**LED**

### Features
- 18 LED indications
- Presented in three colors, red, yellow or green
- Label for description text for each LED
- Used for presentation of information such as
  - protection indications
  - alarm signals
- Each LED individually set to operate
  - in six different sequences
  - as follow or latched type
  - in collecting or re-starting mode
- Acknowledgment performed from the local HMI

### Application
The LED indication module is an additional feature for the REx 5xx terminals for protection and control and consists totally of 18 LEDs (Light Emitting Diodes). The main purpose is to present on site an immediate visual information such as protection indications or alarm signals. It is located on the front of the protection and control terminals. Each LED indication can be set individually to operate in six different sequences; two as follow type and four as latch type. Two of the latching types are intended to be used as a protection indication system, either in collecting or re-starting mode, with reset functionality. The other two are intended to be used as a signaling system in collecting mode with an acknowledgment functionality.

### Design
The LED indication module is equipped with 18 LEDs, which can light or flash in either red, yellow or green color. A description text can be added for each of the LEDs.

See LED indication function (HL, HLED) for details on application and functionality.
Extended indication capabilities

LED

The color of the LEDs can be selected in the function block to red, yellow or green individually. The input signal for an indication has separate inputs for each color. If more than one color is used at the same time, the following priority order is valid: red, yellow and green, with red as highest priority.

The information on the LEDs is stored at loss of the auxiliary power for the terminal, so that the latest LED picture appears immediately after the terminal has restarted successfully.

The LED indication function consists of one common function block named HLED and one function block for each LED named HL01, HL02,..., HL18.

Figure 1: The LED module

Table 1: Input signals for the HMI_LED (HLED-) function block

<table>
<thead>
<tr>
<th>Signal</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACK-RST</td>
<td>Input to acknowledge/reset the indications on the LED-unit. To be used for external acknowledgement/reset.</td>
</tr>
<tr>
<td>BLOCK</td>
<td>Input to block the operation of the LED-unit. To be used for external blocking.</td>
</tr>
<tr>
<td>LEDTEST</td>
<td>Input for external LED test. Common for the whole LED-unit.</td>
</tr>
</tbody>
</table>
Path in local HMI: ServiceReport/Functions/HMI LED

**Table 2: Output signals for the HMI_LED (HLED-) function block**

<table>
<thead>
<tr>
<th>Signal</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>NEWIND</td>
<td>Output that gives a pulse each time a new signal on any of the indication inputs occurs.</td>
</tr>
<tr>
<td>FAIL</td>
<td>Indication for overflow in HMI-LED buffer.</td>
</tr>
</tbody>
</table>

**Table 3: Input signals for the HMI_LEDS (HLnn-) function block**

<table>
<thead>
<tr>
<th>Signal</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>RED</td>
<td>Signal input for indication with red color.</td>
</tr>
<tr>
<td>YELLOW</td>
<td>Signal input for indication with yellow color.</td>
</tr>
<tr>
<td>GREEN</td>
<td>Signal input for indication with green color.</td>
</tr>
</tbody>
</table>

**Manufacturer**

ABB Automation Technology Products AB  
Control & Force Measurement  
Substation Automation  
SE-721 59 Västerås  
Sweden  
Tel: +46 (0) 21 34 20 00  
Fax: +46 (0) 21 14 69 18