-time | ND [Seconds] | | 44 |
| P.931 | Software version transmitter | ND | | 23 |
| P.932 | Software version receiver | ND | | 23 |
| P.933 | Serial number transmitter | ND | | 23 |
| P.934 | Serial number receiver | ND | | 23 |
| P.935 | Error bit transmitter | ND [Digits] | | 23 |
| P.936 | Error bit receiver | ND [Digits] | | 23 |
| P.937 | Aligning mode | 0 | | 24 |
| P.938 | Light line quality | ND | | 24 |
| P.93C | Error counter RS485 | 0 | | 24 |
| P.940 | Input voltage | ND [Volt] | | 45 |
| P.973 | Resetting the maintenance counter | 0 | | 6 |
| P.980 | Operating mode | ND | | 46 |
| P.984 | Screensaver | 0 | | 46 |
| P.989 | Start a software update | 0 | | 48 |
| P.990 | Factory setting | 0 | | 47 |
| P.997 | Storage of actul parameter settings | 0 | | 47 |
| P.999 | Password | 0000 | | 47 |
| P.9F0 | Capacity of battery | 0 [%] | | 24 |
| P.9F1 | Battery voltage of radio safety system | ND [Volt] | | 24 |
| P.9F2 | Wireless status | ND [%] | | 24 |
| P.A01 | Function of Input 21 | 0104 | | 39 |
| P.A02 | Function of Input 22 | 0901 | | 39 |
| P.A03 | Function of Input 23 | 0502 | | 39 |
| P.A04 | Function of Input 24 | 0107 | | 39 |
| P.A05 | Function of Input 25 | 0109 | | 39 |
| P.A06 | Function of Input 26 | 1002 | | 39 |
| P.C00 | The current time and date is shown. | ND | | 48 |
| P.D0A | Function of output 2A | 0000 | | 41 |
| P.D0B | Function of output 2B | 0001 | | 41 |
| P.D0C | Function of output 2C | 0001 | | 41 |
| P.D0D | Function of output 2D | 0001 | | 41 |
| P.D0E | Function of output 2E | 0001 | | 41 |
| P.D0F | Function of output 2F | 0001 | | 41 |
| P.F00 | Activation of the wireless | 0 | | 24 |
| P.F01 | Timeout for the wireless | 50 [ms] | | 24 |
| P.F05 | Channelgroup | 1 | | 24 |
| P.F07 | Address of the mobile unit | 00000000 | | 25 |
| P.F09 | Battery nominal voltage | 3,6 [Volt] | | 25 |
| P.F10 | Mode input 1 | 0 | | 27 |
| P.F11 | Safety | 2 | | 27 |
| P.F12 | Contact type of the input | 0 | | 27 |
| P.F13 | Debouncing time | 1 | | 28 |
| P.F16 | Output | 1 | | 28 |
| P.F17 | Direction 1 | 0 | | 28 |
| P.F18 | Handshake | 0 | | 28 |
| P.F19 | LCD Messages | 0 | | 28 |
| P.F1F | Function input 1 | 0000 | | 26 |
| P.F20 | Mode input 2 | 0 | | 29 |
| P.F21 | Safety | 2 | | 29 |
| P.F22 | Contact type of the input | 0 | | 29 |
| P.F23 | Debouncing Time | 1 | | 29 |

| P. | Function | Default | Changed of: at: | Page |
|---|---|---|---|---|
| P.F26 | Output | 1 | | 29 |
| P.F27 | Direction 2 | 0 | | 29 |
| P.F28 | Handshake | 0 | | 30 |
| P.F29 | LCD Messages | 0 | | 30 |
| P.F2F | Function input 2 | 0000 | | 26 |
| P.F30 | Mode input 3 | 0 | | 30 |
| P.F31 | Safety | 2 | | 30 |
| P.F32 | Contact type of the input | 0 | | 30 |
| P.F33 | Debouncing time | 1 | | 30 |
| P.F36 | Output | 1 | | 31 |
| P.F37 | Direction 3 | 0 | | 31 |
| P.F38 | Handshake | 0 | | 31 |
| P.F39 | LCD Messages | 0 | | 31 |
| P.F3F | Function input 3 | 0000 | | 26 |
| P.F40 | Mode input 4 | 0 | | 31 |
| P.F41 | Safety | 2 | | 32 |
| P.F42 | Contact type of the input | 0 | | 32 |
| P.F43 | Debouncing time | 1 | | 32 |
| P.F46 | Output | 1 | | 32 |
| P.F47 | Direction 4 | 0 | | 32 |
| P.F48 | Handshake | 0 | | 32 |
| P.F49 | LCD Messages | 0 | | 32 |
| P.F4F | Function input 4 | 0000 | | 27 |
| P.FA9 | LCD- Messages | 0 | | 33 |
| P.FB9 | LCD Messages | 0 | | 33 |
| P.FC9 | LCD Messages | 0 | | 33 |
| P.FF2 | Mode output 2 | 0 | | 25 |

# 39 Profiles

## 39.1 Parameter A.480

| A.480 | Unit | 0 | 1 |
|---|---|---|---|
| P.210 | - | NS | 5 |
| P.218 | - | NS | 1 |
| P.253 | - | NS | 2 |
| P.270 | - | NS | 3 |
| P.271 | - | NS | 0 |
| P.275 | [Increments] | NS | 0 |
| P.372 | [Hz/s] | NS | 400 |
| P.374 | [Hz/s] | NS | 80 |
| P.433 | - | 0 | 5 |
| P.447 | - | NS | 46 |
| P.448 | - | NS | 5 |
| P.449 | - | NS | 0 |
| P.44A | [m] | NS | ZW |
| P.460 | - | NS | 1 |
| P.461 | - | NS | 0 |
| P.469 | - | NS | 59 |
| P.46F | - | NS | 1 |
| P.4A0 | - | NS | NS |
| P.4A1 | - | NS | NS |
| P.4A4 | - | NS | NS |
| P.4A8 | - | NS | NS |
| P.4B0 | - | NS | 0 |
| P.4B1 | - | NS | 0 |
| P.4B4 | - | NS | 0 |
| P.4B8 | - | NS | 0 |
| P.4D1 | - | NS | 3 |
| P.4D6 | - | NS | 1 |
| P.4D9 | - | NS | 0 |
| P.505 | - | 0501 | 0530 |
| P.50A | - | 1001 | NS |

## 39.2 Parameter A.490

| A.490 | Unit | 0 | 1 |
|---|---|---|---|
| P.040 | - | 0 | 1 |
| P.490 | [Seconds] | NS | 10,0 |
| P.491 | [minutes] | NS | 0 |
| P.492 | [Cycles] | NS | 1000 |
| P.493 | - | NS | 24 |
| P.495 | [Increments] | NS | ZW |
| P.499 | - | 0 | 2 |
| P.506 | - | NS | 0101 |
| P.507 | - | NS | 0602 |
| P.562 | - | NS | 1 |
| P.56A | - | NS | 1 |
| P.572 | - | NS | 1 |
| P.577 | [Seconds] | NS | 0,1 |
| P.57A | - | NS | 1 |
| P.701 | - | NS | 2601 |
| P.702 | - | NS | NS |

## 39.3 Parameter A.830

| A.830 | Unit | 0000 | 0200 | 0201 | 0300 | 0301 |
|---|---|---|---|---|---|---|
| P.017 | [Seconds] | NS | 60 | 60 | 60 | 60 |
| P.030 | [Seconds] | NS | NS | NS | NS | NS |
| P.501 | - | NS | 0104 | 0104 | 0104 | 0104 |
| P.505 | - | NS | NS | NS | 0501 | 0501 |
| P.506 | - | NS | 1002 | 1002 | 1002 | 1002 |
| P.50D | - | NS | 0114 | 0114 | 0114 | 0114 |
| P.50E | - | NS | 0801 | 0801 | 0801 | 0801 |
| P.5DB | - | NS | NS | 3 | NS | 3 |
| P.5DC | - | NS | NS | 21 | NS | 21 |
| P.5EB | - | NS | NS | 3 | NS | 3 |
| P.5EC | - | NS | NS | 22 | NS | 22 |
| P.830 | - | 0 | 1 | 1 | 2 | 2 |
| P.831 | - | NS | 1 | 1 | 1 | 1 |
| P.83E | - | NS | 0 | 1 | 0 | 1 |
| P.8D1 | - | NS | NS | 13 | NS | 13 |
| P.8D2 | - | NS | NS | 14 | NS | 14 |
| P.D01 | - | NS | 1601 | 1601 | 1601 | 1601 |
| P.D02 | - | NS | 1001 | 1001 | 1001 | 1001 |

## 39.4 Parameter A.F00

| A.F00 | Unit | 0000 | 10BB | 20AA | 20BA | 20BB | 21AA | 21BA | 21BB |
|---|---|---|---|---|---|---|---|---|---|
| P.200 | - | NS | 8 | 8 | 8 | 8 | 8 | 8 | 8 |
| P.460 | - | NS | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| P.465 | - | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| P.47B | - | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| P.4FB | - | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| P.509 | - | NS | NS | NS | NS | NS | 0411 | 0411 | 0411 |
| P.51F | - | 0 | NS | NS | NS | NS | NS | NS | NS |
| P.58F | - | 0 | NS | NS | NS | NS | NS | NS | NS |
| P.59F | - | 0 | NS | NS | NS | NS | 2 | 2 | 2 |
| P.5AF | - | 0 | NS | NS | NS | NS | NS | NS | NS |
| P.601 | - | 0 | NS | NS | NS | NS | NS | NS | NS |
| P.602 | - | 0 | 3 | NS | 3 | 3 | NS | 3 | 3 |
| P.F00 | - | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| P.F07 | - | NS | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| P.F1F | - | 0000 | F203 | 0000 | 0000 | 0000 | F301 | F301 | F301 |
| P.F2F | - | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 |
| P.F3F | - | 0000 | F102 | F102 | F102 | F102 | F102 | F102 | F102 |
| P.F4F | - | 0000 | F203 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 |
| P.FA9 | - | NS | 16 | NS | 16 | 16 | NS | 16 | 16 |
| P.FB9 | - | NS | 53 | NS | 53 | 53 | NS | 53 | 53 |
| P.FC9 | - | NS | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

## 39.5 Parameter P.110

| P.110 | Unit | 0 |
|---|---|---|
| P.100 | [Hz] | ZW |
| P.101 | [A] | ZW |
| P.102 | [%] | ZW |
| P.103 | [Volt] | ZW |

## 39.6 Parameter P.17F

| P.17F | Unit | 0 |
|---|---|---|
| P.140 | [%] | 0 |
| P.142 | [Hz] | 0 |
| P.143 | [%] | 100 |
| P.145 | [%] | 0 |
| P.147 | [Hz] | 0 |
| P.148 | [%] | 100 |
| P.160 | - | 5 |
| P.161 | [Hz] | 120 |
| P.162 | [Hz] | 120 |

## 39.7 Parameter P.18F

| P.18F | Unit | 0 |
|---|---|---|
| P.180 | [Hz] | 10 |
| P.181 | [10 ms] | 6000 |
| P.185 | [Hz] | 7 |
| P.186 | [10 ms] | 6000 |
| P.189 | [%] | 0 |

## 39.8 Parameter P.205

| P.205 | Unit | 0000 | 0001 | 0300 | 0700 | 0800 | 0900 |
|---|---|---|---|---|---|---|---|
| P.200 | - | 0 | 0 | 3 | 7 | 8 | 9 |
| P.202 | - | 0 | 0 | 0 | 0 | 13 | 8 |
| P.25F | - | 0 | 0 | 0 | 0 | 0 | 10 |
| P.506 | - | 1106 | 1107 | NS | NS | NS | NS |
| P.507 | - | 1108 | 1109 | NS | NS | NS | NS |
| P.508 | - | 1110 | 1110 | NS | NS | NS | 1110 |
| P.509 | - | 1111 | 1111 | NS | NS | NS | 1111 |
| P.980 | - | 2 | 2 | 0 | 0 | 0 | 2 |

## 39.9 Parameter P.25F

| P.25F | Unit | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| P.253 | - | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| P.270 | - | 0 | 1 | 3 | 0 | 0 | 3 | 3 | 1 | 2 | 0 |
| P.271 | - | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 |
| P.273 | [Seconds] | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 1 | 5 |
| P.280 | - | 0 | 0 | 0 | 1 | 2 | 2 | 1 | 2 | 2 | 0 |
| P.281 | - | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| P.283 | [Seconds] | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 1 | 5 |

| P.25F | Unit | 10 |
|---|---|---|
| P.253 | - | 3 |
| P.270 | - | 0 |
| P.271 | - | 1 |
| P.273 | [Seconds] | 5 |
| P.280 | - | 0 |
| P.281 | - | 1 |
| P.283 | [Seconds] | 5 |

## *39.10 Parameter P.39F*

| P.39F | Unit | 0 | 1 | 2 | 3 |
|---|---|---|---|---|---|
| P.221 | [Increments] | 0 | 0 | 0 | 0 |
| P.222 | [Increments] | 400 | 400 | 400 | 400 |
| P.223 | [Increments] | 60 | 60 | 60 | 60 |
| P.225 | [Increments] | 0 | 0 | 0 | 0 |
| P.226 | [Increments] | 0 | 0 | 0 | 0 |
| P.228 | [Increments] | 50 | 50 | 50 | 50 |
| P.229 | [Increments] | 50 | 50 | 50 | 50 |
| P.231 | [Increments] | 0 | 0 | 0 | 0 |
| P.232 | [Increments] | 500 | 500 | 500 | 500 |
| P.233 | [Increments] | 70 | 70 | 70 | 70 |
| P.235 | [Increments] | 0 | 0 | 0 | 0 |
| P.236 | [Increments] | 0 | 0 | 0 | 0 |
| P.239 | [Increments] | 50 | 50 | 50 | 50 |
| P.240 | [Increments] | 25 | 25 | 25 | 25 |
| P.242 | [Increments] | 0 | 0 | 0 | 0 |
| P.244 | - | 0 | 0 | 0 | 0 |
| P.275 | [Increments] | 0 | 0 | 0 | 0 |
| P.285 | [Increments] | 0 | 0 | 0 | 0 |
| P.310 | [Hz] | 60 | 60 | 60 | 60 |
| P.312 | [Hz/s] | 100 | 50 | 150 | 200 |
| P.315 | [Hz] | 20 | 20 | 20 | 20 |
| P.317 | [Hz/s] | 40 | 40 | 40 | 40 |
| P.320 | [Hz] | 20 | 20 | 20 | 20 |
| P.322 | [Hz/s] | 80 | 40 | 120 | 160 |
| P.325 | [Hz] | 40 | 40 | 40 | 40 |
| P.327 | [Hz/s] | 40 | 40 | 40 | 40 |
| P.332 | [Hz/s] | 400 | 400 | 400 | 400 |
| P.342 | [Hz/s] | 150 | 150 | 150 | 150 |
| P.343 | [Hz/s] | 40 | 40 | 40 | 40 |
| P.348 | [Hz/s] | 300 | 300 | 300 | 300 |
| P.350 | [Hz] | 40 | 40 | 40 | 40 |
| P.352 | [Hz/s] | 80 | 40 | 120 | 160 |
| P.355 | [Hz] | 20 | 20 | 20 | 20 |
| P.357 | [Hz/s] | 40 | 40 | 40 | 40 |
| P.360 | [Hz] | 20 | 20 | 20 | 20 |
| P.362 | [Hz/s] | 40 | 20 | 60 | 80 |
| P.365 | [Hz] | 30 | 30 | 30 | 30 |
| P.367 | [Hz/s] | 20 | 20 | 20 | 20 |
| P.372 | [Hz/s] | 400 | 400 | 400 | 400 |
| P.374 | [Hz/s] | 400 | 400 | 400 | 400 |
| P.382 | [Hz/s] | 150 | 150 | 150 | 150 |
| P.383 | [Hz/s] | 40 | 40 | 40 | 40 |
| P.388 | [Hz/s] | 200 | 200 | 200 | 200 |
| P.390 | [Hz] | 20 | 20 | 20 | 20 |
| P.392 | [Hz/s] | 66 | 66 | 66 | 66 |
| P.395 | [Hz] | 20 | 20 | 20 | 20 |
| P.397 | [Hz/s] | 66 | 66 | 66 | 66 |
| P.398 | [Hz/s] | 200 | 200 | 200 | 200 |

## 39.11 Parameter P.460

| P.460 | Unit | 0 | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|---|---|
| P.467 | - | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| P.46D | - | 0 | 0 | 0 | 1 | 1 | 0 | 0 |
| P.46F | - | 0 | 1 | 2 | 1 | 2 | 3 | -1 |

## 39.12 Parameter P.50x

| P.50x | Unit | 0000 | 0101 | 0102 | 0103 | 0104 | 0105 | 0106 | 0107 | 0108 | 0109 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| P.5x0 | - | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| P.5x1 | - | 0 | 0 | 0 | 5 | 0 | 1 | 1 | 3 | 1 | 2 |
| P.5x2 | - | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| P.5x3 | - | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 1 |
| P.5x4 | - | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| P.5x5 | - | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| P.5x6 | - | 0 | 3 | 3 | 3 | 1 | 3 | 2 | 3 | 3 | 3 |
| P.5x7 | [Seconds] | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 |
| P.5x8 | [Seconds] | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 |
| P.5x9 | - | 0 | 1 | 1 | 1 | 2 | 1 | 3 | 1 | 1 | 1 |
| P.5xA | - | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| P.50x | Unit | 0110 | 0111 | 0112 | 0113 | 0114 | 0116 | 0117 | 0120 | 0121 | 0124 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| P.5x0 | - | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| P.5x1 | - | 0 | 0 | 0 | 6 | 5 | 0 | 0 | 1 | 0 | 1 |
| P.5x2 | - | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| P.5x3 | - | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| P.5x4 | - | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 1 |
| P.5x5 | - | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 |
| P.5x6 | - | 1 | 3 | 3 | 3 | 2 | 1 | 2 | 2 | 1 | 2 |
| P.5x7 | [Seconds] | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 |
| P.5x8 | [Seconds] | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 |
| P.5x9 | - | 2 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 3 |
| P.5xA | - | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| P.50x | Unit | 0125 | 0129 | 0152 | 0165 | 0180 | 0201 | 0202 | 0204 | 0205 | 0223 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| P.5x0 | - | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 2 |
| P.5x1 | - | 1 | 1 | 16 | 18 | 4 | 2 | 2 | 2 | 4 | 4 |
| P.5x2 | - | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| P.5x3 | - | 0 | 1 | 0 | 0 | 0 | 2 | 3 | 0 | 0 | 0 |
| P.5x4 | - | 1 | 1 | 1 | 2 | 1 | 1 | 0 | 0 | 0 | 1 |
| P.5x5 | - | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 |
| P.5x6 | - | 2 | 1 | 3 | 3 | 2 | 3 | 3 | 3 | 3 | 3 |
| P.5x7 | [Seconds] | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 |
| P.5x8 | [Seconds] | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 |
| P.5x9 | - | 3 | 2 | 1 | 1 | 3 | 4 | 4 | 4 | 4 | 4 |
| P.5xA | - | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| P.50x | Unit | 0301 | 0302 | 0304 | 0401 | 0402 | 0403 | 0404 | 0407 | 0411 | 0501 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| P.5x0 | - | 3 | 3 | 3 | 4 | 4 | 4 | 4 | 4 | 4 | 5 |
| P.5x1 | - | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 2 | 2 | 0 |
| P.5x2 | - | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 1 |
| P.5x3 | - | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 |
| P.5x4 | - | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 |
| P.5x5 | - | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| P.5x6 | - | 3 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| P.5x7 | [Seconds] | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 |
| P.5x8 | [Seconds] | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 |
| P.5x9 | - | 5 | 1 | 5 | 6 | 6 | 6 | 6 | 6 | 36 | 7 |
| P.5xA | - | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| P.50x | Unit | 0502 | 0504 | 0505 | 0506 | 0507 | 0509 | 0511 | 0520 | 0522 | 0530 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| P.5x0 | - | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 |
| P.5x1 | - | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 0 |
| P.5x2 | - | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 2 | 1 |
| P.5x3 | - | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 |
| P.5x4 | - | 4 | 2 | 4 | 2 | 4 | 5 | 5 | 4 | 2 | 4 |
| P.5x5 | - | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| P.5x6 | - | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| P.5x7 | [Seconds] | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 |
| P.5x8 | [Seconds] | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 |
| P.5x9 | - | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 52 | 60 |
| P.5xA | - | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |

| P.50x | Unit | 0601 | 0602 | 0701 | 0703 | 0704 | 0713 | 0714 | 0801 | 0802 | 0803 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| P.5x0 | - | 6 | 6 | 7 | 7 | 7 | 7 | 7 | 8 | 8 | 8 |
| P.5x1 | - | 1 | 0 | 0 | 4 | 5 | 0 | 5 | 0 | 1 | 2 |
| P.5x2 | - | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 |
| P.5x3 | - | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| P.5x4 | - | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| P.5x5 | - | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 |
| P.5x6 | - | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| P.5x7 | [Seconds] | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 |
| P.5x8 | [Seconds] | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 |
| P.5x9 | - | 8 | 8 | 9 | 9 | 9 | 9 | 9 | 10 | 10 | 28 |
| P.5xA | - | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| P.50x | Unit | 0804 | 0901 | 0902 | 0903 | 1001 | 1002 | 1003 | 1004 | 1005 | 1101 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| P.5x0 | - | 8 | 9 | 9 | 9 | 10 | 10 | 10 | 10 | 10 | 11 |
| P.5x1 | - | 2 | 5 | 7 | 0 | 0 | 4 | 3 | 2 | 7 | 1 |
| P.5x2 | - | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| P.5x3 | - | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| P.5x4 | - | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| P.5x5 | - | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| P.5x6 | - | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| P.5x7 | [Seconds] | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 |
| P.5x8 | [Seconds] | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 |
| P.5x9 | - | 28 | 11 | 11 | 11 | 12 | 12 | 56 | 12 | 12 | 19 |
| P.5xA | - | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| P.50x | Unit | 1102 | 1103 | 1104 | 1105 | 1106 | 1107 | 1108 | 1109 | 1110 | 1111 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| P.5x0 | - | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 |
| P.5x1 | - | 2 | 6 | 0 | 0 | 4 | 4 | 5 | 5 | 9 | 10 |
| P.5x2 | - | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 1 |
| P.5x3 | - | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| P.5x4 | - | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| P.5x5 | - | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| P.5x6 | - | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| P.5x7 | [Seconds] | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 |
| P.5x8 | [Seconds] | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 |
| P.5x9 | - | 25 | 22 | 20 | 20 | 21 | 21 | 23 | 23 | 24 | 26 |
| P.5xA | - | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| P.50x | Unit | 1114 | 1116 | 1401 | 1402 | 1403 | 1404 | 1405 | 1406 | 1407 | 1408 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| P.5x0 | - | 11 | 11 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 |
| P.5x1 | - | 7 | 10 | 1 | 0 | 8 | 6 | 7 | 9 | 3 | 4 |
| P.5x2 | - | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| P.5x3 | - | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 4 | 4 | 4 |
| P.5x4 | - | 1 | 0 | 0 | 4 | 0 | 0 | 0 | 4 | 4 | 4 |
| P.5x5 | - | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| P.5x6 | - | 3 | 0 | 0 | 3 | 0 | 0 | 0 | 3 | 3 | 3 |
| P.5x7 | [Seconds] | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 |
| P.5x8 | [Seconds] | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 |
| P.5x9 | - | 0 | 26 | 6 | 7 | 6 | 7 | 7 | 7 | 6 | 31 |
| P.5xA | - | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |

| P.50x | Unit | 1418 | 1420 | 1422 | 1501 | 1502 | 1506 | 1612 | 1613 | 1615 | 1624 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| P.5x0 | - | 14 | 14 | 14 | 15 | 15 | 15 | 16 | 16 | 16 | 16 |
| P.5x1 | - | 6 | 0 | 9 | 0 | 2 | 1 | 10 | 0 | 0 | 9 |
| P.5x2 | - | 0 | 2 | 2 | 0 | 0 | 1 | 2 | 2 | 1 | 1 |
| P.5x3 | - | 0 | 4 | 4 | 0 | 0 | 0 | 0 | 4 | 4 | 4 |
| P.5x4 | - | 0 | 4 | 2 | 1 | 0 | 0 | 0 | 4 | 4 | 4 |
| P.5x5 | - | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 |
| P.5x6 | - | 0 | 3 | 3 | 3 | 0 | 0 | 0 | 3 | 3 | 3 |
| P.5x7 | [Seconds] | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 |
| P.5x8 | [Seconds] | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 |
| P.5x9 | - | 6 | 52 | 52 | 2 | 9 | 6 | 52 | 52 | 7 | 7 |
| P.5xA | - | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| P.50x | Unit | 1701 | 1801 | 1802 | 1803 | 1804 |
|---|---|---|---|---|---|---|
| P.5x0 | - | 17 | 18 | 18 | 18 | 18 |
| P.5x1 | - | 0 | 1 | 2 | 3 | 4 |
| P.5x2 | - | 0 | 0 | 0 | 0 | 0 |
| P.5x3 | - | 0 | 0 | 0 | 0 | 0 |
| P.5x4 | - | 1 | 0 | 0 | 0 | 0 |
| P.5x5 | - | 1 | 0 | 0 | 0 | 0 |
| P.5x6 | - | 3 | 3 | 3 | 3 | 3 |
| P.5x7 | [Seconds] | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 |
| P.5x8 | [Seconds] | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 |
| P.5x9 | - | 25 | 2 | 2 | 2 | 2 |
| P.5xA | - | 0 | 0 | 0 | 0 | 0 |

## 39.13 Parameter P.70x

| P.70x | Unit | 0000 | 0001 | 0101 | 0103 | 0201 | 0203 | 0401 | 0501 | 0601 | 0602 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| P.7x0 | - | 6 | 6 | 0 | 6 | 2 | 6 | 4 | 5 | 6 | 6 |
| P.7x1 | [Seconds] | 1000,0 | 1000,0 | 1000,0 | 1000,0 | 1000,0 | 1000,0 | 1000,0 | 1000,0 | 1000,0 | 1000,0 |
| P.7x2 | [Seconds] | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 |
| P.7x3 | [Seconds] | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 |
| P.7x4 | - | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| P.7x5 | [Increments] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| P.7x6 | - | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| P.7x7 | - | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| P.7x8 | - | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| P.7x9 | - | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| P.7xA | - | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| P.7xB | - | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| P.7xC | - | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| P.7xD | - | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| P.7xF | - | 0 | 0 | 0 | 70 | 0 | 69 | 0 | 0 | 19 | 20 |

| P.70x | Unit | 0605 | 0606 | 0607 | 0612 | 0613 | 0630 | 0634 | 0659 | 0660 | 0665 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| P.7x0 | - | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 |
| P.7x1 | [Seconds] | 0,5 | 0,5 | 0,5 | 1000,0 | 1000,0 | 1000,0 | 1000,0 | 1000,0 | 1000,0 | 1000,0 |
| P.7x2 | [Seconds] | 0,1 | 0,1 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 |
| P.7x3 | [Seconds] | 0,0 | 0,0 | 0,0 | 1,0 | 1,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 |
| P.7x4 | - | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 |
| P.7x5 | [Increments] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| P.7x6 | - | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| P.7x7 | - | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| P.7x8 | - | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| P.7x9 | - | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| P.7xA | - | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| P.7xB | - | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| P.7xC | - | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| P.7xD | - | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| P.7xF | - | 38 | 39 | 43 | 46 | 47 | 73 | 65 | 85 | 92 | 50 |

| P.70x | Unit | 0666 | 0701 | 0703 | 0801 | 1001 | 1002 | 1101 | 1102 | 1201 | 1210 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| P.7x0 | - | 6 | 7 | 7 | 8 | 10 | 10 | 10 | 11 | 12 | 12 |
| P.7x1 | [Seconds] | 1000,0 | 0,0 | 1000,0 | 1000,0 | 1000,0 | 1000,0 | 1000,0 | 1000,0 | 1000,0 | 1000,0 |
| P.7x2 | [Seconds] | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 |
| P.7x3 | [Seconds] | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 1,0 | 0,0 | 0,0 | 0,0 | 0,0 |
| P.7x4 | - | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| P.7x5 | [Increments] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| P.7x6 | - | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| P.7x7 | - | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| P.7x8 | - | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| P.7x9 | - | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 |
| P.7xA | - | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| P.7xB | - | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| P.7xC | - | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| P.7xD | - | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| P.7xF | - | 51 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| P.70x | Unit | 1220 | 1221 | 1222 | 1223 | 1224 | 1232 | 1233 | 1250 | 1251 | 1252 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| P.7x0 | - | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| P.7x1 | [Seconds] | 1000,0 | 1000,0 | 1000,0 | 1000,0 | 1000,0 | 1000,0 | 1000,0 | 1000,0 | 1000,0 | 1000,0 |
| P.7x2 | [Seconds] | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 |
| P.7x3 | [Seconds] | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 |
| P.7x4 | - | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| P.7x5 | [Increments] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| P.7x6 | - | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 3 | 3 | 3 |
| P.7x7 | - | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 |
| P.7x8 | - | 1 | 3 | 1 | 3 | 1 | 1 | 1 | 1 | 3 | 1 |
| P.7x9 | - | 0 | 0 | 0 | 0 | 6 | 6 | 6 | 0 | 0 | 0 |
| P.7xA | - | 3 | 4 | 3 | 4 | 1 | 1 | 1 | 3 | 4 | 3 |
| P.7xB | - | 1 | 3 | 1 | 3 | 1 | 1 | 1 | 1 | 3 | 1 |
| P.7xC | - | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| P.7xD | - | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| P.7xF | - | 0 | 0 | 0 | 0 | 20 | 51 | 51 | 0 | 0 | 0 |

| P.70x | Unit | 1253 | 1255 | 1263 | 1264 | 1295 | 1298 | 1601 | 1701 | 1801 | 1901 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| P.7x0 | - | 12 | 12 | 12 | 12 | 12 | 12 | 16 | 17 | 18 | 19 |
| P.7x1 | [Seconds] | 1000,0 | 1000,0 | 1000,0 | 1000,0 | 1000,0 | 1000,0 | 1000,0 | 1000,0 | 1000,0 | 1000,0 |
| P.7x2 | [Seconds] | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 |
| P.7x3 | [Seconds] | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,5 | 0,5 |
| P.7x4 | - | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| P.7x5 | [Increments] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| P.7x6 | - | 3 | 3 | 3 | 3 | 4 | 4 | 0 | 0 | 0 | 0 |
| P.7x7 | - | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| P.7x8 | - | 3 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 |
| P.7x9 | - | 0 | 6 | 6 | 6 | 1 | 0 | 0 | 0 | 0 | 0 |
| P.7xA | - | 4 | 1 | 1 | 1 | 3 | 3 | 0 | 0 | 0 | 0 |
| P.7xB | - | 3 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 |
| P.7xC | - | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 |
| P.7xD | - | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 |
| P.7xF | - | 0 | 19 | 50 | 50 | 0 | 0 | 0 | 0 | 0 | 0 |

| P.70x | Unit | 2001 | 2101 | 2201 | 2301 | 2501 | 2601 | 3201 | 3202 |
|---|---|---|---|---|---|---|---|---|---|
| P.7x0 | - | 20 | 21 | 22 | 23 | 25 | 26 | 32 | 32 |
| P.7x1 | [Seconds] | 1000,0 | 1000,0 | 1000,0 | 1000,0 | 1000,0 | 1000,0 | 1000,0 | 1000,0 |
| P.7x2 | [Seconds] | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 |
| P.7x3 | [Seconds] | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 |
| P.7x4 | - | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| P.7x5 | [Increments] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| P.7x6 | - | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| P.7x7 | - | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| P.7x8 | - | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| P.7x9 | - | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| P.7xA | - | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| P.7xB | - | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| P.7xC | - | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| P.7xD | - | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| P.7xF | - | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

## *39.14 Parameter P.991*

| P.991 | Unit | 0 |
|---|---|---|
| P.110 | - | 0 |
| P.17F | - | 0 |
| P.18F | - | 0 |
| P.205 | - | ZW |
| P.210 | - | 5 |
| P.39F | - | 0 |
| P.465 | - | 0 |
| P.501 | - | 0101 |
| P.502 | - | 0401 |
| P.503 | - | 0701 |
| P.504 | - | 0201 |
| P.505 | - | 0501 |
| P.506 | - | 0301 |
| P.507 | - | 0601 |
| P.508 | - | 0802 |
| P.509 | - | 1003 |
| P.50A | - | 1001 |
| P.50B | - | 0106 |
| P.50C | - | 0110 |
| P.50D | - | 0000 |
| P.50E | - | 0000 |
| P.50F | - | 0000 |
| P.608 | - | 0223 |
| P.609 | - | 0223 |
| P.701 | - | 0101 |
| P.702 | - | 0201 |
| P.703 | - | 3201 |
| P.704 | - | 0000 |
| P.705 | - | 1220 |
| P.706 | - | 1201 |
| P.707 | - | 1250 |
| P.708 | - | 1210 |
| P.709 | - | 0000 |
| P.70A | - | 0000 |
| P.70B | - | 0001 |
| P.70C | - | 0000 |
| P.70D | - | 0000 |
| P.70E | - | 0000 |
| P.70F | - | 0001 |
| P.970 | - | 0 |
| P.971 | [1000 Cycles] | 1000 |
| P.972 | [Cycles] | 1000 |
| P.973 | - | 0 |
| P.985 | - | 1 |
| P.A01 | - | 0104 |
| P.A02 | - | 0901 |
| P.A03 | - | 0502 |
| P.A04 | - | 0107 |
| P.A05 | - | 0109 |
| P.A06 | - | 1002 |
| P.A07 | - | 0106 |
| P.A08 | - | 0802 |
| P.D05 | - | 0001 |

| P.991 | Unit | 0 |
|---|---|---|
| P.D06 | - | 0001 |
| P.D07 | - | 0000 |
| P.D08 | - | 1295 |
| P.D09 | - | 1298 |
| P.F00 | - | 0 |
| P.F1F | - | 0000 |
| P.F2F | - | 0000 |
| P.F3F | - | 0000 |
| P.F4F | - | 0000 |

### *39.15 Parameter P.F1F*

| P.F1F | Unit | 0000 | F101 | F102 | F103 | F104 | F201 | F202 | F203 | F206 | F207 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| P.F10 | - | 0 | 1 | 3 | 1 | 1 | 4 | 1 | 4 | 4 | 4 |
| P.F11 | - | 2 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 |
| P.F12 | - | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 1 |
| P.F13 | - | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 |
| P.F16 | - | 1 | 1 | 1 | 2 | 3 | 3 | 3 | 3 | 3 | 3 |
| P.F19 | - | 0 | 52 | 52 | 52 | 52 | 49 | 49 | 51 | 16 | 53 |

| P.F1F | Unit | F301 | F302 |
|---|---|---|---|
| P.F10 | - | 4 | 4 |
| P.F11 | - | 2 | 2 |
| P.F12 | - | 1 | 1 |
| P.F13 | - | 1 | 1 |
| P.F16 | - | 2 | 2 |
| P.F19 | - | 0 | 0 |

## 40 LCD-Messages

For each input of the controler a text message can be set, that appears on the LCD display when the input is triggered.

For the following inputs, the LCD message can be changed from the standard LCD text to an optional LCD message:

### *40.1 Selectable LCD text messages:*

| No. | Description | English | German | French | Spanish |
|---|---|---|---|---|---|
| 1 | Open | Open | Auf | Ouvert | Abrir |
| 2 | Open outside | Open extern | Auf extern | Ouvert extern | Abrir externa |
| 3 | Open inside | Open intern | Auf intern | Ouvert intern | Abrir interna |
| 4 | Single channel | Pull Switch | Einkanal | Sequentiel | Un Canal |
| 5 | Permanent open | Perm. Open | Dauerauf | Ouv Perm | Perm. Abierto |
| 6 | Stop | Stop | Stopp | Stop | Parar |
| 7 | Light beam | Photoeye | Lichtschranke | Cellule | Barrera Luz |
| 8 | Dead man mode | Deadman | Totmann | Hommort | Hombre M. |
| 9 | Close | Close | Zu | Ferm. | Cerrar |
| 10 | Locked close | Locked Closed | Verrieg. EU | VerrPosBas | Cerrado bloq. |
| 11 | Cross traffic | Cross Traffic | Querverkehr | Trafic trans. | Trafic.trans |
| 12 | Deactivation | Deactivation | Abschaltung | Deactivation | Desactivacion |
| 13 | Limit switch | Limit Switch | Endschalter | FdC | Lim.F.Carrera |
| 14 | Radar | Radar | Radardetektor | Detect radar | Radar |

| | | | | | |
|---|---|---|---|---|---|
| **15** | OBID-Card | OBID Card | OBID-Karte | Carte OBID | OBID Tarjeta |
| **16** | Emergency stop - thermo switch | E-Stop Ext 1 | Thermo-Pille | Sonde T° Mot | Alto-E Ext 1 |
| **17** | Emergency stop - slackrope switch | E-Stop Ext 2 | Schlaffseil | MouCab | Alto-E Ext 2 |
| **18** | Key switch | Keyswitch | Schlüsselsch. | Int a clef | Inter.d.llave |
| **19** | Pre limit switch light beam | PreLimitPhoto | VorendLi-schr | FdCDesacCell | Prelimit.Foto |
| **20** | Pre limit switch safety edge | PreLimit Edge | Vorend SiLei | FdCDesacLdS | Prelim.Banda |
| **21** | Pre limit switch open | PreLimit Open | Vorend Oben | 2FdCHaut | Prelimit.sup |
| **22** | Pre limit switch intermediate stop | PreLimIntern. | VorendZw.halt | FdCPart | Prelim.inter. |
| **23** | Pre limit switch close | PreLimitClose | Vorend Unten | 2FdCBas | Prelimit.Cr. |
| **24** | Limit switch open | Limit Open | Endsch. Oben | FdCHaut | Limite Abier. |
| **25** | Limit switch intermediate stop | LimitIntermed | EndschZw.halt | FdCPart | Limite.Inter. |
| **26** | Limit switch close | Limit Close | Endsch. Unten | FdCBas | Limite Cerr. |
| **27** | Reference switch | Reference | Referenz | PointDeRef. | Referencia |
| **28** | Locking in intermediate stop 2 | Locked Interm | Verrieg. E2 | Verr.E2 | Locked Interm |
| **30** | Locking close speed | Locked Cspeed | Verrieg. Cs | VerrVitFerm | Cerrado bloq. |
| **31** | Feed rentention | Feed Retent. | Einzugsich. | Feed Retent. | Feed Retent. |
| **32** | Pull switch inside | Pull Swit.int | Eink. innen | Un canal int | Un Canal int |
| **33** | Pull switch outside | Pull Swit.ext | Eink. extern | Un canal ext | Un Canal ext |
| **36** | Crash | Crash | Crash | Crash | Crash |
| **44** | Obstacle detection | Obstacle | Hindernis | Obstacle | Obstacle |
| **49** | Personnel door switch | Escape door | Schlupftür | Portillon | Deslizamiento |
| **50** | Autoclose off | AutoClose Off | Zeitschl. aus | Temp.Ouv.Des. | Apagad.autom. |
| **51** | Emergency stop - Slack rope switch | E-Stop Ext | Schlaffseil | MouCab | Alto-E Ext |
| **52** | Safety Edge | Edge Tripped | Leiste Ausl. | LdS | Barra Infer |
| **53** | Emergency crank | Emerg.Crank | Not-Handbed. | Deverrou. | Maniv.Emerg |
| **54** | Thermo switch | Thermo Switch | Thermopille | Sonde T° Mot | Int.Termico |
| **56** | Deactivation intermediate stop | PartialOpnOff | Zwischenh.Aus | Ouv.Part.Des. | AperParclOff |
| **58** | E-Locked | Stop E-Lock | Stop E-Verr. | Verr-E.Stop | Stop E-Bloq |
| **59** | Light curtain danger zone | Safety | Sicherheit | Securite | Safety |
| **60** | Light curtain occupied | Object | Hindernis | Opstacle | Object |