

# **DREHMO**

**VALVE ACTUATORS**

A member of the AUMA Group

## **Control description for actuators with integrated i-matic control unit type IMC**

**V2.02.0018**



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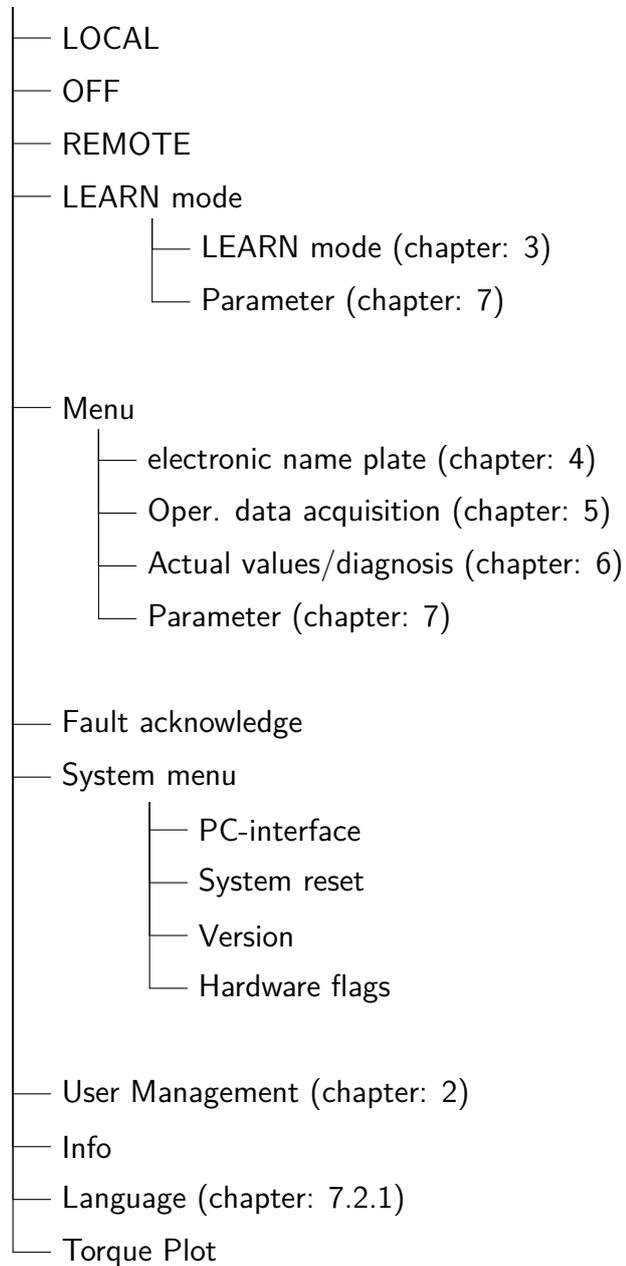
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# 1 Structure of the device Menu

## Selection menu



### NOTICE

#### **This description contains all parameters**

According to the configuration some parameters may not be displayed in the actuator.

## 2 User management

### **User Login**

User level: User

Default value: -/-

**Description:**

Selection of the user for login.

### **Specialist password**

User level: Specialist

Default value: 1234

**Description:**

Setting of the password for the specialist.

### **ENTER-TASTE password**

User level: User

Default value: 0

**Description:**

Input of the password for the according user.  
It consists of 4 digits.

### **Actual user**

readable from User

Default value: Manufacturer

**Description:**

Output of loggedin user.

### **Password from user**

User level: Specialist

Default value: Manufacturer

**Description:**

Setting for the use of password. User below the selected one do not need to enter a password.

### **User password**

User level: User

Default value: 1234

**Description:**

Setting of the password for the user.

### **Mainten. staff password**

User level: Maintenance staff

Default value: 1234

**Description:**

Setting of the password for maintenance staff.

## 3 LEARN mode

### 3.1 Short LEARN mode

---

#### Closing direction

User level: Maintenance staff  
 Default value: Clockwise CW

**Description:**

Turning direction of the actuator if the valve is closing.

#### Switching off mode

User level: Maintenance staff  
 Default value: Final position limit sw.

**Description:**

Sets the switch-off conditions of the valve. During LEARN-mode, this parameter should be set to STOP POSITION, because the references for the set values are the positions 0% and 100%. Increases in torque due to the kind of valve need to lie outside of this range.

#### Tripping torque CLOSE

User level: Maintenance staff

**Description:**

The actuator switches off if the torque exceeds this value when closing. The actuator is delivered by default with minimum tripping torque.

#### Tripping torque OPEN

User level: Maintenance staff

**Description:**

The actuator switches off if the torque exceeds this value when opening. The actuator is delivered by default with minimum tripping torque.

#### Clear position CLOSE

User level: Maintenance staff  
 Default value: No

**Description:**

Clear position closed. The final position is shifted by 90 turns.

#### Clear position OPEN

User level: Maintenance staff  
 Default value: No

**Description:**

Clear position open. The final position is shifted by 90 turns.

#### Set position CLOSE

User level: Maintenance staff  
 Default value:

**Description:**

The actuator can be moved with the buttons OPEN and CLOSE as if in LOCAL mode. ENTER sets the final position to the current position, ESC cancels the procedure without setting the final position.

#### Set position OPEN

User level: Maintenance staff  
 Default value:

**Description:**

The actuator can be moved with the buttons OPEN and CLOSE as if in LOCAL mode. ENTER sets the final position to the current position, ESC cancels the procedure without setting the final position.

### 3.2 Change final positions

---

#### Clear position CLOSE

User level: Maintenance staff  
 Default value: No

**Description:**

Clear position closed. The final position is shifted by 90 turns.

**Clear position OPEN**

User level: Maintenance staff

Default value: No

**Description:**

Clear position open. The final position is shifted by 90 turns.

**Set position CLOSE**

User level: Maintenance staff

Default value:

**Description:**

The actuator can be moved with the buttons OPEN and CLOSE as if in LOCAL mode. ENTER sets the final position to the current position, ESC cancels the procedure without setting the final position.

**Set position OPEN**

User level: Maintenance staff

Default value:

**Description:**

The actuator can be moved with the buttons OPEN and CLOSE as if in LOCAL mode. ENTER sets the final position to the current position, ESC cancels the procedure without setting the final position.

## 3.3 Analogue position value

### 3.3.1 Input

---

**Set OPEN position**

User level: Maintenance staff

Default value: No change

**Description:**

Defines the actual setpoint current as the setpoint value for position open. If this parameter is used, the parameter VALUE OPEN is automatically set.

**Set CLOSE position**

User level: Maintenance staff

Default value: No change

**Description:**

Defines the actual setpoint current as the setpoint value for position closed. If this parameter is used, the parameter VALUE CLOSE is automatically set.

**Value OPEN**

User level: Maintenance staff

Default value: 978

**Description:**

Adjusts the numerical value of the A/D converter of the setpoint signal to the position OPEN.

**Value CLOSE**

User level: Maintenance staff

Default value: 194

**Description:**

Adjusts the numerical value of the A/D converter of the setpoint signal to the position CLOSE.

### 3.3.2 Output 1

---

**Value 100%**

User level: Maintenance staff

Default value: 947

**Description:**

Sets the value for the D/A converter which corresponds to the position of 100% (20 mA).

**Value 0%**

User level: Maintenance staff

Default value: 188

**Description:**

Sets the value for the D/A converter which corresponds to the position of 0% (4 mA).

#### 3.3.3 Output 2-3

---

**Value 100%**

User level: Maintenance staff

Default value: 928

**Description:**

Sets the value for the D/A converter which corresponds to the position of 100% (20 mA).

**Value 0%**

User level: Maintenance staff

Default value: 186

**Description:**

Sets the value for the D/A converter which corresponds to the position of 0% (4 mA).

#### 3.4 Torque calibration

---

**Delete torque OPEN**

User level: Specialist

Default value: No

**Description:**

Deletes all calibration data of the torque sensor for opening direction. Afterwards the calibration has to be executed by using torque OPEN 50% and 100%.

**Delete torque CLOSE**

User level: Specialist

Default value: No

**Description:**

Deletes all calibration data of the torque sensor for closing direction. Afterwards the calibration has to be executed by using torque CLOSE 50% and 100%.

**Zero point adjust**

User level: Maintenance staff

Default value: No

**Description:**

Defines the actual torque as 0 Nm.

**torque OPEN 50%**

User level: Specialist

**Description:**

Sets the calibration value for the torque in opening direction with a level of 50%. The actuator opens the valve upon pushing ARROW UP and moves until the button is pressed again to set the value of 50% in opening direction. The actuator then stops automatically.

To function properly, the closing direction has to be set to CW and the tripping torque must be set to maximum!

**torque OPEN 100%**

User level: Specialist

**Description:**

Sets the calibration value for the torque in opening direction with a level of 100%. The actuator opens the valve upon pushing ARROW UP and moves until the button is pressed again to set the value of 100% in opening direction. The actuator then stops automatically.

To function properly, the closing direction has to be set to CW the tripping torque must be set to maximum!

**torque CLOSE 50%**

User level: Specialist

**Description:**

Sets the calibration value for the torque in closing direction with a level of 50%. The actuator closes the valve upon pushing ARROW DOWN and moves until the button is pressed again to set the value of 50% in closing direction. The actuator then stops automatically.

To function properly, the closing direction has to be set to CW the tripping torque must be set to maximum!

**torque CLOSE 100%**

User level: Specialist

**Description:**

Sets the calibration value for the torque in closing direction with a level of 100%. The actuator closes the valve upon pushing ARROW DOWN and moves until the button is pressed again to set the value of 100% in closing direction. The actuator then stops automatically.

To function properly, the closing direction has to be set to CW the tripping torque must be set to maximum!

**Torque centered**

readable from User

**Description:**

Displays the current value of the excursion of the torque axle.

## 3.5 Maintenance Encoder

**Upload calibration**

User level: Maintenance staff

Default value: No

**Description:**

Transfer of the sensor calibration data into the control unit.

**Download calibration**

User level: Maintenance staff

Default value: No

**Description:**

Transfer of the sensor calibration data from the control unit into the sensor.

**Default calibration**

User level: Maintenance staff

Default value: No

**Description:**

Transfer preset calibration data to the sensor according to the corresponding actuator types.

NOTICE: The torque values may not be exact due to mechanical tolerances.

**Calibr. gradient CLOSE**

User level: Manufacturer

Default value: 0

**Description:**

The slope  $m$  is calculated, based on the two taught points for the torque in direction CLOSE, by the equation:  $y=mx+b$ .

**Calibr. gradient OPEN**

User level: Manufacturer

Default value: 0

**Description:**

The slope  $m$  is calculated, based on the two taught points for the torque in direction OPEN, by the equation:  $y=mx+b$ .

**Calibr. offset CLOSE**

User level: Manufacturer

Default value: 0

**Description:**

The offset  $b$  is calculated, based on the two taught points for the torque in direction CLOSE, by the equation:  $y=mx+b$ .

**Calibr. offset OPEN**

User level: Manufacturer

Default value: 0

**Description:**

The offset  $b$  is calculated, based on the two taught points for the torque in direction CLOSE, by the equation:  $y=mx+b$ .

## 4 Electronic name plate

### 4.1 Identification

---

#### Bluetooth name

readable from User  
Default value:

**Description:**

Shows the actual name tag of the actuator that will be displayed during a bluetooth discovery.

#### Bluetooth address

readable from User  
Default value: 0

**Description:**

Shows the bluetooth MAC address of the actuator that will be displayed during a bluetooth discovery.

### 4.2 Description

---

#### TAG/KKS-ID

User level: Maintenance staff  
Default value: `_TAG_KKS_`

**Description:**

Process-specific identification of the actuator

#### Application

User level: Maintenance staff  
Default value: `_APPLICATION_`

**Description:**

Description of the actuator

#### Installation area

User level: Maintenance staff  
Default value: `_INSTAREA_`

**Description:**

Process-specific part, where the actuator is installed

#### Assembly date

User level: Maintenance staff  
Default value: `_MOUNTDATE_`

**Description:**

date when actuator was installed

#### Commission no.

User level: Specialist  
Default value: `_KOMNR_`

**Description:**

Commission-number of the manufacturer

### 4.3 Actuator

---

#### Manufacturer

User level: Specialist  
Default value: Manufacturer

**Description:**

Indication about the actuators manufacturer

#### Actuator identifier no.

User level: Specialist  
Default value: `_DRIVEIDENT_`

**Description:**

Description of the actuator according to key with output and speed (e.g. iM30 A-25)

#### Actuator model

User level: Specialist  
Default value: electrical

**Description:**

Power source of the actuator

**Serial number**

readable from User

Default value: -/-

**Description:**

Actuator serial number =&gt; setting defined by device key

**Device certifications**

User level: Specialist

Default value: NA

**Description:**

Device certifications

**Mech. output form**

User level: Specialist

Default value: \_\_DROUTPUT\_\_

**Description:**

Mechanical output form

**Rpm**

User level: Specialist

Default value: 0

**Description:**

Speed of the output / Rpm

**Time / 90°**

User level: Specialist

Default value: 0

**Description:**

The time needed to turn 90° (for DPiM)

**Protection class**

User level: Specialist

Default value: IP67

**Description:**

Protection class

**Type of duty**

User level: Specialist

Default value: S4/35%ED

**Description:**

Operational mode of the actuator (e.g. S2-10 min.)

**max. tripping torque**

readable from User

Default value: 0

**Description:**

Maximum available torque of the actuator output =&gt; setting defined by device key (see Control unit)

**min. tripping torque**

readable from User

Default value: 0

**Description:**

Minimum available torque of the actuator output.

Lower torques than this value cannot be detected! =&gt; setting defined by device key (see Control unit)

**max. modulating torque**

readable from User

Default value: 0

**Description:**

Maximum available torque for modulating mode =&gt; setting defined by device key

**min. ambient temp.**

User level: Specialist

Default value: -25

**Description:**

Minimum allowed temperature when electronic unit is powered (heating is on)

**max. ambient temp.**

User level: Specialist

Default value: 60

**Description:**

Maximum allowed temperature

### 4.4 Control unit

#### 4.4.1 Basics

---

##### Device Key

User level: User

Default value: 0000-0000-0000-0000

**Description:**

This key defines the configuration of the control unit (e.g. integral positioner, timer). A new key is only valid after a reset procedure.

##### Device Manufacturer ID

readable from User

Default value: 305

**Description:**

Manufacturer ID assigned by the Profibus organisation.

##### Device Id

readable from User

Default value: i-Matic iM

**Description:**

Kind of electronic

##### Original works number

readable from User

Default value: -/-

**Description:**

Serial number (works number) of the original produced actuator that included the control unit.

##### Serial number

readable from User

Default value: -/-

**Description:**

Serial number of electronic unit

##### Wiring diagram

User level: Specialist

Default value: iM00X-XX-X X-X X X/X

**Description:**

Wiring diagram of the actuator

##### Electrical specification

User level: Specialist

Default value: iM00X-XX-X X-X X X/X

**Description:**

Lists the electronic components of the actuator

##### Motor monitoring

readable from User

Default value: Unknown

**Description:**

Information about the version of the motor monitoring

- PTC: the microcontroller does the motor monitoring
- TMS: a certified module is used to do the motor monitoring. The microcontroller can not control this module

##### min. electronics temp.

User level: Specialist

Default value: -25

**Description:**

The minimum allowed temperature of electronic

##### max. electr. temp.

User level: Specialist

Default value: 85

**Description:**

The maximum allowed temperature of electronic

## 4.4.2 Components

---

### **Snr. base plate**

readable from User  
Default value: -/-

**Description:**

Serial number of base plate

### **SW-Revision baseplate**

readable from User  
Default value: -/-

**Description:**

Software version of main board

### **HW-Revision baseplate**

readable from User  
Default value: -/-

**Description:**

Hardware version of main board

### **Snr. display plate**

readable from User  
Default value: -/-

**Description:**

Serial number of display plate

### **SW-Revision display**

readable from User  
Default value: -/-

**Description:**

Software version of display board

### **HW-Revision Display**

readable from User  
Default value: -/-

**Description:**

Hardware version of display board

### **Serial number EM6**

readable from User  
Default value: -/-

**Description:**

Serial number of combined sensor Em6

### **Snr. EM6 Remote**

readable from User  
Default value: -/-

**Description:**

Serial number of board inside actuator for wall mounted unit

### **SW-Version EM6 Remote**

readable from User  
Default value: -/-

**Description:**

Shows the software version of a remote sensor module. Requirement for this function will be that the actuator is equipped with a wall mounted control unit.

### **Snr. Interface 1**

readable from User  
Default value: -/-

**Description:**

Serial number of Interface board 1

### **SW-Revision Interf. 1**

readable from User  
Default value: -/-

**Description:**

Software version of interface board 1

### **HW-Revision Interf. 1**

readable from User  
Default value: -/-

**Description:**

Hardware version of interface board 1

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---

### **Snr. Interface 2**

readable from User

Default value: -/-

**Description:**

Serial number of additional, optional interface board

### **SW-Revision Interf. 2**

readable from User

Default value: -/-

**Description:**

Software version of interface board 1

### **HW-Revision Interf. 2**

readable from User

Default value: -/-

**Description:**

Hardware version of additional, optional interface board

### **Local remote control**

readable from User

Default value: Disabled

**Description:**

Information, whether the actuator can be remote controlled using the interface of the display unit => setting defined by device key

### **Enhanced controller**

readable from User

Default value: Disabled

**Description:**

This parameter controls the use of the enhanced controller that provides more complex settings for the controller.

### **Programmer**

readable from User

Default value: Disabled

**Description:**

Indication if the actuator is equipped with an internal set value generator.  
=> Set by device key

## 4.4.3 Features

---

### **Internal positioner**

readable from User

Default value: Disabled V003

**Description:**

Information, whether the internal positioner is enabled or not => setting defined by device key

### **Analogue output**

readable from User

Default value: Disabled

**Description:**

Indicates that the actuator was equipped with an analog output by manufacturer => setting defined by device key

## 4.5 Motor

---

### **Motor type**

User level: Specialist

Default value: `_MOTORTYPE_`

**Description:**

Motortype

### **Motor serial no.**

User level: Specialist

Default value: 123456

**Description:**

Serialnumber of the motor

### **Insulation class**

User level: Specialist

Default value: F

**Description:**

Insulation class of the motor

**Nominal voltage**

User level: Specialist  
Default value: 400

**Description:**

Nominal voltage

**Phases**

User level: Specialist  
Default value: 3

**Description:**

Number of phases of the main power system

**Nominal frequency**

User level: Specialist  
Default value: 50

**Description:**

Frequency of the main power system

**Nominal current**

User level: Specialist  
Default value: 0.75

**Description:**

Nominal current

**Starting current**

User level: Specialist  
Default value: 1.1

**Description:**

Maximum current when motor is energised

**Nominal power**

User level: Specialist  
Default value: 1.1

**Description:**

Nominal power

**Phase shift (cos phi)**

User level: Specialist  
Default value: 0.65

**Description:**

Value of cosinus phi at nominal values.

**Motor protection**

User level: Specialist  
Default value: PTC

**Description:**

Sensor of motor temperature

**Output speed / Rpm**

User level: Specialist  
Default value: 1360

**Description:**

Speed of motor at nominal values

---

**4.6 Gear / thrust unit****Manufacturer**

User level: Maintenance staff  
Default value: `_GEARMANUF_`

**Description:**

Manufacturer

**Add. gear model**

User level: Maintenance staff  
Default value: `_GEARTYPE_`

**Description:**

type of additional component

**Serial number**

User level: Maintenance staff  
Default value: `_GEARSERNR_`

**Description:**

Serial number of component

**Gearbox assembly date**

User level: Maintenance staff  
Default value: `_GEARMOUNTDATE_`

**Description:**

Date of installation of component

## 4. ELECTRONIC NAME PLATE

---

### **max. input torque**

User level: Maintenance staff

Default value: 0.0

**Description:**

Value of maximum permissible input torque of component. A value of 0 means no restriction.

### **Adjustment range**

User level: Maintenance staff

Default value: 90.0

**Description:**

Information about the stroke in the configured unit (see parameters>data logging>position unit)

### **Gear ratio**

User level: Maintenance staff

Default value: 1.0

**Description:**

Gear ratio

### **Serial number**

User level: Maintenance staff

Default value: `_VALVESERNR_`

**Description:**

Serial number of valve

### **Gear factor**

User level: Maintenance staff

Default value: 1.0

**Description:**

Gear factor

### **max. torque OPEN**

User level: Maintenance staff

Default value: 0.0

**Description:**

Maximum permissible torque of valve or gear in direction open. A value of 0 means no restriction.

### **Mech. output form**

User level: Maintenance staff

Default value: `_GEAROUTPUT_`

**Description:**

Mechanical form of output

### **max. torque CLOSE**

User level: Maintenance staff

Default value: 0.0

**Description:**

Maximum permissible torque of valve or gear in direction close. A value of 0 means no restriction.

## 4.7 Valve

---

### **Manufacturer**

User level: Maintenance staff

Default value: `_VALVEMANUF_`

**Description:**

Manufacturer of the valve, which was delivered with the actuator

### **Valve type**

User level: Maintenance staff

Default value: linear

**Description:**

Information about the moving of the valve

## 5 Oper. data acquisition

### 5.1 General

---

#### Calibration date

User level: Specialist  
Default value: 2003-08-08

**Description:**

Date, when actuator was last calibrated.

#### Configuration date

User level: Maintenance staff  
Default value: 2002-08-08

**Description:**

This field can be used to store the date of the last configuration changes

#### Maintenance date

User level: Maintenance staff  
Default value: 2002-08-08

**Description:**

This field can be used to store the date of the last maintenance

### 5.2 Operation data

---

#### Valve stroke

User level: Specialist  
Default value: 0.0

**Description:**

Value of the accumulated valve travel in multiples of complete stroke (= 1)

#### > Limit valve stroke

User level: Maintenance staff  
Default value: 0.0

**Description:**

Maximum allowed valve travel in multiples of complete stroke (= 1).  
If the value is set to 0, this check is disabled.

#### Motor oper. time total

readble from User  
Default value: 0.0

**Description:**

Operating time of motor. This value cannot be reset.

#### Motor operation time

User level: Specialist  
Default value: 0.0

**Description:**

Accumulated operating time of motor

#### Position trippings total

readble from User  
Default value: 0

**Description:**

Number of stops due to reaching a final position. This value cannot be reset.

#### Position trippings

User level: Specialist  
Default value: 0

**Description:**

Number of stops due to reaching a final position

#### Operation cycles

User level: Specialist  
Default value: 0

**Description:**

Number of motor start-ups

#### > Limit cycles

User level: Maintenance staff  
Default value: 0

**Description:**

Limit of number of motor start-ups. If the value is exceeded, an indication MAINTENANCE ESSENTIAL is generated. If value is set to 0, this check is disabled.

### Actual op. cycles/h

readable from User  
Default value: 0

**Description:**

Information of number of motor start-ups during the last hour.  
Value is updated continuously

### max. cycles / hour

User level: Specialist  
Default value: 0

**Description:**

Record of maximum value of actual operation cycles per h.

### > Limit cycles / hour

User level: Maintenance staff  
Default value: 0

**Description:**

Limit of number of motor start-ups during one hour. A value of 0 means no limit.

### Operation time CLOSE

readable from User  
Default value: 0.0

**Description:**

Duration of the last complete closing of the valve starting at open position

### Operation time OPEN

readable from User  
Default value: 0.0

**Description:**

Duration of last complete opening of the valve starting at close position

### Actual operation time

readable from User  
Default value: 0.0

**Description:**

Duration of last movement

### Actual duty cycle value

readable from User  
Default value: 0.0

**Description:**

Duration of energised motor during the last hour.  
Value is updated continuously.

### max. duty cycle value

User level: Specialist  
Default value: 0.0

**Description:**

Information about longest duration of energised motor during one hour.

### > Limit duty cycle

User level: Specialist  
Default value: 0.0

**Description:**

Limit for the longest duration of energised motor during one hour. A message will be generated upon violation. The monitoring is disabled when a value of 0.0 is entered.

## 5.3 Dynamic maintenance

### Thermal ageing

User level: Specialist  
Default value: 0

**Description:**

Calculates the ageing process of temperature dependent components of the actuator like gaskets. Those ageing processes are depending on the ambient temperature.

### > Limit thermal ageing

User level: Maintenance staff  
Default value: 87600

**Description:**

Limit for the thermal ageing. If this value is exceeded, the indications MAINTENANCE ESSENTIAL and GASKET CHANGE RECOMM. are generated. If value is set to 0, this check is disabled.

**Temperature corr. value**

User level: Maintenance staff

Default value: -10

**Description:**

Defines the difference between measured and ambient temperature. E.g. if set to 10°C, the ambient temperature is 10K less than the measured temperature.

**Mechanical ageing**

User level: Specialist

Default value: 0

**Description:**

Calculates the abrasion of components of the internal gear.

**Type mech. ageing**

User level: Maintenance staff

Default value: No

**Description:**

This parameter defines the algorithm used for the calculation of the mechanical ageing.

It is required to select the adequate actuator type in order to use the correct calculation algorithm.

Setting of the value to NO results in a deactivation of the mechanical ageing calculation.

**> Limit mechanical ageing**

User level: Maintenance staff

Default value: 0

**Description:**

Limit for mechanical ageing. If this value is exceeded, the indications MAINTENANCE ESSENTIAL and GEAR OVERHAUL RECOMM. are generated. If value is set to 0, this check is disabled.

**> Preset mechanical ageing**

User level: Maintenance staff

Default value: No

**Description:**

This parameter can be used to preset the > LIMIT MECHANICAL AGEING to a limit fitting to the present actuator's size.

**Dyn. Consumptionvar.**

readable from User

Default value: 0

**Description:**

0..100% consumption of the sustainable stress for the actuator. This variable indicates the maximum relativ consumption based on the corresponding limits of the thermal or mechanical ageing.

## 5.4 Faults

---

**Torque tripping**

User level: Specialist

Default value: 0

**Description:**

Number of stops due to a torque exceeding the tripping torque

**Torque warnings**

User level: Specialist

Default value: 0

**Description:**

Number of warnings due to a torque exceeding the torque warning level

**Thermal overload**

readable from User

Default value: 0

**Description:**

Number of times when motor was overheated

### **Actuator start failures**

readable from User

Default value: 0

***Description:***

Number of times while the motor is energised and the position did not change significantly during this period.

## 5.5 System data

---

### **Up time electronic**

readable from User

Default value: 0

***Description:***

The time the electronic was energised

### **Number of power-on**

readable from User

Default value: 0

***Description:***

The number of system resets

### **Electronics overtemp.**

readable from User

Default value: 0

***Description:***

Accumulated duration of electronic temperature exceeding maximum allowed value.

## 6 Actual values/diagnosis

### 6.1 Pending faults

readable from User

Default value:

**Description:**

This parameter contains a list of faults that are indicated as soon as they occur.

### 6.2 Error stack

---

**Fault t-0 - 9**

readable from User

Default value: None

**Description:**

Shows the kind of last error and when it occurred

**Time t-0 - 9**

readable from User

Default value: 0

**Description:**

Shows the time of the fault

### 6.3 Process data

---

**Operation mode**

readable from User

Default value: OFF

**Description:**

Displays the active mode

**Actual position**

readable from User

Default value: 0.0

**Description:**

Displays the position in the unit specified in parameters->data logging->position unit

**Setpoint position**

readable from User

Default value: 0

**Description:**

Displays the setpoint value in the unit specified

**Torque**

readable from User

Default value: 0

**Description:**

Displays the current torque

**Fail safe**

readable from User

Default value: Disabled

**Description:**

Information about the state of the fail safe function

**Emerg. shutdown (ESD)**

readable from User

Default value: Enabled

**Description:**

Information about the state of the emergency shutdown command.

Enabled:

External emergency shutdown is requested.

Disabled:

External emergency shutdown is not requested.

### 6.4 Power supply

---

#### Phase sequence

readable from User  
Default value: Failure

**Description:**

Information about the input power

#### Phase 1 - 3

readable from User  
Default value: Failure

**Description:**

Displays the state of phase L1.  
The indication is reset with the next movement or with a fault acknowledgement.

#### 24V internal

readable from User  
Default value: Failure

**Description:**

Displays the state of the 24 V driven by the main power

#### 24V external

readable from User  
Default value: Failure

**Description:**

Displays the state of the externally powered 24 V

#### Sensor temperature

readable from User  
Default value: 0

**Description:**

Displays the actual temperature of the remote sensor module (wall mounted unit). If no remote sensor module is connected the mean value of the temperature of the base plate will be indicated.

#### NV-Memory failure

readable from User  
Default value: No

**Description:**

Displays whether the non-volatile memory showed an error during the boot procedure

### 6.5 System

---

#### Electronic temperature

readable from User  
Default value: 0

**Description:**

Displays the temperature of electronic. The first value describes the temperature of the display and the second one describes the mean value of the base plate. Only the second value is indicated in the i matic explorer.

**EM6 Error code**

readable from User

Default value: 0

**Description:**

The control unit checks the combined sensor (EM6) during the automatically performed self test. In case of an error the indication10 encoder failure is activated. This parameter describes which kind of error was detected. The EM6 is checked in several steps which generate different error code groups.

Errors during general communication with EM6:

- 1: Read error of serial number
- 2: Read error of offset of angle
- 3: Read error of correction factor for analogue values
- 4: Read error of logic values
- 5: Read error of torque value
- 6: Read error of closing and opening direction
- 7: Read error of checksum flag
- 8: Read error of LEARN values
- 9: Request error of EEPROM acces
- 10: Access error of persistent memory
- 11: Internal error. An invalid function argument has been provided
- 12: The reference values of the sensor are out of the toleranz

41: Timeout during communication with sensor

Blink codes of CAL LED on iMC06 board Z119.105:

Code Major 1

Code Minor X

Meaning: value according to EM6 failure code list

Code Major 2

Code Minor 1

Meaning: sensor has no torque calibration or it was deleted

Code Major 2

Code Minor 2

Meaning: sensor has no position calibration or it was deleted

IMC16 – remote limit switches/potentiometer sensor on CAN Interface

New EM6 failure codes:

51: Error of position indication. Both positions (OPEN and CLOSE) are indicated simultaneously.

52: Error of torque indication. Both torques (OPEN and CLOSE) are indicated simultaneously.

53: Line break. Wiper resistance of potentiometer is too high.

54: Short circuit in potentiometer. Wiper resistance of potentiometer is too low.

55: Resolution of potentiometer is too low. The stroke between positions OPEN and CLOSE is too small.

Blink codes of CAL LED on iMC16 board Z121.784:

Code Major 1

Code Minor 1

Meaning: Error limit switch pair. Both positions are indicated simultaneously.

Code Major 1

Code Minor 2

Meaning: Error torque switch pair. Both torques are indicated simultaneously.

Code Major 2

Code Minor 1

Meaning: Line break potentiometer. Wiper resistance of potentiometer is too high.

Code Major 2

Code Minor 2

Meaning: Short circuit potentiometer. Wiper resistance of potentiometer is too low.

Code Major 3

Code Minor 1

Meaning: Resolution of potentiometer is too low. The stroke between positions OPEN and CLOSE is too small.

### **HW interface failure**

readable from User

Default value: No

**Description:**

Information, whether the communication to the interface board is OK

### **Discrepancy Error code**

readable from User

Default value: 0

**Description:**

Displays the error code describing the fault detected during discrepancy analysis of the power driver. If an error was detected the actuator can't be operated any more.

NOTE: code of the according fault can only be evaluated by manufacturer.

## 6.6 Interface

### 6.6.1 Overview

---

#### **Interface type**

readable from User

Default value: Relays

**Description:**

Information about the kind of interface card

#### **Baudrate**

readable from User

**Description:**

The actual transmission speed of the fieldbus interface is given

#### **Addresses**

readable from User

**Description:**

Shows the actual address of the actuator.

#### **Data to host**

readable from User

**Description:**

Displays the data of the telegram to the fieldbus master in hexadecimal numbers. Refer to complementary operating manual for actuators with fieldbus systems.

**Data from host**

readable from User

**Description:**

Displays the data of the telegram from the fieldbus master in sedecimal numbers. Refer to complementary operating manual for actuators with fieldbus systems.

**6.6.2 HART****6.6.2.1 Version**

---

**APP FW-Version**

readable from User

Default value: Vx.xx.xxxx

**Description:**

Firmware version of application from HART-Board.

**IAP FW-Version**

readable from User

Default value: Vx.xx.xxxx

**Description:**

Firmware version of STM-Application (In-Application Program IAP) from HART-Board.

**Stack FW-Version**

readable from User

Default value: Vx.xx.xxxx

**Description:**

Firmware version of the HART-Stack.

**6.6.2.2 Device Identification**

---

**Manufacturer ID**

readable from User

Default value: 24700

**Description:**

Indicates the company that produced the device. Manufacturer Ids are allocated by the HART Communication Foundation. Only the designated manufacturer may use this ID.

**Device ID**

readable from User

Default value: 0

**Description:**

A number unique to a particular field device. This number must be different for every device produced with a given device type.

**Expanded Device Type**

readable from User

Default value: 58037

**Description:**

Indicates the type of the device (i.e., the product name). The parameter Expanded Device Type indicates the set of commands and data items supported by the field device. This value will be set from the HART Communication Foundation per device.

### Device Conn. Type

readable from User

Default value: Actuator

#### *Description:*

Defines the Device Connection Type of the actuator. The default value of the DREHMO actuator is the type: Actuator.

The following type exists:

- 0 = Not defined
- 1 = Current Input
- 2 = Current Output
- 3 = Voltage Input
- 4 = Voltage Output
- 5 = Secondary
- 6 = Transmitter
- 7 = Actuator
- 8 = Non-DC Isolated Bus Device
- 9 = DC Isolated Bus Device

### Wireless HART Adapter

readable from User

Default value: Disabled

#### *Description:*

If the parameter WirelessHART Adapter is set to value 0 (disabled), the power supply of 24V for the wireless adapter will be interrupted. Otherwise the voltage is provided when the system is ready for operation.

### CurrentOut Resistor

readable from User

Default value: Disabled

#### *Description:*

If the parameter CURRENT OUT RESISTOR has the value 0 (Disabled) the additional resistor is disabled by the switch S2 on the HART module. Otherwise it is enabled.

### Device Revision Level

readable from User

Default value: 1

#### *Description:*

A whole Number indicating the revision level of command and data item set for this Device Type.

### Software Revision Level

readable from User

Default value: 1

#### *Description:*

An unsigned integer indicating the revision level of the firmware in the field device. An increment of the revision number must occur for every released version of the field device's firmware.

### Hardware Revision Level

readable from User

Default value: 1

#### *Description:*

An unsigned integer indicating the major revision level of the hardware in the field device.

### Protocol Major Rev. Nr.

readable from User

Default value: 7

#### *Description:*

The HART Stack is compatible with Protocol Revision 7.4 (Major Revision 7).

### 6.6.2.3 Plant Identification

#### Date Code

readable from User

Default value: 1900-01-01

#### *Description:*

Describes a date code, which only will be written by DCS-System.

**Descriptor**

readble from User

Default value: ??????????????????

**Description:**

Describes a 16 Byte Device Description value in ASCII format. Via HART will be 12 Byte communicated in ASCII Packet format.

**Config. Changed Bit SM**

readble from User

Default value: 0

**Description:**

If Configuration Change Counter has been incremented, then the Configuration Changed Bit for Secondary Master (SM) will be set.

**6.6.2.4 Communication State****Current Flow**

readble from User

Default value: No Impedance

**Description:**

Indicates if the connection type is Actuator and a current source (low impedance) is detected, or when the connection type is Current Output a current sink (high impedance) is detected. If no current signal is detected, the value 0 (no impedance) is reported.

**Config. Change Counter**

readble from User

Default value: 0

**Description:**

The Configuration Change Counter must be incremented once for every command received that changes the device configuration. The counter must also be incremented once for every user action that changes the device's configuration or calibration (e.g., from local operator interface). This value is never reset and must be maintained even if power is removed from the device or a device reset is performed.

**Config. Changed Bit PM**

readble from User

Default value: 0

**Description:**

If Configuration Change Counter has been incremented, then the Configuration Changed Bit for Primary Master (PM) will be set.

**6.6.3 Foundation Fieldbus****6.6.3.1 Device Identification****Device ID**

readble from User

Default value:

**Description:**

The device ID is set during the the start of the FF module. After that it will never changed. After start the Device ID is transmitted through the Application-Interface from FF module to the device.

**Module FW-Version**

readble from User

Default value: FF-Vx.xx AP-x.xx.xx

**Description:**

The FW version of the FF-module is fix. At startup of the FF-module, the FW version is transmitted to the device.

**Module HW-Version**

readble from User

Default value: FF-Vx.xx AP-x.xx.xx

**Description:**

The HW version is stored in the EEPROM on the FF-module. At start the FF-module transmits the version over application interface to the device.

### Compatibility Rev

readable from User

Default value: 1

**Description:**

The parameter COMPATIBILITY REVISION shows the lowest revision of the device. For replacing a device take a Firmware with the same or a higher revision for compatibility in the FF-H1 network.

Example:

DEV\_TYPE = 0x0007, DEV\_REV = 0x03,  
COMPATIBILITY\_REV = 0x02

The device can only be used with revision 0x03 or 0x02.

### Bus Activity 2

readable from User

Default value: FALSE

**Description:**

The purpose of the Bus Activity information is whether the electrical wiring is ready to communicate over the fieldbus.

### Bus State

readable from User

Default value: Undefined

**Description:**

Shows that the electrical wiring is OK.

### 6.6.3.2 Communication State

---

#### Active Channel

readable from User

Default value: Undefined

**Description:**

Displays the active channel which communicates with the control system (DCS).

#### Data Exchange 1

readable from User

Default value: FALSE

**Description:**

A valid data exchange occurs between the corresponding stack and the device.

#### Data Exchange 2

readable from User

Default value: FALSE

**Description:**

A valid data exchange occurs between the corresponding stack and the device.

#### Bus Activity 1

readable from User

Default value: FALSE

**Description:**

The purpose of the Bus Activity information is whether the electrical wiring is ready to communicate over the fieldbus.

#### Station Mode

readable from User

Default value: Undefined

**Description:**

Indicates the current type of FF.

#### Live List 1

readable from User

Default value:

**Description:**

Displays the available devices at the Foundation Fieldbus system.

The Live List is only valid if the FF module operates as Link Master. The Live List is transmitted as U8 [32] on the application interface to the device. At startup the live list is unique transmitted, otherwise only when it will be changed.

Node Address = 0 corresponds  
live\_list\_buffer [0] = 0x80

Node Address = 7 corresponds  
live\_list\_buffer [0] = 0x01, etc.

**Live List 2**

readable from User

Default value:

**Description:**

Displays the available devices at the Foundation Fieldbus system.

The Live List is only valid if the FF module operates as Link Master. The Live List is transmitted as U8 [32] on the application interface to the device. At startup the live list is unique transmitted, otherwise only when it will be changed.

Node Address = 0 corresponds  
live\_list\_buffer [0] = 0x80

Node Address = 7 corresponds  
live\_list\_buffer [0] = 0x01, etc.

**Live List 3**

readable from User

Default value:

**Description:**

Displays the available devices at the Foundation Fieldbus system.

The Live List is only valid if the FF module operates as Link Master. The Live List is transmitted as U8 [32] on the application interface to the device. At startup the live list is unique transmitted, otherwise only when it will be changed.

Node Address = 0 corresponds  
live\_list\_buffer [0] = 0x80

Node Address = 7 corresponds  
live\_list\_buffer [0] = 0x01, etc.

**Live List 4**

readable from User

Default value:

**Description:**

Displays the available devices at the Foundation Fieldbus system.

The Live List is only valid if the FF module operates as Link Master. The Live List is transmitted as U8 [32] on the application interface to the device. At startup the live list is unique transmitted, otherwise only when it will be changed.

Node Address = 0 corresponds  
live\_list\_buffer [0] = 0x80

Node Address = 7 corresponds  
live\_list\_buffer [0] = 0x01, etc.

**Macrocycle**

readable from User

Default value: 0

**Description:**

At the start of the FF-module the configured Macro-Cycle is read from the FF-H1 stack and transferred from the FF-module over the application interface. Any other changes to the Macro-Cycle is transferred from the FF-module over the application interface.

**Schedule List**

readable from User

Default value:

**Description:**

The Schedule list shows the running function blocks of the FBK2 (scheduled) on the device display. At start the FF module creates a list and transmits it over the application interface to the device. The list is cyclic (500ms) updated and only changes will be transmitted. The blockID's used as an index in the list. Value 1 indicates block is in schedule. Value 0 means no block is in schedule. The Schedule list contains information about the schedule state (block in the Schedule / block not in the Schedule) of 27 function blocks. Starting with DO1 in the low byte and DO2 in the high byte of Modbus Holding Reg., etc ..

### Simulation State

readable from User  
Default value: OFF

**Description:**

At startup the FF-module read if the Simulate mode on the FF module is active or not. The value SIMULATE\_ON / SIMULATE\_OFF is then transferred once from the FF-module over the application interface to the device. Other transfers occurs only when something is changed. The simulate mode on the FF module is activate if the Simulate jumper is set on the FF module or the command CMD\_SIMULATE\_ON is transmitted over the application interface from the device to FF-module. An activate simulate mode by jumper can not be deactivated with command CMD\_SIMULATE\_OFF.

### XD\_ERROR Positioner

readable from User  
Default value: NOERR

**Description:**

Indicates an error in PositionerTB.

### XD\_ERREXT Positioner

readable from User  
Default value: NOERR

**Description:**

On error indication shows the exact error description.

### 6.6.3.3 Block Modes

---

#### Block Select

User level: User  
Default value: RB

**Description:**

Block selection mode to display the block attributes: Target / Actual.

### Block Mode Target

readable from User  
Default value: MODE\_OOS

**Description:**

Block mode target of the currently selected block (Block Select).

### Block Mode Actual

readable from User  
Default value: MODE\_OOS

**Description:**

Actual block mode of the currently selected block (Block Select).

### 6.6.3.4 TB\_Channels

---

#### TB\_DO Select

User level: User  
Default value: CFG\_OUT1

**Description:**

Choosing a Digital Output Function Block.

#### TB\_DO CFG\_OUT

readable from User  
Default value: Not used

**Description:**

Configurable channel of the Digital Output TB.

#### TB\_DI Select

User level: User  
Default value: CFG\_IN1

**Description:**

Choosing a Digital Input Function Block.

#### TB\_DI CFG\_IN

readable from User  
Default value: Not used

**Description:**

Configurable channel of the Digital Input TB.

**TB\_AO Select**

User level: User

Default value: CFG\_AOUT1

**Description:**

Selection of an Analog Output Function Block.

**TB\_AO CFG\_AOUT**

readable from User

Default value: Fieldbus setpoint position

**Description:**

Configurable channel of the Analog Output TB.

**TB\_AI Select**

User level: User

Default value: CFG\_AIN1

**Description:**

Selection of an Analog Input Function Block.

**TB\_AI CFG\_AIN**

readable from User

Default value: Actual position

**Description:**

Configurable channel of the Analog Input TB.

**FB\_DI Select**

User level: User

Default value: DI\_1

**Description:**

Choosing a Digital Input Function Block.

**FB\_DI Channel**

readable from User

Default value: Ch not used

**Description:**

Occupancy of the channel of a selected DI FB.

**FB\_AO Select**

User level: User

Default value: AO\_1

**Description:**

Selection of an analog output function block.

**FB\_AO Channel**

readable from User

Default value: Ch not used

**Description:**

Occupancy of the channel of a selected AO FB.

**6.6.3.5 FB\_Channels**

---

**FB\_DO Select**

User level: User

Default value: DO\_1

**Description:**

Choosing a Digital Output Function Block.

**FB\_DO Channel**

readable from User

Default value: Ch not used

**Description:**

Occupancy of the channel of a selected DO FB.

**FB\_AI Select**

User level: User

Default value: AI\_1

**Description:**

Selection of an analog input function block.

**FB\_AI Channel**

readable from User

Default value: Ch not used

**Description:**

Occupancy of the channel of a selected AI FB.

### 6.6.3.6 Other Signals

---

#### Testsignal DigOut

readble from User  
Default value: FALSE

**Description:**

Test signal for testing digital output signals.

#### Testsignal DigIn

User level: Maintenance staff  
Default value: FALSE

**Description:**

Test signal for digital input signals.

#### Testsignal AnaOut

readble from User  
Default value: 0000.0

**Description:**

Test signal for analog output signals.

#### Testsignal Analn

User level: Maintenance staff  
Default value: 0000.0

**Description:**

Test signal for analog input signals.

### 6.6.4 Profibus

---

#### Bus profile

readble from User  
Default value: DPV1

**Description:**

Defines, which services of the PROFIBUS system are available => setting defined by device key

#### Param. Error code

readble from User  
Default value: 0

**Description:**

Provides a coded output of a failure for further research. The following error codes could occur:

- 0: No error.
- 1: An invalid bit in one of the DPV1 bytes from parameter frame is set.
- 2: The parameter frame has an invalid length.
- 3: The PRM\_CMD part from DPV2 redundancy is invalid.
- 4: The PRM\_CMD part has an invalid length or the actuator has no DPV2 functionality.
- 5: The TIME\_AR part for the timestamp parameter is invalid.
- 6: The TIME\_AR part for the timestamp parameter has an invalid length or the actuator has no DPV2 functionality.
- 8: The D\_DEVICE part for F-Device parameter has an invalid length or the actuator has no PROFIsafe functionality.
- 9: Within the expanded parameters has one block a not supported Block ID.
- 10: Within the expanded parameters the length of the blocks are inconsistent.

### 6.6.5 Modbus

---

#### Bus profile

readble from User  
Default value: Redundant

**Description:**

Defines, whether the actuator is equipped with one or two transmission channels => setting defined by device key

### 6.6.6 I/O interface

---

**Extension relay**

readable from User

Default value: 4 latching relays

**Description:**

Information, which kinds of additional relays are mounted onto the relay board

## 6.7 Battery Backup

---

**State**

readable from User

Default value: not present

**Description:**

Display the state of the internal accumulator. The battery backup must be enabled by software to function properly.

**Temperature**

readable from User

Default value: unknown

**Description:**

Information about the temperature of the internal accumulator

Charge-/discharge range: 0...45 °C of electronic unit

Discharge range: -30...60 °C of electronic unit

Excess/insuff. Temp.: out of discharge range

## 6.8 Torque curves

### 6.8.1 Curve 0 - 3

---

**Curve 0 -> Curve 0 - 3**

User level: Maintenance staff

Default value: -/-

**Description:**

Stores the last recorded torque curve as curve 0.

**Show**

User level: Maintenance staff

Default value:

**Description:**

Shows the corresponding torque curve on the display.

**Description curve 0 - 3**

User level: Maintenance staff

Default value: Default 0

**Description:**

Describing text for curve x.

**T CLOSE\_OPEN - 0 - 3**

readable from User

Default value:

**Description:**

Time stamp of curve x for opening.

**T OPEN\_CLOSE - 0 - 3**

readable from User

Default value:

**Description:**

Time stamp of curve x for closing.

### 6.9 Simulation

---

#### **LED Test**

User level: User

Default value: Test LEDs

***Description:***

The five Local Lamps can be checked for functionality by using the buttons ARROW UP and ARROW DOWN.

By using the ESC button the colors of the LEDs can be changed. With the ENTER button the test is aborted.

#### **Simulate alarm**

User level: Specialist

Default value: 0

***Description:***

This parameter can be used to simulate alarm signal for the DCS. The available alarms are:

- 2 torque OPEN
- 3 torque CLOSE
- 6 actuator start monitor.
- 7 thermal overload
- 8 hardware failure
- 9 encoder failure
- 10 phase 1,2 or 3 failure
- 11 phase correction failure
- 13 24 V internal failure
- 14 24 V external failure
- 15 collective failure 1
- 16 collective failure 2
- 17 final position open
- 18 final position close
- 19 mode not REMOTE

# 7 Parameters

## 7.1 Power supply

---

### Phase correction

User level: Maintenance staff  
Default value: Enabled

**Description:**

Defines the rotating field for the connected power system. If set to ACTIVE, the rotating field is checked continuously.

### Phase monitoring

User level: Maintenance staff  
Default value: Enabled latching

**Description:**

If activated detects if a phase is missing and causes the actuator to stop. In this case the motor is de-energised, and the indication PHASE FAILURE is given.

Depending on the configuration the indication is reset when the phase returns (active non latching) or remains until next movement or a fault acknowledgement (active latching).

### Phase monitoring delay

User level: Maintenance staff  
Default value: 1

**Description:**

Defines the delay time of the indications PHASE FAILURE.

### Indication range mains failure

User level: Maintenance staff  
Default value: Extended

**Description:**

Filtered

Only mains failure is indicated when mains power is lost. Thermal fault and Phase 1-3 fault, as well as Int24VDC failure are suppressed when mains failure is indicated

Extended

Indications are compatible as up to FW V 2.02.0016. Thermal fault, Phase fault 1-3 and Int24VDC failure are totally independent from each other and are indicated when the respective signal source triggers.

## 7.2 Display unit

### 7.2.1 Language

---

#### Language

User level: User  
Default value: German

**Description:**

Sets the language of the display

#### Loaded language

User level: User  
Default value: German

**Description:**

Selects a language out of a list of available languages.

### 7.2.2 Date and Time

---

#### RTC Enabled

User level: Maintenance staff

Default value: Enabled

**Description:**

Activation and deactivation of the real time clock

#### Time

User level: User

Default value: 12:00

**Description:**

System time

#### Date

User level: User

Default value: 01.01.2015

**Description:**

Actual date

#### DST

User level: User

Default value: Automatic

**Description:**

Automatic switching for DST

#### Time zone GMT

User level: User

Default value: 1

**Description:**

Time zone for controlling the change of DST

#### Time format

User level: User

Default value: 24h

**Description:**

Time format switchable from 12h to 24h

#### Date format

User level: User

Default value: YYYY-MM-DD

**Description:**

Selection of the date format (DD-MM-YYYY / YYYY-MM-DD / MM-DD-YYYY )

#### Show date/time

User level: User

Default value: Enabled

**Description:**

Activate and deactivate the indication of date and time on the display unit.

#### Time sync. fieldbus

User level: User

Default value: Disabled

**Description:**

Activate/deactivate acceptance of a time stamp from a fieldbus

### 7.2.3 LEDs

---

#### Running indication

User level: Maintenance staff

Default value: directional flashing

**Description:**

This parameter sets the indication behavior of the LOCAL LAMPS during energized motor.

#### Position indication

User level: Maintenance staff

Default value: Final positions

**Description:**

This parameter sets the indication behavior of the LOCAL LAMPS in the end positions and intermediate positions.

**Colour LED OPEN**

User level: Maintenance staff

Default value: Green

**Description:**

Selection of the colour for the LED that indicates the waypoint OPEN. There are 8 choosable colours : blue, green, red, orange, cyan, pink, white.

**Colour LED Torque OPEN**

User level: Maintenance staff

Default value: Orange

**Description:**

Selection of the colour for the LED that indicates the torque in direction OPEN. There are 8 choosable colours (see parameter COLOUR LED OPEN).

**Colour LED Fault**

User level: Maintenance staff

Default value: Red

**Description:**

Selection of the colour for the LED that indicates a fault. There are 8 choosable colours (see parameter COLOUR LED OPEN).

**Colour LED Torque CLOSE**

User level: Maintenance staff

Default value: Orange

**Description:**

Selection of the colour for the LED that indicates the torque in direction CLOSE. There are 8 choosable colours (see parameter COLOUR LED OPEN).

**Colour LED CLOSE**

User level: Maintenance staff

Default value: Yellow

**Description:**

Selection of the colour for the LED that indicates the waypoint CLOSE. There are 8 choosable colours : blue, green, red, orange, cyan, pink, white.

**7.2.4 View****Position output**

User level: Maintenance staff

Default value: Over-/underflow

**Description:**

Defines how the position is displayed:

- With OVER-/UNDERFLOW the position is not limited to values between CLOSE and OPEN

(see data logging -> high scale value, low scale value)

- With LIMITED the displayed position is limited to the range between CLOSE and OPEN

**LCD backlight delay**

User level: User

Default value: 30

**Description:**

Sets the time after which the backlight is switched off if no button is pressed

**Orientation**

User level: Maintenance staff

Default value: Normal

**Description:**

Specifies if the display content is shown normal or 180° rotated.

**7.2.5 Usage****Lock display unit**

User level: Maintenance staff

Default value: Ignore signal

**Description:**

Defines how the command ENABLE LOCAL works:

- DISABLE COMPLETELY is like having a lock through the enter button - no push button can be operated

- DISABLE LOCAL OPERATION only disables the motor operation

- IGNORE SIGNAL disables this command input

## 7. PARAMETERS

---

### PC-interface

User level: Maintenance staff

Default value: Enabled

**Description:**

This parameter can block the Infrared- or bluetooth-port.

### Bluetooth PIN

User level: Maintenance staff

Default value: 0

**Description:**

This parameter defines the PIN of the optional available Bluetooth interface containing four digits.

The PIN is used for authentication of the actuator during connexion establishment with the master station.

### Bluetooth name

User level: Maintenance staff

Default value: Serial number

**Description:**

Defines the distinct identification of the actuator regarding the Bluetooth interface.

### Automatic logout

User level: Maintenance staff

Default value: Disabled

**Description:**

Defines whether and how an automatic logout is accomplished

### Logout delay time

User level: Maintenance staff

Default value: 10

**Description:**

Sets the time after which an automatic logout is accomplished

### Maintain mode LOCAL

User level: Maintenance staff

Default value: Disabled

**Description:**

If this parameter is enabled and a local command close or open is given, the actuator runs until a final position is reached or an error occurs.

## 7.3 Data logging

---

### Torque unit

User level: Maintenance staff

Default value: Nm

**Description:**

Sets the unit for the torque

### Output Torque

User level: Maintenance staff

Default value: Actual value

**Description:**

Defines the output of the torque value.

- ACTUAL VALUE : the current torque is output. When using slow fieldbus or DCS systems, peaks of the torque might not be detected.

- MAX. VALUE : outputs the maximum torque of the last movement. A new movement resets the value of the torque.

- MAX. VALUE without FINAL POS. : is identical to MAX. VALUE, except that the value of the torque is not output within the range of the final positions.

- TREND VALUE : the maximum value of the torque is output for 1 second, and automatically cleared afterwards. We recommend this function for slow DCS systems.

**High scale value**

User level: Maintenance staff

Default value: 100

**Description:**

Defines which value corresponds to the final position OPEN

**Low scale value**

User level: Maintenance staff

Default value: 0

**Description:**

Defines which value corresponds to the final position CLOSE

**Position unit**

User level: Maintenance staff

Default value: %

**Description:**

Sets the dimension of the position unit for the display output. If the dimension has changed, depending parameters must be adjusted manually (e.g. scale values).

**Decimal Position**

User level: Maintenance staff

Default value: 1

**Description:**

Sets the number of digits indicated after the comma in the display.

## 7.4 Valve

### 7.4.1 Basic settings

---

**Closing direction**

User level: Maintenance staff

Default value: Clockwise CW

**Description:**

Turning direction of the actuator, if the valve is closing, seen from the motor side of the actuator

**Switching off mode**

User level: Maintenance staff

Default value: Final position limit sw.

**Description:**

Sets the switch-off conditions of the valve

**Limit to max. Torque**

User level: Maintenance staff

Default value: Enabled

**Description:**

If enabled the actuator monitors for the maximum adjustable torque during monitoring delay. If disabled the actuator operates at stall torque.

**Tripping torque CLOSE**

User level: Maintenance staff

**Description:**

The actuator switches off if the torque exceeds this value when closing. The actuator is delivered by default with minimum tripping torque.

**Tripping torque OPEN**

User level: Maintenance staff

**Description:**

The actuator switches off if the torque exceeds this value when opening. The actuator is delivered by default with minimum tripping torque.

**Delay torque monitoring**

User level: Maintenance staff

Default value: 0

**Description:**

Sets the duration the actuator ignores torque trippings to filter out peaks in torque measurement.

## 7. PARAMETERS

---

### **Torque warning CLOSE**

User level: Maintenance staff

**Description:**

The warning indication is activated if the torque exceeds this value when closing

### **Torque warning OPEN**

User level: Maintenance staff

**Description:**

The warning indication is activated if the torque exceeds this value when opening

### **Tolerance pos. OPEN**

User level: Maintenance staff

Default value: 0.5

**Description:**

The indication of a final position is reset by running out of the tolerance. This parameter sets the range for the positioner to interpret a setpoint value as final position OPEN. The actuator will move automatically until it reaches the final position if the setpoint value has a value between position open and this value. The final position is left if the setpoint value is lower than the final position - tolerance - Xp.

### **Tolerance pos. CLOSE**

User level: Maintenance staff

Default value: 0.5

**Description:**

The indication of a final position is reset by running out of the tolerance. This parameter sets the range for the positioner to interpret a setpoint value as final position CLOSE. The actuator will move automatically until it reaches the final position if the setpoint value has a value between position open and this value. The final position is left if the setpoint value is lower than the final position - tolerance - Xp.

## 7.4.2 Starting-up aid

---

### **Torque bypass final pos.**

User level: Maintenance staff

Default value: Disabled

**Description:**

Disables the torque detection during the time DELAY FINAL POSITIONS when trying to leave a final position. If the torque still exceeds the tripping torque if the actuator leaves the end position or if the delay time is exceeded, a torque indication is generated and the actuator switches off.

### **Delay time final pos.**

User level: Maintenance staff

Default value: 3000

**Description:**

Sets the duration the actuator can move with the breakdown torque of the motor - without a torque indication - to leave a final position

### **Torque byp. interm. pos.**

User level: Maintenance staff

Default value: Disabled

**Description:**

Enables the breakdown torque of the motor when trying to leave an intermediate position.

The bypass is not enabled if the actuator switched off due to a high torque.

### **Delay time interm. pos.**

User level: Maintenance staff

Default value: 400

**Description:**

Sets the duration of the disabled torque detection if leaving an intermediate position

## 7.4.3 Intermediate positions

### 7.4.3.1 Pivot points

---

#### Intermediate position 1

User level: Maintenance staff

Default value: 15

**Description:**

Sets the value for the intermediate position 1 in the current unit

#### Intermediate position 2

User level: Maintenance staff

Default value: 25

**Description:**

Sets the value for the intermediate position 2 in the current unit

#### Intermediate position 3

User level: Maintenance staff

Default value: 35

**Description:**

Sets the value for the intermediate position 3 in the current unit

#### Intermediate position 4

User level: Maintenance staff

Default value: 45

**Description:**

Sets the value for the intermediate position 4 in the current unit

#### Intermediate position 5

User level: Maintenance staff

Default value: 55

**Description:**

Sets the value for the intermediate position 5 in the current unit

#### Intermediate position 6

User level: Maintenance staff

Default value: 65

**Description:**

Sets the value for the intermediate position 6 in the current unit

#### Intermediate position 7

User level: Maintenance staff

Default value: 75

**Description:**

Sets the value for the intermediate position 7 in the current unit

#### Intermediate position 8

User level: Maintenance staff

Default value: 85

**Description:**

Sets the value for the intermediate position 8 in the current unit

### 7.4.3.2 Hysteresis

---

#### Hysteresis 1

User level: Maintenance staff

Default value: 0.5

**Description:**

Hysteresis for signalling the intermediate position 1.

#### Hysteresis 2

User level: Maintenance staff

Default value: 0.5

**Description:**

Hysteresis for signalling the intermediate position 2.

#### Hysteresis 3

User level: Maintenance staff

Default value: 0.5

**Description:**

Hysteresis for signalling the intermediate position 3.

## 7. PARAMETERS

---

### Hysteresis 4

User level: Maintenance staff

Default value: 0.5

**Description:**

Hysteresis for signalling the intermediate position 4.

### Hysteresis 5

User level: Maintenance staff

Default value: 0.5

**Description:**

Hysteresis for signalling the intermediate position 5.

### Hysteresis 6

User level: Maintenance staff

Default value: 0.5

**Description:**

Hysteresis for signalling the intermediate position 6.

### Hysteresis 7

User level: Maintenance staff

Default value: 0.5

**Description:**

Hysteresis for signalling the intermediate position 7.

### Hysteresis 8

User level: Maintenance staff

Default value: 0.5

**Description:**

Hysteresis for signalling the intermediate position 8.

### 7.4.3.3 Signal behaviour

---

#### Signal behaviour 1

User level: Maintenance staff

Default value: No signal

**Description:**

Specifies the signal behaviour of the intermediate position 1.

No signal

The intermediate position will not be signalized.

C\_\_\_\_\_O

The signal of the intermediate position will be high inbetween the specified intermediate position and the final position OPEN.

C\_\_\_\_\_O

The signal of the intermediate position will be high in between the final position CLOSE and the specified intermediate position.

C\_\_\_—\_\_\_O

The signal of the intermediate position will be high in a range specified by the hysteresis around the specified intermediate position.

**Signal behaviour 2**

User level: Maintenance staff

Default value: No signal

**Description:**

Specifies the signal behaviour of the intermediate position 2.

No signal

The intermediate position will not be signalized.

C\_\_\_\_\_O

The signal of the intermediate position will be high inbetween the specified intermediate position and the final position OPEN.

C\_\_\_\_\_O

The signal of the intermediate position will be high in between the final position CLOSE and the specified intermediate position.

C\_\_\_—\_\_\_O

The signal of the intermediate position will be high in a range specified by the hysteresis around the specified intermediate position.

**Signal behaviour 3**

User level: Maintenance staff

Default value: No signal

**Description:**

Specifies the signal behaviour of the intermediate position 3.

No signal

The intermediate position will not be signalized.

C\_\_\_\_\_O

The signal of the intermediate position will be high inbetween the specified intermediate position and the final position OPEN.

C\_\_\_\_\_O

The signal of the intermediate position will be high in between the final position CLOSE and the specified intermediate position.

C\_\_\_—\_\_\_O

The signal of the intermediate position will be high in a range specified by the hysteresis around the specified intermediate position.

## 7. PARAMETERS

---

### Signal behaviour 4

User level: Maintenance staff

Default value: No signal

**Description:**

Specifies the signal behaviour of the intermediate position 4.

No signal

The intermediate position will not be signalized.

C\_\_\_\_\_O

The signal of the intermediate position will be high inbetween the specified intermediate position and the final position OPEN.

C\_\_\_\_\_O

The signal of the intermediate position will be high in between the final position CLOSE and the specified intermediate position.

C\_\_\_—\_\_\_O

The signal of the intermediate position will be high in a range specified by the hysteresis around the specified intermediate position.

### Signal behaviour 5

User level: Maintenance staff

Default value: No signal

**Description:**

Specifies the signal behaviour of the intermediate position 5.

No signal

The intermediate position will not be signalized.

C\_\_\_\_\_O

The signal of the intermediate position will be high inbetween the specified intermediate position and the final position OPEN.

C\_\_\_\_\_O

The signal of the intermediate position will be high in between the final position CLOSE and the specified intermediate position.

C\_\_\_—\_\_\_O

The signal of the intermediate position will be high in a range specified by the hysteresis around the specified intermediate position.

**Signal behaviour 6**

User level: Maintenance staff

Default value: No signal

**Description:**

Specifies the signal behaviour of the intermediate position 6.

No signal

The intermediate position will not be signalized.

C\_\_\_\_\_O

The signal of the intermediate position will be high inbetween the specified intermediate position and the final position OPEN.

C\_\_\_\_\_O

The signal of the intermediate position will be high in between the final position CLOSE and the specified intermediate position.

C\_\_\_—\_\_\_O

The signal of the intermediate position will be high in a range specified by the hysteresis around the specified intermediate position.

**Signal behaviour 7**

User level: Maintenance staff

Default value: No signal

**Description:**

Specifies the signal behaviour of the intermediate position 7.

No signal

The intermediate position will not be signalized.

C\_\_\_\_\_O

The signal of the intermediate position will be high inbetween the specified intermediate position and the final position OPEN.

C\_\_\_\_\_O

The signal of the intermediate position will be high in between the final position CLOSE and the specified intermediate position.

C\_\_\_—\_\_\_O

The signal of the intermediate position will be high in a range specified by the hysteresis around the specified intermediate position.

## 7. PARAMETERS

---

### Signal behaviour 8

User level: Maintenance staff

Default value: No signal

**Description:**

Specifies the signal behaviour of the intermediate position 8.

No signal

The intermediate position will not be signalized.

C\_\_\_\_\_O

The signal of the intermediate position will be high inbetween the specified intermediate position and the final position OPEN.

C\_\_\_\_\_O

The signal of the intermediate position will be high in between the final position CLOSE and the specified intermediate position.

C\_\_\_\_—\_\_\_\_O

The signal of the intermediate position will be high in a range specified by the hysteresis around the specified intermediate position.

### 7.4.4 Monitoring

---

#### Max. runtime torque cut off

User level: Maintenance staff

Default value: 0

**Description:**

Within this time a waypoint must be followed by a torque signal. Otherwise a mechanical fault is assumed and the actuator stops giving an error indication.

### Op-time survey CLOSE

User level: Maintenance staff

Default value: 0

**Description:**

Sets the time which may not be exceeded when moving from OPEN to final position CLOSE at once. If the current running time is longer than this value, the indication OP-TIME SURVEY is activated. If this value is 0, the survey is disabled.

### Op-time survey OPEN

User level: Maintenance staff

Default value: 0

**Description:**

Sets the time which may not be exceeded when moving from CLOSE to final position OPEN at once. If the current running time is longer than this value, the indication OP-TIME SURVEY is activated. If this value is 0, the survey is disabled.

## 7.5 Actuator

---

### Thermal failure reset

User level: Maintenance staff

Default value: Automatic

**Description:**

A tripped motor protection requires the cooling down of the motor into a valid operating temperature range. A reset of the failure indication and thus a new motor run is possible by:

1. Automatic failure reset. Set parameterisation to AUTOMATIC.
2. An explicit required manual confirmation. Set parameterisation to MANUAL.

A failure confirmation can be done at the local control station as well as from a remote command or parameterisation in operation mode REMOTE.

**Thermal failure delay**

User level: Maintenance staff

Default value: 1

**Description:**

Sets the time delay between detection of a motor overtemperature, and the indication and switch off. The temperature sensor is only powered by the main power of the actuator. If the main power fails, the temperature detection is not powered, and therefore the motor temperature is detected as too high. The motor overtemperature indication will be activated. To suppress this indication due to short power failures, the delay time can be set.

**Actuator run monitor.**

User level: Maintenance staff

Default value: Enabled

**Description:**

If enabled checks whether the position changes if the motor is energised. This indication is reset with a new command or with a fault acknowledgement.

**Delay run monit.**

User level: Maintenance staff

Default value: 1000

**Description:**

Sets the time of the parameter DRIVE START UP MONITORING. If the position has not changed significantly before the time elapses, the indication DRIVE START UP MONIT. is activated.

**Reversing delay**

User level: Specialist

Default value: 400

**Description:**

Defines the dead time between reversal of rotation direction

**Power unit**

User level: Specialist

Default value: Contactors or SSR

**Description:**

Sets the type of the used power control unit. Choose the option mechanical contactor unit for standard contactor unit or SSR (solid state relay) for standard solid state relay. Alternatively the option Ex solid state relay can be chosen for all pole disconnecting solid state relay.

**Battery Backup**

User level: Specialist

Default value: No

**Description:**

Specifies whether the actuator is equipped with a battery backup module or not. The battery backup module is able to supply the control unit for a certain time. If this parameter is activated the battery backup module is monitored by the control unit. Its state is displayed and an indication will be generated if the module fails.

**Increased detachment**

User level: Specialist

Default value: Disabled

**Description:**

Activates the enhanced detachment of the control unit by decreasing the communication speed to the Torque-/Position Sensor.

## 7.6 DCS / PLC system

### 7.6.1 Emerg. shutdown (ESD)

---

#### **Emerg. shutdown (ESD)**

User level: Maintenance staff

Default value: Disabled

**Description:**

Sets the action of this function. If enabled the actuator moves to the specified final position.

#### **Motor overtemperature**

User level: Maintenance staff

Default value: Respect

**Description:**

If ignored the actuator moves to the specified final position even if the motor becomes too hot.

For explosion proofed actuators the setting has to be specified as RESPECT.

Attention: The parameterization IGNORE may result in damage and personal injury.

#### **Torque indication**

User level: Maintenance staff

Default value: Respect

**Description:**

This Parameter specifies the torque monitoring behaviour during an externally received emergency shutdown command.

Respect: Torque monitoring is operating normal. In case of a torque tripping in intermediate positions the actuator will stop with a fault indication.

Ignore: Torque monitoring is disabled during external emergency shutdown request. The actuator will drive into the specified direction without monitoring the torque. This will result in an actuator movement with stall torque. If a torque final position cut off is specified in the respective direction the actuator will not stop in final position. In this case the value RESPECT THE FINAL POSITIONS should be specified.

Respect in final positions: Torque monitoring in intermediate positions is disabled during emergency shutdown. The torque monitoring will be activated if the parameterized final position is reached .

#### **LOCAL mode**

User level: Maintenance staff

Default value: Respect

**Description:**

If ignored the actuator moves even if the mode is Local.

Attention: The parameterization IGNORE may result in damage and personal injury.

**OFF mode**

User level: Maintenance staff

Default value: Respect

**Description:**

If ignored the actuator moves even if the mode is OFF.

Attention: The parameterization IGNORE may result in damage and personal injury.

---

**7.6.2 Fail safe**

---

**Reaction**

User level: Maintenance staff

Default value: Disabled

**Description:**

Sets the action of the actuator if the set-point value does not lie in the range 3.0...22 mA, or the fieldbus communication fails for a longer duration than specified with the parameter BREAKDOWN DELAY.

**Position modulating act.**

User level: Maintenance staff

Default value: 0.0

**Description:**

Sets the fail safe position for an actuator with integrated positioner.

**Position on-off actuator**

User level: Maintenance staff

Default value: 0% CLOSE

**Description:**

Sets the fail safe end position for an actuator without integrated positioner.

**Breakdown delay**

User level: Maintenance staff

Default value: 1

**Description:**

Sets the time of the delay between failure and activation of the fail safe action.

---

**7.6.3 Collective failure 1 - 2**

---

**Failure of internal 24V**

User level: Maintenance staff

Default value: Enabled

**Description:**

Indicates whether the internal power of 24 V DC - generated from mains power L1, L2 - is OK or failed. Enabling this indication makes only sense if the actuator is additionally powered by 24 V DC (either by external source or by battery backup). Otherwise - in case of a failure of the main power and thus a failure of the internal power, too - the electronic unit is deenergised, and therefore without function.

**Failure of external 24V**

User level: Maintenance staff

Default value: Disabled

**Description:**

Indicates whether the external power of 24 V DC is OK or failed.

**Phase failure**

User level: Maintenance staff

Default value: Enabled

**Description:**

Indicates whether a phase of the main power is missing. The indication is reset with the next movement or with a fault acknowledgement. If one of the two phases L1 and L2, which supply the electronic fail, the electronic will be without function. Only if the electronic is powered with additional 24 V DC, the failure of those two phases can be indicated.

### **Actuator not starting**

User level: Maintenance staff

Default value: Enabled

**Description:**

If the time DELAY RUN MONIT. elapses while the motor is energised, and the position did not change significantly during this period, this indication is activated. This indication can be reset by a new movement or with a fault acknowledgement.

### **Torque failure**

User level: Maintenance staff

Default value: Enabled

**Description:**

Indication is activated if the torque exceeds one of the values for the tripping torque

### **Torque CLOSE**

User level: Maintenance staff

Default value: Disabled

**Description:**

Indicates that the closing torque exceeded the tripping torque when closing the valve. The indication can be reset by moving the actuator into the other direction or with a fault acknowledgement.

### **Torque OPEN**

User level: Maintenance staff

Default value: Disabled

**Description:**

Indicates that the opening torque exceeded the tripping torque when opening the valve. The indication can be reset by moving the actuator into the other direction.

### **Torque warning**

User level: Maintenance staff

Default value: Disabled

**Description:**

Is activated if the torque exceeds one of the values for the torque warning

### **Torque warning CLOSE**

User level: Maintenance staff

Default value: Disabled

**Description:**

Indicates that the closing torque exceeds the warning value when closing the valve. The indication can be reset by moving the actuator into the other direction or by fault acknowledgement.

### **Torque warning OPEN**

User level: Maintenance staff

Default value: Disabled

**Description:**

Indicates that the opening torque exceeds the warning value when opening the valve. The indication can be reset by moving the actuator into the other direction or by fault acknowledgement.

### **Motor overtemperature**

User level: Maintenance staff

Default value: Enabled

**Description:**

Indication is activated if the motor temperature exceeds the permissible value.

### **Discrepancy power unit**

User level: Maintenance staff

Default value: Enabled

**Description:**

Indicates an error with the internal discrepancy analysis of the power module.

### **Emergency-STOP**

User level: Maintenance staff

Default value: Enabled

**Description:**

Indicates an external Emergency-Stop signal.

**OFF mode**

User level: Maintenance staff

Default value: Disabled

**Description:**

Indicates that the actuator cannot move

**LOCAL mode**

User level: Maintenance staff

Default value: Disabled

**Description:**

Indicates that the actuator can be controlled by using the display unit.

**Emerg. shutdown tripped**

User level: Maintenance staff

Default value: Disabled

**Description:**

Is activate as long as the actuator executes an emergency shutdown

**Fail safe**

User level: Maintenance staff

Default value: Enabled

**Description:**

Is active as long as the actuator is in the mode fail safe.

**Hardware failure**

User level: Maintenance staff

Default value: Enabled

**Description:**

Indicates that during self test the electronic detected defective hardware components

**Combisensor failure**

User level: Maintenance staff

Default value: Enabled

**Description:**

Indicates that the electronic detected a malfunction of the combined sensor during self test. This indication lasts as long as the error. While this error is active, the actuator cannot be moved! The control unit tries to re-initialise the combined sensor to clear the error.

**Int. positioner disabled**

User level: Maintenance staff

Default value: Disabled

**Description:**

Indicates if the positioner of an actuator of type V005 is not enabled (command AUTOMATIC not active).

**Maintenance required**

User level: Maintenance staff

Default value: Disabled

**Description:**

Indicates if a limit of the operation data is exceeded.

**Mode not REMOTE**

User level: Maintenance staff

Default value: Disabled

**Description:**

Is active if the actuator is not in mode REMOTE

**Configuration invalid**

User level: Maintenance staff

Default value: Disabled

**Description:**

Indicates, that at least one of the tripping torques exceeds the maximum permissible torque values of either the additional component or the valve.

**Electronic overtemp.**

User level: Maintenance staff

Default value: Disabled

**Description:**

Indicates, that the electronic temperature is exceeding the permissible value

## 7. PARAMETERS

---

### **Direction monitoring**

User level: Maintenance staff

Default value: Enabled

**Description:**

Indicates, that the actuator is turning the wrong way. This indication can be reset by a new movement or with a fault acknowledgement.

### **Handwheel operation**

User level: Maintenance staff

Default value: Disabled

**Description:**

Indicates, that the position of the actuator is changing without giving a command to the motor. The indication is active as long as the position changes.

## 7.6.4 Control

---

### **Control mode**

User level: Maintenance staff

Default value: Inching operation

**Description:**

Sets the function of the REMOTE command inputs. In INCHING OPERATION the command is active as long as the signal is active. In MAINTAIN MODE the command is activated with an edge triggered command and deactivated in case of final position switch off, a command in reverse direction or stop command, or actuator switch off due to failure.

### **Maintain in final pos.**

User level: Maintenance staff

Default value: Enabled

**Description:**

Defines whether the actuator shall move automatically into the final position even after removing the command, if in the end position. Enable only if the valve has at least one final position with switch-off by torque!

### **Remote priority**

User level: Maintenance staff

Default value: Add on board

**Description:**

Defines the interaction of an additional interface and the binary inputs on the base board.

- Additional interface: Commands of the binary inputs are ignored
- Binary inputs: Commands of the additional interface are ignored
- Equitable: The fieldbus commands and the commands of the binary inputs are validated in disjunction (logical OR combination).

**OBSERVE:**

In the configuration EQUITABLE a limited usage for the prioritisation of the setpoint value and therefore also for the fail-safe exists. Only one controlling source is accepted. Once a binary input is configured as AUTOMATIC, the exclusive controlling source is the analogue input of the base board, otherwise the fieldbus (if installed).

The priority of the commands is as follows:

On/Off-Actuator: ESD -> Stop -> Command

Modulating-Actuator: ESD -> Automatic bit -> Automatic via binary input -> Automatic via additional interface -> Stop -> Command

If different commands with the same priority are active at the same time, the command first activated command is adhered to!

**Edge detection remote**

User level: Maintenance staff

Default value: Enabled

**Description:**

This parameter is relevant for the actuator action in case of a change of the operation mode into REMOTE.

If the parameter is set to ACTIVATED, a new actuator start command EDGE TRIGGERED BEHAVIOUR is required to initiate an actuator run.

If the parameter is set to DEACTIVATED, in case of a switch over to mode REMOTE, an actuator run starts directly if a running command is still active.

**Automatic Bit**

User level: Maintenance staff

Default value: acc. REMOTE

**Description:**

This parameter can be used to avoid the required automatic bit for the activation of the internal positioner.

Instead of the usage of the automatic bit it is possible

- to permanently enable the internal positioner -> FORCE ENABLE, thus control via setpoint value
- to permanently disable the internal positioner -> FORCE DISABLE, thus control via discrete commands OPEN, CLOSE

**7.6.5 Indications****Final position indication**

User level: Maintenance staff

Default value: Position

**Description:**

Sets the indication of the final positions.

If set to POSITION the indication is activated if the limit positions are reached.

If set to ACT. CUT OFF MODE the indication is only activated if the actuator reaches the final positions.

**Torque indication**

User level: Maintenance staff

Default value: Retained in final position

**Description:**

Sets whether a torque exceeding the tripping torque shall or shall not be indicated if the actuator is in an end position.

**Torque fault**

User level: Maintenance staff

Default value: No ind. in final positions

**Description:**

Sets whether a torque exceeding the tripping torque shall or shall not be indicated as fault if the actuator is in an end position.

**7.6.6 Interface****7.6.6.1 HART****7.6.6.1.1 Plant Configuration****Identity Tag**

User level: Maintenance staff

Default value: ?

**Description:**

An 8 character label assigned by the end user based on location and use of the field device. The tag supports only the Packed ASCII character set.

**Long Tag**

User level: Maintenance staff

Default value: DREHMO i-matic xxxxxxxx

**Description:**

A 32-character label assigned by the user based on location and use of the field device. The Long Tag supports ISO Latin-1 characters from DCS.

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### Message

User level: Maintenance staff

Default value: ?

**Description:**

During commissioning the configurator write a message into the device for documentation. This process called AS INSTALLED RECORD KEEPING.

### Final Assembly Nr

User level: Maintenance staff

Default value: 0

**Description:**

The Final Assembly Number is a 24-bit number (0...16.777.215) and will be used for administration of the device in the plant.

#### 7.6.6.1.2 Comm. Config

---

### Polling Address

User level: Maintenance staff

Default value: 0

**Description:**

Identify unique all devices. The address values between 0 and 64.

### Req. Msg. Preamble Len.

User level: Maintenance staff

Default value: 5

**Description:**

Minimum number of preambles required for the request message from the master to the slave.

### Res. Msg. Preamble Len.

User level: Maintenance staff

Default value: 5

**Description:**

Minimum number of Preambles required for the response message from the Slave to the Master.

### BusAct Timeout

User level: Maintenance staff

Default value: 15

**Description:**

The busactivity timeout should be configured in the range 1 to 3600 sec. (default: 15 sec.).

### Loop Current Mode

User level: Maintenance staff

Default value: Enabled

**Description:**

With connection type Actuator and parameter value of Loop Current Mode is enabled (defaultvalue) should the actuator drive by the analog input signal. When parameter-value of Loop Current Mode is disabled the actuator drives with the HART commands OPEN, CLOSE and SETPOINT.

#### 7.6.6.1.3 Calibrat. values

---

### Analn Current Zero

User level: Maintenance staff

Default value: 4000

**Description:**

Reference value for 4 mA, which is used for calculation of the loop current (calibration) from the physical input current.

### Analn Current Span

User level: Maintenance staff

Default value: 20000

**Description:**

Reference value for 20 mA, which is used for the calculation of the loop current (calibration) of the physical input current.

**AnaOut Current Zero**

User level: Maintenance staff  
Default value: 4000

**Description:**

Reference value for 4 mA, which is used for the correction (calibration) the internal loop current from the generated physical output current.

**AnaOut Current Span**

User level: Maintenance staff  
Default value: 20000

**Description:**

Reference value for 20 mA, which is used for the correction (trimming) of the internal loop current from the generated physical output signal.

**AnaIn LRV**

User level: Maintenance staff  
Default value: 0

**Description:**

With this function it is possible to set the range of the input current between -250% and +250%.

**AnaIn URV**

User level: Maintenance staff  
Default value: 100

**Description:**

With this function it is possible to set the range of the input current between -250% and +250%.

**AnaOut LRV**

User level: Maintenance staff  
Default value: 0

**Description:**

With this function it is possible to set the range of the output current between -250% and +250%.

**AnaOut URV**

User level: Maintenance staff  
Default value: 100

**Description:**

With this function it is possible to set the range of the output current between -250% and +250%.

**7.6.6.2 Foundation Fieldbus****7.6.6.2.1 Device Ident \_\_\_\_\_****PD-TAG**

User level: Maintenance staff  
Default value: DREHMO i-matic xxxxxxxx

**Description:**

The FF-module indicates after first startup with a default PD\_Tag on the FF-H1 bus. During the commissioning of the FF module, the PD\_TAG can be changed from the DCS. A modified PD\_TAG over FF-H1 is transferred from the FF module to the application interface. On every startup of the FF module, the persistently stored PD\_TAG is read once from the main board and transferred to the DCS.

**Node Address**

User level: Maintenance staff  
Default value: 248

**Description:**

On first startup the FF-module responds with the default NodeAddress on the FF-H1 bus. Changes of the node address are performed by the DCS. It will be transferred from the FF module via the application interface to the device. At the start of the FF-module, the persistently stored node address is read once from the base board and transferred to the DCS.

**Config Rev**

User level: Maintenance staff

Default value: Rev\_2

**Description:**

This parameter is used to select a new directory order of function blocks for the connection with an Emerson control system. The reason is that not all functional blocks can be displayed because of missing resources. The value Rev\_1 used for field devices (until 2014), but the value Rev\_2 for all current devices and especially those with Emerson control systems.

**DigOut Other 5**

User level: Maintenance staff

Default value: Undefined

**Description:**

Foundation Fieldbus DigitalOut-Transducer Block Channel Configuration.

**DigOut Other 6**

User level: Maintenance staff

Default value: Undefined

**Description:**

Foundation Fieldbus DigitalOut-Transducer Block Channel Configuration.

**7.6.6.2.2 TB\_Channel Config****DigOut Other 1**

User level: Maintenance staff

Default value: Undefined

**Description:**

Foundation Fieldbus DigitalOut-Transducer Block Channel Configuration.

**DigIn Other 1**

User level: Maintenance staff

Default value: Undefined

**Description:**

Foundation Fieldbus DigitalIn-Transducer Block Channel Configuration.

**DigOut Other 2**

User level: Maintenance staff

Default value: Undefined

**Description:**

Foundation Fieldbus DigitalOut-Transducer Block Channel Configuration.

**DigIn Other 2**

User level: Maintenance staff

Default value: Undefined

**Description:**

Foundation Fieldbus DigitalIn-Transducer Block Channel Configuration.

**DigOut Other 3**

User level: Maintenance staff

Default value: Undefined

**Description:**

Foundation Fieldbus DigitalOut-Transducer Block Channel Configuration.

**DigIn Other 3**

User level: Maintenance staff

Default value: Undefined

**Description:**

Foundation Fieldbus DigitalIn-Transducer Block Channel Configuration.

**DigOut Other 4**

User level: Maintenance staff

Default value: Undefined

**Description:**

Foundation Fieldbus DigitalOut-Transducer Block Channel Configuration.

**DigIn Other 4**

User level: Maintenance staff

Default value: Undefined

**Description:**

Foundation Fieldbus DigitalIn-Transducer Block Channel Configuration.

**DigIn Other 5**

User level: Maintenance staff

Default value: Undefined

**Description:**Foundation Fieldbus DigitalIn-Transducer  
Block Channel Configuration.**DigIn Other 6**

User level: Maintenance staff

Default value: Undefined

**Description:**Foundation Fieldbus DigitalIn-Transducer  
Block Channel Configuration.**AnaOut Other 1**

User level: Maintenance staff

Default value: Undefined

**Description:**Foundation Fieldbus AnalogOut-Transducer  
Block Channel Configuration.**AnaOut Other 2**

User level: Maintenance staff

Default value: Undefined

**Description:**Foundation Fieldbus AnalogOut-Transducer  
Block Channel Configuration.**Analn Other 1**

User level: Maintenance staff

Default value: Undefined

**Description:**Foundation Fieldbus AnalogIn-Transducer  
Block Channel Configuration.**Analn Other 2**

User level: Maintenance staff

Default value: Undefined

**Description:**Foundation Fieldbus AnalogIn-Transducer  
Block Channel Configuration.**Analn Other 3**

User level: Maintenance staff

Default value: Undefined

**Description:**Foundation Fieldbus AnalogIn-Transducer  
Block Channel Configuration.**Analn Other 4**

User level: Maintenance staff

Default value: Undefined

**Description:**Foundation Fieldbus AnalogIn-Transducer  
Block Channel Configuration.**7.6.6.2.3 Commands**

---

**Delete NVRAM**

User level: Maintenance staff

Default value: OFF

**Description:**

The NVRAM on the FF module can be deleted via the application interface with the command `CMD_DELETE_NVRAM`. The FF-module confirms the command by writing the result in `DEV_COMMAND_RESULT`. Then the `CONFIG_REVISION` is incremented in NV-RAM and restarted the FF-MODULE. On reboot, the NV-RAM is reinitialized with default values.

**Simulation Mode**

User level: Maintenance staff

Default value: OFF

**Description:**

Set the simulation mode in the module.

**Reset Modul**

User level: Maintenance staff

Default value: OFF

**Description:**

The FF-module (FBK 2) reboots.

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### **Redundancy Mode**

User level: Maintenance staff  
Default value: No Redundancy

**Description:**

Enables or disables the redundancy mode.

### **Redundancy reply**

User level: Maintenance staff  
Default value: Active channel

**Description:**

In actuators equipped with a line redundant interface card, this parameter defines, whether a telegram to the master is send on both channels, or only on the channel where the telegram from the master has been received from.

### 7.6.6.3 Profibus

---

#### **Primary slave address**

User level: Maintenance staff  
Default value: 126

**Description:**

Sets the primary PROFIBUS address of the actuator in the range between 2 and 125. In case the actuator is fitted up with slave redundancy, this value is the address for channel 1.

#### **Sec. slave address**

User level: Maintenance staff  
Default value: 126

**Description:**

Sets the secondary PROFIBUS address of the actuator in the range between 2 and 125. In case the actuator is fitted up with slave redundancy, this value is the address for channel 2.

#### **PNO-Ident number**

User level: Maintenance staff  
Default value: i-matic (0824/0825)

**Description:**

Setting for the Profibus emulation mode. During normal operation this value should be kept on the default value i-matic (0824/0825).

**Redundancy type**

User level: Maintenance staff

Default value: Drehmo

**Description:**

This parameter specifies the redundancy concept that is realized in conjunction with the slave redundant interface logic.

**DREHMO:**

The interface logic is implemented as a two channel independent working slave solution. This means, that two separate profibus slaves are active in the actuator. The slave which is first parameterized by the master is automatically being selected as the primary slave by the internal logic itself. On communication loss of the primary channel, an automatic switch-over to the backup channel takes place. The slave addresses of both channels can be separately set in the range from 2 to 125.

**DPV2:**

The interface logic is implemented as slave with system redundancy according to the PNO specification 2212.

The slave addresses of both channels can be separately set in the range from 2 to 125. According to the PNO specification for system redundancy, the addresses have to be set equal.

**ABB:**

The interface logic is implemented as slave with flying redundancy according to the PNO specification 2212.

The slave address of the primary channel can be set in the range from 2 to 63. According to the specification of flying redundancy, the slave address of the backup channel is automatically set with an address offset of 64.

**LINE:**

The interface logic operates in line mode redundancy and receives telegrams equivalent on both channels. Whether the interface response one or both channels is determined on redundancy response parameter. From the perspective of the communication relationships the transmissionmedium is ~~doubled~~.

**Alarms/Diagnosis**

User level: Maintenance staff

Default value: None

**Description:**

Defines the diagnosis means given by the actuator.

**NONE:**

The actuator doesn't give extended diagnosis.

**EXTENDED DIAGNOSIS:**

The actuator gives extended diagnosis according to the DP-V0 specification. The definition of the diagnosis content is defined by the GSD File.

**ALARMS:**

Time stamped alarms acc. to the DP-V2 specification are generated.

**BOTH:**

The actuator gives extended diagnosis according to the DP-V0 specification and time stamped alarms acc. to the DP-V2 specification are generated too.

**Fail safe on GCC**

User level: Maintenance staff

Default value: Disabled

**Description:**

This parameter specifies, whether the fail safe reaction is also carried out if the master transmits a global control clear command or not.

Normally the master gives this command, if the PLC is not ready to execute its control program (PLC in status STOP).

### 7.6.6.4 Modbus

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#### **Primary slave address**

User level: Maintenance staff  
Default value: 247

**Description:**

Sets the primary address for the Modbus system in the range between 1 and 247.

Attention: Changes will only take effect after actuator restart.

#### **Sec. slave address**

User level: Maintenance staff  
Default value: 247

**Description:**

Sets the secondary address of the Modbus system in the range between 1 and 247.

Attention: Changes will only take effect after actuator restart.

#### **Autom. configuration**

User level: Maintenance staff  
Default value: Disabled

**Description:**

The parameters for the BUS are detected and set automatically.

Only in combination with a SIMA-Masterstation!

#### **Reset autom. config.**

User level: Maintenance staff  
Default value: No

**Description:**

Deleting the BUS-Address to enable a new address allocation by the masterstation to the according actuator.

#### **Baudrate**

User level: Maintenance staff  
Default value: 38400

**Description:**

Defines the transmission speed.

Attention: Changes will only take effect after actuator restart.

#### **Parity**

User level: Maintenance staff  
Default value: Even

**Description:**

Defines the parity.

Attention: Changes will only take effect after actuator restart.

#### **Stopbits**

User level: Maintenance staff  
Default value: 1

**Description:**

Defines the format for the frames (telegrams).

#### **Timeout**

User level: Maintenance staff  
Default value: 50

**Description:**

Sets the timeout in units of 100ms.

### **Redundancy**

User level: Maintenance staff

Default value: Line reply act. channel

**Description:**

Defines the redundancy type.

- Loop: The interface works as loop redundant interface with repeater implementation.
- Line reply act. channel: Line redundant implementation. Reply will be send over active channel.
- Line reply both channels: Line redundant implementation. Replies will be send both channels.
- Master/Slave: The interface logic is implemented as a two channel independent working slave solution.

#### **7.6.6.5 I/O interface**

##### **7.6.6.5.1 Outputs**

### **Output O1**

User level: Maintenance staff

Default value: Final position CLOSE

**Description:**

Defines the functions of the outputs. The functions can be allocated to the outputs in any way.

### **Logic Output O1**

User level: Maintenance staff

Default value: NO contact

**Description:**

The physical implementation of the indication outputs are normally open contacts (NO). If configured to normally closed contacts (NC), the relays are powered if the indication is not active, and deenergised if the indication is active. If power fails, these relays are released, and output thus an active signal.

### **Output O2**

User level: Maintenance staff

Default value: Final position OPEN

**Description:**

Defines the functions of the outputs.

The functions can be allocated to the outputs in any way.

### **Logic Output O2**

User level: Maintenance staff

Default value: NO contact

**Description:**

The physical implementation of the indication outputs are normally open contacts (NO).

If configured to normally closed contacts (NC), the relays are powered if the indication

is not active, and deenergised if the indication is active.

If power fails, these relays are released, and output thus an active signal.

### **Output O3**

User level: Maintenance staff

Default value: Torque tripping CLOSE

**Description:**

Defines the functions of the outputs.

The functions can be allocated to the outputs in any way.

### **Logic Output O3**

User level: Maintenance staff

Default value: NO contact

**Description:**

The physical implementation of the indication outputs are normally open contacts (NO).

If configured to normally closed contacts (NC), the relays are powered if the indication

is not active, and deenergised if the indication is active.

If power fails, these relays are released, and output thus an active signal.

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### Output O4

User level: Maintenance staff  
Default value: Torque tripping OPEN

**Description:**

Defines the functions of the outputs.  
The functions can be allocated to the outputs in any way.

### Logic Output O4

User level: Maintenance staff  
Default value: NO contact

**Description:**

The physical implementation of the indication outputs are normally open contacts (NO).  
If configured to normally closed contacts (NC), the relays are powered if the indication is not active, and deenergised if the indication is active.  
If power fails, these relays are released, and output thus an active signal.

### Output O5

User level: Maintenance staff  
Default value: Remote control

**Description:**

Defines the functions of the outputs.  
The functions can be allocated to the outputs in any way.

### Logic Output O5

User level: Maintenance staff  
Default value: NO contact

**Description:**

The physical implementation of the indication outputs are normally open contacts (NO).  
If configured to normally closed contacts (NC), the relays are powered if the indication is not active, and deenergised if the indication is active.  
If power fails, these relays are released, and output thus an active signal.

### Output O6

User level: Maintenance staff  
Default value: Local control

**Description:**

Defines the functions of the outputs.  
The functions can be allocated to the outputs in any way.

### Logic Output O6

User level: Maintenance staff  
Default value: NO contact

**Description:**

The physical implementation of the indication outputs are normally open contacts (NO).  
If configured to normally closed contacts (NC), the relays are powered if the indication is not active, and deenergised if the indication is active.  
If power fails, these relays are released, and output thus an active signal.

### Output O7

User level: Maintenance staff  
Default value: Collective failure 1

**Description:**

Defines the functions of the outputs.  
The functions can be allocated to the outputs in any way.

### Logic Output O7

User level: Maintenance staff  
Default value: NC contact

**Description:**

The physical implementation of the indication outputs are normally open contacts (NO).  
If configured to normally closed contacts (NC), the relays are powered if the indication is not active, and deenergised if the indication is active.  
If power fails, these relays are released, and output thus an active signal.

**Output O9**

User level: Maintenance staff

Default value: Disabled

**Description:**

Defines the functions of the outputs.  
The functions can be allocated to the outputs in any way.

**Logic Output O9**

User level: Maintenance staff

Default value: NO contact

**Description:**

The physical implementation of the indication outputs are normally open contacts (NO).  
If configured to normally closed contacts (NC), the relays are powered if the indication is not active, and deenergised if the indication is active.  
If power fails, these relays are released, and output thus an active signal.

**Output O10**

User level: Maintenance staff

Default value: Disabled

**Description:**

Defines the functions of the outputs.  
The functions can be allocated to the outputs in any way.

**Logic Output O10**

User level: Maintenance staff

Default value: NO contact

**Description:**

The physical implementation of the indication outputs are normally open contacts (NO).  
If configured to normally closed contacts (NC), the relays are powered if the indication is not active, and deenergised if the indication is active.  
If power fails, these relays are released, and output thus an active signal.

**Output O11**

User level: Maintenance staff

Default value: Disabled

**Description:**

Defines the functions of the outputs.  
The functions can be allocated to the outputs in any way.

**Logic Output O11**

User level: Maintenance staff

Default value: NO contact

**Description:**

The physical implementation of the indication outputs are normally open contacts (NO).  
If configured to normally closed contacts (NC), the relays are powered if the indication is not active, and deenergised if the indication is active.  
If power fails, these relays are released, and output thus an active signal.

**Output O12**

User level: Maintenance staff

Default value: Disabled

**Description:**

Defines the functions of the outputs.  
The functions can be allocated to the outputs in any way.

**Logic Output O12**

User level: Maintenance staff

Default value: NO contact

**Description:**

The physical implementation of the indication outputs are normally open contacts (NO).  
If configured to normally closed contacts (NC), the relays are powered if the indication is not active, and deenergised if the indication is active.  
If power fails, these relays are released, and output thus an active signal.

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### Output O13

User level: Maintenance staff

Default value: Disabled

**Description:**

Defines the functions of the outputs. The functions can be allocated to the outputs in any way.

### Logic Output O13

User level: Maintenance staff

Default value: NO contact

**Description:**

The physical implementation of the indication outputs are normally open contacts (NO).

If configured to normally closed contacts (NC), the relays are powered if the indication

is not active, and deenergised if the indication is active.

If power fails, these relays are released, and output thus an active signal.

### Output O14

User level: Maintenance staff

Default value: Disabled

**Description:**

Defines the functions of the outputs. The functions can be allocated to the outputs in any way.

### Logic Output O14

User level: Maintenance staff

Default value: NO contact

**Description:**

The physical implementation of the indication outputs are normally open contacts (NO).

If configured to normally closed contacts (NC), the relays are powered if the indication

is not active, and deenergised if the indication is active.

If power fails, these relays are released, and output thus an active signal.

### 7.6.6.5.2 Analogue outputs

#### Analogue output 1

User level: Maintenance staff

Default value: Position

**Description:**

Defines which kind of information should be output as a 4...20 mA signal using analogue output 1. The calibration of the analogue signals - only possible for position output - can be done using the parameters of the Learn mode. The possible parameters are situated in the submenu ANALOGUE SIGNAL->OUTPUT->VALUE 100% and VALUE 0%. The range for the analogue signals is:

-Position: CLOSE...OPEN

-torque: Depending on the configuration of the parameter DATA LOGGING->TORQUE SIGN either -100%...+100%, or 0...100%

Electronic temperature: -25°C...+100°C

#### Analogue output 2

User level: Maintenance staff

Default value: Position

**Description:**

Defines which kind of information should be output as a 4...20 mA signal using analogue output 1. The calibration of the analogue signals - only possible for position output - can be done using the parameters of the Learn mode. The possible parameters are situated in the submenu ANALOGUE SIGNAL->OUTPUT->VALUE 100% and VALUE 0%. Those parameters have the same effect on output 2 and 3. The range for the analogue signals is:

-Position: CLOSE...OPEN

-torque: Depending on the configuration of the parameter DATA LOGGING->TORQUE SIGN either -100%...+100%, or 0...100%

Electronic temperature: -25°C...+100°C

**Analogue output 3**

User level: Maintenance staff

Default value: Torque

**Description:**

Defines which kind of information should be output as a 4...20 mA signal using analogue output 1. The calibration of the analogue signals - only possible for position output - can be done using the parameters of the Learn mode. The possible parameters are situated in the submenu ANALOGUE SIGNAL->OUTPUT->VALUE 100% and VALUE 0%. Those parameters have the same effect on output 2 and 3. The range for the analogue signals is:

-Position: CLOSE...OPEN

-torque: Depending on the configuration of the parameter DATA LOGGING->TORQUE SIGN either -100%...+100%, or 0...100%

Electronic temperature: -25°C...+100°C

**7.6.6.5.3 Command inputs****Dead time**

User level: Maintenance staff

Default value: 0

**Description:**

Specifies the minimum impulse time for the digital command inputs. A command must be at least valid for the duration of the parameterized delay in order to take effect.

**Command input 1**

User level: Maintenance staff

Default value: Stop

**Description:**

Defines the functions of the command inputs. The functions can be allocated to the command inputs in any way.

**Logic Command inp.1**

User level: Maintenance staff

Default value: high-active

**Description:**

Defines if the command is active with 24 V DC (high-active) or with 0 V (low-active).

**Command input 2**

User level: Maintenance staff

Default value: CLOSE

**Description:**

Defines the functions of the command inputs.

The functions can be allocated to the command inputs in any way.

**Logic Command inp. 2**

User level: Maintenance staff

Default value: high-active

**Description:**

Defines if the command is active with 24 V DC (high-active) or with 0 V (low-active).

**Command input 3**

User level: Maintenance staff

Default value: OPEN

**Description:**

Defines the functions of the command inputs.

The functions can be allocated to the command inputs in any way.

**Logic Command inp. 3**

User level: Maintenance staff

Default value: high-active

**Description:**

Defines if the command is active with 24 V DC (high-active) or with 0 V (low-active).

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### Command input 4

User level: Maintenance staff

Default value: Automatic

**Description:**

Defines the functions of the command inputs.

The functions can be allocated to the command inputs in any way.

### Logic Command inp. 4

User level: Maintenance staff

Default value: low-active

**Description:**

Defines if the command is active with 24 V DC (high-active) or with 0 V (low-active).

### Command input 5

User level: Maintenance staff

Default value: Disabled

**Description:**

Defines the functions of the command inputs.

The functions can be allocated to the command inputs in any way.

### Logic Command inp.5

User level: Maintenance staff

Default value: high-active

**Description:**

Defines if the command is active with 24 V DC (high-active) or with 0 V (low-active).

### Command input 6

User level: Maintenance staff

Default value: Disabled

**Description:**

Defines the functions of the command inputs.

The functions can be allocated to the command inputs in any way.

### Logic Command inp.6

User level: Maintenance staff

Default value: high-active

**Description:**

Defines if the command is active with 24 V DC (high-active) or with 0 V (low-active).

### Command input 7

User level: Maintenance staff

Default value: Disabled

**Description:**

Defines the functions of the command inputs.

The functions can be allocated to the command inputs in any way.

### Logic Command inp.7

User level: Maintenance staff

Default value: high-active

**Description:**

Defines if the command is active with 24 V DC (high-active) or with 0 V (low-active).

### Command input 8

User level: Maintenance staff

Default value: Disabled

**Description:**

Defines the functions of the command inputs.

The functions can be allocated to the command inputs in any way.

### Logic Command inp.8

User level: Maintenance staff

Default value: high-active

**Description:**

Defines if the command is active with 24 V DC (high-active) or with 0 V (low-active).

**Command input 9**

User level: Maintenance staff

Default value: Disabled

**Description:**

Defines the functions of the command inputs.

The functions can be allocated to the command inputs in any way.

**Logic Command inp.9**

User level: Maintenance staff

Default value: high-active

**Description:**

Defines if the command is active with 24 V DC (high-active) or with 0 V (low-active).

**Command input 10**

User level: Maintenance staff

Default value: Disabled

**Description:**

Defines the functions of the command inputs.

The functions can be allocated to the command inputs in any way.

**Logic Command inp.10**

User level: Maintenance staff

Default value: high-active

**Description:**

Defines if the command is active with 24 V DC (high-active) or with 0 V (low-active).

**7.6.6.5.4 Other**

---

**Fail safe reaction**

User level: Maintenance staff

Default value: Ignore Automatic

**Description:**

Defines whether for actuators with internal positioner the fail safe action is only performed if the automatic command is active or in every case.

**7.6.6.6 Basic settings**

---

**Interface board**

User level: Maintenance staff

Default value: No

**Description:**

This parameter specifies if an additional IO board (e.g. fieldbus interface board) is mounted. The parameter has the value 'Yes' if an additional IO board was detected. If the board shall be removed from the actuator, the parameter has to be set to 'No' manually.

**Position output**

User level: Maintenance staff

Default value: Over-/underflow

**Description:**

Defines how the position is output:

- With OVER-/UNDERFLOW : the position is not limited to values between CLOSE and OPEN (see data logging -> high scale value, low scale value)
- With LIMITED : the displayed position is limited to the range between CLOSE and OPEN

**7.7 Process****7.7.1 Modulation behaviour**

---

**Deadband OPEN**

User level: Maintenance staff

Default value: 1.0

**Description:**

modulating tolerance in direction OPEN

**Deadband CLOSE**

User level: Maintenance staff

Default value: 1.0

**Description:**

modulating tolerance in direction CLOSE

## 7. PARAMETERS

---

### Outer deadband

User level: Maintenance staff

Default value: 2.5

**Description:**

Delay of the reaction of the actuator to a change of the set point value, if the actuator has stopped before.

### Dead time

User level: Maintenance staff

Default value: 500

**Description:**

Delay of the reaction of the actuator to a change of the set position value.

## 7.7.2 Stepping mode

---

### Programmer

User level: User

Default value: Disabled

**Description:**

Activates the function of the programmer to generate an internal set value. To activate the functionality it has to be activated by device key.

### Step. mode pulse source

User level: Maintenance staff

Default value: Internal

**Description:**

Sets the source which controls whether the stepping mode is active.

- INTERNAL: The stepping mode is active from position CLOSE to START PULSE INTERNAL.

- EXTERNAL: The stepping mode is active as long as the command is active and the actuator turns into a direction the stepping mode has been enabled.

### Stepping mode select

User level: Maintenance staff

Default value: linear

**Description:**

Sets the cyclic pulse time  $T_{on}$  to a fixed value (Linear), or reduces the time  $T_{on}$  from the specified value to the minimum value of 0.5 seconds during movement (Decreasing).

With decreasing stepping mode, the minimum  $T_{on}$  is reached in final position CLOSE - regardless of the direction.

### Start pulse internal

User level: Maintenance staff

Default value: 25.0

**Description:**

Defines the second limit of the stepping mode. The first limit is always position CLOSE.

### Stepping mode opening

User level: Maintenance staff

Default value: Disabled

**Description:**

Enables the stepping mode if opening the valve.

### Stepping mode closing

User level: Maintenance staff

Default value: Disabled

**Description:**

Enables the stepping mode if closing the valve.

### Stepping mode T on

User level: Maintenance staff

Default value: 500

**Description:**

Sets the duration the motor is energised during cyclic operation.

### **Stepping mode T off**

User level: Maintenance staff

Default value: 700

***Description:***

Sets the duration the motor is deenergised during cyclic operation.

## **7.8 Factory settings**

---

### **Load factory settings**

User level: Maintenance staff

Default value: No

***Description:***

The factory setting will be loaded

### **Store factory settings**

User level: Specialist

Default value: No

***Description:***

Stores the settings as factory setting.

## 8 Failures

### [1] - Torque OPEN

Tripping torque OPEN has been exceeded.

**Solution:**

Is reset by movement into other direction or by acknowledgement.

### [2] - Torque CLOSE

Tripping torque OPEN has been exceeded.

**Solution:**

Is reset by movement into other direction or by acknowledgement.

### [3] - Actuator start monitor.

Valve position has not changed in spite of powered motor.

**Solution:**

Check mechanical parts and components of power circuit.

### [4] - Direction monitoring

Actuator is running into wrong direction.

**Solution:**

Check setting of PHASE SEQUENCE.

### [5] - Thermal overload

Thermal overload.

**Solution:**

Cool down motor.

### [6] - Electronic overtemp.

Electronic unit too hot.

**Solution:**

Cool down electronic unit.

### [7] - Control voltage too low

Indicates that the internal control voltage is too low. Malfunctions are possible.

### [8] - Fail safe

Actuator is in state fail-safe.

**Solution:**

Is reset when state fail-safe is left.

### [9] - Hardware failure

Electronic unit has detected a hardware error during selfcheck.

**Solution:**

Replace broken parts.

### [10] - Encoder failure

Electronic unit has detected an error of the combined sensor during self-check.

**Solution:**

Is reset if error has been cleared. If error is still present exchange sensor.

**[11] - Encoder setup failure**

Limit positions are not set correctly.

**Solution:**

Erasing and new setting of limit positions.

**[12] - Torq. inp. gear exceed.**

Additional information to indication CONFIGURATION INVALID.

**Solution:**

Set tripping torque values smaller than the permissible input torque of the gear.

**[13] - Valve torque OPEN**

Additional information to indication CONFIGURATION INVALID.

**Solution:**

Set tripping torque values in open direction smaller than the permissible input torque of the gear.

**[14] - Valve torque CLOSE**

Additional information to indication CONFIGURATION INVALID.

**Solution:**

Set tripping torque values in close direction smaller than the permissible input torque of the gear.

**[15] - Systemtest fault**

Electronic unit has detected an error during self-check.

**Solution:**

Depending on detected error.

**[16] - 24V internal failure**

Failure of the internal 24V DC powered by the mains voltage system.

**Solution:**

Is automatically reset if voltage returns.

**[17] - 24V external failure**

Failure of the additional, external 24V DC.

**Solution:**

Is automatically reset if voltage returns.

**[18] - Phase 1 failure**

Failure of phase 1.

**Solution:**

Is reset with a new movement or with a fault acknowledgement.

**[19] - Phase 2 failure**

Failure of phase 2.

**Solution:**

Is reset with a new movement or with a fault acknowledgement.

**[20] - Phase 3 failure**

Failure of phase 3.

**Solution:**

Is reset with a new movement or with a fault acknowledgement.

### [21] - Phase correction failure

Indicates that the automatic phase detection is not working properly.

**Solution:**

Check quality of main power supply grid. Set PHASE CORRECTION to manually.

### [22] - Battery backup malf.

Battery backup is not able to power the electronic unit.

**Solution:**

Load if Accumulator empty, else exchange it if battery backup is defective.

### [23] - 24V external overload

Control unit is powered by external 24V input, but she is not configured to be powered by this input.

**Solution:**

disconnect the external 24V power supply

### [24] - Emerg. shutdown (ESD)

Actuator is in state emergency shutdown.

**Solution:**

Is reset when emergency shutdown is left.

### [25] - Discrepancy error

Discrepancy between the active command and the state of the power unit.

**Solution:**

Acknowledgement of the according indication after fixed error.

### [26] - Wrong power unit

Configured power unit does not match with the existing one (for example after a modification).

**Solution:**

If the configuration is wrong it has to be correctet otherwise if the power unit is wrong it has to be replaced by the correct one.

### [27] - Emergency-STOP

The emergency stop command is aktive.

**Solution:**

The command can be deactivated after clearing the emergency situation.

### [28] - OFF mode

Actuator in mode OFF.

**Solution:**

Change mode of operation.

### [29] - LOCAL mode

Actuator in mode LOCAL.

**Solution:**

Change mode of operation.

### [30] - Mode not REMOTE

Actuator not in mode REMOTE.

**Solution:**

Change mode of operation to REMOTE

**[31] - Testmode enabled**

Manufacturer testmode active.

**Solution:**

Reset the voltage supply.

**[32] - Simulation mode active**

Only for FF-Bus. operation mode for commissioning of the actuator in the DCS (drive commands will be ignored).

**Solution:**

after commissioning deactivate simulation mode (reset of the parameter SIMULATION ACTIVE;)

**[33] - Configuration invalid**

Tripping torque values exceed permissible values of additional components. An other possibility is a discrepancy between configured Profibus-profile and permitted Profibus-profile by device key.

**Solution:**

Adjust the tripping torque or the Profibus-profile according to the given limits.

**[34] - NV-Memory failure**

Electronic unit has detected an error of the non-volatile memory during self-check.

**Solution:**

Exchange electronic unit.

**[35] - HW interface failure**

Electronic unit has detected an error of the interface board during self-check.

**Solution:**

Exchange interface board.

**[36] - Device key invalid**

The device key is not valid.

**Solution:**

Contact manufacturer for valid device key and enter it.

**[37] - Encoder overflow**

Stroke is higher than the measurable area.

**Solution:**

repeat stroke setting. Check gear factor if a gear box is used.

**[38] - Encoder range error**

Actual position is below -24% or above 125% of the stroke that is set.

**Solution:**

check the combined sensor.

**[39] - Potentiom. calibr. failure**

This error is displayed, if the resolution of the position calibration is too small with a potentiometer.

**Solution:**

Recalibration of the position with using a potentiometer.

### [40] - Limit valve strokes

The set number of motor operations has been exceeded.

**Solution:**

Clear current value or increase limit.

### [41] - Accum. operation cycles

The permitted number of operations for the valve is exceeded.

**Solution:**

Will be acknowledged when the actual value of operations for the valve gets lower than the limit.

### [42] - Current op. cycles/h

The set number of operation cycles per hour has been exceeded.

**Solution:**

Clear current value or increase limit.

### [43] - Op-time survey OPEN

The current motor operation time has exceeded the limit of direction OPEN.

**Solution:**

Is reset if value is smaller than limit.

### [44] - Op-time survey CLOSE

The current motor operation time has exceeded the limit of direction CLOSE.

**Solution:**

Is reset if value is smaller than limit.

### [45] - Gasket change recomm.

The value for thermal age exceeds the given limit.

**Solution:**

Change all gaskets of the actuator to ensure its protection class and reset value THERMAL AGEING afterwards.

### [46] - Gear overhaul recomm.

The value for mechanical age exceeds the given limit.

**Solution:**

Check internal gear of the actuator and exchange exhausted parts. Reset value MECHANICAL AGEING afterwards.

### [47] - Duty cycle exceeded

Limit ON time exceeded.

**Solution:**

adjust process control

### [48] - Torque warning OPEN

The current torque value has exceeded the value TORQUE WARNING OPEN.

**Solution:**

Is reset by movement into other direction.

**[49] - Torque warning CLOSE**

The current torque value has exceeded the value TORQUE WARNING CLOSE.

**Solution:**

Is reset by movement into other direction.

**[50] - Handwheel operation**

The position of the valve changes although the motor is not powered.

**Solution:**

Is cleared automatically if position does not change.

**[51] - Maintenance required**

A limit of the operation data has been exceeded.

**Solution:**

Clear current value or increase limit.

**[52] - Int. positioner disabled**

An actuator with internal positioner has the command AUTOMATIC disabled.

**Solution:**

Is cleared if command AUTOMATIC is given.

**[53] - Position calibr. failure**

End stop was deleted but not set again.

**Solution:**

set the end stop again.

**[54] - Torque calibr. failure**

Calibration of torque was deleted and not set again.

**Solution:**

Load a preset by choosing from the menu entry DEFAULT CALIBRATION under the entry MAINTENANCE ENCODER or contact customer service.

**[55] - Analog inp. calibr. failure**

Bit range for the 4-20 mA -Signal is too small.

**Solution:**

adjust the limits (4 and 20 mA) again while feeding the corresponding current.

**[56] - Interlock LOCAL**

The local control station is locked by a signal of the fieldbus interface.

**Solution:**

unlock via fieldbus interface or disconnect fieldbus interface.

**[57] - Interlock REMOTE**

Driving the actuator from remote is locked by a signal of the fieldbus interface.

**Solution:**

unlock via fieldbus interface.

### **[58] - dummy**

Future use

### **[59] - Programmer data invalid**

A special driving profile has been developed for Cameron. If the position data are incorrectly parameterized as a function of the time, this error appears.

**Solution:**

Check the time and position data.

### **[60] - TMS Module Error**

TMS module failure.

**Solution:**

Replace TMS module.

### **[61] - RTC Error**

RTC failure.

**Solution:**

Replace TMS module.

### **[62] - RTC not set**

RTC time invalid.

**Solution:**

Set time.

### **[63] - RTC battery low**

RTC battery empty.

**Solution:**

Replace battery.

### **[64] - FO module error**

The diagnostic interface of the FO module can not be accessed.

**Solution:**

Check and replace the fiber optic module.

### **[65] - FOC budget ch. 1**

Reception level border.

**Solution:**

Check the optical transmission path.

### **[66] - FO failure ch. 1**

Reception level too low.

**Solution:**

Verification of the optical transmission path.

### **[67] - FOC budget ch. 2**

Reception level border.

**Solution:**

Check the optical transmission path.

### **[68] - FO failure ch. 2**

Reception level too low.

**Solution:**

Verification of the optical transmission path.

**[69] - dummy**

Future use

**[70] - dummy**

Future use

**[71] - dummy**

Future use

**[72] - Mains power failure**

Main power supply failure

**[73] - dummy**

Future use

**[74] - dummy**

Future use

**[75] - dummy**

Future use

**[76] - dummy**

Future use

**[77] - dummy**

Future use

**[78] - dummy**

Future use

**[79] - dummy**

Future use

## 9 Collective failures

This chapter contains a description of the differences between the two collective failures.

### 9.1 Activation of the indications

The actual firmware allows the configuration of COLLECTIVE FAILURE 1 and COLLECTIVE FAILURE 2. Both of them contain a list of indications that can be activated. Each parameter set to **activated** triggers the collective failure under which he is activated:ls **AKTIVIERT** parametriert worden ist:

- Failure of internal 24V
- Failure of external 24V
- Phase failure
- Actuator not starting
- Torque failure
- Torque CLOSE
- Torque OPEN
- Torque warning
- Torque warning CLOSE
- Torque warning OPEN
- Motor overtemperature
- Discrepancy power unit
- Emergency-STOP
- OFF mode
- LOCAL mode
- Emerg. shutdown tripped
- Fail safe
- Hardware failure
- Combisensor failure
- Int. positioner disabled
- Maintenance required
- Mode not REMOTE
- Configuration invalid
- Electronic overtemp.
- Direction monitoring
- Handwheel operation
- Op-time survey
- Battery backup malf.

If there is an indication active that is set under `COLLECTIVE FAILURE 1` the LED indicating a failure will be on and there appears a bell on the display( refer to figure 9.1).

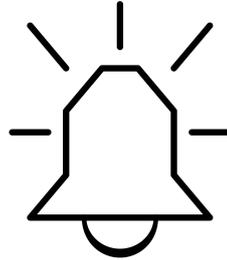


Figure 9.1: Bell

Every other indication out of the list above or the list of failures will cause a triangular warning sign to appear on the display (refer to figure 9.2).



Figure 9.2: Triangular warning sign

# 10 Digital In- and outputs

This chapter contains information about the possibilities of configuration for the process- and command inputs and the Outputs

## 10.1 Configuration of the outputs

The actual firmware allows a free configuration of the outputs. Therefore one of the following indications has to be selected for the according output.

The selectable indications are:

- Final position
- Final position CLOSE
- Final position OPEN
- Pos. b. CLOSE and Int.1
- Pos. b. Int.2 and OPEN
- Act. running-permanent
- Act. running-flashing
- Act. closing-permanent
- Act. closing-flashing
- Act. opening-permanent
- Act. opening-flashing
- Actuator not starting
- Torque tripping
- Torque tripping CLOSE
- Torque tripping OPEN
- Torque warning
- Torque warning CLOSE
- Torque warning OPEN
- Collective failure 1
- Collective failure 2
- Motor overtemperature
- Remote control
- OFF
- Local control
- Emerg. shutdown tripped
- Fail safe
- Hardware failure
- Combisensor failure
- Int. positioner disabled
- Maintenance required
- Mode not REMOTE
- Handwheel operation
- Systemtest fault
- Intermediate position 1
- Intermediate position 2
- Intermediate position 3
- Intermediate position 4
- Intermediate position 5
- Intermediate position 6
- Intermediate position 7
- Intermediate position 8
- Fieldbus DOUT1
- Fieldbus DOUT2
- Fieldbus DOUT3
- Fieldbus DOUT4
- PVST active
- PVST error
- PVST abort
- Emergency-STOP

After an indication has been assigned to an output the type of the output (**NC contact** oder **NO contact**) has to be selected. Contacts that are parametrized to behave like NC contacts have to be switched to this behavior by the software, because the hardware has always NO contacts. That is the reason why the control unit must be energized for the NC contacts to work properly.

## 10.2 Configuration of the process- and command inputs

The actual firmware allows a free configuration of the inputs. Therefore one of the following indications has to be selected for the according input. The amount of inputs may vary depending on the hardware configuration of the actuator.

The selectable commands are

- Stop
- CLOSE
- OPEN
- Automatic
- Emerg. shutdown (ESD)
- Stepping mode active
- Enable LOCAL
- Enable REMOTE
- Enable CLOSE
- Enable OPEN
- Fault acknowledge
- Force LOCAL
- Force LOCAL STOP
- Force LOCAL CLOSE
- Force LOCAL OPEN
- Intermediate position 1
- Intermediate position 2
- Intermediate position 3
- Intermediate position 4
- Intermediate position 5
- Intermediate position 6
- Intermediate position 7
- Intermediate position 8
- Execute PVST
- Emergency-STOP

After a command has been assigned to an input the type of the input (**HIGH-ACTIVE** or **LOW-ACTIVE**) has to be selected.

# 11 Anotations for explosion proof actuators

In this chapter the dependencies between some of the parameters and the protection against explosion will be described. The according parameters and their correct configuration will be shown.

## 11.1 The affected parameters

- Thermal failure reset
- Thermal overload
- Power unit



### **DANGER**

**If these parameters are changed the actuator may not be explosion proof anymore.**

- The Information in this chapter has to be regarded.

## 11.2 Keeping the actuator explosion proof

### 11.2.1 Thermal failure reset.

This parameter regulates the behavior of the actuator after the motor got overheated. It must be set to **MANUELL** to prevent to motor from running automatically after cooling down. This is the default setting after production and if not set correctly the actuator will not longer be explosion proof. The error that is indicated when the motor gets too hot must be reset manually before the actuator can be operated again.

### 11.2.2 Thermal overload

Monitoring the over temperature of the motor must be set to **RESPECT** in the parameter **emergency shut down (ESD)**. Otherwise the motor will get too hot and the actuator is not longer explosion proof.

### 11.2.3 The power unit

This parameter adjusts the power unit to the control unit. If the actuator is not equipped with an Ex solid state relay (SSR) (solid state relay that disconnects all pins) the parameter must be set to **contactors or SSR**. Use of normal SSR (one pin is permanently conducted) is only allowed in combination with a circuit breaker that disconnects all pins (as described in the actuators operation manual). For use with an Ex SSR the parameter has to be set to **Ex solid state relay** to keep the actuator explosion proof.







# **DREHMO**

## **VALVE ACTUATORS**

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