An analogue data repeater MS31-LiU separates, converts and repeats standard analogue signals, and passes the converted signals to a user-defined output. The input circuit accepts a standard current input (0/4...20 mA), a standard voltage input (0/2...10 V) or a variable voltage input (0...1 - 10 V). The transfer characteristic of the analogue data repeater is programmed with bridge connectors (refer to drawing on the next page). By this method, dead-zero signals are converted to live-zero signals (or vice versa). In addition, current signals can be converted to voltage signals and voltage signals to current signals.

The power supply is isolated from the input circuit, output circuit and supply voltage. A green LED indicates that power is supplied to the device.

Special version:
MS31-LiU/M12: signal inverter for inversions from 0...20 mA/20...0 mA.
 Analogue Data Transmitters

<table>
<thead>
<tr>
<th>Type</th>
<th>MS31-LIU/230VAC</th>
<th>MS31-LIU/24VDC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ident-No.</td>
<td>05 310</td>
<td>05 317</td>
</tr>
</tbody>
</table>

### Supply Voltage
- **U_B**: 184...264 VAC
- Line frequency/ripple **W_{PP}**: 48...62 Hz
- **Power/current consumption**: ≤ 5 VA
- **Galvanic isolation**: between input circuit, output circuit and supply voltage for 250 V_{rms}, test voltage 2.5 kV_{rms}
- **Supply Voltage** **U_B**: 19.2...28.8 VDC
- **Line frequency/ripple** **W_{PP}**: ≤ 10 %
- **Power/current consumption** **W_{PP}**: ≤ 3 W
- **Galvanic isolation**: between input circuit, output circuit and supply voltage for 250 V_{rms}, test voltage 2.5 kV_{rms}

### Input Circuits
- **Voltage input**
  - Input resistance: 50 kΩ
  - Operating characteristics: 0/2...10 V
- **Current input**
  - Input resistance: 50 Ω
  - Operating characteristics: 0/4...20 mA
- **Variable voltage input**
  - Input resistance: 5 kΩ/V
  - Operating characteristics: 0...1-10 V

### Output Circuits
- **Voltage output**
  - Load resistance: ≥ 1 kΩ
  - Operating characteristics: 0/2...10 V
- **Current output**
  - Load impedance: 500 Ω
  - Operating characteristics: 0/4...20 mA

### Transfer Characteristics
- **Linearity tolerance**: ≤ 0.1 % of final value
- **Load impedance**: ≤ 0.01 % of final value
- **Effect of load impedance**: ≤ 0.01 % of final value
- **Conversion error (U->I; I->U)**: ≤ 0.1 % of final value
- **Ambient temperature sensitivity**: ≤ 0.005 %/K of final value
- **Pulse rise time (10 %...90 %)**: < 50 ms
- **Release time (90 %...10 %)**: < 50 ms

### LED Indication
- **Power ON**: green

### Housing
- **Width**: 50 mm wide, Polycarbonate/ABS
- **Mounting Options**: panel mounting or snap-on clamps for top-hat rail (DIN 50022)
- **Connection**: 2 x 8 self-lifting pressure plates
- **Degree of protection (IEC 60529/EN 60529)**: IP20
- **Environment**: Operating temperature: -25...+60 °C

### Programming
- **Selection of transfer functions**
  - 1:1 transfer
  - Dead-zero conversion
  - Live-zero conversion
  - Current/voltage conversion
  - Voltage/current conversion

### Diagram
- Design of the device showing connections and interfaces.