DESIGO™ I/O modules

Status display unit PHM1.36TL
with P-bus connection

Status display unit
• for connections to automation stations with P-bus
• for status indication of up to 24 messages
• for remote control of up to 12 operating points in plants or in plant elements

Use
• Optical status indication for individual operational and/or fault status signals on the control panel front or outside of the control panel.
  Examples for status signals:
  – fire protection dampers
  – burners
  – fans
  – pumps
  – chillers
  – elevators, etc.
• Remote control to switch plants or plant elements, for example:
  – operating mode switch
  – acknowledge button
  – temporary button to extend business hours
• The status display unit can be connected to automation stations with P-bus, which support the status display unit on the software side. Refer to "Equipment combination".
**Type summary**

**Status display unit**

PHM1.36TL

**Delivery**

The status display unit is delivered separately. The delivery contains a mounting bracket for control panel face mounting.

**Accessory**

Bar for en-suite mounting of status display units panel face (order separately).

PHZ1.01

**Equipment combinations**

**Automation stations**

The status display unit can be connected to automation stations with P-bus, which support the I/O functions on the software side. Refer to document Z8102, "Basics of the I/O module system" or to data sheet N8100 "I/O module range".

**Functions**

**Status indication**

Conversion of the P-bus signals from the automation station into signals for the LED's. Assignment of status signals to the LED's is accomplished via the automation station's software configuration.

**Remote control**

Conversion of push button activation at the status display units to P-bus telegrams for further processing in the automation station. The push buttons' function is determined via the automation station's software configuration.

**LED test**

Testing of all LED's by pushing the LED test button. Other functions and time-related processes are not affected during an LED test.

**LED indication**

LED indication and the associated operating statuses:

<table>
<thead>
<tr>
<th>Green</th>
<th>Red</th>
<th>Yellow</th>
<th>Statuses</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Plant operation)</td>
<td>(Plant fault)</td>
<td>(P-bus traffic)</td>
<td>(Signal status unit / Plant)</td>
</tr>
<tr>
<td>OFF</td>
<td>OFF</td>
<td>Steady light</td>
<td>Display unit status: Plant status: OFF</td>
</tr>
<tr>
<td>Steady light</td>
<td>OFF</td>
<td>Steady light</td>
<td>Display unit status: Plant status: Normal Operation, step 1</td>
</tr>
<tr>
<td>Flashing light (1 Hz)</td>
<td>OFF</td>
<td>Steady light</td>
<td>Display unit status: Plant status: Normal Operation, step 2 or higher</td>
</tr>
<tr>
<td>OFF</td>
<td>Steady light</td>
<td>Steady light</td>
<td>Display unit status: Plant status: Normal Faulty, acknowledged*</td>
</tr>
<tr>
<td>OFF</td>
<td>Steady light</td>
<td>Steady light</td>
<td>Display unit status: Plant status: Normal Faulty, acknowledged*</td>
</tr>
<tr>
<td>Flashing light for ca. 3s, then acc. to plant status</td>
<td>According to plant status</td>
<td>Steady light</td>
<td>Key of the associated function line activated</td>
</tr>
<tr>
<td>Flashing light (4Hz)</td>
<td>Flashing light (4Hz)</td>
<td>Flashing light (4Hz)</td>
<td>Display unit status: (telegram failure) Faulty</td>
</tr>
<tr>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
<td>Display unit status: (voltage failure) Faulty</td>
</tr>
<tr>
<td>OFF</td>
<td>OFF</td>
<td>ON, flashing light after timeout</td>
<td>Display unit status: (until reception of valid telegram) Switch-on status</td>
</tr>
<tr>
<td>Steady light</td>
<td>Steady light</td>
<td>Steady light</td>
<td>Lamp test</td>
</tr>
</tbody>
</table>

* Only if "Fault phases" was selected through configuration.
Technical design

Data traffic via P-bus
The status signals are logged via I/O modules or I/O compact units, requested by the automation station and transmitted to the status display unit via the P-bus. Information on activated pushbuttons is (similar to the status signals) requested by the automation station via P-bus and processed in accordance with the software configuration.

Addressing
The status display unit must have an address enabling the automation station to identify it. The address is set with the aid of the address switch on the rear of the unit. Note that only specific addresses are permitted.

Assignment of permitted addresses and setting positions on the unit:

<table>
<thead>
<tr>
<th>Setting position</th>
<th>Address</th>
<th>Setting position</th>
<th>Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
<td>8</td>
<td>129</td>
</tr>
<tr>
<td>1</td>
<td>17</td>
<td>9</td>
<td>145</td>
</tr>
<tr>
<td>2</td>
<td>33</td>
<td>A</td>
<td>161</td>
</tr>
<tr>
<td>3</td>
<td>49</td>
<td>B</td>
<td>177</td>
</tr>
<tr>
<td>4</td>
<td>65</td>
<td>C</td>
<td>193</td>
</tr>
<tr>
<td>5</td>
<td>81</td>
<td>D</td>
<td>209</td>
</tr>
<tr>
<td>6</td>
<td>97</td>
<td>E</td>
<td>225</td>
</tr>
<tr>
<td>7</td>
<td>113</td>
<td>F</td>
<td>241</td>
</tr>
</tbody>
</table>

Non-used addresses can be used for I/O module or I/O compact unit addressing (avoid double assignments!)

Behaviour in the event of faults
If data traffic on the P-bus is interrupted for more than 4 seconds, all LED's are lit. But, the last known status of all LED's is stored and re-displayed following reception of the next valid P-bus telegram.

Notes
The entire functionality of the status display unit comprises the unit itself (hardware) as well as signal handling in the automation station (software). To fully understand the module functions, the associated process sequences and configuration options for the user program must be considered.

Further application requirements as, for instance, make / break contacts, storage, and suppression of first-up signal of fault indications are implemented with supplemental function blocks.

Mechanical design

- Metal housing with plastic face
- Housing for front or wall mounting with surface mounting or flush-type box
- Address switch and connection terminals on the rear of the unit
- Mounting bracket for front mounting provided

Unit face
The status display unit's face contains one yellow, 12 green, and 12 red LED's, 12 pushbuttons and one lamp test button. One green and one red LED and one pushbutton belong to one function line.

To mount a project-related label, the housing provides a recess.
These specifically prepared and perforated labels are marked with the help of the engineering tool for the building automation and control system. The printed label is then inserted in the recess on the unit's face. The label contains application-related information for each function line.

1. Label
2. Green LED row
3. Red LED row
4. Pushbutton row
5. Function line
6. Unit face
7. LED to test all LED's
8. Yellow LED for P-bus communication (Com)

Engineering notes

The documents listed below contain engineering basics for the device and system level of building automation systems. Read the information provided in these documents and observe all safety-related information:
- "P-Bus (Process Bus)", data sheet N8022
- "Basics of the I/O-module system", document Z8102
- Function block descriptions for automation stations

Proper use

Use this unit in a system only for applications as described in the brief description on the title page (bold print) and in the chapters "Use", "Engineering notes", and "Technical data".

System neutral

The system neutral terminals (G0) for the automation station, I/O devices, and status display unit must be linked via a "joint system neutral" (SN), see "Connection diagrams".

System integration

The system integration of the status display unit has been illustrated in the application example. Several status display units can be connected to one automation station.
Mounting notes

Mounting instructions
Each unit comes with mounting instructions describing the various mounting options. Refer also to "Dimensions" in this data sheet.

Wall mounting
For wall mounting, the unit face must be separated from the metal housing. Additionally, the address must be set at the address switch on the rear of the unit **prior** to re-attaching the unit face.

Commissioning notes

Addressing
The correct, system-dependent address for identification by the automation station must be set at the address switch on the rear of the unit (see "Technical design - Addressing"). If the set address is changed at a later time, the status display unit's power supply must briefly be interrupted, e.g., by disconnecting the P-bus, to adopt the new address.

Required software
The required function software must be loaded in the associated automation station.

Technical data

<table>
<thead>
<tr>
<th>Voltage supply</th>
<th>Via P-bus</th>
<th>DC 24 V (against G0)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Load units: Automation station</td>
<td></td>
<td>4 (12.5 mA each)</td>
</tr>
<tr>
<td>Protection</td>
<td>As per EN 60 529</td>
<td>IP 30</td>
</tr>
<tr>
<td>Environmental conditions</td>
<td>Transport</td>
<td>IEC 721-3-2</td>
</tr>
<tr>
<td></td>
<td>Climatic conditions</td>
<td>Class 2K3</td>
</tr>
<tr>
<td></td>
<td>Permissible ambient</td>
<td>-25 ... +70°C</td>
</tr>
<tr>
<td></td>
<td>temperatures</td>
<td>≤ 95% r. h.</td>
</tr>
<tr>
<td></td>
<td>Humidity</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Operation</td>
<td>IEC 721-3-3</td>
</tr>
<tr>
<td></td>
<td>Climatic conditions</td>
<td>Class 3K5</td>
</tr>
<tr>
<td></td>
<td>Permissible ambient</td>
<td>-5 ... +50°C</td>
</tr>
<tr>
<td></td>
<td>temperatures</td>
<td>≤ 95% r. h.</td>
</tr>
<tr>
<td></td>
<td>Humidity</td>
<td></td>
</tr>
<tr>
<td>Conformity</td>
<td>In accordance with</td>
<td>89/336/EEC</td>
</tr>
<tr>
<td></td>
<td>European Union directives:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Electromagnetic compatibility</td>
<td>EN 50 081-1</td>
</tr>
<tr>
<td></td>
<td>- Emissions</td>
<td>EN 61 000-6-2</td>
</tr>
<tr>
<td>Connection terminals</td>
<td>Line diameter</td>
<td>min. Ø 0,5 mm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>max. 2 x 1.5 mm or 1 x 2.5 mm</td>
</tr>
<tr>
<td>Permissible P-bus line length</td>
<td>For standard bus</td>
<td>max. 50 m</td>
</tr>
<tr>
<td></td>
<td>For remote P-bus (with</td>
<td>max. 200 m</td>
</tr>
<tr>
<td></td>
<td>screened cable)</td>
<td></td>
</tr>
<tr>
<td>Dimensions, Weight</td>
<td>Dimensions</td>
<td>see Dimensions</td>
</tr>
<tr>
<td></td>
<td>Weight</td>
<td>0.3 kg</td>
</tr>
<tr>
<td>Note</td>
<td>For wiring of standard P-bus and remote P-bus refer to data sheet N8022 &quot;P-bus&quot;.</td>
<td></td>
</tr>
</tbody>
</table>
Connection terminals

**Connection diagram (standard P-bus)**

- **G0**: Operating voltage neutral AC 24V
- **PD**: Data signal
- **PU**: Reference voltage (DC 24 V against G0)
- **PC**: Synchronisation signal (Clock)

- **H1...Hn**: Status display units PHM1.36TL
- **N**: Automation station with P-bus connection
- **U**: I/O devices (I/O modules, I/O compact units)
- **SP**: System potential AC 24 V
- **SN**: System neutral
Example

PHM1.36 TL | Status display unit
---|---
G | System potential
G0 | System neutral
AC 24 V | Operating voltage
P-bus | Process bus
I/O | I/O devices

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The minimum clearance to the next cut-out for further status display units is 20 mm.

\[ b = n \cdot 100 - 7 \cdot \frac{3}{2} \]