User manual

Pressing monitor
EPW 500FP
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1 Important information

1.1 Legal note

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Operating instructions, manuals, technical descriptions and software are originally compiled in German.

1.2 Exclusion of liability

TOX® PRESSOTECHNIK has checked the contents of this publication to ensure that it conforms to the technical properties and specifications of the products or plant and the description of the software. However, discrepancies may still be present, so we cannot guarantee complete accuracy. The supplier documentation included with the system documentation is an exception.

However, the information in this publication is checked regularly and any required corrections are included in subsequent editions. We are grateful for any corrections and suggestions for improvement. TOX® PRESSOTECHNIK reserves the right to revise the technical specifications of the products or plant and/or the software or documentation without prior notice.
1.3 Validity of the document

1.3.1 Content and target group

This manual contains information and instructions for the safe operation and safe maintenance or servicing of the product.

- All information in this manual is up to date at the time of print. TOX® PRESSOTECHNIK reserves the right to make technical changes that improve the system or increase the standard of safety.

- The information is intended for the operating company as well as operating and service personnel.

1.3.2 Other applicable documents

In addition to the available manual, further documents can be supplied. These documents must also be complied with. Other applicable documents can be, for example:

- additional operating manuals (e.g. of components or of a whole system)
- Supplier documentation
- Instructions, such as software manual, etc.
- Technical data sheets
- Safety data sheets
- Data sheets
- Schematics

1.4 Gender note

In order to enhance readability, references to persons that also relate to all sexes are normally only stated in the usual form in German or in the corresponding translated language in this manual, thus e.g. "operator" (singular) for male or female, or "operators" (plural) for male or female". This should in no way convey any gender discrimination or any violation of the principle of equality, however.
1.5 Displays in the document

1.5.1 Display of warnings

Warning signs indicate potential dangers and describe protective measures. Warning signs precede the instructions for which they are applicable.

Warning signs concerning personal injuries

⚠️ DANGER

Identifies an immediate danger!
Death or severe injuries will occur if appropriate safety measures are not taken.
➡️ Measures for remedial action and protection.

⚠️ WARNING

Identifies a potentially dangerous situation!
Death or serious injury may occur if appropriate safety measures are not taken.
➡️ Measures for remedial action and protection.

⚠️ CAUTION

Identifies a potentially dangerous situation!
Injury may occur if appropriate safety measures are not taken.
➡️ Measures for remedial action and protection.

Warning signs indicating potential damage

⚠️ NOTE

Identifies a potentially dangerous situation!
Property damage may occur if appropriate safety measures are not taken.
➡️ Measures for remedial action and protection.
1.5.2 Display of general notes

General notes show information on the product or the described action steps.

Identifies important information and tips for users.

1.5.3 Highlighting of texts and images

The highlighting of texts facilitates orientation in the document.

✓ Identifies prerequisites that must be followed.

1. Action step 1
2. Action step 2: identifies an action step in an operating sequence that must be followed to ensure trouble-free operation.▶ Identifies the result of an action.

▶ Identifies the result of a complete action.

⇒ Identifies a single action step or several action steps that are not in an operating sequence.

The highlighting of operating elements and software objects in texts facilitates distinction and orientation.

- \<In square brackets\> identifies operating elements, such as buttons, levers and (valves) stopcocks.
- "with quotation marks" identifies software display panels, such as windows, messages, display panels and values.
- **In bold** identifies software buttons, such as buttons, sliders, check-boxes and menus.
- **In bold** identifies input fields for entering text and/or numerical values.
1.6 Contact and source of supply

Only use original spare parts or spare parts approved by TOX® PRESSOTECHNIK.

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For additional information and forms see
www.tox-pressotechnik.com
2 Safety

2.1 Basic safety requirements

The product is state of the art. However, operation of the product may involve danger to life and limb for the user or third parties or damage to the plant and other property.

For this reason the following basic safety requirements will apply:

- Read the operating manual and observe all safety requirements and warnings.
- Operate the product only as specified and only if it is in perfect technical condition.
- Remedy any faults in the product or the plant immediately.
2.2 Organizational measures

2.2.1 Safety requirements for the operating company

The operating company is responsible for compliance with the following safety requirements:

- The operating manual must always be kept available at the operation site of the product. Ensure that the information is always complete and in legible form.
- In addition to the operating manual, the generally valid legal and other binding rules and regulations must be provided for the following content and all personnel must be trained accordingly:
  - Work safety
  - Accident prevention
  - Working with hazardous substances
  - First aid
  - Environmental protection
  - Traffic safety
  - Hygiene
- The requirements and contents of the operating manual must be supplemented by existing national regulations (e.g. for prevention of accidents and for environmental protection).
- Instructions for special operating features (e.g. work organization, work processes, appointed personnel) and supervisory and reporting obligations must be added to the operating manual.
- Take action to ensure safe operation and make sure that the product is maintained in a functional condition.
- Only allow authorized persons access to the product.
- Ensure that all personnel work with awareness of safety and potential dangers with reference to the information in the operating manual.
- Provide personal protective equipment.
- Maintain all safety and information on dangers regarding the product complete and in legible condition and replace as required.
- Do not make any changes, carry out attachments or conversions to the product without the written approval of TOX® PRESSOTECHNIK. Action contrary to the above will not be covered by the warranty or the operating approval.
- Make sure that the annual safety inspections are carried out and documented by an expert.
2.2.2 Selection and qualifications of personnel

The following safety requirements are applicable for the selection and qualifications of personnel:

- Only appoint persons to work on the plant who have read and understood the operating manual, and in particular, the safety instructions before starting work. This is particularly important for persons who only work on the plant occasionally, e.g. for maintenance work.
- Only allow persons appointed and authorized for this work access to the plant.
- Only appoint reliable and trained or instructed personnel.
- Only appoint persons to work in the danger zone of the plant who can perceive and understand visual and acoustic indications of danger (e.g. visual and acoustic signals).
- Ensure that assembly and installation work and the initial commissioning are performed exclusively by qualified personnel who have been trained and authorized by TOX® PRESSOTECHNIK.
- Maintenance and repairs must be performed by qualified and trained personnel only.
- Ensure that personnel who are being trained, instructed or are in an apprenticeship can only work on the plant under the supervision of an experienced person.
- Have work on electrical equipment performed only by electricians or trained persons under the direction and supervision of an electrician in accordance with the electrotechnical regulations.
2.3 Fundamental hazard potential

Fundamental hazard potentials exist. The specified examples draw attention to known hazardous situations, but are not complete and do not in any way provide safety and risk awareness action in all situations.

2.3.1 Electrical hazards

Attention should be paid to electrical hazards particularly inside the components in the area of all assemblies of the control system and motors of the installation.

The following basically applies:

- Have work on electrical equipment performed only by electricians or trained persons under the direction and supervision of an electrician in accordance with the electrotechnical regulations.
- Always keep the control box and/or terminal box closed.
- Before commencing work on electrical equipment, switch off the main switch of the system and secure it against being switched back on inadvertently.
- Pay attention to the dissipation of residual energy from the control system of the servomotors.
- Make sure that the components are disconnected from the power supply when carrying out the work.
3 About this product

3.1 Intended use

The pressing monitor ensures constant monitoring of the production process and quality assurance during production.

3.1.1 Safe and correct operation

Intended use includes the following conduct:

- Only operate with the components for which it is specified.
- Follow all instructions in this operating manual.
- Comply with the specified maintenance intervals and perform maintenance work correctly.
- Operate in compliance with the conditions of the technical data.
- Operation with fully assembled and functional safety devices.
- Activities may only be carried out by persons who are qualified or authorized for this purpose.

Any other use or application beyond this does not come under the scope of intended use.

3.1.2 Foreseeable misuse

Use contrary to intended use includes the following foreseeable misuse:

- Operation under conditions that deviate from the technical data.
- Operation without fully assembled and functional connections.
- Operation without fully assembled and functional safety devices.
- Modifications to the product without prior approval by TOX® PRES- SOTECHNIK and the approving authority.
- Incorrect parameterization.
- Execution of activities by persons who are not qualified or authorized to do so.

The operating company is exclusively responsible for all personal injury and property damage resulting from non-intended use. Non-intended use will not be covered by the warranty or the operating approval.
3.2 Warranty

Warranty and liability are based on the contractually specified conditions. Unless specified otherwise:

The TOX® PRESSOTECHNIK GmbH & Co. KG excludes any warranty or liability claims in the event of defects or damage if these are attributable to one or more of the following causes:

• Non-compliance with safety instructions, recommendations, instructions and/or other specifications in the operating manual.
• Non-compliance with the maintenance rules.
• Unauthorized and improper commissioning and operation of the machine or components.
• Improper use of the machine or components.
• Unauthorized constructional modifications to the machine or components or modifications to the software.
• Use of non-genuine spare parts. Batteries, fuses and lamps are not covered by the warranty.

3.3 Product Identification

3.3.1 Position and content of the type plate

The type plate can be found on the back of the device.

<table>
<thead>
<tr>
<th>Designation on the type plate</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>Product designation</td>
</tr>
<tr>
<td>ID No</td>
<td>Material number</td>
</tr>
<tr>
<td>SN</td>
<td>Serial number</td>
</tr>
</tbody>
</table>

Tab. 1 Type plate
3.4 Function description

3.4.1 Process monitoring system

The pressing monitor monitors processes, in which precisely defined functional correlations between force and distance have to be verified.

The device reads the force/distance data pairs from two measuring channels <X> and <Y> during the measuring operation. The data are written to memory and can be displayed graphically. The resulting force/distance function is compared with the specified data limits of the set window values or envelope curve. An OK message is issued if the data limits are complied with, otherwise a NOK message is issued.

3.4.2 Measuring Mode and Configuration

The registration of a process with the evaluation can only be started in measuring mode. If settings are changed, no measuring cycle can be started. This is the case, for example, during a program change, zero-point adjustment or when you are in the configuration menu.

The readiness for measuring is shown on the display by means of ready signal RDY.
4 Technical data

4.1 Dimensions

![Dimensions Diagram]

Fig. 1 Dimensions

4.2 Weight

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight</td>
<td>2.5 kg</td>
</tr>
</tbody>
</table>
### 4.3 CPU module

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Processor</td>
<td>ARM Cortex A8 1 GHz</td>
</tr>
<tr>
<td>RAM</td>
<td>eMMC 8 GB (program and data)</td>
</tr>
<tr>
<td></td>
<td>NAND Flash 256 MB (operating system)</td>
</tr>
<tr>
<td>Real-time clock / accuracy</td>
<td>Hardware with buffer battery</td>
</tr>
<tr>
<td>Display</td>
<td>LCD 7&quot;</td>
</tr>
<tr>
<td></td>
<td>800 x 480 (WVGA)</td>
</tr>
<tr>
<td></td>
<td>LED, backlit</td>
</tr>
<tr>
<td></td>
<td>Contrast 400:1</td>
</tr>
<tr>
<td></td>
<td>Luminosity 350 cd/m²</td>
</tr>
<tr>
<td></td>
<td>Color depth 256 kbit</td>
</tr>
<tr>
<td></td>
<td>Viewing angle vertical 130°, horizontal 140°</td>
</tr>
<tr>
<td>Buffer battery</td>
<td>Controller: Button cell CR2032</td>
</tr>
<tr>
<td></td>
<td>Panel-PC: Button cell CR1220</td>
</tr>
</tbody>
</table>
4.4 Interfaces

4.4.1 DMS force sensor (X1)

D-Sub 9-pin (socket)

<table>
<thead>
<tr>
<th>Pin</th>
<th>Signal</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>V+ 10V</td>
<td>DMS Supply voltage +10 VDC</td>
</tr>
<tr>
<td>2</td>
<td>n. c.</td>
<td>not connected</td>
</tr>
<tr>
<td>3</td>
<td>S+</td>
<td>DMS Sensor signal pos</td>
</tr>
<tr>
<td>4</td>
<td>n. c.</td>
<td>not connected</td>
</tr>
<tr>
<td>5</td>
<td>n. c.</td>
<td>not connected</td>
</tr>
<tr>
<td>6</td>
<td>n. c.</td>
<td>not connected</td>
</tr>
<tr>
<td>7</td>
<td>S-</td>
<td>DMS Sensor signal neg</td>
</tr>
<tr>
<td>8</td>
<td>n. c.</td>
<td>not connected</td>
</tr>
<tr>
<td>9</td>
<td>V-</td>
<td>Ground 0 VCD</td>
</tr>
<tr>
<td>S</td>
<td></td>
<td>PE shield (housing)</td>
</tr>
</tbody>
</table>

Fig. 2  Connection example: DMS without sensor cable
4.4.2 Force sensor standard input (X2)

D-Sub 9-pin (socket)

<table>
<thead>
<tr>
<th>Pin</th>
<th>Signal</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>n. c.</td>
<td>not connected</td>
</tr>
<tr>
<td>2</td>
<td>V-</td>
<td>Ground 0 VDC</td>
</tr>
<tr>
<td>3</td>
<td>n. c.</td>
<td>not connected</td>
</tr>
<tr>
<td>4</td>
<td>V+ 24V</td>
<td>DMS Supply voltage +24 VDC</td>
</tr>
<tr>
<td>5</td>
<td>Tare 24V</td>
<td>Tare signal</td>
</tr>
<tr>
<td>6</td>
<td>S+</td>
<td>Force signal +10 VDC</td>
</tr>
<tr>
<td>7</td>
<td>n. c.</td>
<td>not connected</td>
</tr>
<tr>
<td>8</td>
<td>S-</td>
<td>Force signal ground GND</td>
</tr>
<tr>
<td>9</td>
<td>n. c.</td>
<td>not connected</td>
</tr>
<tr>
<td>S</td>
<td></td>
<td>PE shield (housing)</td>
</tr>
</tbody>
</table>

Fig. 3 Connection example: sensor with standard signal 0 to 10 V (ZKN with tare, +24 VDC)

Fig. 4 Connection example: ZDO
### 4.4.3 Analog Out (X3)

**D-Sub 9-pin (connector)**

<table>
<thead>
<tr>
<th>Pin</th>
<th>Signal</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Analog Out 0</td>
<td>Analog Out 0</td>
</tr>
<tr>
<td>2</td>
<td>Analog Out 1</td>
<td>Analog Out 1</td>
</tr>
<tr>
<td>3</td>
<td>Analog Out 2</td>
<td>Analog Out 2</td>
</tr>
<tr>
<td>4</td>
<td>n. c.</td>
<td>not connected</td>
</tr>
<tr>
<td>5</td>
<td>n. c.</td>
<td>not connected</td>
</tr>
<tr>
<td>6</td>
<td>0 V</td>
<td>Ground analog signal</td>
</tr>
<tr>
<td>7</td>
<td>0 V</td>
<td>Ground analog signal</td>
</tr>
<tr>
<td>8</td>
<td>0 V</td>
<td>Ground analog signal</td>
</tr>
<tr>
<td>9</td>
<td>n. c.</td>
<td>not connected</td>
</tr>
<tr>
<td>S</td>
<td></td>
<td>PE shield (housing)</td>
</tr>
</tbody>
</table>

### 4.4.4 Distance sensor (X4)

**D-Sub 15-pin (socket)**

<table>
<thead>
<tr>
<th>Pin</th>
<th>Signal</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>V+ 24V</td>
<td>DMS Supply voltage +24 VDC</td>
</tr>
<tr>
<td>2</td>
<td>Signal 1</td>
<td>Signal 1</td>
</tr>
<tr>
<td>3</td>
<td>Vout 10V</td>
<td>Supply of potentiometric button</td>
</tr>
<tr>
<td>4</td>
<td>Signal 2</td>
<td>Signal 2</td>
</tr>
<tr>
<td>5</td>
<td>V+ 24V</td>
<td>Supply voltage</td>
</tr>
<tr>
<td>6</td>
<td>M1</td>
<td>Monitor output signal 1</td>
</tr>
<tr>
<td>7</td>
<td>n. c.</td>
<td>not connected</td>
</tr>
<tr>
<td>8</td>
<td>La</td>
<td>Internal use</td>
</tr>
<tr>
<td>9</td>
<td>V Ground</td>
<td>Supply voltage ground</td>
</tr>
<tr>
<td>10</td>
<td>0 V</td>
<td>Signal ground</td>
</tr>
<tr>
<td>11</td>
<td>0 V</td>
<td>Signal ground</td>
</tr>
<tr>
<td>12</td>
<td>V Ground</td>
<td>Supply voltage ground</td>
</tr>
<tr>
<td>13</td>
<td>0 V</td>
<td>Signal ground</td>
</tr>
<tr>
<td>14</td>
<td>0 V</td>
<td>Signal ground</td>
</tr>
<tr>
<td>15</td>
<td>Lb</td>
<td>Internal use</td>
</tr>
<tr>
<td>S</td>
<td></td>
<td>PE shield (housing)</td>
</tr>
</tbody>
</table>
Fig. 5  Connection example: distance transducer potentiometer (ZWW 10 V supply voltage)

Fig. 6  Connection example: distance transducer (ZKW)
4.4.5 Digital IO (X5)

D-Sub 25-pin (socket)

<table>
<thead>
<tr>
<th>Pin</th>
<th>Signal</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Q0</td>
<td>OK</td>
</tr>
<tr>
<td>2</td>
<td>Q1</td>
<td>NOK</td>
</tr>
<tr>
<td>3</td>
<td>Q2</td>
<td>Acute NOK</td>
</tr>
<tr>
<td>4</td>
<td>Q3</td>
<td>Switching point 1</td>
</tr>
<tr>
<td>5</td>
<td>Q4</td>
<td>Switching point 2 / NOK buzzer</td>
</tr>
<tr>
<td>6</td>
<td>Q5</td>
<td>Ready for measurement</td>
</tr>
<tr>
<td>7</td>
<td>Q6</td>
<td>Program ACK</td>
</tr>
<tr>
<td>8</td>
<td>Q7</td>
<td>Switching point 3</td>
</tr>
<tr>
<td>9</td>
<td>I4</td>
<td>Program bit 4</td>
</tr>
<tr>
<td>10</td>
<td>I5</td>
<td>Program bit 5</td>
</tr>
<tr>
<td>11</td>
<td>0 V</td>
<td>0 V internal</td>
</tr>
<tr>
<td>12</td>
<td>0 V</td>
<td>0 V external</td>
</tr>
<tr>
<td>13</td>
<td>I11</td>
<td>Reserve</td>
</tr>
<tr>
<td>14</td>
<td>I0</td>
<td>Program bit 0</td>
</tr>
<tr>
<td>15</td>
<td>I1</td>
<td>Program bit 1</td>
</tr>
<tr>
<td>16</td>
<td>I2</td>
<td>Program bit 2</td>
</tr>
<tr>
<td>17</td>
<td>I3</td>
<td>Program bit 3</td>
</tr>
<tr>
<td>18</td>
<td>I6</td>
<td>Program strobe</td>
</tr>
<tr>
<td>19</td>
<td>n. c.</td>
<td>not connected</td>
</tr>
<tr>
<td>20</td>
<td>I8</td>
<td>Start measurement</td>
</tr>
<tr>
<td>21</td>
<td>n. c.</td>
<td>not connected</td>
</tr>
<tr>
<td>22</td>
<td>I10</td>
<td>Error reset</td>
</tr>
<tr>
<td>23</td>
<td>24 V</td>
<td>24 V internal</td>
</tr>
<tr>
<td>24</td>
<td>24 V</td>
<td>24 V external</td>
</tr>
<tr>
<td>25</td>
<td>I12</td>
<td>Reserve</td>
</tr>
<tr>
<td>S</td>
<td></td>
<td>PE shield</td>
</tr>
</tbody>
</table>

Digital inputs

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Digital inputs</td>
<td>13 (isolated)</td>
</tr>
<tr>
<td>Input voltage</td>
<td>24 V</td>
</tr>
<tr>
<td>Input current</td>
<td>At rated voltage (24 V): 3 mA</td>
</tr>
<tr>
<td>Input impedance</td>
<td>10 kΩ</td>
</tr>
</tbody>
</table>

Digital outputs

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Digital outputs</td>
<td>8 (isolated)</td>
</tr>
<tr>
<td>Load voltage</td>
<td>Rated voltage 24 V</td>
</tr>
<tr>
<td></td>
<td>(permissible range: 18 V to + 30 V)</td>
</tr>
<tr>
<td>Vin output current</td>
<td>max. 500 mA</td>
</tr>
<tr>
<td>Short-circuit proof</td>
<td>Yes, thermal overload protection</td>
</tr>
</tbody>
</table>
4.4.6 Supply voltage (X6)

<table>
<thead>
<tr>
<th>Pin</th>
<th>Signal</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>24 V</td>
<td>DMS Supply voltage +24 VDC</td>
</tr>
<tr>
<td>2</td>
<td>GND</td>
<td>Ground 0 VDC</td>
</tr>
<tr>
<td>3</td>
<td>PE</td>
<td>PE shield</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated voltage</td>
<td>+24 VDC, ±25 % (incl. 10% residual ripple)</td>
</tr>
<tr>
<td>Current consumption</td>
<td>≤1 A</td>
</tr>
</tbody>
</table>

4.4.7 USB interface (X7)

<table>
<thead>
<tr>
<th>Pin</th>
<th>Signal</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>+ 5 V</td>
<td>Supply voltage</td>
</tr>
<tr>
<td>2</td>
<td>Data -</td>
<td>Data -</td>
</tr>
<tr>
<td>3</td>
<td>Data +</td>
<td>Data +</td>
</tr>
<tr>
<td>4</td>
<td>GND</td>
<td>Ground</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of channels</td>
<td>1 x host (full-speed)</td>
</tr>
<tr>
<td>USB 2.0</td>
<td>according to USB device specification USB 2.0 compatible, type A and B Connection to high-powered hub/host</td>
</tr>
<tr>
<td>Cable length</td>
<td>max. 5 mm</td>
</tr>
</tbody>
</table>
### 4.4.8 Ethernet RJ45 (X8)

<table>
<thead>
<tr>
<th>Pin</th>
<th>Signal</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>TxD+</td>
<td>Transmit Data +</td>
</tr>
<tr>
<td>2</td>
<td>TxD-</td>
<td>Transmit Data -</td>
</tr>
<tr>
<td>3</td>
<td>RxD+</td>
<td>Receive Data +</td>
</tr>
<tr>
<td>4</td>
<td>n. c.</td>
<td>not connected</td>
</tr>
<tr>
<td>5</td>
<td>n. c.</td>
<td>not connected</td>
</tr>
<tr>
<td>6</td>
<td>RxD-</td>
<td>Receive Data -</td>
</tr>
<tr>
<td>7</td>
<td>n. c.</td>
<td>not connected</td>
</tr>
<tr>
<td>8</td>
<td>n. c.</td>
<td>not connected</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 channel</td>
<td>twisted pair (10/100BASE-T)</td>
</tr>
<tr>
<td></td>
<td>Transmission in accordance with IEEE/ANSI 802.3, ISO 8802-3, IEE-E802.3u</td>
</tr>
<tr>
<td>Transmission speed</td>
<td>10/100 Mbit/s</td>
</tr>
<tr>
<td>Connecting line</td>
<td>shielded</td>
</tr>
<tr>
<td></td>
<td>at 0.14 mm²: max. 300 m</td>
</tr>
<tr>
<td></td>
<td>at 0.25 mm²: max. 600 m</td>
</tr>
<tr>
<td>Length</td>
<td>max. 100 mm</td>
</tr>
<tr>
<td>Cable</td>
<td>Shielded, impedance 100 Ω</td>
</tr>
<tr>
<td>Connector</td>
<td>RJ45 (modular connector)</td>
</tr>
</tbody>
</table>
4.5  PLC interface pulse diagrams

4.5.1  Start/Stop

Start measurement

OK

NOK

Acute NOK

NOK buzzer

Ready for measurement

Fig. 7  Signal path diagram

1  Dependent on the previous measured result.
2  When the <Start measuring> signal is active, the conditions of the previous measurement are reset after a maximum of 1 ms.
3  When the measurement has been completed, the OK or NOK signal is set after 1 ms.
4  If the measurement is assessed as NOK during the measurement, the NOK signal is set after a maximum of 1 ms.
5  Depending on the <Acute NOK> option, the signal is set after a maximum of 1 ms after the measurement has been assessed as NOK.
6  Depending on option <NOK beeper>, after the measurement has been assessed as NOK, the signal is set for the duration adjusted in the settings after a maximum of 1 ms.
4.5.2 Changing the program number

Program Bit 0 - 5

Program Strobe

Program ACK

Fig. 8 Signal path diagram

1 Selected program via bits.
2 Delay time Strobe high ACK high maximum of 180 ms.
3 Delay time Strobe low ACK low 1 ms.

During transfer of the new parameters, the "Ready for measurement" signal is set to "low". Before the next measurement, the "Ready for measurement" signal must be checked for "high". The maximum delay time of "Strobe" to "Ready for measurement" is 600 ms.

<table>
<thead>
<tr>
<th>I5</th>
<th>I4</th>
<th>I3</th>
<th>I2</th>
<th>I1</th>
<th>I0</th>
<th>Program</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>60</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>61</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>62</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>63</td>
</tr>
</tbody>
</table>
4.5.3 Environmental conditions

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature</td>
<td>Operation: 0 °C to +50 °C</td>
</tr>
<tr>
<td></td>
<td>Storage: -20 °C to +60 °C</td>
</tr>
<tr>
<td>Relative humidity without condensation (acc. to RH2)</td>
<td>5 % to 80 %</td>
</tr>
</tbody>
</table>

Sensor Analog Standard Signals

Measuring is carried out by a sensor with a standardized process signal 0 to 10 V. The input is selected in the <Configuration> menu.

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal force</td>
<td>adjustable</td>
</tr>
<tr>
<td>Nominal distance</td>
<td>see Setting Nominal Force / Nominal Distance Parameters, Page 54.</td>
</tr>
<tr>
<td>A/D converter</td>
<td>16 bit = 65536 steps</td>
</tr>
<tr>
<td>Nominal load of resolution</td>
<td>Steps see A/D converter, 1 step (bit) = nominal load / steps</td>
</tr>
<tr>
<td>Accuracy of measurement</td>
<td>1 %</td>
</tr>
<tr>
<td>Max. sampling rate</td>
<td>2000 Hz (0.5 ms)</td>
</tr>
</tbody>
</table>

Supply Voltage Sensor

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auxiliary voltage</td>
<td>24 V ±5 %, max. 100 mA</td>
</tr>
<tr>
<td>Reference voltage</td>
<td>10 V ±1 % standard signal : 0 V to 10 V</td>
</tr>
</tbody>
</table>

Sensor with Standard Signal Output

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auxiliary voltage</td>
<td>+24 VDC ±5 %, max. 100 mA</td>
</tr>
<tr>
<td>Nominal signal</td>
<td>0 V to 10 V</td>
</tr>
<tr>
<td>Tare signal</td>
<td>0 V with zero adjustment, &gt;9 V during measuring mode</td>
</tr>
</tbody>
</table>
With some types of force transducers or measurement amplifiers with tare function, a decrease of the measuring accuracy is possible after a certain period of time depending on the process.

### DMS signals

Force measuring (channel Y) via DMS force transducer. The input is selected in menu <Configuration / Sensors>.

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal force</td>
<td>adjustable see Setting Nominal Force / Nominal Distance Parameters, Page 54.</td>
</tr>
<tr>
<td>Nominal distance</td>
<td>see Setting Nominal Force / Nominal Distance Parameters, Page 54.</td>
</tr>
<tr>
<td>A/D converter</td>
<td>16 bit = 65536 steps</td>
</tr>
<tr>
<td>Nominal load of resolution</td>
<td>65536 steps, 1 step (bit) = nominal load / 65536</td>
</tr>
<tr>
<td>Gain error</td>
<td>±0.5 %</td>
</tr>
<tr>
<td>Max. sampling rate</td>
<td>2000 Hz (0.5 ms)</td>
</tr>
<tr>
<td>Bridge voltage</td>
<td>10 V</td>
</tr>
<tr>
<td>Characteristic value</td>
<td>1.1 mV / V</td>
</tr>
</tbody>
</table>
5 Transport and storage

5.1 Temporary storages

- Use original packaging.
- Make sure that all electrical connections are covered to prevent dust ingress.
- Protect the display against sharp-edged objects e.g. due to cardboard or hard foam.
- Wrap the device, e.g. with a plastic bag.
- Store the device only in closed, dry, dust-free and dirt-free rooms at room temperature.
- Add drying agent to the packaging.

5.2 Dispatch for repair

To dispatch the product for repair to TOX® PRESSOTECHNIK, please proceed as follows:

- Fill in the "Accompanying repair form". This we supply in the service sector on our website or upon request via e-mail.
- Send us the completed form via e-mail.
- Then you will receive the shipping documents from us via e-mail.
- Send us the product with the shipping documents and a copy of the "Accompanying repair form".

For contact data see: Chap. 1.6 Contact and source of supply, Page 11 or www.tox-pressotechnik.com.
6 Installation

6.1 Holding bracket

Fig. 9  Hole pattern of holding bracket

With the holding bracket the device to be used as a table, wall device or to be fixed to an outrigger.
7 Commissioning

7.1 Preparing System

1. Check installation and mounting.
2. Connect required lines and devices, e.g. sensors and actuators.
3. Connect supply voltage.
4. Make sure that the correct supply voltage is connected.
   See Chap. 4.4 Interfaces, Page 23.

7.2 Starting system

✔ System is prepared.
   See Chap. 7.1 Preparing System, Page 39.

⇒ Switch on the plant.

► The device starts the operating system and the application.
► The device switches to the start screen.
8 Operation

8.1 Monitoring operation

No operating steps are necessary during ongoing operation.

The operating procedure must be monitored constantly in order to detect faults in time.
9 Software

9.1 Function of the Software

The software fulfills the following functions:

- Clear representation of the operating parameters for operation monitoring
- Displaying of fault messages and warnings
- Configuration of the operating parameters by setting individual operating parameters
- Configuration of the interface by setting the software parameters

9.2 Software interface

![Software Interface Diagram]

Fig. 10 Software interface

<table>
<thead>
<tr>
<th>Screen area</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Information and status bar</td>
<td>The information and display bar displays:</td>
</tr>
<tr>
<td></td>
<td>• General information on the pressing monitor</td>
</tr>
<tr>
<td></td>
<td>• Current pending messages and information for the main area displayed in</td>
</tr>
<tr>
<td></td>
<td>the screen.</td>
</tr>
<tr>
<td>2 Menu-specific screen area</td>
<td>The menu-specific screen area displays the specific contents for the screen currently open.</td>
</tr>
<tr>
<td>3 Menu bar</td>
<td>The menu bar displays the specific sub-menus for the menu currently open.</td>
</tr>
</tbody>
</table>
9.2.1 Information and status bar

![Information and status bar](image)

**Fig. 11** Information and status bar

<table>
<thead>
<tr>
<th>Display/control panel</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Call up &quot;System / Version&quot; menu</td>
</tr>
<tr>
<td>2</td>
<td>Call up access authorization</td>
</tr>
<tr>
<td>3</td>
<td>Display of current menu</td>
</tr>
<tr>
<td>4</td>
<td>Display of current process</td>
</tr>
<tr>
<td>5</td>
<td>Information and status display</td>
</tr>
<tr>
<td>6</td>
<td>Warning symbol</td>
</tr>
<tr>
<td>7</td>
<td>Start screen</td>
</tr>
</tbody>
</table>

9.3 Control elements

9.3.1 Function buttons

![Function buttons](image)

**Fig. 12** Function buttons

<table>
<thead>
<tr>
<th>Display/control panel</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Normal</td>
</tr>
<tr>
<td>2</td>
<td>Highlighted (with a grey back-ground)</td>
</tr>
</tbody>
</table>
9.3.2 Checkboxes

Fig. 13 Checkboxes

<table>
<thead>
<tr>
<th>Display/control panel</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Not selected</td>
</tr>
<tr>
<td>2</td>
<td>Selected</td>
</tr>
</tbody>
</table>

9.3.3 Selection lists

Fig. 14 Selection lists

A value can be selected from a specified list of values via the selection list.

9.3.4 Input field

Fig. 15 Input field

The input field has two functions.
- The input field displays the value currently entered.
- Values can be entered or changed in an input field. This function is dependent on the user level and is not normally available for all user levels.
9.3.5 Dialog keyboard

Keyboard dialogs are needed for entering and changing values in input fields.

Fig. 16 Numerical keyboard

Fig. 17 Alphanumeric keyboard

It is possible to switch between four modes with the alphanumeric keyboard:

- Permanent lowercase
- Uppercase and special characters for the next entry
- Permanent uppercase and special characters
- Other special characters

Activating permanent lowercase

⇒ Press Shift button until the keyboard displays lowercase letters.
Activating uppercase and special characters for the next entry

✓ "permanent" lowercase mode is activated. The keyboard only displays lowercase letters and numbers.

➤ Press Shift button once.
➤ The keyboard displays uppercase letters and special characters.
➤ After entering a character, the keyboard returns again to the "permanent" lowercase mode.

Activating permanent uppercase and special characters

✓ "permanent" lowercase mode is activated. The keyboard only displays lowercase letters and numbers.

➤ Press Shift two times.
➤ The lettering "Shift" becomes red and is underlined.
➤ The keyboard displays uppercase letters and special characters.
➤ Any number of uppercase letters or special characters can be entered.

Activating other special characters

✓ "permanent" lowercase mode is activated. The keyboard only displays lowercase letters and numbers.

➤ Press Shift three times.
➤ The keyboard displays other special characters, e.g. "€".
➤ After entering a character, the keyboard returns again to the "permanent" lowercase mode.
9.3.6 Saving Changes Dialog

The "Save changes" dialog appears if a menu should be exited without saving changes beforehand.

![Save changes dialog](image)

**Fig. 18 "Save changes" dialog**

<table>
<thead>
<tr>
<th>Display/control panel</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Save</td>
<td>The changed values are saved and the current menu is exited.</td>
</tr>
<tr>
<td>2 Do not save</td>
<td>The changed values are discarded and not saved. The current menu is exited.</td>
</tr>
<tr>
<td>3 Cancel</td>
<td>Cancellation of the action. Returns to the current menu.</td>
</tr>
</tbody>
</table>
## 9.3.7 Icons

<table>
<thead>
<tr>
<th>Display/control panel</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measure OK</td>
<td>The last measurement was OK.</td>
</tr>
<tr>
<td>Measured result undefined</td>
<td>The measured result is not yet known.</td>
</tr>
<tr>
<td>Measurement NOK</td>
<td>Last measurement was not OK. At least one evaluation criteria was violated (envelope curve, window).</td>
</tr>
<tr>
<td>No message</td>
<td>No messages are pending.</td>
</tr>
<tr>
<td>Warning</td>
<td>One warning is pending.</td>
</tr>
<tr>
<td>Fault</td>
<td>One error is pending.</td>
</tr>
<tr>
<td>Device ready to measure</td>
<td>Pressing monitor is ready to start a measurement.</td>
</tr>
<tr>
<td>Device not ready to measure</td>
<td>Pressing monitor is not ready to start a measurement.</td>
</tr>
<tr>
<td>Measure active</td>
<td>The measurement is in progress.</td>
</tr>
</tbody>
</table>
9.4 Main menus

9.4.1 Channel cockpit

Fig. 19 Menu "Channel cockpit"

<table>
<thead>
<tr>
<th>Display/control panel</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 User zoom</td>
<td>Restores user zoom</td>
</tr>
<tr>
<td>2 Reduce zoom factor</td>
<td>Reduces zoom factor</td>
</tr>
<tr>
<td>3 Job counter</td>
<td>Counter \… that is displayed in the start screen.</td>
</tr>
<tr>
<td>4 Full-screen display</td>
<td>Changes to full-screen display see <strong>Full-screen display, Page 51</strong>.</td>
</tr>
<tr>
<td>5 Data</td>
<td>Opens Data menu</td>
</tr>
<tr>
<td>6 User</td>
<td>Opens User menu</td>
</tr>
<tr>
<td>7 System</td>
<td>Opens System menu</td>
</tr>
<tr>
<td>8 Processes</td>
<td>Opens Processes menu</td>
</tr>
<tr>
<td>9 Counters</td>
<td>Opens Counter menu</td>
</tr>
<tr>
<td>10 Monitoring</td>
<td>Opens Monitoring menu</td>
</tr>
<tr>
<td>11 Configuration</td>
<td>Opens Configuration menu</td>
</tr>
<tr>
<td>12 Menu back</td>
<td>Changes to the higher menu</td>
</tr>
</tbody>
</table>
### 9.4.2 Full-screen display

![Full-screen display menu](image)

**Fig. 20** Menu "Full-screen display"

<table>
<thead>
<tr>
<th>Display/control panel</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Full-screen display</td>
<td>Closes the full-screen display</td>
</tr>
<tr>
<td>2 User zoom</td>
<td>Restores user zoom</td>
</tr>
<tr>
<td>3 Zoom factor</td>
<td>Reduces zoom factor</td>
</tr>
</tbody>
</table>
9.4.3 Status window

The status window displays all configured information about the work process.

Fig. 21 Status window

<table>
<thead>
<tr>
<th>Display field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Device name</td>
</tr>
<tr>
<td>2</td>
<td>Current process</td>
</tr>
<tr>
<td>3</td>
<td>Measured result</td>
</tr>
<tr>
<td>4</td>
<td>Messages (warning / error)</td>
</tr>
<tr>
<td>5</td>
<td>Process monitoring system ready to measure</td>
</tr>
<tr>
<td>6</td>
<td>Maximum distance of the last work process</td>
</tr>
<tr>
<td>7</td>
<td>Maximum force of the last work process</td>
</tr>
</tbody>
</table>
9.4.4 Configuration

All settings in the "Configuration" menu can be customized for every single process.

Sensors

The nominal force, nominal distance and offset of the sensors are set in the "Configuration\Sensors" menu. Furthermore, the sensors connected to the pressing monitor are calibrated. Sensors have to be calibrated if they were replaced or if the system should be recalibrated.

In these instructions, the nominal force is specified in kN and the nominal distance is specified in mm.

![Menu "Configuration \ Sensors"](image)

<table>
<thead>
<tr>
<th>Button</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>Teach</td>
</tr>
<tr>
<td>5</td>
<td>Offset</td>
</tr>
<tr>
<td>6</td>
<td>Undo</td>
</tr>
<tr>
<td>7</td>
<td>Save</td>
</tr>
<tr>
<td>8</td>
<td>Calibration</td>
</tr>
<tr>
<td>9</td>
<td>Hardware</td>
</tr>
<tr>
<td>10</td>
<td>NOK options</td>
</tr>
<tr>
<td>11</td>
<td>Switching points</td>
</tr>
</tbody>
</table>

Reads in the actual value of the force or distance sensor

Offset adjustment

Undoes the entry

Saves the entry

Determines the calibration

Opens Hardware menu

Opens Evaluation Options menu

Opens Switching points menu
Setting Nominal Force / Nominal Distance Parameters

When setting up the pressing monitor, the **nominal force** and **nominal distance** parameters must be defined in order to evaluate the measurement values correctly.

- The user is logged in with a suitable user level. The necessary write permissions are available.

1. Tap on **Nominal force** input field.
   〉 The numerical keyboard opens.
2. Enter max. nominal force and press the **OK** button to confirm.
3. Tap on **Nominal force \ Unit** input field.
   〉 The alphanumeric keyboard opens.
4. Enter unit and press the **OK** button to confirm.
5. Repeat steps 1 to 4 for the **Nominal distance** parameter.
6. Tap on **Save** button to save the values.
Adjusting Force Sensor or Distance Sensor Offset

The Offset parameter adjusts a possible zero point offset of the analog measurement sensor of the sensor.

An offset adjustment must be carried out:
- once a day or after approx. 1000 measurements.
- when a sensor has been changed.

Adjustment using Offset adjustment button

- The user is logged in with a suitable user level. The necessary write permissions are available.
- Sensor is load-free during the offset adjustment.

1. Tap on Offset adjustment button.
   - The current measurement signal (V) is applied as offset.
2. Tap on Save button to save the values.

Adjustment via direct Value Input

- The user is logged in with a suitable user level. The necessary write permissions are available.
- Sensor is load-free during the offset adjustment.

1. Tap on Offset input field.
   - The numerical keyboard opens.
2. Enter zero point value and press the OK button to confirm.
3. Tap on Save button to save the values.
Calibrating Sensors

Sensors have to be recalibrated if they were replaced or if the system should be recalibrated.

The sensors are calibrated after the two-point calibration process. During the two-point calibration, the exact linear path of the measurement chain characteristic is determined via two measurement points. In this way, the gradient and offset of the measurement chain characteristic is determined.

- The user is logged in with a suitable user level. The necessary write permissions are available.
- The reference measuring instrument is connected.

1. Move to first measurement point.
2. Apply value using Teach button.
3. Tap on Force 1 or Distance 1 input field
   ▶ The numerical keyboard opens.
4. Enter displayed value on the reference measuring instrument and press the OK button to confirm.
5. Move to second measurement point.
6. Apply value using Teach button.
7. Tap on Force 2 or Distance 2
   ▶ The numerical keyboard opens.
8. Enter displayed value of the reference measuring instrument and press the OK button to confirm.
9. Apply value using Calibration button.
   ▶ The gradient and offset between both measurement points are calculated.
10. Tap on Save button to save the values.
IO Config

The inputs of the sensors and the outputs are configured in the "Configuration \ IO Config" menu.

Fig. 23 "Configuration \ IO Config" menu

<table>
<thead>
<tr>
<th>Button</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Undo</td>
</tr>
<tr>
<td>2</td>
<td>Save</td>
</tr>
<tr>
<td>3</td>
<td>Hardware</td>
</tr>
<tr>
<td>4</td>
<td>Evaluation Options</td>
</tr>
<tr>
<td>5</td>
<td>Switching points</td>
</tr>
<tr>
<td>6</td>
<td>Start/Stop</td>
</tr>
<tr>
<td>7</td>
<td>Measuring parameters</td>
</tr>
<tr>
<td>8</td>
<td>IO Config</td>
</tr>
<tr>
<td>9</td>
<td>Sensors</td>
</tr>
<tr>
<td>10</td>
<td></td>
</tr>
</tbody>
</table>

Configuring Inputs/Outputs

✔ The user is logged in with a suitable user level. The necessary write permissions are available.

1. Tap on selection field of the input or output. Selection list opens.
2. Select value.
3. Tap on Save button to save the values.
DMS Characteristic Value

The characteristic for the DMS force transducer is entered using the *Characteristic value* parameter.

- The user is logged in with a suitable user level. The necessary write permissions are available.
- DMS sensor is selected at the force sensor input.

1. Tap on **DMS Characteristic Value** input field. The numerical keyboard opens.
2. Enter characteristic value and press the **OK** button to confirm.
3. Tap on **Save** button to save the values.

Measuring parameters

In the "Configuration \ Measuring parameters" menu, the type of measurement data acquisition is configured via the *acquisition type* parameter.

The following modes are available:

- Distance rising
- Distance rising or falling
- Force or distance increasing
- Force or distance change
- Time-triggered
Selecting <Distance rising> Mode

This mode is suitable for positive value changes, e.g. clinch applications or pressing applications. The measurement values are measured at maximum sampling rate (2000 Hz). The measurement values are read in if the distance to the measurement value last read in has increased by the X-step entered.

If an end force is still increasing without a change in distance (block force), the values (max. force/distance) can be read in and the curve can be inserted via the <insert max. force at the end of the curve> function.

Fig. 24  "Measuring parameters" menu, Distance rising mode

<table>
<thead>
<tr>
<th>Button</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Undo</td>
</tr>
<tr>
<td>3</td>
<td>Save</td>
</tr>
<tr>
<td>6</td>
<td>Hardware</td>
</tr>
<tr>
<td>7</td>
<td>Evaluation Options</td>
</tr>
<tr>
<td>8</td>
<td>Switching points</td>
</tr>
<tr>
<td>9</td>
<td>Start/Stop</td>
</tr>
<tr>
<td>10</td>
<td>Measuring parameters</td>
</tr>
<tr>
<td>11</td>
<td>IO Config</td>
</tr>
<tr>
<td>12</td>
<td>Sensors</td>
</tr>
<tr>
<td>13</td>
<td></td>
</tr>
</tbody>
</table>

Undoes the entry
Saves the entry
Opens Hardware menu
Opens Evaluation Options menu
Opens Switching points menu
Opens Start/Stop menu
Opens Measuring parameters menu
Opens IO Config menu
Opens Sensors menu
Changes to the higher menu
The user is logged in with a suitable user level. The necessary write permissions are available.

1. Tap on **Acquisition type** input field and select **Distance rising** mode.
2. Tap on **X-step** input field. The numerical keyboard opens.
3. Enter value in [mm] and press the **OK** button to confirm.
4. Tap on **Insert max. force at the end of the curve** input field and select whether the force should be inserted or not.
5. Tap on **Save** button to save the values.
Select <Distance rising or falling> mode

This mode is recommended if negative distance changes should be also recorded, e.g. applications with snap-back effects. The measurement values are measured at maximum sampling rate (2000 Hz). The measurement values are read in if the distance in positive or negative direction to the measurement value last read in has changed by the X-step that was read in.

Fig. 25 "Measuring parameters" menu, **Distance rising or falling** mode

<table>
<thead>
<tr>
<th>Button</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Undo</td>
</tr>
<tr>
<td>2</td>
<td>Save</td>
</tr>
<tr>
<td>3</td>
<td>Hardware</td>
</tr>
<tr>
<td>4</td>
<td>Evaluation Options</td>
</tr>
<tr>
<td>5</td>
<td>Switching points</td>
</tr>
<tr>
<td>6</td>
<td>Start/Stop</td>
</tr>
<tr>
<td>7</td>
<td>Measuring parameters</td>
</tr>
<tr>
<td>8</td>
<td>IO Config</td>
</tr>
<tr>
<td>9</td>
<td>Sensors</td>
</tr>
<tr>
<td>10</td>
<td>Change to the higher menu</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Input fields</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Acquisition type</td>
</tr>
<tr>
<td>4</td>
<td>X-Step</td>
</tr>
</tbody>
</table>

*Fig. 25: Measuring parameters" menu, Distance rising or falling mode*
The user is logged in with a suitable user level. The necessary write permissions are available.

1. Tap on **Acquisition type** input field and select **Distance rising or falling** mode.
2. Tap on **X-step** input field.
   ▶ The numerical keyboard opens.
3. Enter value in [mm] and press the **OK** button to confirm.
4. Tap on **Save** button to save the values.
Select <Force or distance rising> mode

This mode is recommended for positive force or distance changes. In this mode, a pair of values is read in if since the last pair of values that was read in ...

- the distance has increased by the X-step.
- the force has increased in positive direction.

![Image of software interface showing the "Force or distance rising" mode.

**Fig. 26** "Measuring parameters" menu, **Force or distance rising** mode

<table>
<thead>
<tr>
<th>Button</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Undo</td>
</tr>
<tr>
<td>3</td>
<td>Save</td>
</tr>
<tr>
<td>6</td>
<td>Hardware</td>
</tr>
<tr>
<td>7</td>
<td>Evaluation Options</td>
</tr>
<tr>
<td>8</td>
<td>Switching points</td>
</tr>
<tr>
<td>9</td>
<td>Start/Stop</td>
</tr>
<tr>
<td>10</td>
<td>Measuring parameters</td>
</tr>
<tr>
<td>11</td>
<td>IO Config</td>
</tr>
<tr>
<td>12</td>
<td>Sensors</td>
</tr>
<tr>
<td>13</td>
<td>Change to the higher menu</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Input fields</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Acquisition type</td>
</tr>
<tr>
<td>4</td>
<td>Y-Step</td>
</tr>
<tr>
<td>5</td>
<td>X-Step</td>
</tr>
</tbody>
</table>
The user is logged in with a suitable user level. The necessary write permissions are available.

1. Tap on Acquisition type input field and select Force or distance rising mode.
2. Tap on Y-step input field.
   ▶ The numerical keyboard opens.
3. Enter value in [kN] and press the OK button to confirm.
4. Tap on X-step input field.
   ▶ The numerical keyboard opens.
5. Enter value in [mm] and press the OK button to confirm.
6. Tap on Save button to save the values.
Select <Force or distance change> mode

This mode is recommended if the force can change while no distance changes occur, e.g. for applications with large slip-in effects. In this mode, a pair of values is read in if since the last pair of values that was read in ...

- the distance has changed in positive or negative direction by the X-step.
- the force has changed in positive or negative direction by the Y-step.

![Diagram](image)

Fig. 27  "Measuring parameters" menu, Force or distance change mode

<table>
<thead>
<tr>
<th>Button</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Undo</td>
</tr>
<tr>
<td>3</td>
<td>Save</td>
</tr>
<tr>
<td>6</td>
<td>Hardware</td>
</tr>
<tr>
<td>7</td>
<td>Evaluation Options</td>
</tr>
<tr>
<td>8</td>
<td>Switching points</td>
</tr>
<tr>
<td>9</td>
<td>Start/Stop</td>
</tr>
<tr>
<td>10</td>
<td>Measuring parameters</td>
</tr>
<tr>
<td>11</td>
<td>IO Config</td>
</tr>
<tr>
<td>12</td>
<td>Sensors</td>
</tr>
<tr>
<td>13</td>
<td>Change to the higher menu</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Input fields</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Acquisition type</td>
</tr>
<tr>
<td>4</td>
<td>Y-Step</td>
</tr>
<tr>
<td>5</td>
<td>X-Step</td>
</tr>
</tbody>
</table>
The user is logged in with a suitable user level. The necessary write permissions are available.

1. Tap on Acquisition type input field and select Force or distance change mode.
2. Tap on Y-step input field.
   - The numerical keyboard opens.
3. Enter value in [kN] and press the OK button to confirm.
4. Tap on X-step input field.
   - The numerical keyboard opens.
5. Enter value in [mm] and press the OK button to confirm.
6. Tap on Save button to save the values.
Selecting <time-triggered> Mode

In this mode, all values are read in time-controlled at the specified frequency. This mode is recommended if the other modes do not lead to any satisfactory results. At a sampling of 2000 Hz, the buffer is filled after approx. 2.5 s. The smaller the sampling rate, the longer the sampling data can be written into the buffer.

![Image of software interface]

Fig. 28  "Measuring parameters" menu, time-triggered mode

<table>
<thead>
<tr>
<th>Button</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Undo</td>
</tr>
<tr>
<td>3</td>
<td>Save</td>
</tr>
<tr>
<td>5</td>
<td>Hardware</td>
</tr>
<tr>
<td>6</td>
<td>Evaluation Options</td>
</tr>
<tr>
<td>7</td>
<td>Switching points</td>
</tr>
<tr>
<td>8</td>
<td>Start/Stop</td>
</tr>
<tr>
<td>9</td>
<td>Measuring parameters</td>
</tr>
<tr>
<td>10</td>
<td>IO Config</td>
</tr>
<tr>
<td>11</td>
<td>Sensors</td>
</tr>
<tr>
<td>12</td>
<td>Change to the higher menu</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Input fields</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Acquisition type</td>
</tr>
<tr>
<td>4</td>
<td>Sampling rate</td>
</tr>
</tbody>
</table>
✓ The user is logged in with a suitable user level. The necessary write permissions are available.

1. Tap on Acquisition type input field and select Time-triggered mode.
2. Tap on sampling rate input field.
   ▶ A drop-down list opens.
3. Select sampling rate in [Hz].
4. Tap on Save button to save the values.

### Start/Stop

In the "Start/Stop" menu, you set when and how the measurement should be started and stopped.

The illustrated screens serve as examples. The start / stop types provided can be combined with each other.

The following modes are available:
- Distance-triggered
- Force-triggered
- Digital IN triggered
- Time-triggered (only available with stop type)
Selecting <Distance-triggered> Mode

A measurement is started or stopped as soon as the distance set under Start or Stop is exceeded or fallen short of edge-dependent.

Fig. 30 "Configuration \ Start/Stop" menu

✔ The user is logged in with a suitable user level. The necessary write permissions are available.

1. Tap on Start type or Stop type selection field and select distance-triggered.
2. Tap on Start or Stop input field
   ▶ The numerical keyboard opens.
3. Enter value in [mm] and press the OK button to confirm.
4. Tap on edge type selection field and select whether the Start or Stop of the measurement should begin with rising or falling edge.
5. Tap on Save button to save the values.
Selecting <Force-triggered> Mode

A measurement is started or stopped as soon as the force set under Start or Stop is exceeded or fallen short of edge-dependent.

Fig. 31  "Configuration \ Start/Stop" menu

✓ The user is logged in with a suitable user level. The necessary write permissions are available.

1. Tap on Start type or Stop type selection field and select force-triggered.
2. Tap on Start or Stop input field
   ▶ The numerical keyboard opens.
3. Enter value in [kN] and press the OK button to confirm.
4. Tap on edge type selection field and select whether the Start or Stop of the measurement should begin with rising or falling edge.
5. Tap on Save button to save the values.
Selecting *<Digital IN triggered>*

A measurement is started or stopped via the digital signal.

![Start/Stop menu](image)

Fig. 32  "Configuration \ Start/Stop" menu

✓ The user is logged in with a suitable user level. The necessary write permissions are available.

1. Tap on **Start type** or **Stop type** selection field and select **Digital IN triggered**.
2. Tap on **edge type** selection field and select whether the Start or Stop of the measurement should begin with rising or falling edge.
3. Tap on **Save** button to save the values.
Selecting \textit{<time-triggered>} Mode

A measurement can only be stopped time-triggered.

![Fig. 33 "Configuration \ Start/Stop" menu](image)

- The user is logged in with a suitable user level. The necessary write permissions are available.

1. Tap on \textbf{Start type}> or \textbf{Stop type} selection field and select \textit{time-triggered}.
2. Tap on \textbf{Measurement duration} input field
   - The numerical keyboard opens.
3. Enter value in [s] after which the measurement should be stopped and press the \textbf{OK} button to confirm.
4. Tap on \textbf{Save} button to save the values.
Configuring Switching Points

Several switching points are available, which can be used for different signals (force or distance). The setting for the current program can be copied into other programs.

![Configuration Switching points](image)

**Fig. 34  "Configuration \ Switching points" menu**

The **SP2** switching point can be activated or deactivated via the "IO config" menu. If the switching point is grayed out, the <NOK beeper> function was assigned to the <Digital Out 4> output.

- The user is logged in with a suitable user level. The necessary write permissions are available.

1. Tap on **Signal** field and set the switching point to the required signal.
   - The displayed signal switches between **distance** and **force**.
2. Tap on **value** input field.
   - The numerical keyboard opens.
3. Enter value in the corresponding dimension and press the **OK** button to confirm
4. Tap on **Inv** field and set the switching point to inverse (X) or normal.
5. Tap on **Active** field and activate switching point (ON) or deactivate (OFF).
6. Tap on **Save** button to save the values.
NOK options

If an acknowledgement type was selected, a NOK must be acknowledged before the pressing monitor is ready to measure again.

---

**Fig. 35** "Configuration \ NIO options" menu

<table>
<thead>
<tr>
<th>Button</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>activate NOK buzzer</td>
</tr>
<tr>
<td>2</td>
<td>External NOK acknowledgement</td>
</tr>
<tr>
<td>3</td>
<td>NOK acknowledgement per display</td>
</tr>
</tbody>
</table>
Activating NOK buzzer

activate NOK buzzer and sec. buzzer time can be activated or deactivated via the "IO config" menu. If the entries are grayed out, the <switching point> function was assigned to the <Digital Out 4> output.

✓ The user is logged in with a suitable user level. The necessary write permissions are available.

1. Tap on activate NOK buzzer checkbox to activate beeper.
2. Tap on buzzer time input field.
   ▶ The numerical keyboard opens.
3. Enter value in [s] and press the OK button to confirm.

If the value "0" is entered, the acoustic signal sounds until the NOK is acknowledged.

4. Tap on Save button to save the values.

Activate external NOK acknowledgement

✓ The user is logged in with a suitable user level. The necessary write permissions are available.
✓ NOK acknowledgement per display is not activated.

1. Tap on external NOK acknowledgement checkbox to activate external acknowledgement.
2. Tap on Save button to save the values.

Activating NOK acknowledgement per display

✓ The user is logged in with a suitable user level. The necessary write permissions are available.
✓ external NOK acknowledgement is not activated.

1. Tap on NOK acknowledgement per display checkbox to activate the acknowledgement per display.
2. Tap on authorization level for acknowledgement input field and select user level that can carry out the acknowledgement.
3. Tap on Save button to save the values.
**Hardware**

The following information is displayed in the "Hardware" menu:
- Current process values in real time
- Digital inputs and outputs
- System time and date of the controller
- Serial number of the device hardware

**System**

The current measurement values of all connected sensors are displayed in the "Hardware \ System" menu.
In the "OUT" or "IN" columns, the active inputs and outputs (green) or deactivated inputs and outputs (red) are displayed.

![Diagram of TOX Hardware \ System menu](image)

Fig. 36  "Hardware \ System" menu

<table>
<thead>
<tr>
<th>Button</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Changes to the higher menu</td>
</tr>
<tr>
<td>2</td>
<td>System</td>
</tr>
<tr>
<td>3</td>
<td>Digital inputs/outputs</td>
</tr>
<tr>
<td>4</td>
<td>Controller</td>
</tr>
<tr>
<td>5</td>
<td>Filter</td>
</tr>
</tbody>
</table>
Digital inputs/outputs

Fig. 37  "Hardware \ Digital inputs/outputs" menu

<table>
<thead>
<tr>
<th>Button</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Filter</td>
</tr>
<tr>
<td>2</td>
<td>Controller</td>
</tr>
<tr>
<td>3</td>
<td>Digital inputs/outputs</td>
</tr>
<tr>
<td>4</td>
<td>System</td>
</tr>
<tr>
<td>5</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Designation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>Inputs</td>
</tr>
<tr>
<td>7</td>
<td>Outputs</td>
</tr>
</tbody>
</table>

The function of the occupied input and output is labeled in plain text.

- The user is logged in with a suitable user level. The necessary write permissions are available.
- Tap on the corresponding button of the output.
- The output is activated or deactivated.
Controller

The system time, date as well as serial number of the device hardware is displayed in the "Hardware \ Controller" menu.

Fig. 38 "Hardware \ Controller" menu

<table>
<thead>
<tr>
<th>Button</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Changes to the higher menu</td>
</tr>
<tr>
<td>2</td>
<td>System opens System menu</td>
</tr>
<tr>
<td>3</td>
<td>Digital inputs/outputs opens digital inputs/outputs menu</td>
</tr>
<tr>
<td>4</td>
<td>Controller opens Controller menu</td>
</tr>
<tr>
<td>5</td>
<td>Filter opens Filter menu</td>
</tr>
</tbody>
</table>

Synchronizing the system time of the controller with the system time of the panel PC

✓ The user is logged in with a suitable user level. The necessary write permissions are available.

⇒ Tap on Update BoardTime to Systemtime button.

▶ The system time is synchronized.
Filter

In the "Hardware \ Filter" menu, the signals can be smoothed for displaying the curves with less low-noise. The higher the respective value is, the lower the signal noise.

![Filter menu](image)

**Fig. 39  "Hardware \ Filter" menu**

<table>
<thead>
<tr>
<th>Button</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Undo</td>
</tr>
<tr>
<td>2</td>
<td>Save</td>
</tr>
<tr>
<td>3</td>
<td>Test</td>
</tr>
<tr>
<td>4</td>
<td>Filter</td>
</tr>
<tr>
<td>5</td>
<td>Controller</td>
</tr>
<tr>
<td>6</td>
<td>Digital inputs/outputs</td>
</tr>
<tr>
<td>7</td>
<td>System</td>
</tr>
<tr>
<td>8</td>
<td>Changes to the higher menu</td>
</tr>
</tbody>
</table>

- The user is logged in with a suitable user level. The necessary write permissions are available.

1. Tap on **Filter dimension force** or **Filter dimension distance** input field. The numerical keyboard opens.
2. Enter value and press the **OK** button to confirm.
3. Tap on **Test** button to test the smoothing of the value.
4. Tap on **Save** button to save the values.
9.4.5 Monitoring

Zoom

The user zoom is configured in the "Monitoring \ Zoom" menu.

Zooming is also possible via the "Home Screen" menu.

Fig. 40 "Monitoring \ Zoom" menu

<table>
<thead>
<tr>
<th>Button</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Undo</td>
</tr>
<tr>
<td>2</td>
<td>Reduces zoom factor</td>
</tr>
<tr>
<td>3</td>
<td>Save</td>
</tr>
<tr>
<td>4</td>
<td>Zoom area</td>
</tr>
<tr>
<td>5</td>
<td>Zoom factor</td>
</tr>
<tr>
<td>6</td>
<td>Autozoom</td>
</tr>
<tr>
<td>7</td>
<td>Envelope curve</td>
</tr>
<tr>
<td>8</td>
<td>Windows</td>
</tr>
<tr>
<td>9</td>
<td>Zoom</td>
</tr>
<tr>
<td>10</td>
<td></td>
</tr>
</tbody>
</table>

The following configuration options are available:

- Change the zoom area graphically
- Change zoom area by direct entry of values
Change the zoom area graphically

![Diagram of monitoring zoom](image)

Fig. 41  "Monitoring \ Zoom" menu

**Setting zoom area automatically**

✓ The user is logged in with a suitable user level. The necessary write permissions are available.

⇒ Tap on **Autozoom** button.

**Increasing zoom area**

✓ The user is logged in with a suitable user level. The necessary write permissions are available.

⇒ Tap on **decrease zoom factor** button.
- OR -
  Tap on any spot of the diagram.
Freely defining Zoom Area

✓ The user is logged in with a suitable user level. The necessary write permissions are available.

1. Tap on **zoom area in the marked frame** button.
2. Define the first point of the zoom frame by tapping on the diagram.
3. Define the second opposite point of the zoom frame by tapping again on the diagram.
   ▶ The system zooms to the size of the resulting rectangle.
4. Tap on **Save** button to save the values.
Change zoom area by direct entry of values

In the "Monitoring \ Zoom" menu, the action window is adapted to the corresponding axes via the input fields (min/max).

![Image of "Enter zoom values" menu]

- The user is logged in with a suitable user level. The necessary write permissions are available.

1. Tap on the value of the input field that has to be changed.
   - The numerical keyboard opens.
2. Enter value in [mm] or [kN] and press the OK button to confirm.
3. Change additional values accordingly.
   - The zoom area is adapted accordingly to the entered value.
4. Tap on Save button to save the values.
Windows

In the "Monitoring \ Window" menu, evaluation windows can be created, changed or deleted.

The settings only apply for the current process.

Every window is identified by a number on the frame of the window.

Fig. 43  "Monitoring \ Window" menu

<table>
<thead>
<tr>
<th>Button</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Window type</td>
</tr>
<tr>
<td>2</td>
<td>Windows</td>
</tr>
<tr>
<td>3</td>
<td>Move</td>
</tr>
<tr>
<td>4</td>
<td>Undo</td>
</tr>
<tr>
<td>5</td>
<td>Save</td>
</tr>
<tr>
<td>6</td>
<td>Delete</td>
</tr>
<tr>
<td>7</td>
<td>Window boundary</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Envelope curve</td>
</tr>
<tr>
<td>9</td>
<td>Windows</td>
</tr>
<tr>
<td>10</td>
<td>Zoom</td>
</tr>
<tr>
<td>11</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Right</td>
</tr>
<tr>
<td>13</td>
<td>Left</td>
</tr>
<tr>
<td>14</td>
<td>Bottom</td>
</tr>
<tr>
<td>15</td>
<td>Top</td>
</tr>
</tbody>
</table>
Creating window

Fig. 44 "Create Monitoring \ Window " menu

✓ The user is logged in with a suitable user level. The necessary write permissions are available.

1. Tap on screen at the point where the window should start.
   ▶ A red cross hair appears.

2. Tap on screen at the opposite point where the window should end.
   ▶ A second red cross-hair appears.

3. If the window does not fit: Delete the window by tapping on any point on the screen and define a new window again (steps 1 and 2).

4. Tap on Create window button to create the window.
   ▶ The new window is outlined with a green border.
   ▶ The number of the window is displayed at the bottom left of the frame.

5. Tap on Save button to save the values.
Selecting Window

Fig. 45  “Monitoring \ Window” menu

Only one window can ever be selected. The number of the selected window is displayed in the selected window input field.

✓ The user is logged in with a suitable user level. The necessary write permissions are available.

⇒ Tap the window directly on the screen.

– OR –

1. Tap on Selected window input field.
   ▶ The numerical keyboard opens.
2. Enter window number and press the OK button to confirm.
Moving window

![Monitoring Window](image)

Fig. 46 "Monitoring \ Window" menu

**Move by tapping on the screen**

- The user is logged in with a suitable user level. The necessary write permissions are available.
- The desired window is selected.
  See Selecting Window, Page 86.

1. Tap coordinate on the screen, on which the selected window should be centered.
   ▶ A red cross hair appears.
2. Tap on **Move window** button.
   ▶ The selected window is centered on the red cross-hair.
3. Tap on **Save** button to save the values.

**Moving with arrow keys**

- The user is logged in with a suitable user level. The necessary write permissions are available.
- The desired window is selected.
  See Selecting Window, Page 86.

1. Move selected window using the arrow keys.
2. Tap on **Save** button to save the values.
Changing the size of the window

![Diagram of window settings](image)

**Fig. 47** "Monitoring \ Window" menu

### Changing size of Window using Arrow Keys

- The user is logged in with a suitable user level. The necessary write permissions are available.
- The desired window is selected.
  
  See [Selecting Window, Page 86](#).

1. Tap on **Window boundary** repeatedly until the size of the window to be changed is highlighted in red on the button.
2. Move the window side with the corresponding arrow key.
3. Tap on **Save** button to save the values.

### Changing Size of Window by entering a Value

- The user is logged in with a suitable user level. The necessary write permissions are available.
- The desired window is selected.
  
  See [Selecting Window, Page 86](#).

1. Tap on the input field of the window that is to be changed.
2. Enter values and press the **OK** button to confirm.
3. Tap on **Save** button to save the values.
Changing Window Condition

The measuring curve must enter at the specified entry side of the window and exit at the specified exit side.

Entry side and exit side are freely definable. The first point of intersection of the curve with a window boundary is the entry event, the subsequent point of intersection with a window boundary is the exit event.

Examples:

<table>
<thead>
<tr>
<th>Windows</th>
<th>Mode</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Diagram" /></td>
<td>Curve entry</td>
</tr>
<tr>
<td><img src="image" alt="Diagram" /></td>
<td>Curve exit</td>
</tr>
</tbody>
</table>
Tab. 2  Modes for window boundaries

- The user is logged in with a suitable user level. The necessary write permissions are available.
- The desired window is selected. See Selecting Window, Page 86.

1. Tap on Window boundary repeatedly until the size of the window to be changed is highlighted in red on the button.
2. Tap on Modes button repeatedly until the desired mode is displayed.
3. Tap on Save button to save the values.
Delete window

Windows that are no longer needed or which were created incorrectly can be deleted.

Fig. 50 "Monitoring \ Window" menu

- The user is logged in with a suitable user level. The necessary write permissions are available.
- The window which is to be moved is selected. See Selecting Window, Page 86.

1. Tap on **Delete** button.
   - The selected window is deleted.

2. Tap on **Save** button to save the values.
Acute NOK

By activating the Acute NOK option, the <Acute NOK> output is set if the window is violated.

![Diagram of Monitoring Window menu](image)

**Fig. 51** "Monitoring \ Window" menu

- The user is logged in with a suitable user level. The necessary write permissions are available.
- The desired window is selected. See Selecting Window, Page 86.

1. Activate option by tapping on the checkbox.
2. Tap on **Save** button to save the values.
Envelope curve

In the "Monitoring \ Envelope curve" menu, the envelope curve can be configured.

![Envelope curve menu](image)

Fig. 52 "Monitoring \ Envelope curve" menu

The envelope curve is used wherever fast teaching-in of evaluation elements is required.

The measuring curve must run through the envelope curve and not violate the boundary lines in the process.

Switching envelope curve edit mode on/off

- The user is logged in with a suitable user level. The necessary write permissions are available.

- Tap on On/Off button to switch the function on or off.
Teaching-in/Activating Envelope Curve

In the <Teach-in> mode, the measured curves are recorded and the enveloping boundaries (top/bottom envelope curve) are formed.

- The user is logged in with a suitable user level. The necessary write permissions are available.
- Edit mode is switched on.
  See Switching envelope curve edit mode on/off, Page 93.

1. Tap on **Teach-in** button.
2. Execute work process at least 15 times.
   - Several curves are recorded.
3. Tap on **X Min** input field to define entry coordinates of the curve.
   - The numerical keyboard opens.
4. Enter value in [mm].
5. Press the **OK** button to confirm.
6. Tap on **X Max** input field to define exit coordinates of the curve.
   - The numerical keyboard opens.
7. Enter value in [mm].
8. Press the **OK** button to confirm.
9. Enter shift of the top boundary via the **top** input field. The boundary line is thereby shifted accordingly.
10. Enter shift of the bottom boundary via the **bottom** input field. The boundary line is thereby shifted accordingly.
11. Tap on **Save** button to save the values.
12. Tap on the **Evaluate** button to exit teaching-in and to switch to the <Evaluate> mode.

- The envelope curve is now monitored actively.
<Confirmation> Option

✓ The user is logged in with a suitable user level. The necessary write permissions are available.
✓ Edit mode is switched on.
   See Switching envelope curve edit mode on/off, Page 93.
✓ Teach-in mode is activated.

1. Tap on Confirmation button.
   ▶ Recorded curve is used for teaching-in.
2. Tap on add button.
   ▶ Recorded curve is added for teaching-in.

Deleting Envelope Curve

✓ The user is logged in with a suitable user level. The necessary write permissions are available.
✓ Edit mode is switched on.
   See Switching envelope curve edit mode on/off, Page 93.

1. Tap on Delete button to delete the envelope curve.
2. Tap on Save button to save the values.

Supplementing Envelope Curve

✓ The user is logged in with a suitable user level. The necessary write permissions are available.
✓ Edit mode is switched on.
   See Switching envelope curve edit mode on/off, Page 93.

1. Tap on Evaluate button.
2. Tap on add button.
   ▶ The envelope curve is supplemented by a recorded curve outside the boundary.
9.4.6 Counters

![Counter Menu](image)

**Fig. 53** Menu “Counter”

<table>
<thead>
<tr>
<th>Button</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Reset</td>
</tr>
<tr>
<td>2</td>
<td>Save</td>
</tr>
<tr>
<td>3</td>
<td>NOK seq counter</td>
</tr>
<tr>
<td>4</td>
<td>Tool counter</td>
</tr>
<tr>
<td>5</td>
<td>Shift counter</td>
</tr>
<tr>
<td>6</td>
<td>Job counter</td>
</tr>
<tr>
<td>7</td>
<td>Changes to the higher menu</td>
</tr>
</tbody>
</table>

All counters contain the following values:

- Good parts: Value increases after each measurement completed with OK.
- Bad parts: Value increases after each measurement completed with NOK.
- Total parts: Value increases after each measurement and is the total of good parts and bad parts.
Job Counter/Shift Counter

In the "Counter \ Job counter" or "Shift counter" menu, the respective counter states are displayed for the current job or current shift.

![Counter \ Job counter menu](image)

Fig. 54  "Counter \ Job counter" menu

<table>
<thead>
<tr>
<th>Field</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Type</td>
</tr>
<tr>
<td>2</td>
<td>Counter value</td>
</tr>
<tr>
<td>3</td>
<td>Message at</td>
</tr>
<tr>
<td>4</td>
<td>Stop at</td>
</tr>
</tbody>
</table>
Tool counter

In the "Counter \ Tool counter" menu, the counter value is displayed for the current tool.

**Fig. 55  "Counter \ Tool counter" menu**

<table>
<thead>
<tr>
<th>Field</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Type</td>
</tr>
<tr>
<td>2</td>
<td>Counter value</td>
</tr>
<tr>
<td>3</td>
<td>Message at</td>
</tr>
<tr>
<td>4</td>
<td>Stop at</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Field</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Part type</td>
</tr>
<tr>
<td>2</td>
<td>Current value of the respective part type</td>
</tr>
<tr>
<td>3</td>
<td>Number of parts until a message is generated.</td>
</tr>
<tr>
<td>4</td>
<td>Number of parts when the system shuts down.</td>
</tr>
</tbody>
</table>
NOK seq counter

In the "Counter \ NOK seq counter" menu, the NOK components produced in succession are counted.

<table>
<thead>
<tr>
<th>Field</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Type</td>
</tr>
<tr>
<td>2</td>
<td>Counter value</td>
</tr>
<tr>
<td>3</td>
<td>Message at</td>
</tr>
<tr>
<td>4</td>
<td>Stop at</td>
</tr>
</tbody>
</table>

Fig. 56  "Counter \ NOK seq counter" menu

Setting Message

A value can be entered for each part type via the Message at input field. Once the counter value reaches the value, a message is issued. The value <0> deactivates the option and no message is issued.

✓ The user is logged in with a suitable user level. The necessary write permissions are available.

1. Tap on Message at input field of the corresponding part type.
2. Enter trigger value and press the OK button to confirm.
3. Tap on Save button to save the values.
Setting Stop

A value can be entered for each part type via the **Stop at** input field. Once the counter value reaches the value, the system shuts down and a corresponding message is issued.

As soon as the counter value is reached, the <ready to measure> signal for the following measurement is not set. A counter value message (with a red background) is issued.

Tapping on the **Reset** button resets the counter. After that, the next measurement can be continued.

The value <0> deactivates the corresponding option. The system is not shut down and no message is issued.

✔ The user is logged in with a suitable user level. The necessary write permissions are available.

1. Tap on **Stop at** input field of the corresponding part type.
2. Enter trigger value and press the **OK** button to confirm.
3. Tap on **Save** button to save the values.

Reset counter limit

✔ The user is logged in with a suitable user level. The necessary write permissions are available.

➔ Tap on **Reset** button.

▵ The counter values are reset.

Displaying Counter in Main Screen

The corresponding counter can be displayed in the "Channel cockpit" menu via the option **Display counter in main screen**.

✔ The user is logged in with a suitable user level. The necessary write permissions are available.

1. Tap on **Display counter in main screen** input field.
   ➔ The counter is displayed in the main screen.
2. Tap on **Save** button to save the values.
9.4.7 Processes

A process can either be selected by an external PLC or in the "Processes" menu.

Processes

![Fig. 57 "Processes \ Processes" menu](image)

Selecting Processes

Selection by entering a Value

- The user is logged in with a suitable user level. The necessary write permissions are available.

1. Tap on process number input field.
   - The numerical keyboard opens.
2. Enter process number and press the OK button to confirm.
3. Tap on Save button to save the values.
Selection by Function Buttons

✔ The user is logged in with a suitable user level. The necessary write permissions are available.

1. Select process by tapping the <-> or <+> buttons.
2. Tap on Save button to save the values.

Assigning Process Name

A name can be assigned for each process.

✔ The user is logged in with a suitable user level. The necessary write permissions are available.

1. Select process.
2. Tap on process name input field.
   ▶ The alphanumeric keyboard opens.
3. Enter process name and press the OK button to confirm.
4. Tap on Save button to save the values.
Copy

In the "Process \ Copy" menu, process parameters can be copied from a source process to several target processes.

![Menu "Process \ Copy"](image)

Fig. 58 Menu "Process \ Copy"

1. Tap on **source process** input field.
   - The numerical keyboard opens.
2. Enter source process number and press the **OK** button to confirm.
3. Tap on **target process** input field.
   - The numerical keyboard opens.
4. Enter process number of the first target process.
5. Tap on **target processes to** input field.
   - The numerical keyboard opens.
6. Enter the process number of the last target process.
7. Select the process parameters to be copied by tapping on the checkbox.
8. **NOTE!** Data loss! The old process settings in the target process are overwritten by copying.
    Start copying process by tapping on the **Copy** button.
Example

The data from source process <0> are to be copied to the target processes <1> to <2>.

1. Enter the process number <0> in source process input field.
2. Enter the process number <1> in target process input field.
3. Enter the process number <2> in target processes to input field.
4. Select the process data to be copied.
5. Start copying process by tapping on the Copy button.

Saving/Loading

In the "Processes \ Save/Load" menu, process parameters can be saved on or loaded from an external data carrier (e.g. USB stick).

Copying Process Parameters

- The user is logged in with a suitable user level. The necessary write permissions are available.
- An external data medium is connected.

- Tap on Save parameters to USB stick button.
- All parameters and processes are saved on the connected data carrier.
Loading Process Parameters

✓ The user is logged in with a suitable user level. The necessary write permissions are available.
✓ An external data carrier is connected

NOTE

Data loss!
When the data of the data carrier is loaded to the TOX®-pressing monitor, all processes and parameters are overwritten.

1. Tap on Load parameters from USB stick button.
2. Select dataset to be loaded and press the OK button to confirm.
9.4.8 System

Assigning Device Name

If several pressing monitors are used, it is recommendable to assign a unique name for each device. If data is saved on a USB stick, this device name is used in the file name. This enables the imported data to be uniquely assigned.
The user is logged in with a suitable user level. The necessary write permissions are available.

1. Tap on **Device name** input field.
   ▶ The alphanumeric keyboard opens.
2. Enter device name and press the **OK** button to confirm.
3. Tap on **Save** button to save the values.

### Changing Language

![“System \ Language” menu](image)

Fig. 61 "System \ Language" menu

In the "System \ Language" menu, you have the option to change the user interface language.

✓ The user is logged in with a suitable user level. The necessary write permissions are available.

➤ Tap on the desired language to select it.

➤ The selected language will be available immediately
Configuring Communication

In the "communication" menu, the Ethernet IP address can be configured.

![Fig. 62 "system \ communication \ IP address" menu](image)

**Defining IP address via the DHCP protocol**

- The user is logged in with a suitable user level. The necessary write permissions are available.

  ➞ Tap on **DHCP** checkbox.

**Defining IP Address by entering a Value**

- The user is logged in with a suitable user level. The necessary write permissions are available.

1. Tap on the first input field of the **IP address** group, enter the first three digits of the IP address to be used and press the **OK** button to confirm.
   - The numerical keyboard opens.
2. Repeat the procedure for all input fields in the **IP address** group.
3. Repeat point 2 and 3 to enter the **Subnet mask** and **Default Gateway**.
4. Tap on **Save** button to save the values.
Setting Date/Time

In the "System \ Date/Time" menu, the device time and device date can be configured.

!["System \ Date/Time" menu]

- The user is logged in with a suitable user level. The necessary write permissions are available.

1. Tap on the Time or Date input fields.
   - The numerical keyboard opens.
2. Enter values in the corresponding fields and press the OK button to confirm.
3. Tap on Save button to save the values.
Configuring Display

In the "System \ Display" menu, the settings for the display in the "Channel Cockpit" menu are performed.

![Fig. 64 "System \ Display" menu](image)

- The user is logged in with a suitable user level. The necessary write permissions are available.

1. Select the number of curves to be displayed by tapping on the selection list.
2. Select whether switching points should be displayed in the diagram.
3. Tap on Save button to save the values.

Displaying Version

In the "System \ Version" menu, the installed SW versions are displayed.

- Operating system
- Dot Net runtime environment
- Software
- Firmware
- Image Version
Displaying/Exporting Operating Instructions

Displaying Operating Instructions

✓ The user is logged in with a suitable user level. The necessary write permissions are available.

➢ Tap on Display operating instructions button.

Exporting Operating Instructions

✓ The user is logged in with a suitable user level. The necessary write permissions are available.
✓ External data carrier is connected.

➢ Tap on Export operating instructions button

► The operating instructions are saved on an external data carrier.

Fig. 65  “System \ Version” menu
Updating Software

**NOTE**

Loss of data by disconnecting the device from the supply voltage!

→ Do not disconnect the device from the supply voltage during the update

✓ The user is logged in with a suitable user level. The necessary write permissions are available.
✓ The device runs for at least 3 minutes.

1. Unpack ZIP file and copy "EPW500Update" folder to USB stick.
2. Connect USB stick to the device.
3. Tap on **update** button to update the installed software.

Updating Updater

✓ The user is logged in with a suitable user level. The necessary write permissions are available.

→ Tap on **update updater** button to update the software installation program.
9.4.9 User

In the "user" menu, the authorizations for the respective menus are configured, e.g. whether buttons or input fields are active. After each startup, the program is at the lowest authorization level.

![Image of the user menu]

**Fig. 66 "user" menu**

<table>
<thead>
<tr>
<th>Button</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Login</td>
</tr>
<tr>
<td>2</td>
<td>Undo</td>
</tr>
<tr>
<td>3</td>
<td>Save</td>
</tr>
<tr>
<td>4</td>
<td>Changes to the higher menu</td>
</tr>
<tr>
<td>5</td>
<td>Change password</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Button</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Login for the authorizations</td>
</tr>
<tr>
<td>2</td>
<td>Undoes the entry</td>
</tr>
<tr>
<td>3</td>
<td>Saves the entry</td>
</tr>
<tr>
<td>4</td>
<td>Changes to the higher menu</td>
</tr>
<tr>
<td>5</td>
<td>Changes password</td>
</tr>
</tbody>
</table>
Changing User Management/Access Authorization

The pressing monitor has an authorization management system that can limit or enable different operating options and configuration options.

![User Login dialog](image)

**Fig. 67** "User Login" dialog

<table>
<thead>
<tr>
<th>Authorization</th>
<th>Description</th>
<th>Password</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level 1</td>
<td>Configuration</td>
<td>TOX1</td>
</tr>
<tr>
<td>Level 2</td>
<td>Configuration (system, settings)</td>
<td>TOX2</td>
</tr>
<tr>
<td>Level 3</td>
<td>Configuration (Service)</td>
<td>TOX3</td>
</tr>
</tbody>
</table>

1. Tap on **login** button.
   - The "User Login" dialog opens.

2. Tap on **user name** selection field and select authorization level.
   - The description and user group is displayed in the corresponding fields.

3. Tap on **password** input field.
   - The alphanumeric keyboard opens.

4. Enter password of the authorization level and press the **OK** button to confirm.
   - If the password was entered correctly, the selected authorization level is active.
   - OR -
   - If the password was entered incorrectly, a message will appear and the login procedure will be canceled.
9.4.10 Data

Final values

In the "Data \ Final values" menu, the final imported values of a measurement in the internal memory are listed.

Fig. 68 "Data \ Final values" menu

<table>
<thead>
<tr>
<th>Button</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Save</td>
</tr>
<tr>
<td>2</td>
<td>Memory</td>
</tr>
<tr>
<td>3</td>
<td>Settings</td>
</tr>
<tr>
<td>4</td>
<td>Curve data</td>
</tr>
<tr>
<td>5</td>
<td>Final values</td>
</tr>
<tr>
<td>6</td>
<td>Changes to the higher menu</td>
</tr>
</tbody>
</table>

After each measurement, a final value dataset is saved in the internal memory. This dataset includes the following information:

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>No.</td>
<td>Number of the measurement. 1000 final values are stored in a circular buffer, i.e. with each new measurement, the oldest dataset (= no. 999) is discarded and the newest is added (last measurement = no. 0).</td>
</tr>
<tr>
<td>ID</td>
<td>Identification Number Each measurement is indicated with a unique consecutive number.</td>
</tr>
<tr>
<td>Prg.</td>
<td>Program used</td>
</tr>
<tr>
<td>Parameters</td>
<td>Description</td>
</tr>
<tr>
<td>----------------</td>
<td>--------------------------------------</td>
</tr>
<tr>
<td>Status</td>
<td>Measurement OK (green)</td>
</tr>
<tr>
<td></td>
<td>Measurement NOK. (red)</td>
</tr>
<tr>
<td>Max. force</td>
<td>maximum force</td>
</tr>
<tr>
<td>Max. distance</td>
<td>maximum distance</td>
</tr>
<tr>
<td>measurement</td>
<td>Date (dd/mm/yyyy) and time (hh:mm:ss)</td>
</tr>
<tr>
<td>time</td>
<td></td>
</tr>
</tbody>
</table>

✓ The user is logged in with a suitable user level. The necessary write permissions are available.

1. Connect external data carrier.
2. Tap on **Export** button.

▶ The data is copied to the connected data carrier.
Curve data

In the "Data \ Curve data" menu, the curve data can be saved. This window contains a list of the value pairs recorded in the internal memory (distance/force) of the last measuring curve.

<table>
<thead>
<tr>
<th>Button</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Save</td>
</tr>
<tr>
<td>2</td>
<td>Save</td>
</tr>
<tr>
<td>3</td>
<td>Memory</td>
</tr>
<tr>
<td>4</td>
<td>Settings</td>
</tr>
<tr>
<td>5</td>
<td>Curve data</td>
</tr>
<tr>
<td>6</td>
<td>Final values</td>
</tr>
<tr>
<td>7</td>
<td>Changes to the higher menu</td>
</tr>
</tbody>
</table>

Fig. 69 "Data \ Curve data" menu

After each measurement, the curve data is saved in the internal memory. This dataset includes the following information:

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>No.</td>
<td>Number of the measurement. 100 curve data are stored in a circular buffer, i.e. with each new measurement, the oldest dataset (= no. 99) is discarded and the newest is added (last measurement = no. 0).</td>
</tr>
<tr>
<td>ID</td>
<td>Identification Number Each measurement is indicated with a unique consecutive number.</td>
</tr>
<tr>
<td>Prg.</td>
<td>Program used</td>
</tr>
<tr>
<td>Status</td>
<td>Measurement OK (green) Measurement NOK. (red)</td>
</tr>
<tr>
<td>Parameters</td>
<td>Description</td>
</tr>
<tr>
<td>------------------</td>
<td>--------------------------------------</td>
</tr>
<tr>
<td>Max. force</td>
<td>maximum force</td>
</tr>
<tr>
<td>Max. distance</td>
<td>Maximum distance</td>
</tr>
<tr>
<td>Measure Time</td>
<td>Date (dd/mm/yyyy) and time (hh:mm:ss)</td>
</tr>
</tbody>
</table>

- The user is logged in with a suitable user level. The necessary write permissions are available.
- In the "Data \ Settings" menu, the storage of the curve data is activated.
- External data carrier is connected.

- Tap on **Export** button.
  - OR -
  tap on **Single Export** button.

- The recorded curve data is saved on an external data carrier.
Settings

In the "Data \ Settings" menu, you can configure whether data should be saved on an external data carrier or network drive during the export and which data (none, all data, NOK data or OK data).

After the export, the data is available as a CSV file in the corresponding directories.

!["Data \ Settings" menu](image)

**Fig. 70  "Data \ Settings" menu**

<table>
<thead>
<tr>
<th>Button</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Undo</td>
</tr>
<tr>
<td>2</td>
<td>Save</td>
</tr>
<tr>
<td>3</td>
<td>Memory</td>
</tr>
<tr>
<td>4</td>
<td>Settings</td>
</tr>
<tr>
<td>5</td>
<td>Curve data</td>
</tr>
<tr>
<td>6</td>
<td>Final values</td>
</tr>
<tr>
<td>7</td>
<td></td>
</tr>
</tbody>
</table>

The following values can be selected:

- None
- Only OK
- Only NOK
- all
Selecting Values

✔ The user is logged in with a suitable user level. The necessary write permissions are available.

1. Tap on the corresponding selection field and select the desired value.
2. Tap on Save button to save the values.

Selecting CSV Separator

✔ The user is logged in with a suitable user level. The necessary write permissions are available.

1. Tap on CSV separator selection list and select the desired separator.
2. Tap on Save button to save the values.

Selecting Decimal Separator

✔ The user is logged in with a suitable user level. The necessary write permissions are available.

1. Tap on Decimal separator selection list and select the desired separator.
2. Tap on Save button to save the values.
Network Drive/USB Stick

All data (final values/curve data) can be retrieved via a network drive or saved to a USB stick.

During high production frequency, the memory expansion should be used as memory location.

The local network and security guidelines must be configured in such a way that communication is not impaired.

Data of the last 10 days are stored in a ring memory in the corresponding folders.

<table>
<thead>
<tr>
<th>Folder</th>
<th>Memory</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>EPWCurveExp</td>
<td>Internal</td>
<td>A folder with a corresponding date is created per working day. A folder with corresponding names is created below the day folder for each hour. Each stored curve is filed there as a CSV file with a corresponding date/time. The folder can contain a maximum of 1000 files. If more than 1000 data sets are created, these data sets are written in a new folder.</td>
</tr>
<tr>
<td>EPWCurveExt</td>
<td>External</td>
<td>A folder with a corresponding date is created per working day. A folder with corresponding names is created below the day folder for each hour. Each stored curve is filed there as a CSV file with a corresponding date/time. The folder can contain a maximum of 1000 files. If more than 1000 data sets are created, these data sets are written in a new folder.</td>
</tr>
<tr>
<td>EPWFinValExp</td>
<td>Internal</td>
<td>A CSV file with a corresponding date is created per working day. All final values together with a corresponding identification are stored in this file</td>
</tr>
<tr>
<td>EPWFinValExt</td>
<td>External</td>
<td>A CSV file with a corresponding date is created per working day. All final values together with a corresponding identification are stored in this file</td>
</tr>
<tr>
<td>Temp</td>
<td>External</td>
<td>Temporary folder</td>
</tr>
</tbody>
</table>
Network Drive/USB Stick Data Access

If the option save final values on network drive or save curve data on network drive was selected in the "Data\ Settings" menu, the data can be accessed as follows.

✔ The user is logged in with a suitable user level. The necessary write permissions are available.

➔ Open Windows®-Explorer, enter the IP address of the device and press the Enter button to confirm.

▷ All corresponding folders will be displayed

![Network drive folder](image)

Fig. 71 Network drive folder
Memory

In the "Data\ Memory" menu, an external memory expansion (USB stick) can be initialized and selected.

During high production frequency, the memory expansion should be used as memory location. See "Data \ Memory, Page 123" menu

The local network and security guidelines must be configured in such a way that communication is not impaired.

Selecting Memory Location for Usage Data

Fig. 72  "Data \Memory" menu

<table>
<thead>
<tr>
<th>Button</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Save</td>
<td>Saves the entry</td>
</tr>
<tr>
<td>2 Undo</td>
<td>Undoes the entry</td>
</tr>
<tr>
<td>3 Memory</td>
<td>Opens Memory menu</td>
</tr>
<tr>
<td>4 Settings</td>
<td>Opens Settings menu</td>
</tr>
<tr>
<td>5 Curve data</td>
<td>Opens Curve data menu</td>
</tr>
<tr>
<td>6 Final values</td>
<td>Opens Final values menu</td>
</tr>
<tr>
<td>7</td>
<td>Changes to the higher menu</td>
</tr>
</tbody>
</table>

Table: Button Functions
The user is logged in with a suitable user level. The necessary write permissions are available.

USB stick is inserted.

1. Tap on **Initialize memory expansion** to enable external memory expansion.
2. Tap on **memory location for usage data** selection list and select "internal memory" or "memory expansion" memory location.
3. Tap on **storage interval for counter** selection list and select time interval.
4. Tap on **Save** button to save the values.

- Memory expansion is activated after restarting.
10 Troubleshooting

10.1 Detecting faults

Faults are displayed as alarms on the pressing monitor. Depending on the type of fault, the alarms are displayed as errors or warnings.

<table>
<thead>
<tr>
<th>Alarm Type</th>
<th>Display</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Warning</td>
<td>Text with an orange background in the information and status display of the device.</td>
<td>--</td>
</tr>
<tr>
<td>Fault</td>
<td>Text with a red background in the information and status display of the device.</td>
<td>The next measurement is disabled and must be eliminated and acknowledged.</td>
</tr>
</tbody>
</table>

10.1.1 Acknowledging Messages

1. Tap on error symbol.
   ▶ The dialog with all error messages opens.

2. Tap on Ackn all button to acknowledge the pending error messages.
   - OR -
   tap on Cancel button to close the dialog without acknowledging the error messages.
## 10.1.2 Error messages

<table>
<thead>
<tr>
<th>Fault</th>
<th>Cause</th>
<th>Measure</th>
</tr>
</thead>
<tbody>
<tr>
<td>0001 (HMI RTC time invalid)</td>
<td>Time (panel PC) incorrect</td>
<td>Correct the time (panel PC) in the settings.</td>
</tr>
<tr>
<td>0001 (HMI RTC time invalid)</td>
<td>Buffer battery (panel PC) is fully discharged</td>
<td>For spontaneous further operation correct PC time synchronization in Settings. Replace the buffer battery (panel PC)</td>
</tr>
<tr>
<td>0002 (Controller RTC time invalid)</td>
<td>Time (hardware) is incorrect</td>
<td>Synchronize time (hardware) with PC time.</td>
</tr>
<tr>
<td>0002 (Controller RTC time invalid)</td>
<td>Time (PC) is incorrect</td>
<td>Correct the time of the PC in the settings.</td>
</tr>
<tr>
<td>0002 (Controller RTC time invalid)</td>
<td>Buffer battery (hardware) is fully discharged</td>
<td>Buffer battery (replace the hardware).</td>
</tr>
</tbody>
</table>
11 Maintenance

11.1 Maintenance and repair

The recommended time intervals for inspection work and maintenance work must be observed.

The correct and proper repair of the TOX® PRESSOTECHNIK product can only be assured by appropriately trained specialists. The operating company or the personnel in charge of the repair must ensure that the repair personnel are properly trained in the repair of the product.

The repairers themselves are always responsible for the work safety.
11.2 Safety during maintenance

The following applies:

- Observe maintenance intervals if present and stipulated.
- Maintenance intervals may vary from the stipulated maintenance intervals.
  The maintenance intervals may have to be verified with the manufacturer if necessary.
- Perform only maintenance work that is described in this manual.
- Inform operating personnel before starting repair work.
- Appoint a supervisor.

11.3 Maintenance schedule

The operating company is responsible for compliance with the maintenance schedules and documentation of maintenance.

1. Ensure that all maintenance work is performed at the intervals specified in the maintenance schedule.
2. Records of completed maintenance work must be kept.

At the end of the chapter is the maintenance table with the maintenance cycles.
11.4 Controller Battery Change

TOX® PRESSOTECNIK recommends a battery change after 10 years at the latest.

- Device is de-energized.
- Person is electrostatically discharged.
- Electrically **non** conductive tool for removing the battery.

![Diagram of controller battery change](image)

1. Cheese head screw
2. Housing
3. Battery
4. Panel PC

**Fig. 73** Opened housing

1. Loosen and remove cheese-head screws.
2. Remove panel PC from the housing.
3. **NOTE!** equipment damage due to short-circuit!
   - Remove lithium battery using an electrically **non** conductive tool.
4. Install new lithium battery in the correct polarity.
5. Reinsert panel PC into the housing and assemble using the cheese-head screws.
11.5 Panel PC Battery Change

TOX® PRESSOTECHNIK recommends a battery change after 10 years at the latest.

✓ Device is de-energized.
✓ Person is electrostatically discharged.
✓ Electrically non conductive tool for removing the battery.
✓ A scratch-free base for placing the screen onto.

![Diagram](image)

Fig. 74  Opened housing

1. Loosen and remove cheese-head screws.
2. Remove panel PC from the housing and place it onto a scratch-free surface with the screen facing downwards.
3. Remove screws and threaded bolts.
4. **NOTE!** Equipment damage due to short-circuit! Remove cover and lithium battery using an electrically **non** conductive tool.

5. Install new lithium battery in the correct polarity.
6. Install cover and fasten using the screws and threaded bolts.
7. Reinsert panel PC into the housing and assemble using the cheese-head screws.
Maintenance table

The specified intervals are only approximate values. Depending on the area of application, the actual values may differ from the guide values. The actual intervals can be found in the system control.

<table>
<thead>
<tr>
<th>Maintenance cycle</th>
<th>Additional information</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 years</td>
<td></td>
</tr>
<tr>
<td>11.4</td>
<td>Controller Battery Change</td>
</tr>
<tr>
<td>11.5</td>
<td>Panel PC Battery Change</td>
</tr>
</tbody>
</table>
12 Repairs

12.1 Repair work

No repair work is necessary.
13 Disassembly and Disposal

13.1 Safety requirements for disassembly

Have the disassembly carried out by qualified personnel.

13.2 Disassembly

1. Shut down system or component.
2. Disconnect system or component from the supply voltage.
3. Remove all connected sensors, actuators or components.
4. Disassemble system or component.

13.3 Disposal

When disposing of packaging, consumables and spare parts, including the machine and its accessories, the relevant national environmental protection regulations must be complied with.
14 Appendices

14.1 Declaration of conformity
EU DECLARATION OF CONFORMITY

Original EU declaration of conformity

The manufacturer TOX® PRESSOTECHNIK GmbH & Co. KG declares herewith that the following product

Designation/function Process monitoring
Product name/module EPW
Model/type 500-FP
Serial number see type plate
Description Device for the process monitoring of pressing and joining processes by means of a force/displacement diagram as a compact device for table, wall or support arm assembly

complies with all relevant provisions of the applicable legislation (indicated below), including any changes in force at the moment of the declaration.
The Manufacturer is solely responsible for the issue of this Declaration of Conformity.

Applied EU legislation:
2014/30/EU EMC Directive
2011/65/EU RoHS Directive

Applied harmonized standards:
DIN EN 61326-1:2013-07 Electrical equipment for measurement, control and laboratory use - EMC requirements - Part 1: General Requirements
DIN EN 61326-2-1:2013-08 Electrical equipment for measurement, control and laboratory use - EMC requirements - Part 2-1: Particular requirements - Test configurations, operational conditions and performance criteria for sensitive test and measurement equipment for EMC unprotected applications
DIN EN IEC 63000:2019-05 Technical documentation for assessing electric and electronic devices with regard to the limitation of hazardous substances

Place and date Weigarten, September 21, 2021
Manufacturer TOX® Pressotechnik GmbH & Co. KG

Signature

Information on the signatory Stefan Katzenmaier
Component and Region Sales Manager
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<tr>
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<td>19</td>
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<tr>
<td>device name</td>
<td>106</td>
</tr>
<tr>
<td>dialog</td>
<td></td>
</tr>
<tr>
<td>Keyboard</td>
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</tr>
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<td>48</td>
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</tr>
<tr>
<td>Input</td>
<td>27</td>
</tr>
<tr>
<td>Output</td>
<td>27</td>
</tr>
<tr>
<td>Digital IN triggered</td>
<td>71</td>
</tr>
<tr>
<td>Dimensions</td>
<td>21</td>
</tr>
<tr>
<td>Disassembly</td>
<td>137</td>
</tr>
<tr>
<td>Safety</td>
<td>137</td>
</tr>
<tr>
<td>Dispatch</td>
<td></td>
</tr>
<tr>
<td>Repair</td>
<td>35</td>
</tr>
<tr>
<td>display</td>
<td></td>
</tr>
<tr>
<td>Configur</td>
<td>110</td>
</tr>
<tr>
<td>Operating instructions</td>
<td>111</td>
</tr>
<tr>
<td>Software version</td>
<td>110</td>
</tr>
<tr>
<td>Disposal</td>
<td>137</td>
</tr>
<tr>
<td>distance</td>
<td></td>
</tr>
<tr>
<td>Change</td>
<td>65</td>
</tr>
<tr>
<td>Rising</td>
<td>59, 63</td>
</tr>
<tr>
<td>Rising or falling</td>
<td>61</td>
</tr>
<tr>
<td>Distance sensor</td>
<td>25</td>
</tr>
<tr>
<td>Adjust offset</td>
<td>55</td>
</tr>
<tr>
<td>Distance-triggered</td>
<td>69</td>
</tr>
<tr>
<td>DMS</td>
<td>23</td>
</tr>
<tr>
<td>DMS Characteristic Value</td>
<td></td>
</tr>
<tr>
<td>Configure</td>
<td>58</td>
</tr>
<tr>
<td>DMS signals</td>
<td>33</td>
</tr>
<tr>
<td>Document</td>
<td></td>
</tr>
<tr>
<td>additional</td>
<td>8</td>
</tr>
<tr>
<td>Validity</td>
<td>8</td>
</tr>
<tr>
<td>envelop curve</td>
<td>94</td>
</tr>
<tr>
<td>Teach-in</td>
<td></td>
</tr>
<tr>
<td>envelope curve</td>
<td>95</td>
</tr>
<tr>
<td>Delete</td>
<td></td>
</tr>
<tr>
<td>Supplement</td>
<td>95</td>
</tr>
<tr>
<td>Switch off</td>
<td>93</td>
</tr>
<tr>
<td>Switch on</td>
<td>93</td>
</tr>
<tr>
<td>Environmental conditions</td>
<td>32</td>
</tr>
<tr>
<td>Error message</td>
<td>126</td>
</tr>
<tr>
<td>Ethernet RJ45</td>
<td>29</td>
</tr>
<tr>
<td>Exclusion of liability</td>
<td>7</td>
</tr>
<tr>
<td>export</td>
<td></td>
</tr>
<tr>
<td>CSV separator</td>
<td>120</td>
</tr>
<tr>
<td>Decimal separator</td>
<td>120</td>
</tr>
<tr>
<td>Network drive</td>
<td>121</td>
</tr>
<tr>
<td>Operating instructions</td>
<td>111</td>
</tr>
<tr>
<td>Settings</td>
<td>119</td>
</tr>
<tr>
<td>USB stick</td>
<td>121</td>
</tr>
<tr>
<td>Values</td>
<td>120</td>
</tr>
<tr>
<td>faults</td>
<td>125</td>
</tr>
<tr>
<td>Detect</td>
<td></td>
</tr>
<tr>
<td>force</td>
<td>65</td>
</tr>
<tr>
<td>Change</td>
<td></td>
</tr>
<tr>
<td>Rising</td>
<td>63</td>
</tr>
<tr>
<td>force sensor</td>
<td></td>
</tr>
<tr>
<td>Adjust offset</td>
<td>55</td>
</tr>
<tr>
<td>DMS</td>
<td>23</td>
</tr>
<tr>
<td>Standard input</td>
<td>24</td>
</tr>
<tr>
<td>Force-triggered</td>
<td>70</td>
</tr>
<tr>
<td>function</td>
<td></td>
</tr>
<tr>
<td>Software</td>
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