Panel Bus I/O Modules

Product Data

GENERAL
The CentraLine Panel Bus I/O Modules communicate via the Panel Bus.
The pluggable CentraLine Panel Bus I/O modules consist of a terminal socket and a removable electronic module, allowing the socket to be mounted and wired before the electronic module is installed. All such electronic modules can be swapped out without disrupting the power and bus connections: Simply unplug the "old" and insert the "new" module.

WARNING
Risk of electric shock or equipment damage!
► Do not touch any live parts in the cabinet.
► Disconnect the power supply before you start to install the control system. More than one disconnect switch may be required to de-energize the system.
► Do not reconnect the power supply until you have completed the installation.
► Unused terminals must be closed (by completely screwing in the terminal screws), thus preventing the accidental touching of "live" parts.

The mixed CentraLine Panel Bus I/O modules offer a mix of 34 inputs and outputs in a compact housing.
Software updates, configuration, and commissioning are all done automatically by the controller for all Panel Bus I/O Modules.
The Panel Bus I/O Modules are addressed manually by adjusting their HEX switches.
The Panel Bus I/O Modules may be used with any CPU supporting Panel Bus communication (e.g., the LION, EAGLE, etc.).

FEATURES
• Plug-and-play functionality for easy maintenance.
• Pluggable Panel Bus I/O modules can be exchanged without rewiring. Further, the separate installation of terminal sockets and electronic modules lower risk of damage and theft in the construction phase.
• Fast wiring with state-of-the-art push-in terminals (screw-type terminals also available) and bridge connectors.
• Wide range of sensors supported (NTC20kΩ, NTC10kΩ, PT1000-1/-2, Johnson A99 PTC, Ni1000TK5000, PT3000, Balco500, 0/2…10 V, 0/4…20 mA).
NOTE: The mixed Panel Bus I/O modules CLIOP830A and CLIOP831A feature inputs suitable for signals from NTC20kΩ sensors and 0/2…10 V, 0/4…20 mA, only!
• Binary input LEDs of the pluggable CentraLine Panel Bus I/O Modules can be configured for status display (off / yellow) or alarm display (green / red) per channel.
NOTE: The mixed I/O modules CLIOP830A and CLIOP831A feature only non-configurable binary input LEDs!
• Configurable safety position for outputs, in case of loss of communication with the controller.
• Max. wiring flexibility due to optional accessories like auxiliary terminals and cross-connectors.
• Can be mounted in small installation housings
• Flexible mix of Panel Bus I/O modules covering all your application requirements.
OVERVIEW

Table 1. Overview of CentraLine Panel Bus I/O Modules

<table>
<thead>
<tr>
<th>order number</th>
<th>description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CLIOP821A</td>
<td>Pluggable Panel Bus Analog Input Module (with 8 analog inputs)</td>
</tr>
<tr>
<td>CLIOP822A</td>
<td>Pluggable Panel Bus Analog Output Module (with 8 analog outputs)</td>
</tr>
<tr>
<td>CLIOP822A</td>
<td>Pluggable Panel Bus Analog Output Module (with 8 analog outputs and manual overrides)</td>
</tr>
<tr>
<td>CLIOP823A</td>
<td>Pluggable Panel Bus Binary Input Module (with 12 binary inputs)</td>
</tr>
<tr>
<td>CLIOP824A</td>
<td>Pluggable Panel Bus Relay Output Module (with 6 relay outputs)</td>
</tr>
<tr>
<td>CLIOPR824A</td>
<td>Pluggable Panel Bus Relay Output Module (with 6 relay outputs and manual overrides)</td>
</tr>
<tr>
<td>CLIOPR825A</td>
<td>Pluggable Panel Bus Floating Output Module (with 3 floating outputs and manual overrides)</td>
</tr>
<tr>
<td>CLIOP830A</td>
<td>Mixed Panel Bus I/O Module (with 8 AIs, 8 AOs, 12 BIs, and 6 ROs); housing fits to LION Controller housing</td>
</tr>
<tr>
<td>CLIOP831A</td>
<td>Mixed Panel Bus I/O Module (with 8 AIs, 8 AOs, 12 BIs, and 6 ROs); housing fits to EAGLE Controller housing</td>
</tr>
</tbody>
</table>

Terminal Sockets (not needed for the mixed I/O modules CLIOP830A and CLIOP831A)

<table>
<thead>
<tr>
<th>Socket</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>XS821-22</td>
<td>Push-in terminal socket for pluggable AI/AO modules (incl. bridge connector, swivel label)</td>
</tr>
<tr>
<td>XSU821-22</td>
<td>Screw-type terminal socket for pluggable AI/AO modules (incl. bridge connector, swivel label)</td>
</tr>
<tr>
<td>XS823</td>
<td>Push-in terminal socket for pluggable BI modules (incl. bridge connector, swivel label)</td>
</tr>
<tr>
<td>XSU823</td>
<td>Screw-type terminal socket for pluggable BI modules (incl. bridge connector, swivel label)</td>
</tr>
<tr>
<td>XS824-25</td>
<td>Push-in terminal socket for pluggable relay/ floating output modules (incl. bridge connector, cross connector, swivel label)</td>
</tr>
<tr>
<td>XSU824-25</td>
<td>Screw-type terminal socket for pluggable relay/ floating output modules (incl. bridge connector, cross connector, swivel label)</td>
</tr>
</tbody>
</table>
Table 2. Overview of auxiliary parts and spare parts

<table>
<thead>
<tr>
<th>order number</th>
<th>description</th>
</tr>
</thead>
<tbody>
<tr>
<td>XS814</td>
<td>Ten Auxiliary Terminal Blocks (for distribution of signals/power). Each terminal block includes two groups with seven internally-connected push-in terminals. For pluggable I/O modules, only.</td>
</tr>
<tr>
<td>XS830</td>
<td>Ten Auxiliary Terminal Blocks (for distribution of signals/power). Each terminal block consists of two groups of nine internally-connected push-in terminals. For CLIOP830 and CLIOP831, only.</td>
</tr>
<tr>
<td>XS831</td>
<td>Ten Auxiliary Terminal Blocks (for connection of 0...20 mA signals). Each terminal block consists of two groups of four pairs of push-in terminals (each with a 499Ω resistor to GND) for supporting up to eight current inputs. For CLIOP830A and CLIOP831A, only.</td>
</tr>
<tr>
<td>XS815</td>
<td>20 Cross-Connectors for connection of six relay commons. One Cross-Connector is included in the Terminal Socket package. For pluggable I/O modules, only.</td>
</tr>
<tr>
<td>XS816</td>
<td>10 Bridge Connectors. One Bridge Connector is included in the Terminal Socket package.</td>
</tr>
<tr>
<td>XAL10</td>
<td>10 Swivel Labels (for attaching the application-specific label printed with CARE / COACH AX / COACH NX). One Swivel Label is included in the Terminal Socket package.</td>
</tr>
<tr>
<td>XAL11</td>
<td>10 Swivel Label Holders for Mixed I/O modules. One Swivel Label Holder is included in each mixed I/O module package. For mixed I/O modules, only. NOTE: Phased out.</td>
</tr>
</tbody>
</table>

**NOTE:** The inputs and outputs of all CentraLine analog and binary I/O modules are protected against short circuit, 24 VAC +20%, and 40 VDC. In the case of the relay outputs of other CentraLine I/O modules (i.e., relay output modules, floating output modules, and mixed I/O modules), appropriate fusing must be provided to ensure that permissible load currents are not exceeded. See also sub-section "Features" in section "Relay Output Modules" (pg. 15), "Floating Output Module" (pg. 18), and "Mixed I/O Modules" (pg. 20).
### Table 3. Pluggable Panel Bus I/O Module specifications

<table>
<thead>
<tr>
<th>Module</th>
<th>Analog Inputs</th>
<th>Analog Outputs</th>
<th>Binary Inputs</th>
<th>Relay Outputs</th>
<th>Floating Outputs</th>
</tr>
</thead>
<tbody>
<tr>
<td>CLIO821A</td>
<td>8 analog inputs</td>
<td>8 analog outputs</td>
<td>12 binary inputs requiring a gold contact or open collector</td>
<td>3 relay outputs</td>
<td>3 floating outputs</td>
</tr>
<tr>
<td>CLIO822A, CLIO823A</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Linear Graph, 0…10 VDC with pull-up, 0(2)…10 VDC without pull-up, NTC20kΩ (-30…+150 °C, default) NTC10kΩ (-30…+100 °C) PT1000 (-50…+100 °C) Johnson A99 (-40…+120 °C) N11000K5000 (-30…+130 °C) PTxxx (-50…+150 °C) BALCONO (-30…+120 °C)</th>
<th>Features:</th>
<th>Also configurable as:</th>
<th>Configurable types:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safety position</td>
<td>Safety position (remain, 0%, 50%, 100%)</td>
<td>(default)</td>
<td>safety position (remain, 0%, 50%, 100%)</td>
<td>static binary input, (default: dry contact)</td>
</tr>
<tr>
<td>Override (R)</td>
<td>1 potentiometer per output</td>
<td>auto feedback signal (mode + value)</td>
<td>blinking in manual override position</td>
<td>(default: dry contact)</td>
</tr>
<tr>
<td>Version with manual override (R)</td>
<td>1 switch per output</td>
<td>auto feedback signal (mode + value)</td>
<td>blinking in manual override position</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Manual Overrides as per EN ISO 16484-2:2004

The manual override switches and potentiometers of the output modules (…R822A, …R824 A, and CLIOPR825A) support direct operation as per EN ISO 16484-2:2004, section 5.4.3 "Local Priority Override/Indicating Units."

Specifically, the positions of the manual override switches and potentiometers directly control the outputs – independently of the controller and HMI. When a manual override switch or potentiometer is not in its default position ("auto"), the corresponding output LED will blink continuously, and the output module will send a feedback signal with the status "manual override" and the given override position to the controller (which will then also store this information in its alarm memory).

**NOTE:** When updating the firmare of output modules, their outputs are turned OFF – regardless of the position of their manual override switches and/or potentiometers.

### Table 4. Mixed CentraLine Panel Bus I/O module specifications (CLIO830A and CLIO831A)

<table>
<thead>
<tr>
<th>Number: 8</th>
<th>Number: 8</th>
<th>Number: 12 (requiring a gold contact or open collector)</th>
<th>Number: 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Configurable types:</td>
<td>Configurable types:</td>
<td>Configurable types:</td>
<td>Configurable types:</td>
</tr>
<tr>
<td>NTC20kΩ (-30…+110 °C) (default)</td>
<td>0…11 VDC / ± 1 mA (default)</td>
<td>Static binary inputs (default: static, dry contact)</td>
<td>Static binary inputs (default: static, dry contact)</td>
</tr>
<tr>
<td>Linear Graph</td>
<td>Also configurable as:</td>
<td>ON: &lt; 1.6 kΩ to GND or OFF: &gt; 90 kΩ to GND</td>
<td>ON: &lt; 1.6 kΩ to GND or OFF: &gt; 90 kΩ to GND</td>
</tr>
<tr>
<td>0…10 VDC with pull-up</td>
<td>binary outputs (0 V / 10 V)</td>
<td>or OFF: &gt; 2.5 V to GND, OFF: &gt; 90 kΩ to GND</td>
<td>or OFF: &gt; 2.5 V to GND, OFF: &gt; 90 kΩ to GND</td>
</tr>
<tr>
<td>0(2)…10 VDC without pull-up</td>
<td>Features:</td>
<td>&gt; 90 kΩ to GND or &gt; 4 V to GND</td>
<td>&gt; 90 kΩ to GND or &gt; 4 V to GND</td>
</tr>
<tr>
<td>Also configurable as:</td>
<td></td>
<td></td>
<td>(default)</td>
</tr>
<tr>
<td>binary inputs (static, dry contact, only)</td>
<td>Features:</td>
<td></td>
<td>(default: dry contact)</td>
</tr>
<tr>
<td>Features:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10-bit resolution</td>
<td></td>
<td>1 yellow LED per input</td>
<td></td>
</tr>
<tr>
<td>configurable offset per input</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
GENERAL FEATURES

Fig. 2. CentraLine Panel Bus I/O Modules on DIN rails

Legend
1 Controller (e.g., LION, EAGLE, HAWK, etc.)
2 Cable (power, Panel Bus) connection from controller to Panel Bus I/O Modules
3 Swivel label holder
4 Cable connection between Panel Bus I/O Modules on separate DIN rails
5 Bridge connectors between Panel Bus I/O Modules on same DIN rail
6 Stopper (from 3rd-party supplier)
7 Auxiliary terminal packages

LEDs
Each CentraLine Panel Bus I/O Module is equipped with:
- one green power LED
- one yellow service LED

Overvoltage Protection
The inputs and outputs of all CentraLine analog and binary I/O modules are protected against short circuit, 24 VAC +20%, and 40 VDC.
In the case of the relay outputs of other CentraLine I/O modules (i.e., relay output modules, floating output modules, and mixed I/O modules), appropriate fusing must be provided to ensure that permissible load currents are not exceeded.
See also sub-section "Features" in section "Relay Output Modules" (pg. 15), "Floating Output Module" (pg. 18), and "Mixed I/O Modules" (pg. 20).

Service LED
Each Panel Bus I/O Module is equipped with a yellow service LED (status: yellow/OFF) for easy diagnosis of failures.

Microprocessor
Each Panel Bus I/O Module is equipped with its own microprocessor.

Addressing
Addressing is performed using the HEX switch.

System Constraints

<table>
<thead>
<tr>
<th>Table 5. System constraints</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max. no. of I/O modules (any combination) per controller</td>
</tr>
<tr>
<td>Max. no. of I/O modules per row</td>
</tr>
<tr>
<td>Max. current (F1)</td>
</tr>
<tr>
<td>Max. current (F2)</td>
</tr>
<tr>
<td>Max. current (F3)</td>
</tr>
<tr>
<td>Max. current (F4) (mixed I/O modules, only)</td>
</tr>
<tr>
<td>Max. row length</td>
</tr>
<tr>
<td>Max. distance between rows</td>
</tr>
<tr>
<td>Min. cross-section of GND (terminal 9) (protected by F2)</td>
</tr>
</tbody>
</table>
Analog Input Module

Fig. 3. CLIOP821A Panel Bus AI Module (shown with terminal socket)

Legend
1 Hex switch S2
2 Service LED
3 Power LED

The pluggable CentraLine Panel Bus Analog Input Module, with 8 analog inputs, is installed with the XS821-22 or XSU821-22 Terminal Socket.

Fig. 4. Analog input low impedance (input circuit for PT1000, Johnson A99 PTC, Balco500, PT3000, NI1000TK5000, slow binary input)

Fig. 5. Analog input high impedance (input circuit for voltage input for active sensors)

Fig. 6. Analog input impedance setpoint (input circuit for NTC10kΩ, NTC20kΩ, wall module setpoint)

Fig. 7. CentraLine Panel Bus Analog Input Module (schematic)

Features
- 0…10 VDC, 2…10 VDC without pull-up
- 0…10 VDC with pull-up (linear graph, e.g. used for wall module connection)
- 0/4…20 mA, needs 499 Ω resistor in parallel
- NTC20kΩ (-50…+150 °C, default)
- NTC10kΩ (-30…+100 °C)
- PT1000-1 (-50…+150 °C)
- PT1000-2 (0…+400 °C)
- NI1000TK5000 (-30…+130 °C)
- PT3000 (-50…+150 °C)
- BALCO500 (-30…+120 °C)
- Binary input
- 16-bit resolution
- Configurable offset per input
- Auxiliary voltage: 10 VDC, Imax = 5 mA
- Sensor failure detection

See also section "Sensor Characteristics" on pg. 24.
Fig. 8. CLIOP821A Panel Bus AI Module, wiring example 1: Active sensor and potentiometer
CLIOP821A ANALOG INPUT MODULE

Fig. 9. CLIOP821A Panel Bus AI Module, wiring example 2: Passive sensor and 0 (4) ... 20 mA signal

LEGEND:

F1 = MAX. 4 A
F2 = MAX. 12 A

THIN LINES = MAX. 0.75 mm²
THICK LINES = MIN. 1.5 mm²
DASHED LINES = SELECTED INTERNAL CONNECTIONS
Analog Output Modules

Fig. 10. CLIOPR822A Panel Bus AO Module (shown with terminal socket)

Legend
1 Hex switch S2
2 Manual overrides
3 Status LEDs
4 Service LED
5 Power LED

The pluggable CentraLine Panel Bus Analog Output Modules, with 8 analog outputs, are available in the following models:
- CLIOP822A Panel Bus Analog Output Module (without manual overrides)
- CLIOPR822A Panel Bus Analog Output Module (with manual overrides)
They are installed with the XS821-22 or XSU821-22 Terminal Socket.

Features
- 0...11 VDC, +/-1 mA
- Floating actuator (requires MCD3)
- Binary output (0 V / 10 V)
- red LED per output (brightness according to signal level)
- Optional versions with manual override potentiometers (Auto, 0...100%; LED flashes in override mode)
- Feedback on manual override signal
- 8-bit resolution
- Configurable safety position for outputs in case of communication problems (remain, 0%, 50%, 100%)
Fig. 12. CLIOP822A Panel Bus AO Module, wiring example 1: Actuator
The relay module facilitates the control of peripheral devices with high load via the analog outputs.

- Input terminal 17 of MCD3 controls changeover contact K3.
- Relay terminal 18 of MCD3 controls the N.O. contacts (floating outputs) K1, K2.
The relay module facilitates the control of peripheral devices with high load via the analog outputs.

- Input terminal 16 of MCE3 controls the N.O. contact K3.
- Input terminal 17 of MCE3 controls the changeover contact K2.
- Input terminal 18 of MCE3 controls the changeover contact K1.
Binary Input Module

Fig. 15. CLIOP823A Panel Bus BI Module (shown with XS823 terminal socket)

Legend
1 Hex switch S2
2 Status LEDs
3 Service LED
4 Power LED

The pluggable CentraLine Panel Bus Binary Input Module, with 12 binary inputs, is installed with the XS823 or XSU823 Terminal Socket.

Configuration as Fast Totalizer
Using CARE / COACH AX / COACH NX, the binary inputs can be configured as fast totalizers for operation in conjunction with devices equipped with an open collector output.

Table 6. Binary inputs used as fast totalizers

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency</td>
<td>max. 20 Hz</td>
</tr>
<tr>
<td>Pulse ON</td>
<td>min. 25 ms</td>
</tr>
<tr>
<td>Pulse OFF</td>
<td>min. 25 ms</td>
</tr>
<tr>
<td>Bounce</td>
<td>max. 5 ms</td>
</tr>
</tbody>
</table>

Fig. 16. Configuration of a binary input as a fast totalizer

Fig. 17. CentraLine Panel Bus Binary Input Modules (schematic)

Features
- Static binary input (dry contact)
- Totalizer for up to 20 Hz
- LEDs per binary input supporting alarm display mode (red/green) or status mode (off/yellow).
- Color mode of each LED can be set to OFF/yellow or green/red in CARE / COACH AX / COACH NX.
CLIOP823A BINARY INPUT MODULE

**Dry Contact**
1: Signal
2: GND

**Totalizer**
1: Signal
2: GND

**Legend:**

- **F1** = Max. 4 A
- Thin Lines = —— = Min. 0.75 mm²
- Thick Lines = ——— = Min. 1.5 mm²
- Dashed Lines = ---- / ----- = Selected internal connections

Fig. 18. CLIOP823A Panel Bus BI Module, wiring example: Dry contact and totalizer
Relay Output Modules

Fig. 19. CLIOPR824A Panel Bus Relay Output Module (shown with terminal socket)

Legend
1 Hex switch S2
2 Manual overrides
3 Status LEDs
4 Service LED
5 Power LED

The pluggable CentraLine Panel Bus Relay Output Modules, with 6 relay outputs, are available in the following versions:

- CLIOP824A Panel Bus Relay Output Module (without manual overrides)
- CLIOPR824A Panel Bus Relay Output Module (with manual overrides)

They are installed with the XS824-25 or XSU824-25 Terminal Socket.

Features
- Cross-Connector
- 1 yellow LED per output
- Optional versions with manual override switches (Auto, 0, 1; LED flashes in override mode)
- Feedback on manual override signal
- Configurable safety position for outputs in case of communications problems (remain, OFF, ON)
- Permissible Load per Relay Output Module (Total)
  - Max. load (fuse F3):
    - 19…250 VAC: 12 A
    - 1…29 VDC: 12 A resistive, 3 A inductive
- Permissible Load per Normally-Open Contact:
  - Max. load:
    - 19…250 VAC: 4 A resistive or inductive
    - 1…29 VDC: 4 A resistive, 1 A inductive
  - Min. load: P > 50 mW
- Permissible Load per Normally-Closed Contact:
  - Max. load:
    - 19…250 VAC: 2 A resistive, 1 A inductive
    - 1…29 VDC: 2 A resistive, 1 A inductive
  - Min. load: P > 50 mW
Fig. 21. CLIOP824A Panel Bus RO Module, wiring example 1: Both relay blocks with line voltage
CLIOP824A RELAY OUTPUT MODULE

CROSS CONNECTOR XS815 (FACTORY-MOUNTED)

OPTIONAL AUX. TERMINAL PACKAGE XS814

Fig. 22. CLIOP824A Panel Bus RO Module, wiring example 2: Relay blocks with low and line voltage
Floating Output Module

Fig. 23. CLIOPR825A Panel Bus Floating Output Module
(shown with terminal socket)

Legend
1 Hex switch S2
2 Manual overrides
3 Status LEDs
4 Service LED
5 Power LED

The pluggable CLIOPR825A Panel Bus Floating Output Module, with manual overrides and 3 floating outputs, is installed with the XS824-25 or XSU824-25 Terminal Socket.

Features
- Cross-Connector
- 1 red LED (opening) and 1 green LED (closing) per floating output
- Manual override potentiometers (Auto, 0%…100%; LED flashes in override mode)
- Feedback on manual override signal
- Configurable safety position for outputs in case of communication problems (remain, 0%, 50%, 100%)
- Permissible Load per Floating Output Module (Total)
  - Max. load (fuse F3):
    19…250 VAC: 12 A
    1…29 VDC: 12 A resistive, 3 A inductive
- Permissible Load per Normally-Open Contact:
  - Max. load:
    19…250 VAC: 4 A resistive or inductive
    1…29 VDC: 4 A resistive, 1 A inductive
  - Min. load: P > 50 mW
- Permissible Load per Normally-Closed Contact:
  - Max. load:
    19…250 VAC: 2 A resistive, 1 A inductive
    1…29 VDC: 2 A resistive, 1 A inductive
  - Min. load: P > 50 mW
Fig. 25. CLIOPR825A Panel Bus FO Module, wiring example: Floating actuator
Mixed I/O Modules

The CLIOP830A and CLIOP831A mixed Panel Bus I/O modules feature 8 analog inputs, 8 analog outputs, 12 binary inputs, and 6 relay outputs. The CLIOP830A is equipped with push-in terminals, while the CLIOP831A features screw-type terminals. Both feature an integrated terminal socket and electronic module. The CLIOP830A can be equipped with up to two rows of (XS830 and/or XS831) auxiliary terminal blocks on the top and/or bottom. The CLIOP831A can be equipped with up to two rows of (XS830 and/or XS831) auxiliary terminal blocks on the top, only.

Features
- 1 yellow LED per output
- Configurable safety position for outputs in case of communications problems (remain in last position, OFF, ON)

Table 7. Permissible loads of Mixed Panel Bus I/O Modules

<table>
<thead>
<tr>
<th>Feature</th>
<th>max. load</th>
<th>min. load</th>
</tr>
</thead>
<tbody>
<tr>
<td>per module (total for all relay contacts)</td>
<td>19...29 VAC, 1...29 VDC</td>
<td>3 A resistive or inductive, cos φ ≥ 0.6, no capacitive load, protected by fuse F4</td>
</tr>
<tr>
<td>per normally open contact</td>
<td>19...29 VAC, 0.5 A resistive or inductive, cos φ ≥ 0.6, no capacitive load</td>
<td>&gt;50 mW, 0.05 A res./ind., cos φ ≥ 0.6</td>
</tr>
</tbody>
</table>
CLIOP830A Mixed I/O Module

**Binary Inputs**
- **1**: GND
- **2**: Signal

**Analog Inputs**
- **1**: GND (24V 0)
- **2**: 24V
- **3**: 0...10 VDC

**Analog Outputs**
- **1**: GND
- **2**: 24V
- **3**: 0...10 VDC

**24V Relays**
- **1**: GND (24V 0)
- **2**: 24V
- **3**: 0...10 VDC

**Opt. Aux. Term. Module XS830**
- **1**: GND
- **2**: 24V

**Fig. 32. CLIOP830A mixed Panel Bus I/O Module, wiring example: Actuators**
Fig. 33. CLIOP831A mixed Panel Bus I/O Module, wiring example: Current inputs
Approvals, Certifications, and Standards
Approvals and Certifications
- CE-approved
- Conforms to EN 60730-1 and EN 60730-2-9
- Investigated according to United States Standard UL916 (USL-listed) as well as according to Canadian National Standard(s) C22.2 (CNL-listed)

Classification according to EN60730-1
Environmental conditions: For use in home (residential, commercial, and light-industrial) environments
Pollution degree: Class 2
Protection against shock: Class II
Software class: Class A
Overvoltage category: II

Classification according to EN60529
(Degree of Protection Provided by Enclosures)
Classification: IP20

Ambient Environmental Limits
Operating temperature: 0 … +50 °C at 5…93% r.H.
Storage temperature: -20 … +70 °C at 5…93% r.H.
Humidity: 5 … 93% r.h. non-condensing

Current Requirement and Heat Dissipation
The Panel Bus I/O Modules are equipped with highly-efficient switching power supplies which provide for relatively uniform power consumption over a wide range of supply voltages (see Table 8). The specific heat dissipation inside the modules amounts to less than 2 W for all models.

Table 8. Current requirements of CentraLine Panel Bus I/O Modules
<table>
<thead>
<tr>
<th>devices powered</th>
<th>supply voltage</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>24 VAC</td>
</tr>
<tr>
<td>CLIOP821A</td>
<td>130 mA</td>
</tr>
<tr>
<td>CLIOP822A, CLIOPR822A</td>
<td>150 mA</td>
</tr>
<tr>
<td>CLIOP823A, CLIOL823A</td>
<td>180 mA</td>
</tr>
<tr>
<td>CLIOP824A, CLIOPR824A, CLIOPR825A</td>
<td>140 mA</td>
</tr>
<tr>
<td>CLIOP830A, CLIOP831A</td>
<td>200 mA</td>
</tr>
</tbody>
</table>
Mechanical

Housing dimensions (H x W x D)
The pluggable CentraLine I/O Modules (mounted on Terminal Sockets) all have the dimensions: 110 X 90 X 93 mm (see also Fig. 34 on page 25).
The CLIOP830A mixed Panel Bus I/O module has the dimensions: 216 X 110 X 93 mm (see also Fig. 35 on page 25).
The CLIOP831A mixed Panel Bus I/O module has the dimensions: 216 X 110 X 61 mm (see also Fig. 36 on page 26).

Housing Material
Plastic, flame-retardant

Mounting Methods
DIN-rail mounting (e.g. in control cabinet).

Calculated Lifetime of Weakest Components
MTBF ≥ 13.7 years (under typical operating conditions)

Sensor Characteristics
The following sensor characteristics do not include failures due to:
- sensor failures;
- wiring resistance or wiring failures;
- misreadings due to a meter connected to measure resistance or voltage at the input.

For more-detailed values, see section "Appendix 3: Sensor Characteristics" of the CentraLine I/O Modules – Installation & Commissioning Instructions (EN1Z-0973GE51).

### Table 9. BALCO 500

<table>
<thead>
<tr>
<th>Temp. [°C]</th>
<th>Resistance [Ω]</th>
<th>Terminal voltage [V]</th>
</tr>
</thead>
<tbody>
<tr>
<td>-20.0</td>
<td>415</td>
<td>0.164</td>
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<tr>
<td>0.0</td>
<td>453</td>
<td>0.179</td>
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<tr>
<td>20.0</td>
<td>493</td>
<td>0.194</td>
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<tr>
<td>40.0</td>
<td>535</td>
<td>0.210</td>
</tr>
<tr>
<td>60.0</td>
<td>579</td>
<td>0.227</td>
</tr>
<tr>
<td>80.0</td>
<td>625</td>
<td>0.245</td>
</tr>
<tr>
<td>100.0</td>
<td>673</td>
<td>0.263</td>
</tr>
<tr>
<td>120.0</td>
<td>724</td>
<td>0.283</td>
</tr>
</tbody>
</table>

### Table 11. Pt 1000

<table>
<thead>
<tr>
<th>Temp. [°C]</th>
<th>Resistance [Ω]</th>
<th>Terminal voltage [V]</th>
</tr>
</thead>
<tbody>
<tr>
<td>-20.0</td>
<td>922</td>
<td>0.357</td>
</tr>
<tr>
<td>0.0</td>
<td>1000</td>
<td>0.386</td>
</tr>
<tr>
<td>20.0</td>
<td>1078</td>
<td>0.415</td>
</tr>
<tr>
<td>40.0</td>
<td>1155</td>
<td>0.443</td>
</tr>
<tr>
<td>60.0</td>
<td>1232</td>
<td>0.471</td>
</tr>
<tr>
<td>80.0</td>
<td>1309</td>
<td>0.499</td>
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<tr>
<td>100.0</td>
<td>1385</td>
<td>0.527</td>
</tr>
<tr>
<td>120.0</td>
<td>1461</td>
<td>0.554</td>
</tr>
</tbody>
</table>

### Table 12. Ni1000TK5000

<table>
<thead>
<tr>
<th>Temp. [°C]</th>
<th>Resistance [Ω]</th>
<th>Terminal voltage [V]</th>
</tr>
</thead>
<tbody>
<tr>
<td>-20.0</td>
<td>913.5</td>
<td>0.354</td>
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<tr>
<td>0.0</td>
<td>1000.0</td>
<td>0.386</td>
</tr>
<tr>
<td>20.0</td>
<td>1090.7</td>
<td>0.420</td>
</tr>
<tr>
<td>40.0</td>
<td>1185.7</td>
<td>0.455</td>
</tr>
<tr>
<td>60.0</td>
<td>1285.4</td>
<td>0.491</td>
</tr>
<tr>
<td>80.0</td>
<td>1390.1</td>
<td>0.529</td>
</tr>
<tr>
<td>100.0</td>
<td>1500.0</td>
<td>0.568</td>
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<tr>
<td>120.0</td>
<td>1615.4</td>
<td>0.609</td>
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</tbody>
</table>

### Table 13. NTC 10 kOhm

<table>
<thead>
<tr>
<th>Temp. [°C]</th>
<th>Resistance [kΩ]</th>
<th>Terminal voltage [V]</th>
</tr>
</thead>
<tbody>
<tr>
<td>-20.0</td>
<td>97.073</td>
<td>7.241</td>
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<td>0.0</td>
<td>32.650</td>
<td>5.299</td>
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<tr>
<td>20.0</td>
<td>12.490</td>
<td>3.207</td>
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<tr>
<td>40.0</td>
<td>5.327</td>
<td>1.724</td>
</tr>
<tr>
<td>60.0</td>
<td>2.488</td>
<td>0.898</td>
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<tr>
<td>80.0</td>
<td>1.258</td>
<td>0.478</td>
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<tr>
<td>100.0</td>
<td>0.680</td>
<td>0.265</td>
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</table>

### Table 14. Pt 3000

<table>
<thead>
<tr>
<th>Temp. [°C]</th>
<th>Resistance [kΩ]</th>
<th>Terminal voltage [V]</th>
</tr>
</thead>
<tbody>
<tr>
<td>-20.0</td>
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<td>1.104</td>
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<td>0.0</td>
<td>3.266</td>
<td>1.160</td>
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<tr>
<td>20.0</td>
<td>3.440</td>
<td>1.214</td>
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<tr>
<td>40.0</td>
<td>3.613</td>
<td>1.267</td>
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<tr>
<td>60.0</td>
<td>3.784</td>
<td>1.319</td>
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<tr>
<td>80.0</td>
<td>3.954</td>
<td>1.370</td>
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<tr>
<td>100.0</td>
<td>4.122</td>
<td>1.420</td>
</tr>
<tr>
<td>120.0</td>
<td>4.289</td>
<td>1.469</td>
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</table>
Fig. 34. CentraLine Panel Bus I/O Modules (example shows Manual Overrides), incl. Terminal Socket, outside dimensions (in mm)

Fig. 35. CLIOP830A mixed Panel Bus I/O module (shown with 4 auxiliary terminal packages), dimensions (in mm)
Fig. 36. CLIOP831A mixed Panel Bus I/O module, dimensions (in mm)