I/O-Module for Elevators
Type G 2140 4421 700

Product Description
Direct interface to the I/O's of elevator floor stations. The input pulses are prolonged to 0.5 s to ensure transfer of fast push-button activations. Due to the small size of the module it can be integrated into most push-button panels. All modules in an elevator are connected to the same 3 wires for bus communication with the control system and DC power supply for the lamps. Installer-friendly mounting, operation and maintenance without requirements for any special tools or programming.

Type Selection

<table>
<thead>
<tr>
<th>Supply</th>
<th>Number of I/Os</th>
<th>PNP-outputs</th>
</tr>
</thead>
<tbody>
<tr>
<td>10-30 VDC</td>
<td>2 push-button inputs</td>
<td>G 2140 4421 700</td>
</tr>
</tbody>
</table>

Output Specifications

<table>
<thead>
<tr>
<th>Outputs</th>
<th>2 PNP-transistors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Output voltage drop</td>
<td>≤ 2.0 V</td>
</tr>
<tr>
<td>Current per output</td>
<td>≤ 200 mA</td>
</tr>
<tr>
<td>Short circuit protection</td>
<td>None</td>
</tr>
<tr>
<td>Built-in protective diodes</td>
<td>Yes</td>
</tr>
<tr>
<td>Off-state leakage current</td>
<td>≤ 200 µA</td>
</tr>
<tr>
<td>Response time</td>
<td>1 pulse train (136 ms @ 128 channels)</td>
</tr>
</tbody>
</table>

Input Specifications

<table>
<thead>
<tr>
<th>Inputs</th>
<th>2 contacts or NPN-transistor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Open loop voltage</td>
<td>8.0 VDC</td>
</tr>
<tr>
<td>Short circuit current</td>
<td>17 µA</td>
</tr>
<tr>
<td>Start peak current</td>
<td>20 mA</td>
</tr>
<tr>
<td>Contact resistance</td>
<td>≤ 100 Ω</td>
</tr>
<tr>
<td>Cable length</td>
<td>≤ 3 m</td>
</tr>
<tr>
<td>Response time</td>
<td>≤ 156 ms @ 128 channels</td>
</tr>
<tr>
<td>Input pulse prolongation</td>
<td>Typ. 0.5 s</td>
</tr>
</tbody>
</table>

Supply Specifications

<table>
<thead>
<tr>
<th>Power supply</th>
<th>Overvoltage cat. III (IEC 60664)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated operational voltage (V_{op})</td>
<td>10-30 VDC (ripple included)</td>
</tr>
<tr>
<td>Ripple</td>
<td>≤ 3 V</td>
</tr>
<tr>
<td>Reverse polarity protection</td>
<td>Yes</td>
</tr>
<tr>
<td>Current consumption</td>
<td>≤ 30 mA</td>
</tr>
<tr>
<td>Power dissipation</td>
<td>≤ 1 W</td>
</tr>
<tr>
<td>Inrush current</td>
<td>≤ 1 A</td>
</tr>
<tr>
<td>Transient protection voltage</td>
<td>800 V</td>
</tr>
<tr>
<td>Dielectric voltage</td>
<td>None</td>
</tr>
</tbody>
</table>

Specifications are subject to change without notice (29.04.03)
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**General Specifications**

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Power ON delay</strong></td>
<td>Typ 2 s</td>
</tr>
<tr>
<td><strong>Indication for</strong></td>
<td></td>
</tr>
<tr>
<td>Supply ON</td>
<td>LED, green</td>
</tr>
<tr>
<td>Dupline® carrier</td>
<td>LED, yellow</td>
</tr>
<tr>
<td><strong>Environment</strong></td>
<td></td>
</tr>
<tr>
<td>Operating temperature</td>
<td>-20° to +50°C (-4° to +122°F)</td>
</tr>
<tr>
<td>Storage temperature</td>
<td>-50° to +85°C (-58° to +185°F)</td>
</tr>
<tr>
<td><strong>Humidity (non-condensing)</strong></td>
<td>20 - 80%</td>
</tr>
<tr>
<td><strong>Mechanical resistance</strong>:</td>
<td></td>
</tr>
<tr>
<td>Shock</td>
<td>15 G (11 ms)</td>
</tr>
<tr>
<td>Vibration</td>
<td>2 G (6 to 55 Hz)</td>
</tr>
<tr>
<td><strong>Dimensions</strong></td>
<td></td>
</tr>
<tr>
<td>Open PCB 54 x 40 mm</td>
<td>4 pcs. of nylon PA6 snap locks are included for mounting the PCB in ø 4.8 holes</td>
</tr>
<tr>
<td><strong>Weight</strong></td>
<td>50 g</td>
</tr>
</tbody>
</table>

**Pin Allocation**

<table>
<thead>
<tr>
<th>Terminal</th>
<th>Input/Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>DUP</td>
<td>Dupline® signal</td>
</tr>
<tr>
<td>GND</td>
<td>Dupline® + supply GND</td>
</tr>
<tr>
<td>POW</td>
<td>Supply IN</td>
</tr>
<tr>
<td>DC +</td>
<td>DC out</td>
</tr>
<tr>
<td>I1</td>
<td>Input 1</td>
</tr>
<tr>
<td>I2</td>
<td>Input 2</td>
</tr>
<tr>
<td>O5</td>
<td>Output 1</td>
</tr>
<tr>
<td>O6</td>
<td>Output 2</td>
</tr>
</tbody>
</table>

**Wiring Diagram**

**Programming Information**

The table below shows the relation between the inputs/outputs of the G 2140 4421 and the In/Out-markings on the GAP 1605.

<table>
<thead>
<tr>
<th>GAP 1605</th>
<th>G 2140 4421</th>
</tr>
</thead>
<tbody>
<tr>
<td>In/out 1</td>
<td>Input 1 (I1)</td>
</tr>
<tr>
<td>In/out 2</td>
<td>Input 2 (I2)</td>
</tr>
<tr>
<td>In/out 3</td>
<td>Not used</td>
</tr>
<tr>
<td>In/out 4</td>
<td>Not used</td>
</tr>
<tr>
<td>In/out 5</td>
<td>Output 1 (O5)</td>
</tr>
<tr>
<td>In/out 6</td>
<td>Output 2 (O6)</td>
</tr>
<tr>
<td>In/out 7</td>
<td>Not used</td>
</tr>
<tr>
<td>In/out 8</td>
<td>Not used</td>
</tr>
</tbody>
</table>

**Mode of Operation**

The I/O-units use three wires for the communication with all the other I/O-units of an installation, for the supply of the I/O-units and for the loads connected to the outputs of the units. This implies, that the “common” of the communication signal is identical to the “minus” of the supply.

The DC-supply voltage must connect to the system through a G 2196 0000 700, which also performs the channel generator function and the RS485 communication link to the elevator controller (please refer to the data sheet for G 21960 000 700 for details).

Each I/O-unit has 2 inputs (NPN/contact) and 2 PNP-outputs. Every input and output is given its individual address with the coding unit GAP 1605 (please refer to the respective data sheet for details). The ON/OFF-signal that is applied to the input of an I/O-unit is associated to the address given to that input. Any output of an I/O-unit that is given the identical address will now follow that input signal and switch its output signal ON or OFF. This means that a signal which is input at one location (for example as an output from the lift controller) may be output wherever required and as many times as required.

An input pulse stretcher is used on every input to assure that the changes of input signals (even extremely short ones) are communicated by the system.

The output status of all outputs of an I/O-unit may be pre-defined for cases like loss of power and loss of communication. Please refer to the paragraph “Output status setting” of the data sheet for the GAP 1605 to change the default setting (all outputs OFF).