**FEATURES**

- Compact design, only 22.5 mm wide
- Clips onto top-hat DIN rail
- Plug-in screw terminals or spring-clamp connectors
- Dual-line LC display with additional display elements
- Process values always in view
- Convenient 3-key operation
- Universal input with high signal resolution (>15 bits)
- Universal output with high resolution (14 bits) as combined voltage/current output
- Relay output
- Quick response; only 100 ms cycle time, i.e. also suitable for fast signals
- Customer-specific linearization
- Measurement value correction (offset or 2-point)
- Min/max indicator (‘slave pointer’)
- Preset for output value

**APPLICATIONS**

- Measurement, scaling, and separation of electrical signals, e.g. for:
- Heat treatment plants

**DESCRIPTION**

UNIFLEX CI 35 transmitters are designed to give precise and cost-effective signal detection and processing tasks.

By means of the extended Operating Level, it is possible to show any signal or parameter in the 2nd display line.

**Engineering Tools**

The transmitter settings are also configurable by means of an Engineering Tool.

Via the BlueControl® software, including the transmitter simulation and especially the convenient connection via the BluePort® front interface, the user can solve the task in hand without having to work through operating instructions.

Of course, practically all settings can also be made from the device front.

**Password protection**

If required, unauthorized access to the various Operating Levels can be prevented with a password, or an entire level can be blocked.

**UNIFLEX CI 35**

Universal transmitter

Compact design
Display & operating functions
High resolution
Fast cycle times
universal input / universal output
relay output
Customer-specific linearization
Measurement value correction
Min/max indicator (‘slave pointer’)

- Drying equipment
- Furnace builders
- Metallurgy
- Kilns
- General machine building
- Research and development
- etc.
**TECHNICAL DATA**

**UNIVERSAL INPUT INP1**

Type: single ended, except thermocouples

Resolution: > 15 bits

Decimal point: 0 to 3 decimals

Digital input filter: adjustable 0.0...999.9 s

Scanning cycle: 100 ms (only INP1)

Linearization: 31 segments, adaptable with BlueControl®

Measurement value correction: 2-point or offset

Limiting frequency: 1.7 Hz

**Thermocouples (Table 1)**

<table>
<thead>
<tr>
<th>Thermocouple type</th>
<th>Measurement range</th>
<th>Error</th>
<th>Typical resol.</th>
</tr>
</thead>
<tbody>
<tr>
<td>L Fe-CuNi (DIN)</td>
<td>-100...900°C</td>
<td>≤ 2K</td>
<td>0.05 K</td>
</tr>
<tr>
<td>J Fe-CuNi</td>
<td>-100...1,200°C</td>
<td>≤ 2K</td>
<td>0.05 K</td>
</tr>
<tr>
<td>K NiCr-Ni</td>
<td>-100...1,350°C</td>
<td>≤ 2K</td>
<td>0.1 K</td>
</tr>
<tr>
<td>N Nicrosil/Nisil</td>
<td>-100...1,300°C</td>
<td>≤ 2K</td>
<td>0.1 K</td>
</tr>
<tr>
<td>S PtRh-Pt10%</td>
<td>-1,760°C</td>
<td>≤ 2K</td>
<td>0.1 K</td>
</tr>
<tr>
<td>R PtRh-Pt13%</td>
<td>-1,760°C</td>
<td>≤ 2K</td>
<td>0.1 K</td>
</tr>
<tr>
<td>T NiCr-CuNi</td>
<td>-200...400°C</td>
<td>≤ 2K</td>
<td>0.03 K</td>
</tr>
<tr>
<td>C W5%Re-W28%Re</td>
<td>-2,315°C</td>
<td>≤ 3K</td>
<td>0.2 K</td>
</tr>
<tr>
<td>D W3%Re-W25%Re</td>
<td>-2,315°C</td>
<td>≤ 3K</td>
<td>0.2 K</td>
</tr>
<tr>
<td>E NiCr-CuNi</td>
<td>-100...1,000°C</td>
<td>≤ 2K</td>
<td>0.05 K</td>
</tr>
<tr>
<td>B PtRh-Pt6%</td>
<td>(400)...1,820°C</td>
<td>≤ 3K</td>
<td>0.2 K</td>
</tr>
<tr>
<td>Special</td>
<td>-25...75 mV</td>
<td>≤ 0.1%</td>
<td>0.005%</td>
</tr>
</tbody>
</table>

* Values apply from 400°C upwards.

**Resistance (Table 2)**

<table>
<thead>
<tr>
<th>Type</th>
<th>Sensor current</th>
<th>Measurement range</th>
<th>Error</th>
<th>Typical resol.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pt100 ***</td>
<td>≤ 0.25mA</td>
<td>0...4,500°C**</td>
<td>≤ 0.1%</td>
<td>0.005%</td>
</tr>
<tr>
<td>Special</td>
<td>0...450 Ω**</td>
<td>0...1,600°C**</td>
<td>≤ 0.1%</td>
<td>0.005%</td>
</tr>
<tr>
<td>Potentiom.</td>
<td>0...450 Ω**</td>
<td>0...1,600°C**</td>
<td>≤ 0.1%</td>
<td>0.005%</td>
</tr>
<tr>
<td>Potentiom.</td>
<td>0...450 Ω**</td>
<td>0...1,600°C**</td>
<td>≤ 0.1%</td>
<td>0.005%</td>
</tr>
<tr>
<td>Potentiom.</td>
<td>0...4,500 Ω**</td>
<td>≤ 0.1%</td>
<td>0.005%</td>
<td></td>
</tr>
</tbody>
</table>

* Default setting is the characteristic for KTY 11-6 (-50...150°C)

**Including lead resistance

*** up to 150 °C at reduced lead resistance (max. 160 Ω)

**Break monitoring**

Sensor current: ≤ 1 µA

Operating sense configurable

**Resistance thermometer (Table 2)**

<table>
<thead>
<tr>
<th>Measurement range</th>
<th>Input resistance</th>
<th>Error</th>
<th>Typical resol.(Ω)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0...10 V</td>
<td>~110 kΩ</td>
<td>≤ 0.1%</td>
<td>0.3 mV</td>
</tr>
<tr>
<td>-10...10 V</td>
<td>~110 kΩ</td>
<td>≤ 0.1%</td>
<td>0.6 mV</td>
</tr>
<tr>
<td>-5...5 V</td>
<td>~110 kΩ</td>
<td>≤ 0.1%</td>
<td>0.3 mV</td>
</tr>
<tr>
<td>-2.5...115 mV*</td>
<td>&gt;1 MΩ</td>
<td>≤ 0.1%</td>
<td>4 µV</td>
</tr>
<tr>
<td>-25...1,150 mV**</td>
<td>&gt;1 MΩ</td>
<td>≤ 0.1%</td>
<td>40 µV</td>
</tr>
<tr>
<td>-25...90 mV*</td>
<td>&gt;1 MΩ</td>
<td>≤ 0.1%</td>
<td>4 µV</td>
</tr>
<tr>
<td>-500...500 mV**</td>
<td>&gt;1 MΩ</td>
<td>≤ 0.1%</td>
<td>40 µV</td>
</tr>
<tr>
<td>-200...200 mV**</td>
<td>&gt;1 MΩ</td>
<td>≤ 0.1%</td>
<td>40 µV</td>
</tr>
<tr>
<td>0...20 mA</td>
<td>20 Ω</td>
<td>≤ 0.1%</td>
<td>0.8 µA</td>
</tr>
</tbody>
</table>

* high-impedance, without break monitoring

**OUTPUTS**

**SURVEY OF OUTPUTS**

<table>
<thead>
<tr>
<th>Output</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>OUT1 (relay)</td>
<td>Limit contact, alarms, errors, status messages *</td>
</tr>
<tr>
<td>OUT3 (logic)</td>
<td>Same as OUT1</td>
</tr>
<tr>
<td>OUT3 (continuous)</td>
<td>Analog output for display value, INP1, Transmitter supply 13 V / 22 mA</td>
</tr>
</tbody>
</table>

All logic signals can be "OR-linked".
**RELAY OUTPUT OUT1**

Type: 2 NO contact  
Max. contact rating: 500 VA, max. 250 V, max. 2 A at 48...62 Hz, resistive load  
Min. contact rating: 6 V, 1 mA DC  
Switching for l=1A/2A: ≥ 800,000/500,000 cycles (at 250 V AC, resistive load)  
(electrical):  

**Note:**  
If the relay OUT1 is used to operate external contactors, these must be fitted with RC snubber circuits to manufacturer specifications to prevent excessive voltage peaks at switch-off.

**OUT3 AS UNIVERSAL OUTPUT**

Parallel current/voltage output with common ‘minus’ terminal (combined use only in galvanically isolated circuits).  
Freely scalable  
Resolution: 14 bits  
Dynamic response: Output follows the input:  
(step change of input signal) T90: ≤ 540 ms  
Tracking error U/I: ≤ 0.09%  
Residual ripple: ≤ 0.1%  
(res. to range end) 0...130 kHz  

**Current output**  
0/4...20 mA, configurable.  
short circuit proof  
Dynamic range: -0.5...23 mA  
Load: ≤ 700 Ω  
Load effect: ≤ 0.02%  
Resolution: ≤ 1.5 μA  
Error: ≤ 0.1%  

**Voltage output**  
0/2...10 V, configurable  
not continuous short-circuit proof  
Dynamic range: -0.15...11.5 V  
Load: ≥ 2 kΩ  
Load effect: ≤ 0.08%  
Resolution: ≤ 0.75 mV  
Error: ≤ 0.1%  
Additional error when using simultaneously the current output  

**OUT3 as transmitter supply**  
Output: 22 mA / ≥ 13 V DC  

**OUT3 as logic signal**  
Load ≤ 700 Ω  0/≤ 23 mA  
Load > 500 Ω  0/> 13 V

**GALVANIC ISOLATION**

Galvanic isolation is provided between inputs and outputs as well as from the supply voltage (3-port isolation).  
Test voltage: Between power supply and in-/outputs: 2.3 kV AC, 1 min

The transmitter contains a 1st-order mathematical filter with adjustable time constant and bandwidth. The bandwidth is the adjustable tolerance range within which the filter is active above and below the process value. Measurement value changes in excess of the adjusted bandwidth are not filtered.

**LIMIT VALUE FUNCTIONS**

Max, Min or Max/Min monitoring with adjustable hysteresis.  

**Monitored signals**  
- Process value  
- Input 1  

**Functions**  
- Input value monitoring  
- Input value monitoring with storage  
- Signal changes / with storage  
- Reset via front panel  
- Alarm discriminator adjustable from 0...9,999 seconds  
- Several limit values and alarm messages can be logically “OR-linked”.  
- Limits can used as control signals.

**ALARMS**

Sensor break / short circuit  
Depending on the selected input type, the input circuit is monitored for break, short circuit, and reversed polarity.

**ERROR LIST**

Display of error messages, warnings, and stored limit value messages in the error list. Messages are stored, and can be reset manually.

Possible elements in the error list:

- Sensor break, short circuit, incorrect polarity  
- Stored limit values  
- Heating current alarm  
- Control loop alarm  
- Fault during self-tuning  
- E.g. Re-calibration warning (message is generated when a predefined operating time is reached)  
- E.g. Maintenance interval for a switching device (message is generated when a predefined number of switching cycles is reached)  
- Internal fault (RAM, EEPROM, ...)

---

**Fig. 3: Galvanic isolation**

**Fig. 4: Filter function**
DISPLAY AND OPERATION

Display

LCD:
dual-line plus additional display elements

Upper line:
4 digits, 7-segment LCD
• for process value

Lower line:
5 digits, 14-segment LCD; configurable contents (via BlueControl®)
• Engineering unit
• Parameters
• Extended Operating Level

Additional display elements
2 display elements (bars in the lower line of the LCD, identified as 1, 2, F, E)
• Bars 1 and 2: OUT1 active
• Bar E: Entry has been made in the error list

LED:
• Green = OK
• Red = limit value Lim1 triggered
• Red blinking = internal fault, configuration mismatch

Operating functions
Only three keys at the front of the CI 35 are used to operate process values, parameters, and configuration data. Different Operating Levels and selected parameters can be disabled by means of BlueControl®.

POWER SUPPLY

Depending on ordered version:

AC supply
Voltage: 90...260 V AC
Frequency: 48...62 Hz
Consumption: approx. 7 VA max.

Universal supply 24 V UC*
AC supply: 18...30 V AC
Frequency: 48...62 Hz
DC supply: 8...31 V DC
Consumption: approx. 4 VA/3 W max.

Supply only from safety electrical low voltage (SELV).

Behaviour with power failure
Configuration and parameter settings: Permanent storage in EEPROM

BLUEPORT® FRONT INTERFACE

Connection to the transmitter front via a PC adapter (see ‘Accessories’). The BlueControl® software enables the CI 35 to be configured, parameters set, and operated.

ENVIRONMENTAL CONDITIONS

Protection mode
Front panel: IP 20
Housing: IP 20
Terminals: IP 20

Permissible temperatures
For specified accuracy: -10...55°C
Warm-up time: < 20 minutes
Temperature effect: ≤ 0.05% / 10 K
add. influence to cold junction compensation: ≤ 0.05% / 10 K

Operating limits: -20...60°C
Storage: -30...70°C

Humidity
Max. 95%, 75% yearly average, no condensation

Shock and vibration
Vibration test Fc (DIN EN 60068-2-6)
Frequency: 10...150 Hz
Unit in operation: 1g or 0.075 mm
Unit not in operation: 2g or 0.15 mm

Shock test Ea (DIN EN 60068-2-27)
Shock: 15 g
Duration: 11 ms

Electromagnetic compatibility
Complies with EN 61 326-1 for continuous, unattended operation.

Interference radiation:
• Within the limits for Class B devices.

Meets the test requirements for devices in industrial areas.

Evaluation criteria:
• Surge interference partly has marked effects, which decay after the interference stops.
• With high levels of surge interference on 24 V AC mains leads, it is possible that the device is reset.
• With HF interference, effects up to 50 µV can occur.

GENERAL

Housing front
Material: Polyamide PA 6.6
Flammability class: V0 (UL 94)

Connecting terminals
Material: Polyamide PA
Flammability class: V2 (UL 94) for screw terminals
V0 (UL 94) for spring-clamp terminals bus connector

Electrical safety
Complies with EN 61010-1:
Over-voltage category II
Contamination degree 2
Protection class II

Electrical connections
Plug-in connector strips with choice of terminal type:
• Screw terminals or spring-clamp terminals, both for lead cross-sections from 0.2 to 2.5 mm² (AWG24-12)
**Mounting method**

Clip-on rail mounting (35 mm top-hat rail to EN 50 022). Locked by means of metal catch in housing base. Close-packed mounting possible.

Mounting position: vertical

Weight: 0.18 kg

**CERTIFICATION**

- CE certified
- UL / cUL certified (applied for)

**ACCESSORIES**

**BlueControl® (Engineering Tool)**

PC program for configuring, parameter setting, and operating (commissioning) the CI 35 transmitter. Moreover, all settings are saved and can be printed, if required.

Depending in version, a powerful data acquisition module with trend graphics is available.

**Show/hide function**

The BlueControl® software enables any number of parameters and configuration setting to be shown/hidden. This ensures that only permitted parameters & settings can be changed in the transmitter. Safety-relevant parameters are not displayed.

**Simulation function**

The built-in simulation serves to test the settings.

**Import function**

Engineerings of UNIFLEX CI/CB created by engineering tool ET/Uniflex can be read and transformed if possible.

**Software requirements:**

Windows 95/98/NT/2000/XP

**Configuration settings made only via the BlueControl® software (not via the transmitter’s front keys)**

- Customer-specific linearization
- Switch-over to 60 Hz mains frequency
- Blocking operator functions, Operating Levels, and password definition
- Text setting
- Definition of the display contents

**Hardware requirements:**

A special PC adapter (see ‘Accessories’) is required for connecting to the transmitter.

Updates and demo software from:

www.pma-online.de

**Standard accessories:**

- Operating notes

---

**Table 4: BlueControl®, versions und functions:**

<table>
<thead>
<tr>
<th>Function</th>
<th>Mini</th>
<th>Basic</th>
<th>Expert</th>
</tr>
</thead>
<tbody>
<tr>
<td>parameter and configuration setting</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>download: writes an engineering to the device</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>online-mode / visualisation</td>
<td>SIM only</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>creation of user defined linearizations</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>configuration of extended operation level</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>upload: reads an engineering from the device</td>
<td>SIM only</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>basic diagnosis function</td>
<td>no</td>
<td>no</td>
<td>yes</td>
</tr>
<tr>
<td>saves files and engineering data</td>
<td>no</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>printer function</td>
<td>no</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>online documentation / help system</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>measurement correction (calibration procedure)</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>data acquisition and trend function</td>
<td>SIM only</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>personal assistant function</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
</tbody>
</table>
Transmitter UNIFLEX CI 35

1 universal-input
with display and BluePort®-interface

<table>
<thead>
<tr>
<th>Description</th>
<th>Order no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>without plug-in connector terminals</td>
<td>0</td>
</tr>
<tr>
<td>with screw-terminal connectors</td>
<td>1</td>
</tr>
<tr>
<td>with spring-clamp terminals</td>
<td>2</td>
</tr>
</tbody>
</table>

90..260V AC, mA/V/logic +1 relay
18..30VAC/18..31VDC, mA/V/logic +1 relay

Standard configuration 0
Configuration to order 9

Standard (CE-certified) 0
UL /cUL - certified (applied for) U

ACCESSORIES

<table>
<thead>
<tr>
<th>Description</th>
<th>Quantity</th>
<th>Order no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Connector set with screw terminals</td>
<td>4 pieces</td>
<td>9407-998-07101</td>
</tr>
<tr>
<td>2 Connector set with spring-clamp terminals</td>
<td>4 pieces</td>
<td>9407-998-07111</td>
</tr>
</tbody>
</table>

ADDITIONAL ACCESSORIES

<table>
<thead>
<tr>
<th>Description</th>
<th>Language</th>
<th>Order no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>PC adapter for the BluePort® front interface</td>
<td></td>
<td>9407-998-00001</td>
</tr>
<tr>
<td>USB serial adaptor (USB to RS 232)</td>
<td></td>
<td>9407-998-00081</td>
</tr>
<tr>
<td>BlueControl® Mini</td>
<td>German/English</td>
<td><a href="http://www.pma-online.de">www.pma-online.de</a></td>
</tr>
<tr>
<td>BlueControl® with Basic license rail line</td>
<td>German/English</td>
<td>9407-999-12001</td>
</tr>
<tr>
<td>BlueControl® with Expert license rail line</td>
<td>German/English</td>
<td>9407-999-12011</td>
</tr>
</tbody>
</table>

Please also order the associated documentation:

<table>
<thead>
<tr>
<th>Description</th>
<th>Order no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating instructions for CI 35 (D)</td>
<td>9499-040-71718</td>
</tr>
<tr>
<td>Operating instructions for CI 35 (E)</td>
<td>9499-040-71711</td>
</tr>
</tbody>
</table>