



## GENERAL

The CentralLine Panel Bus I/O Modules communicate via the Panel Bus.

The pluggable CentralLine 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 CentralLine 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 (NTC20k $\Omega$ , NTC10k $\Omega$ , PT1000-1/-2, NI1000TK5000, PT3000, Balco500, 0/2...10 V, 0/4...20 mA). **NOTE:** The mixed Panel Bus I/O modules CLIOP830 and CLIOP831 feature inputs suitable for signals from NTC20k $\Omega$  sensors and 0/2...10 V, 0/4...20 mA, only!
- Binary input LEDs of the pluggable CentralLine 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 CLIOP830 and CLIOP831 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, manual disconnectors, and cross-connectors.
- Can be mounted in small installation housings
- Flexible mix of Panel Bus I/O modules covering all your application requirements.

## OVERVIEW

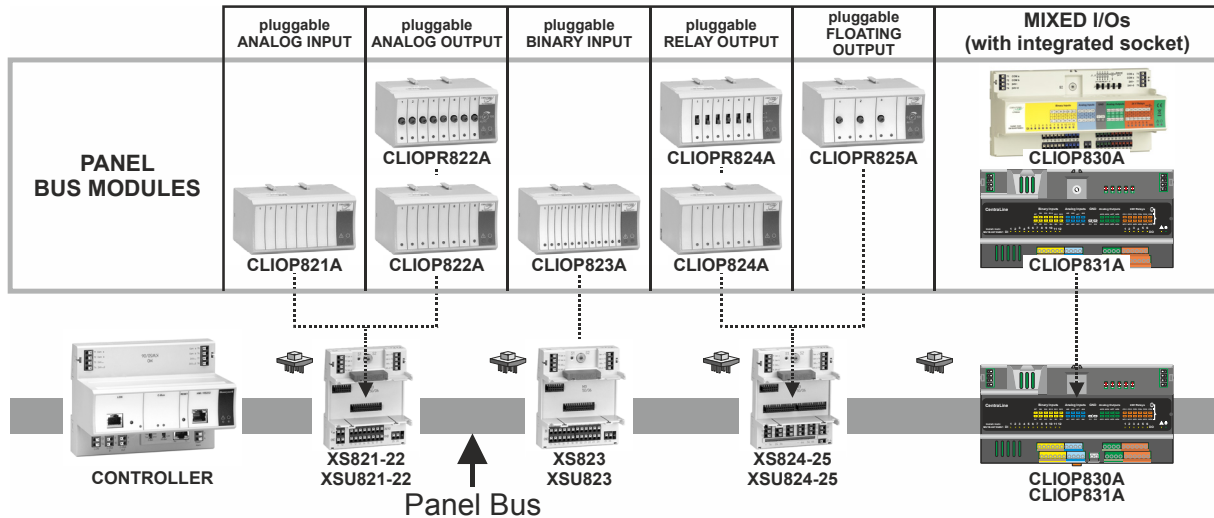








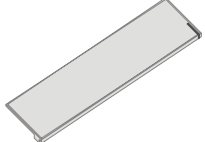


Fig. 1. Overview of CentraLine Panel Bus I/O Modules

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

order number	description
<b>Pluggable Panel Bus I/O Modules</b>	
<b>CLIOP821</b>	Pluggable Panel Bus Analog Input Module (with 8 analog inputs)
<b>CLIOP822</b>	Pluggable Panel Bus Analog Output Module (with 8 analog outputs)
<b>CLIOPR822</b>	Pluggable Panel Bus Analog Output Module (with 8 analog outputs and manual overrides)
<b>CLIOP823</b>	Pluggable Panel Bus Binary Input Module (with 12 binary inputs)
<b>CLIOP824</b>	Pluggable Panel Bus Relay Output Module (with 6 relay outputs)
<b>CLIOPR824</b>	Pluggable Panel Bus Relay Output Module (with 6 relay outputs and manual overrides)
<b>CLIOPR825</b>	Pluggable Panel Bus Floating Output Module (with 3 floating outputs and manual overrides)
<b>Mixed Panel Bus I/O Modules with integrated socket</b>	
<b>CLIOP830</b>	Mixed Panel Bus I/O Module (with 8 AIs, 8 AOs, 12 BIs, and 6 ROs); housing fits to LION Controller housing
<b>CLIOP831</b>	Mixed Panel Bus I/O Module (with 8 AIs, 8 AOs, 12 BIs, and 6 ROs); housing fits to EAGLE Controller housing
<b>Terminal Sockets (not needed for the mixed I/O modules CLIOP830 and CLIOP831)</b>	
<b>XS821-22</b>	Push-in terminal socket for pluggable AI/AO modules (incl. bridge connector, swivel label)
<b>XSU821-22</b>	Screw-type terminal socket for pluggable AI/AO modules (incl. bridge connector, swivel label)
<b>XS823</b>	Push-in terminal socket for pluggable BI modules (incl. bridge connector, swivel label)
<b>XSU823</b>	Screw-type terminal socket for pluggable BI modules (incl. bridge connector, swivel label)
<b>XS824-25</b>	Push-in terminal socket for pluggable relay/floating output modules (incl. bridge connector, cross connector, swivel label)
<b>XSU824-25</b>	Screw-type terminal socket for pluggable relay/floating output modules (incl. bridge connector, cross connector, swivel label)

**Table 2. Overview of auxiliary parts and spare parts**

order number	description
<b>XS812</b> 	Manual Disconnecter Module for AI/AO/BI Modules (for manual disconnection of individual signals; useful during start-up). Plugged between Terminal Socket and Electronic Module. For pluggable I/O modules, only.
<b>XS812RO</b> 	Manual Disconnecter Module for Relay Output Modules (for manual disconnection of individual signals; useful during start-up). Plugged between Terminal Socket and Electronic Module. Not suitable for line voltage. For pluggable I/O modules, only.
<b>XS814</b> 	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.
<b>XS830</b> 	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.
<b>XS831</b> 	Ten Auxiliary Terminal Blocks (for connection of 0...20 mA signals). Each terminal block supports up to 8 current inputs. For CLIOP830 and CLIOP831, only.
<b>XS815</b> 	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.
<b>XS816</b> 	10 Bridge Connectors. One Bridge Connector is included in the Terminal Socket package / in the mixed Panel Bus I/O module packages.
<b>XAL10</b> 	10 Swivel Labels (for attaching the application-specific label printed with CARE). One Swivel Label is included in the Terminal Socket package.
<b>XAL11</b> 	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:** All CentraLine Panel Bus I/O Modules are protected against short circuit, 24 VAC +20% and 30 VDC

**Table 3. Pluggable Panel Bus I/O Module specifications**

Module	Analog Input	Analog Output	Binary Input	Relay Output	Floating Output
	CLIO821	CLIO822, CLIO822	CLIO823	CLIO824, CLIO824	CLIO825
no. of I/Os	8 analog inputs	8 analog outputs	12 binary inputs requiring a gold contact or open collector	6 relay outputs	3 floating outputs
characteristic	<p>Linear Graph, 0...10 Vdc with pull-up, 0(2)...10 Vdc without pull-up</p> <p><u>NTC20kΩ (-50...+150 °C, default)</u></p> <p><u>NTC10kΩ (-30...+100 °C)</u></p> <p>PT<sub>1000-1</sub> (-50...150°C)</p> <p>PT<sub>1000-2</sub> (0...400°C)</p> <p>NI1000TK5000 (-30...+130 °C)</p> <p>PT<sub>3000</sub> (-50...150°C)</p> <p>BALCO<sub>500</sub> (-30...120°C)</p> <p>Also configurable as: binary inputs</p> <ul style="list-style-type: none"> <li>Linear graph (0...10 V with pull-up)</li> </ul> <p><b>Features:</b></p> <ul style="list-style-type: none"> <li>16-bit resolution</li> <li>configurable offset per input</li> <li>auxiliary voltage: 10 Vdc, I<sub>max</sub> = 5 mA</li> </ul>	<p>0...11 Vdc / ± 1 mA, 8-bit resolution (default)</p> <p>Also configurable as: floating outputs or binary outputs (0 V / 10 V)</p> <p><b>Features:</b></p> <ul style="list-style-type: none"> <li>8-bit resolution</li> <li>Safety position (remain, 0%, 50%, 100%)</li> <li>red LED per output</li> <li>light intensity follows output level in auto</li> </ul> <p><b>Version with manual override (R):</b></p> <ul style="list-style-type: none"> <li>1 potentiometer per output</li> <li>auto feedback signal (mode + value)</li> <li>blinking in manual override position</li> </ul>	<p><u>static binary input, (default: dry contact)</u></p> <p>Also configurable as: totalizers (20 Hz)</p> <p><b>Features:</b></p> <ul style="list-style-type: none"> <li>1 LED per input</li> <li>Color mode can be set per input to OFF/yellow or green/red using CARE</li> <li>ON: &lt; 1.6 kΩ to GND or &lt; 2.5 V to GND, OFF: &gt; 90 kΩ to GND or &gt; 4 V to GND</li> </ul>	<p><u>relay outputs (default)</u></p> <p><b>Features:</b></p> <ul style="list-style-type: none"> <li>Changeover relays</li> <li>Voltage: 19...250 Vac, 1...29 Vdc, P&gt;50 mW</li> <li>max. total current: 12 A</li> <li>current per relay: N.O.: 4(4) A (AC) or 4(1) A (DC), N.C.: 2(1) A (AC) or 4(1) A (DC)</li> <li>Safety position (remain, 0%, 100%)</li> <li>yellow LED per output</li> </ul> <p><b>Version with manual override (R):</b></p> <ul style="list-style-type: none"> <li>1 switch per output</li> <li>auto feedback signal (mode + value)</li> <li>blinking in manual override position</li> </ul>	<p><u>floating outputs</u></p> <p><b>Features:</b></p> <ul style="list-style-type: none"> <li>2 relays per floating output</li> <li>Voltage: 19...250 Vac, 1...29 Vdc, P&gt;50 mW</li> <li>max. total current: 12 A</li> <li>current per relay: N.O.: 4(4) A (AC) or 4(1) A (DC), N.C.: 2(1) A (AC) or 4(1) A (DC)</li> <li>1 potentiometer per floating output</li> <li>2 LEDs per output: green: relay 1 closed, red: relay 2 closed</li> <li>blinking in manual override position</li> <li>auto feedback signal (mode + value)</li> </ul>

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

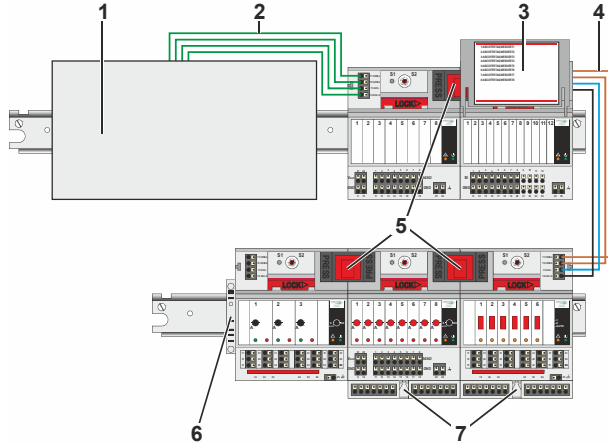
The manual override switches and potentiometers of the output modules (...R822, ...R824, and CLIO825) support direct operation as per EN ISO 16484-2:2004, section 5.4.3 "Local Priority Override/Indicating Units." Specifically, the positions of the manual override switches and potentiometers directly 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 firmware 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 (CLIO830 and CLIO831)**

Analog Inputs	Analog Outputs	Binary Inputs	Relay Outputs
<p><b>Number:</b> 8</p> <p><b>Configurable types:</b></p> <ul style="list-style-type: none"> <li>NTC20kΩ (-30...+110 °C) (default)</li> <li>Linear Graph</li> <li>0...10 Vdc with pull-up</li> <li>0(2)...10 Vdc without pull-up</li> </ul> <p><b>Also configurable as:</b></p> <ul style="list-style-type: none"> <li>binary inputs (static, dry contact, only)</li> </ul> <p><b>Features:</b></p> <ul style="list-style-type: none"> <li>10-bit resolution</li> <li>configurable offset per input</li> </ul>	<p><b>Number:</b> 8</p> <p><b>Configurable types:</b></p> <ul style="list-style-type: none"> <li>0...11 Vdc / ± 1 mA (default)</li> </ul> <p><b>Also configurable as:</b></p> <ul style="list-style-type: none"> <li>binary outputs (0 V / 10 V)</li> </ul> <p><b>Features:</b></p> <ul style="list-style-type: none"> <li>10-bit resolution (default)</li> <li>Safety position (remain, 0%, 50%, 100%)</li> </ul>	<p><b>Number:</b> 12 (requiring a gold contact or open collector)</p> <p><b>Configurable types:</b></p> <ul style="list-style-type: none"> <li>Static binary inputs (default: static, dry contact)</li> <li>ON: &lt; 1.6 kΩ to GND or &lt; 2.5 V to GND, OFF: &gt; 90 kΩ to GND or &gt; 4 V to GND</li> </ul> <p><b>Also configurable as:</b></p> <ul style="list-style-type: none"> <li>totalizers (15 Hz)</li> </ul> <p><b>Features:</b></p> <ul style="list-style-type: none"> <li>1 yellow LED per input</li> </ul>	<p><b>Number:</b> 6</p> <p><b>Configurable types:</b></p> <ul style="list-style-type: none"> <li>Relay outputs (default)</li> </ul> <p><b>Features:</b></p> <ul style="list-style-type: none"> <li>Voltage: 24 VAC/DC, P&gt;50 mW</li> <li>max. total current: 3 A (AC/DC)</li> <li>current per relay: 500 mA</li> <li>normally-open contacts: P &gt; 50 mW, voltage: 24 V (AC/DC)</li> <li>1 yellow LED per output</li> </ul>

# 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 3<sup>rd</sup>-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

All inputs and outputs are protected against 24 Vac and 40 Vdc overvoltage as well as against short-circuiting.

## 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 5. System constraints**

<b>Max. no. of I/O modules (any combination) per controller (depending upon controller type)</b>	64
<b>Max. no. of I/O modules per row</b>	10
<b>Max. current (F1)</b>	4 A
<b>Max. current (F2)</b>	12 A
<b>Max. current (F3)</b>	12 A
<b>Max. current (F4) (mixed I/O modules, only)</b>	3 A
<b>Max. row length</b>	3 m
<b>Max. distance between rows</b>	40 m
<b>Min. cross-section of GND (terminal 9) (protected by F2)</b>	1.5 mm <sup>2</sup>

## Analog Input Module



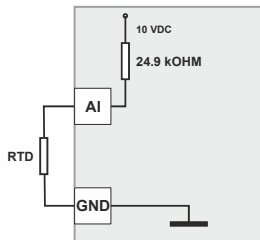
**Fig. 3. CLIOP821 Panel Bus AI Module (shown with terminal socket)**

### Legend

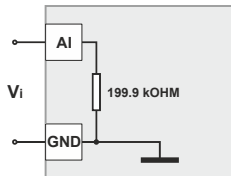
- 1 Hex switch S2
- 2 Service LED
- 3 Power LED

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

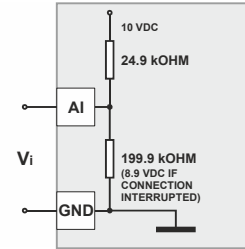
Accessory disconnecter module: XS812 (see also Table 2 on page 3).



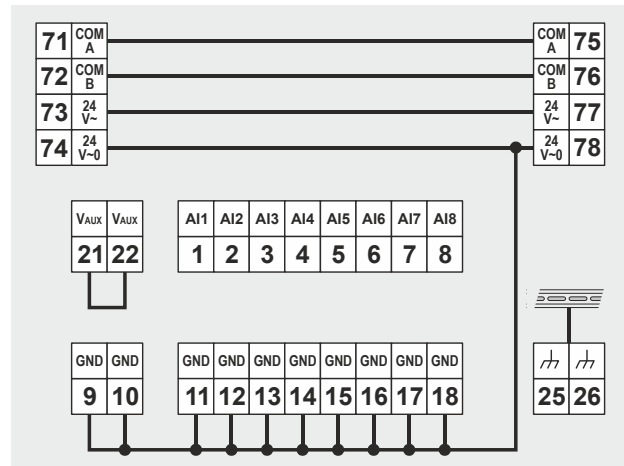
**Fig. 4. Analog input low impedance (input circuit for PT1000, Balco500, PT3000, NI1000TK5000, slow binary input)**



**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,  $I_{MAX} = 5 \text{ mA}$
- Sensor failure detection

See also section "Sensor Characteristics" on pg. 24.

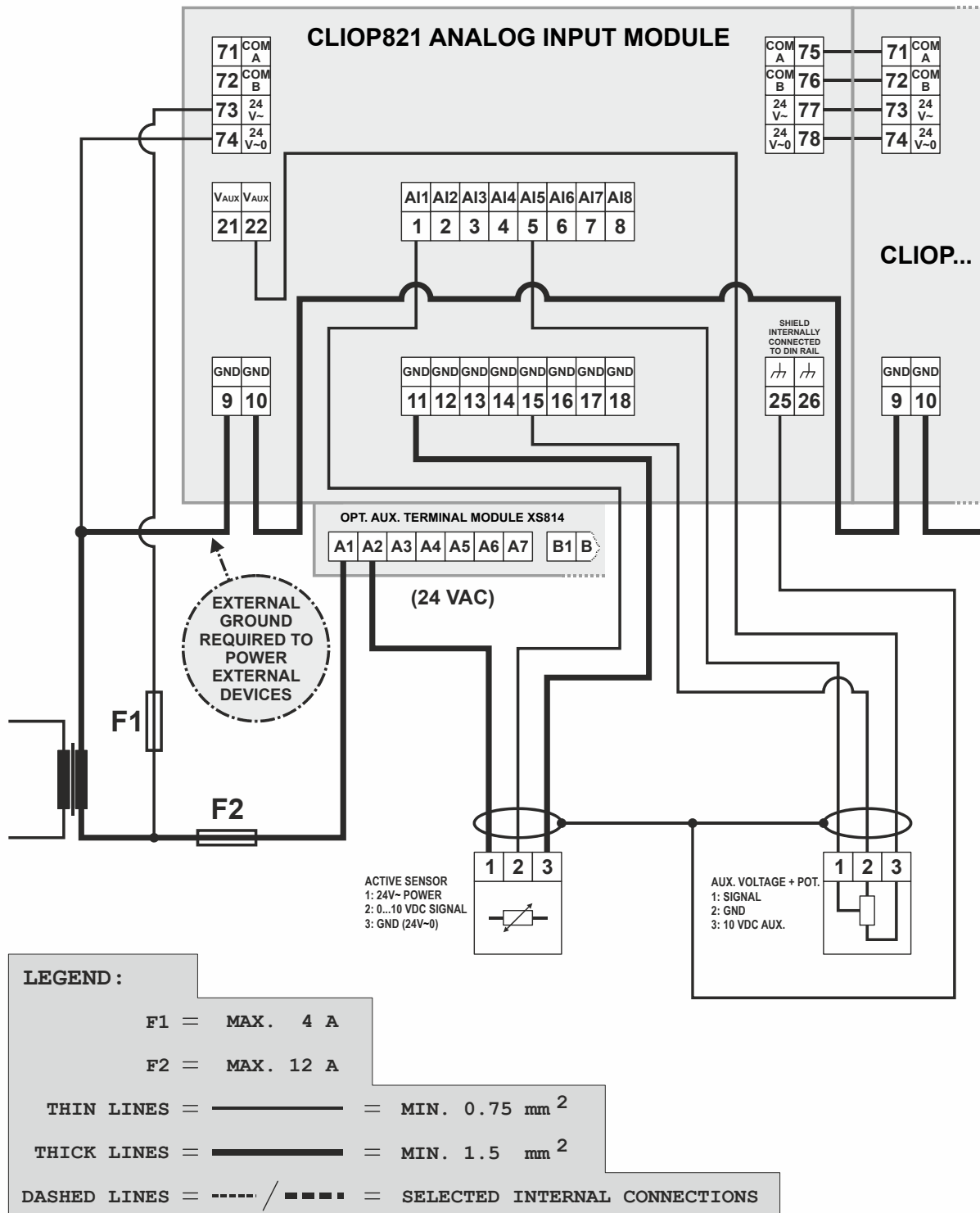


Fig. 8. CLIO821 Panel Bus AI Module, wiring example 1: Active sensor and potentiometer

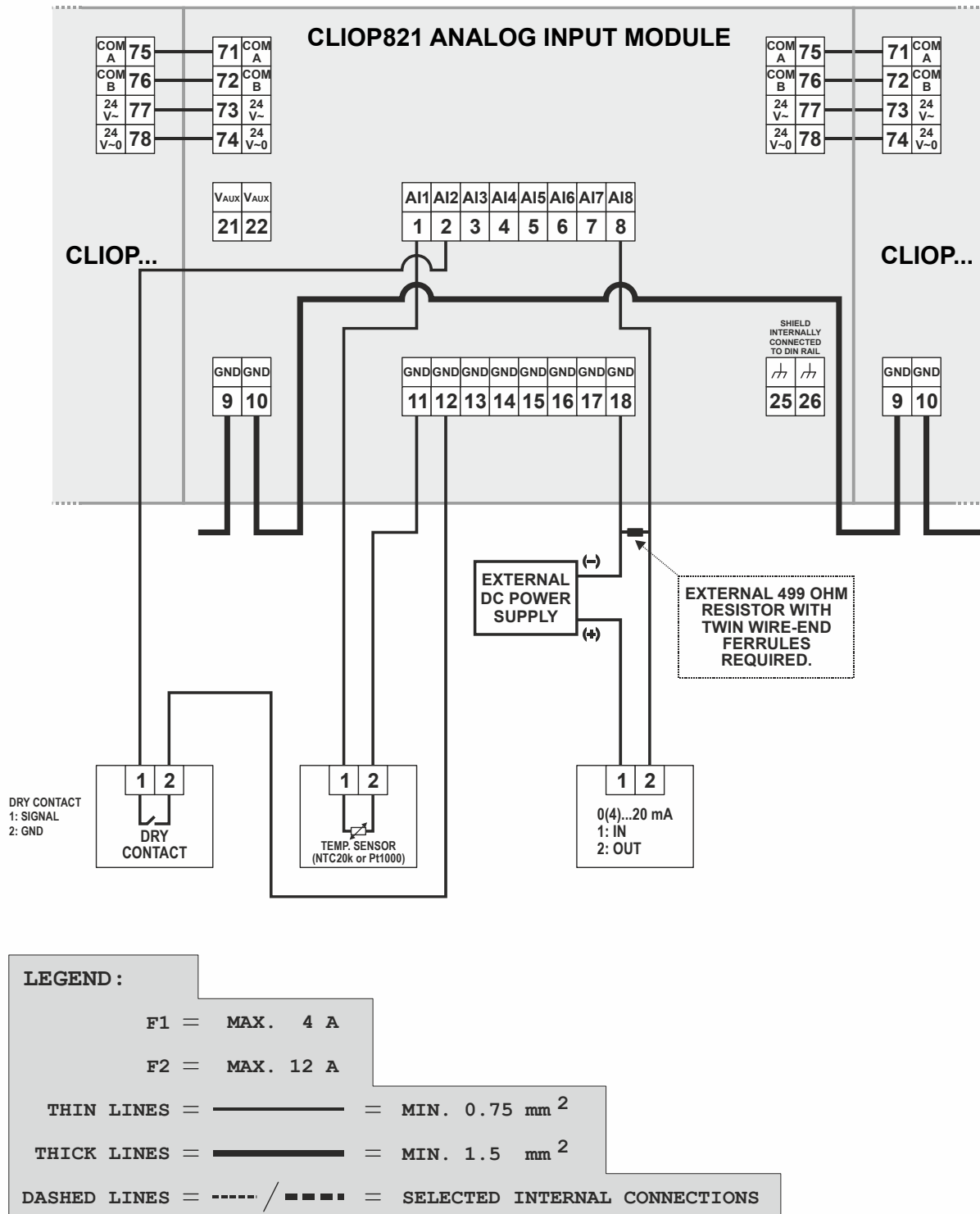


Fig. 9. CLIO821 Panel Bus AI Module, wiring example 2: Passive sensor and 0 (4) ... 20 mA signal



## Analog Output Modules

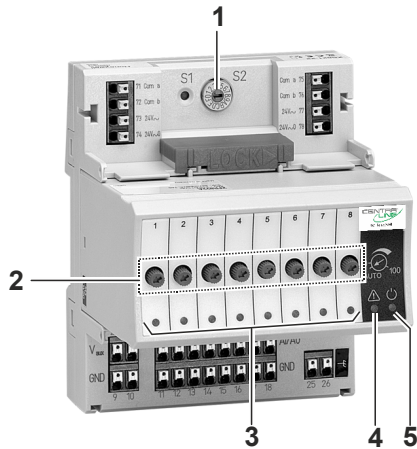


Fig. 10. CLIOPR822 Panel Bus AO Module (shown with terminal socket)

### Legend

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

The pluggable CentralLine Panel Bus Analog Output Modules, with 8 analog outputs, are available in the following models:

- CLIOPR822 Panel Bus Analog Output Module (without manual overrides)
- CLIOPR822 Panel Bus Analog Output Module (with manual overrides)

They are installed with the XS821-22 or XSU821-22 Terminal Socket.

Accessory disconnecter module: XS812 (see also Table 2 on page 3).

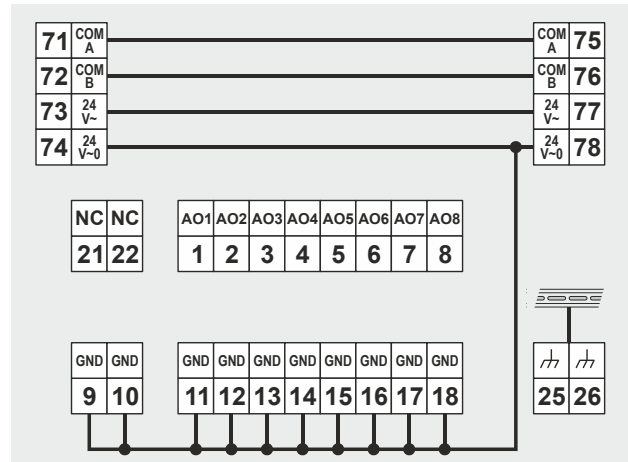


Fig. 11. CentralLine Panel Bus Analog Output Modules (schematic)

### 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%)

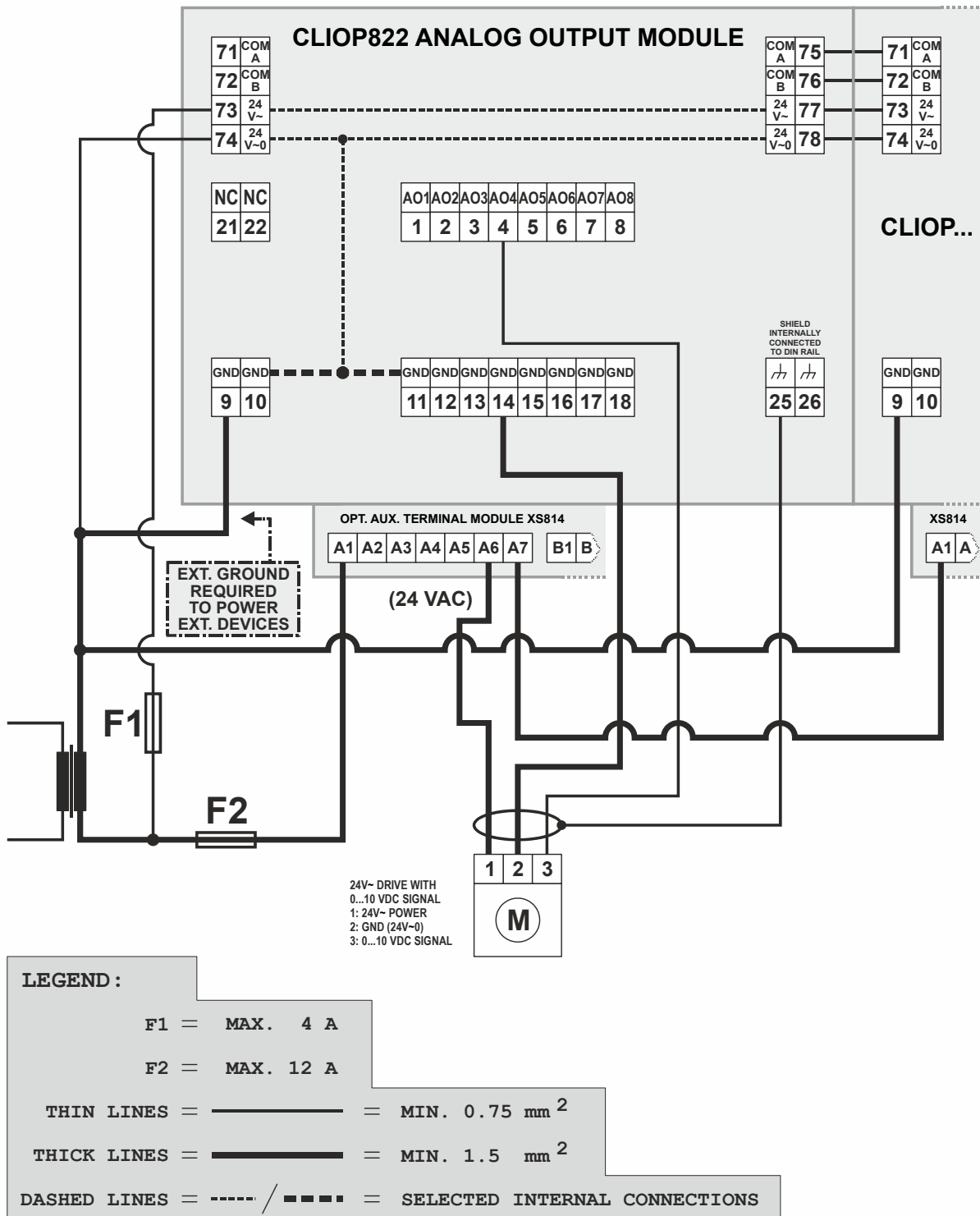


Fig. 12. CLIOP822 Panel Bus AO Module, wiring example 1: Actuator

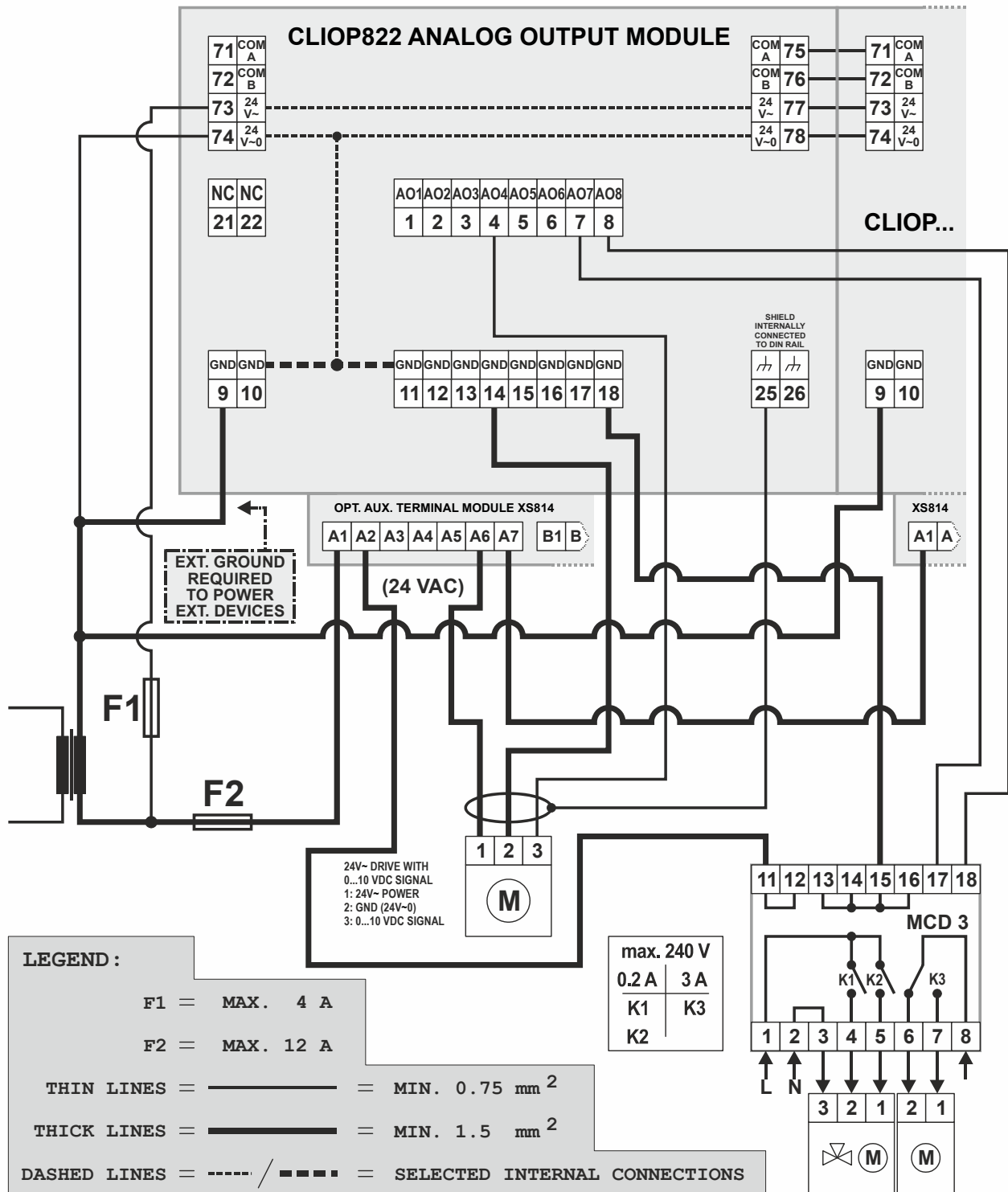


Fig. 13. CLIO822 Panel Bus AO Module, wiring example 2: Relay Module MCD 3

- 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.

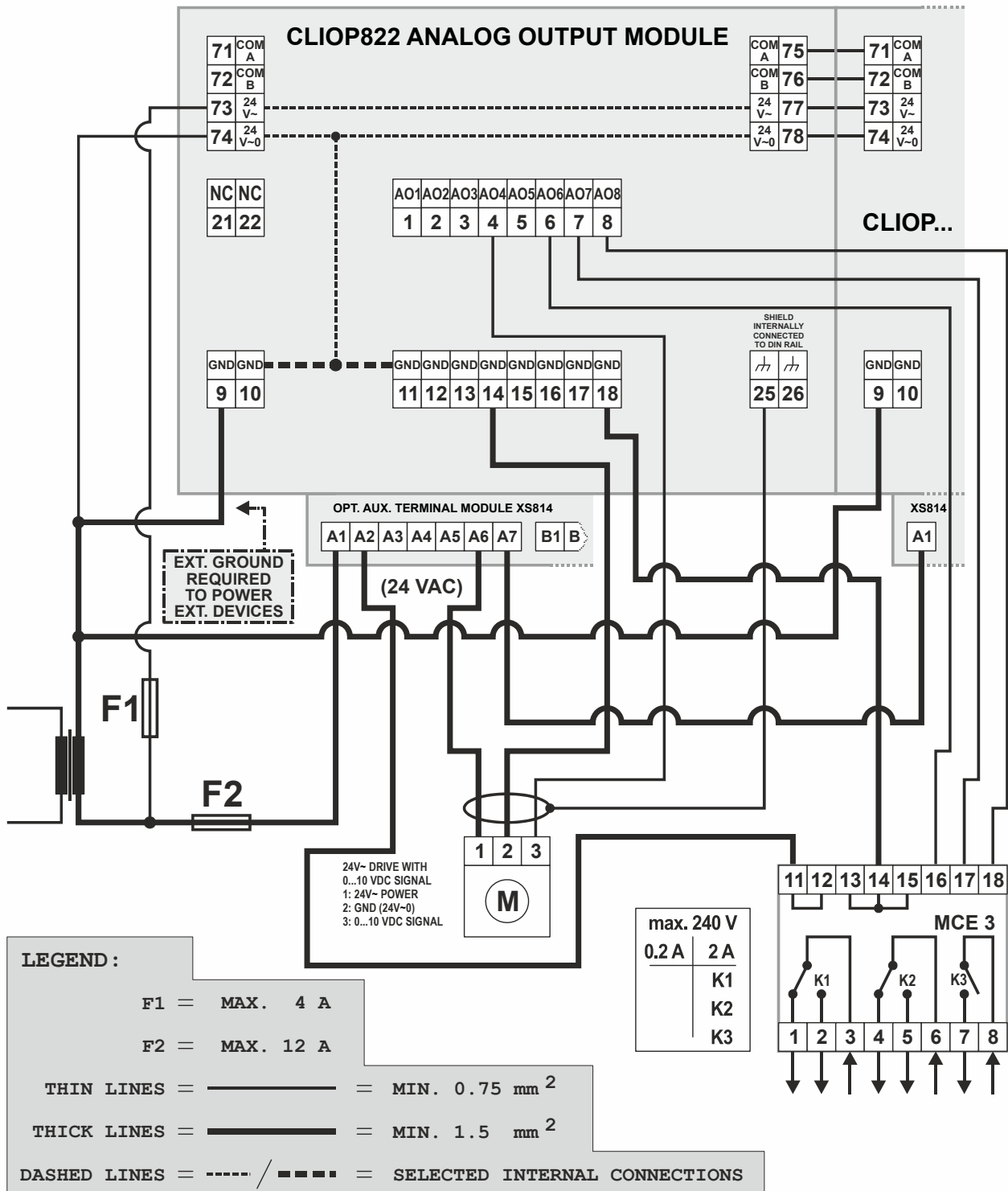


Fig. 14. CLIO822 Panel Bus AO Module, wiring example 3: Relay Module MCE 3

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.



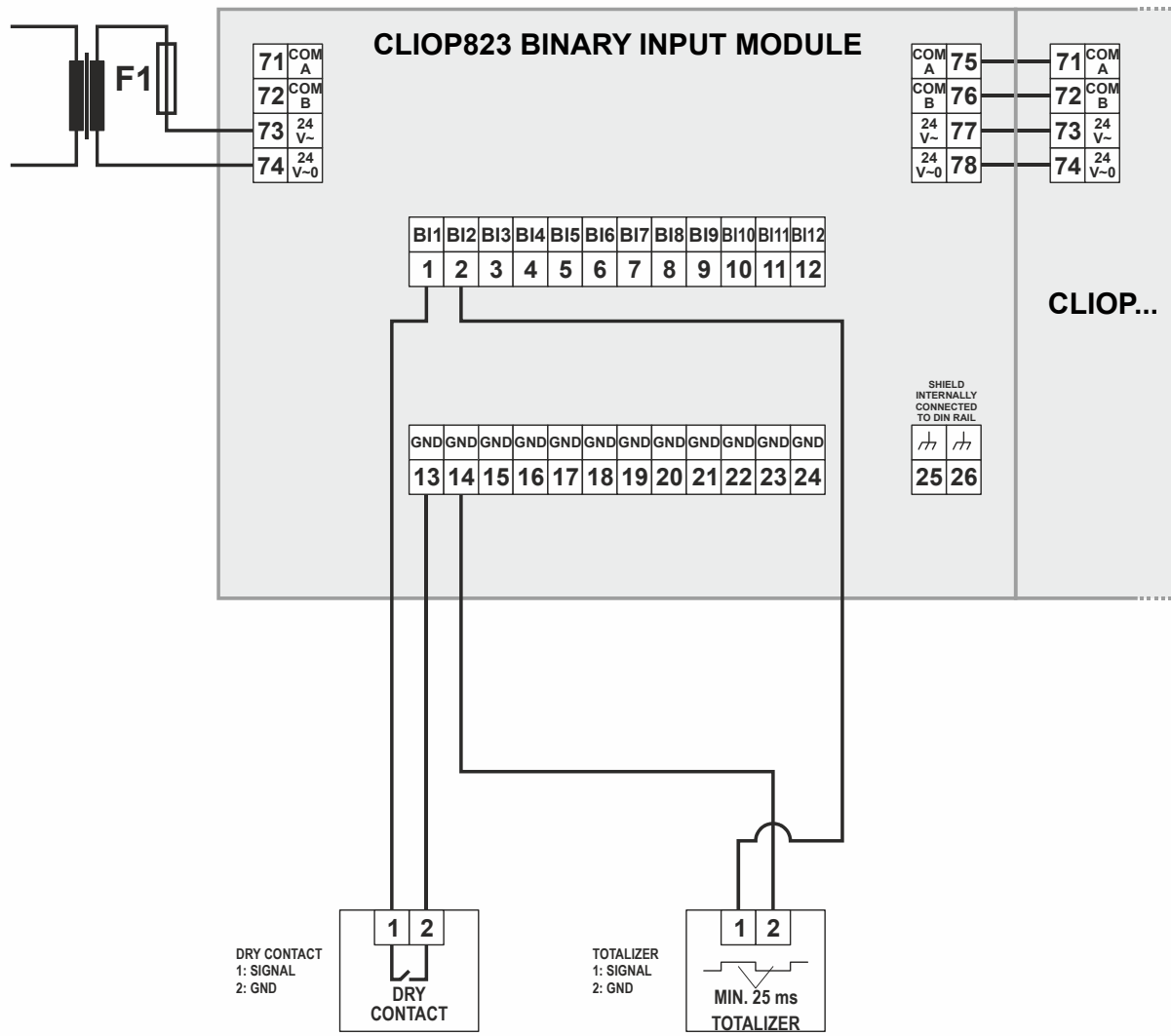
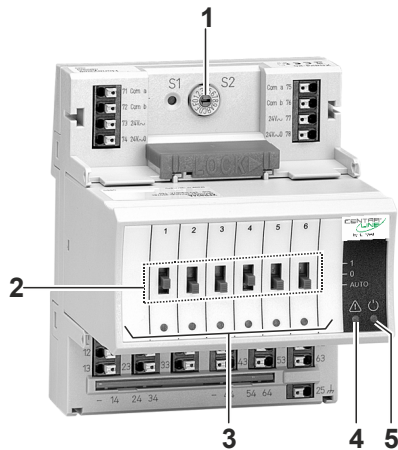


Fig. 18. CLIOP823 Panel Bus BI Module, wiring example: Dry contact and totalizer

## Relay Output Modules



**Fig. 19. CLIOPR824 Panel Bus Relay Output Module (shown with terminal socket)**

### Legend

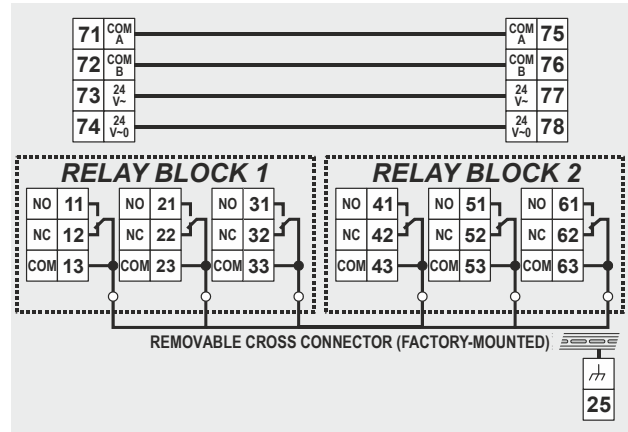
- 1 Hex switch S2
- 2 Manual overrides
- 3 Status LEDs
- 4 Service LED
- 5 Power LED

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

- CLIOPR824 Panel Bus Relay Output Module (without manual overrides)
- CLIOPR824 Panel Bus Relay Output Module (with manual overrides)

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

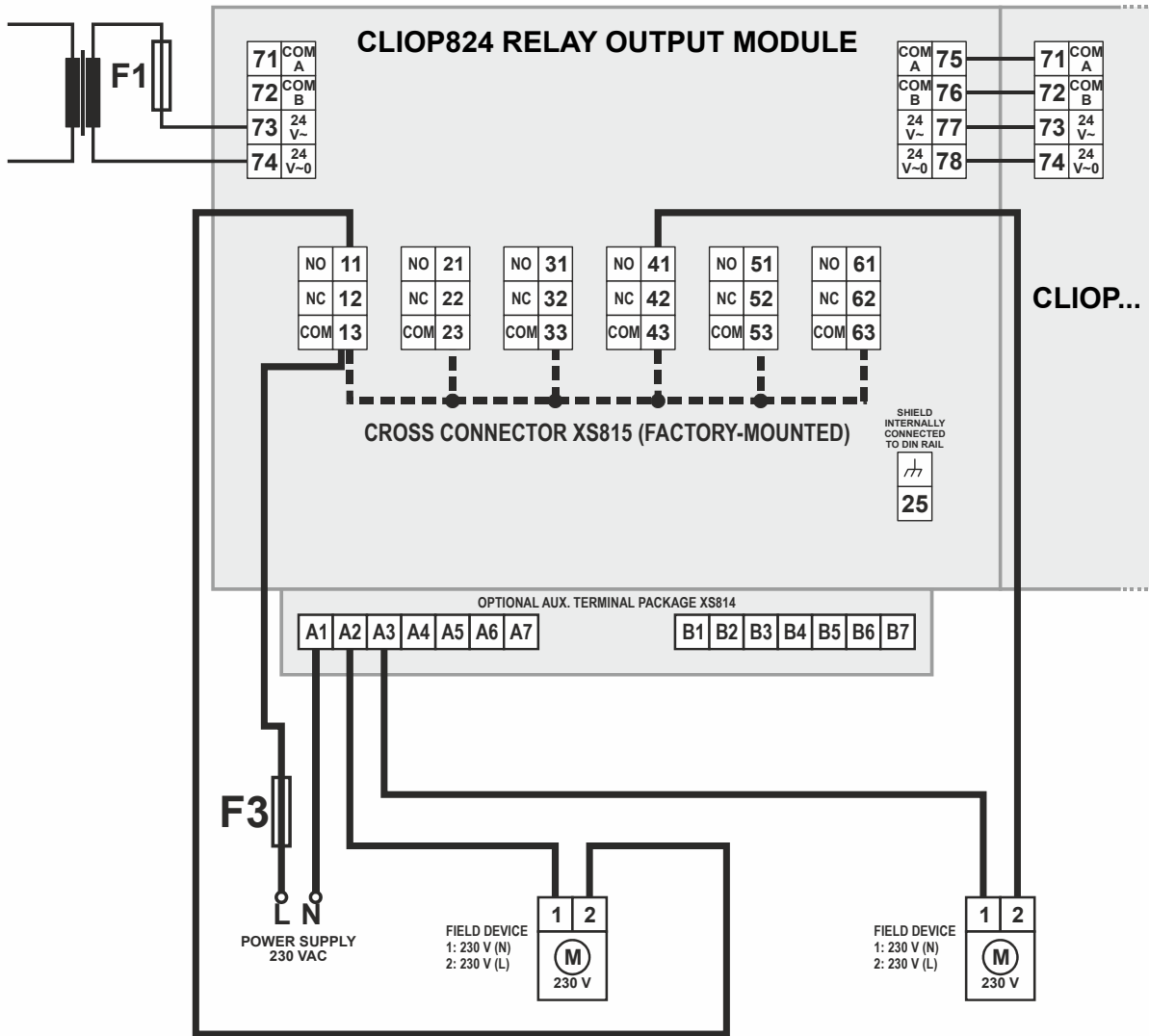
Accessory disconnecter module: XS812-RO (see also Table 2 on page 3).



**Fig. 20. Centraline Panel Bus Relay Output Modules (schematic)**

### 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...24 Vdc: 12 A resistive, 3 A inductive
- Permissible Load per Normally-Open Contact:
  - *Max. load:*
    - 19...250 Vac: 4 A resistive or inductive
    - 1...24 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...24 Vdc: 2 A resistive, 1 A inductive
  - *Min. load:* P > 50 mW



**LEGEND :**

**F1 = MAX. 4 A**

**F3 = MAX. 12 A**

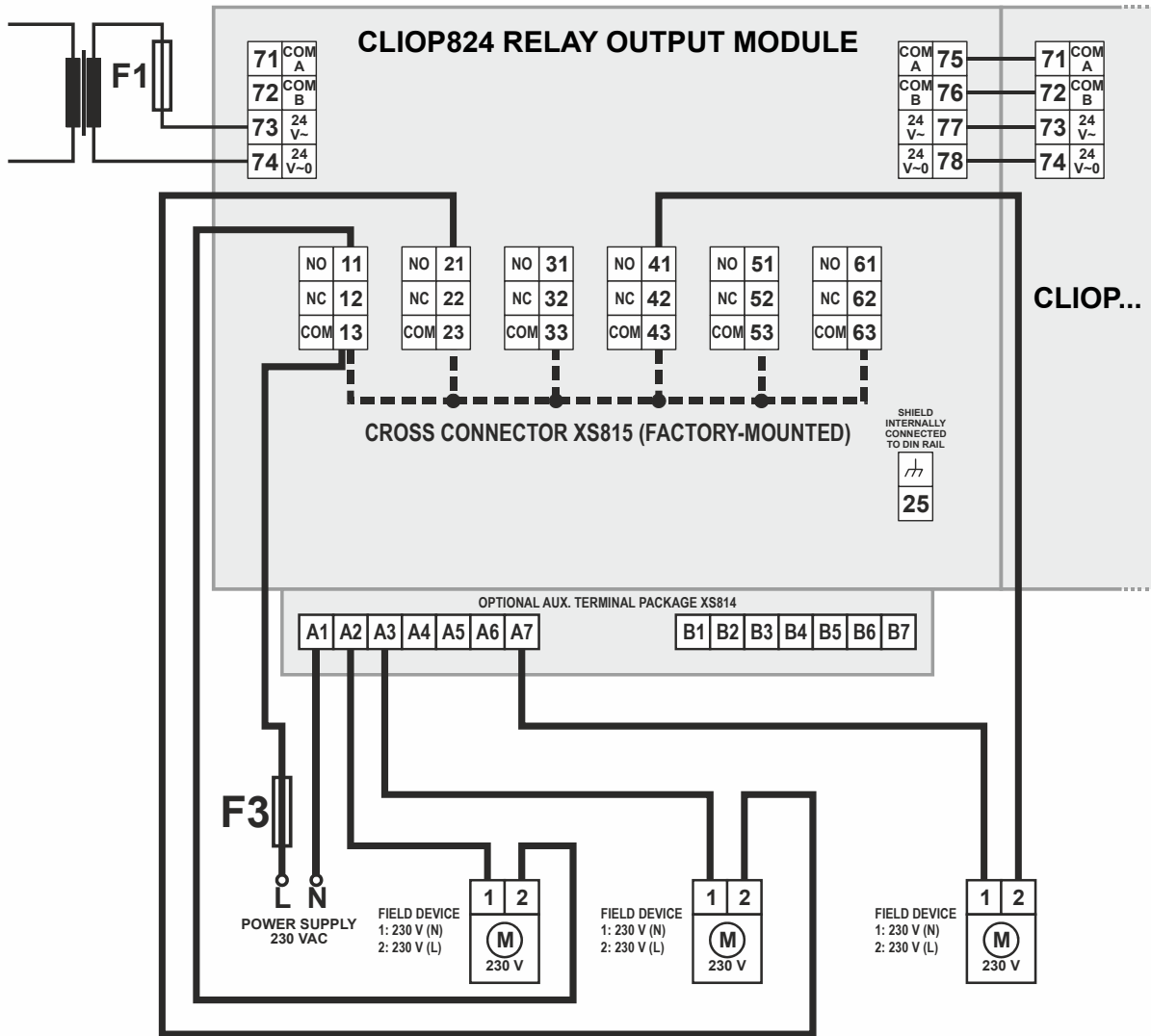
**THIN LINES =** ——— = MIN. 0.75 mm<sup>2</sup>

**THICK LINES =** ————— = MIN. 1.5 mm<sup>2</sup> - or less, as per F3

**DASHED LINES =** - - - - - / - - - - - = SELECTED INTERNAL CONNECTIONS

**Fig. 21. CLIOP824 Panel Bus RO Module, wiring example 1: Both relay blocks with line voltage**





**LEGEND :**

**F1 = MAX. 4 A**

**F3 = MAX. 12 A**

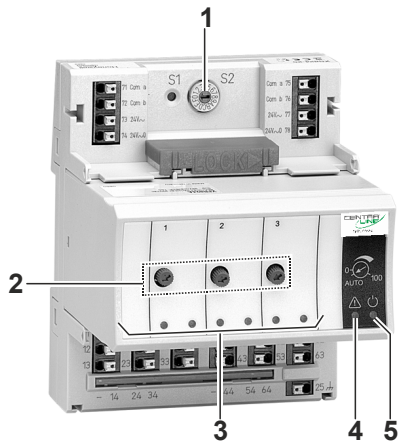
**THIN LINES = ——— = MIN. 0.75 mm<sup>2</sup>**

**THICK LINES = ————— = MIN. 1.5 mm<sup>2</sup> - or less, as per F3**

**DASHED LINES = - - - - - / - - - - - = SELECTED INTERNAL CONNECTIONS**

**Fig. 22. CLIOP824 Panel Bus RO Module, wiring example 2: Relay blocks with low and line voltage**

## Floating Output Module

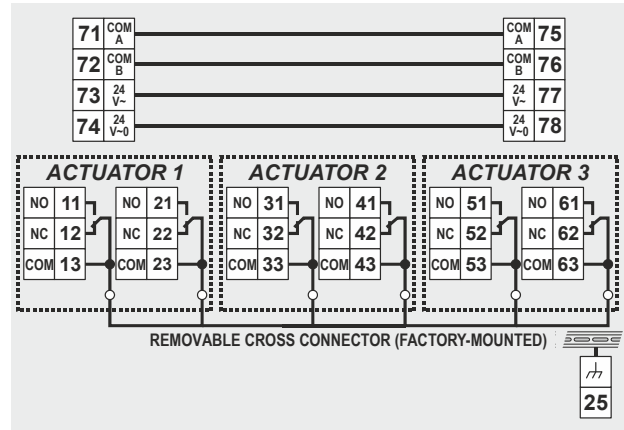


**Fig. 23. CLIOPR825 Panel Bus Floating Output Module (shown with terminal socket)**

### Legend

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

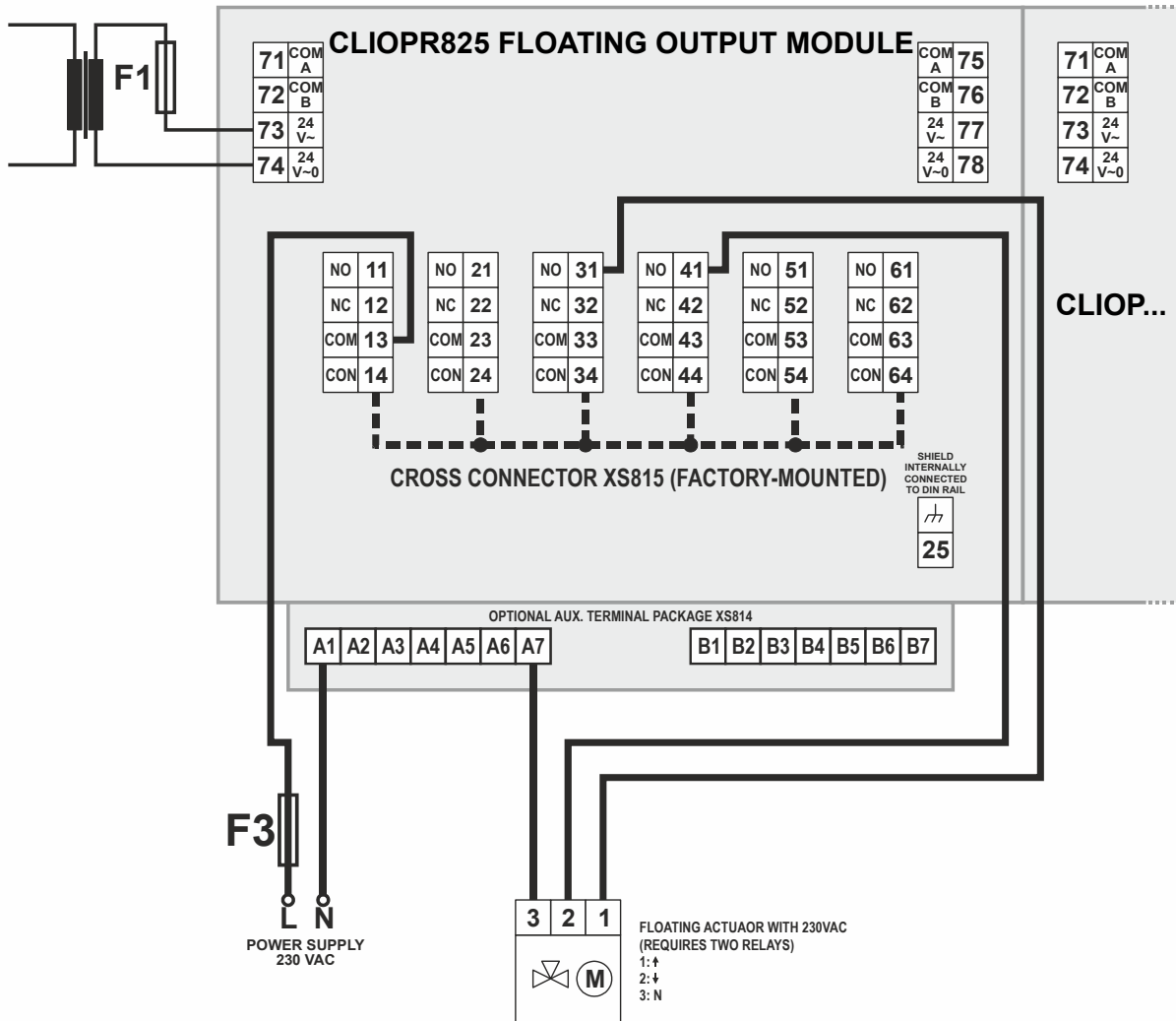
The pluggable CLIOPR825 Panel Bus Floating Output Module, with manual overrides and 3 floating outputs, is installed with the XS824-25 or XSU824-25 Terminal Socket. Accessory disconnecter module: XS812-RO (see also Table 2 on page 3).



**Fig. 24. CentraLine Panel Bus Floating Output Module (schematic)**

### 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...24 Vdc: 12 A resistive, 3 A inductive
- Permissible Load per Normally-Open Contact:
  - *Max. load:*
    - 19...250 Vac: 4 A resistive or inductive
    - 1...24 Vdc: 4 A resistive, 1 A inductive
  - *Min. load:*  $P > 50 \text{ mW}$
- Permissible Load per Normally-Closed Contact:
  - *Max. load:*
    - 19...250 Vac: 2 A resistive, 1 A inductive
    - 1...24 Vdc: 2 A resistive, 1 A inductive
  - *Min. load:*  $P > 50 \text{ mW}$



**LEGEND :**

F1 = MAX. 4 A

F3 = MAX. 12 A

THIN LINES = ——— = MIN. 0.75 mm<sup>2</sup>

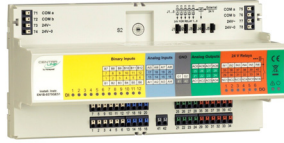
THICK LINES = ————— = MIN. 1.5 mm<sup>2</sup> - or less, as per F3

DASHED LINES = - - - - - / - - - - - = SELECTED INTERNAL CONNECTIONS

**Fig. 25. CLIOPR825 Panel Bus FO Module, wiring example: Floating actuator**

## Mixed I/O Modules

### CLIOP830



### CLIOP831



Fig. 26. Mixed Panel Bus Modules

The CLIOP830 and CLIOP831 mixed Panel Bus I/O modules feature 8 analog inputs, 8 analog outputs, 12 binary inputs, and 6 relay outputs.

The CLIOP830 is equipped with push-in terminals, while the CLIOP831 features screw-type terminals.

Both feature an integrated terminal socket and electronic module and come complete with one bridge connector and one swivel label.

The CLIOP830 can be equipped with up to two rows of (XS830 and/or XS831) auxiliary terminal blocks on the top and/or bottom.

The CLIOP831 can be equipped with up to two rows of (XS830 and/or XS831) auxiliary terminal blocks on the top, only.

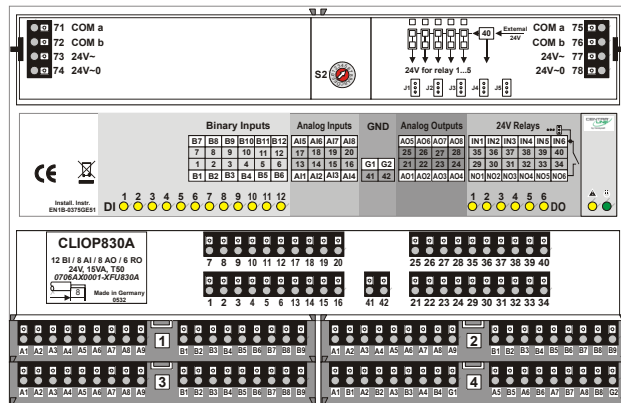


Fig. 27. CLIOP830 mixed Panel Bus I/O module, shown with 4 optional aux. terminal blocks (top view)

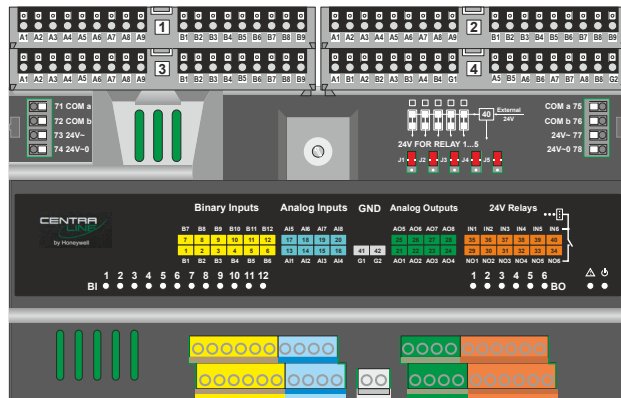


Fig. 28. CLIOP831 mixed Panel Bus I/O module, shown with 4 optional aux. terminal blocks (top view)

## Features

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

Table 6. Permissible loads of Mixed Panel Bus I/O Modules

	max. load	min. load
per module (total for all relay contacts)	24 VDC/VAC 3 A resistive or inductive, $\cos \varphi \geq 0.6$ , no capacitive load, protected by fuse F4	—
per normally open contact	24 VDC/VAC, 0.5 A resistive or inductive, $\cos \varphi \geq 0.6$ , no capacitive load	>50 mW, 0.05 A res./ind., $\cos \varphi \geq 0.6$

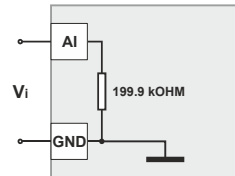


Fig. 29. Analog input high impedance (input circuit for voltage input for active sensors)

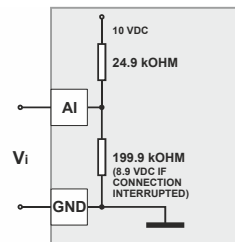


Fig. 30. Analog input impedance setpoint (input circuit for NTC10kΩ, NTC20kΩ, wall module setpoint)

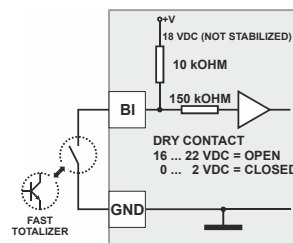


Fig. 31. Configuration of a binary input as a fast totalizer

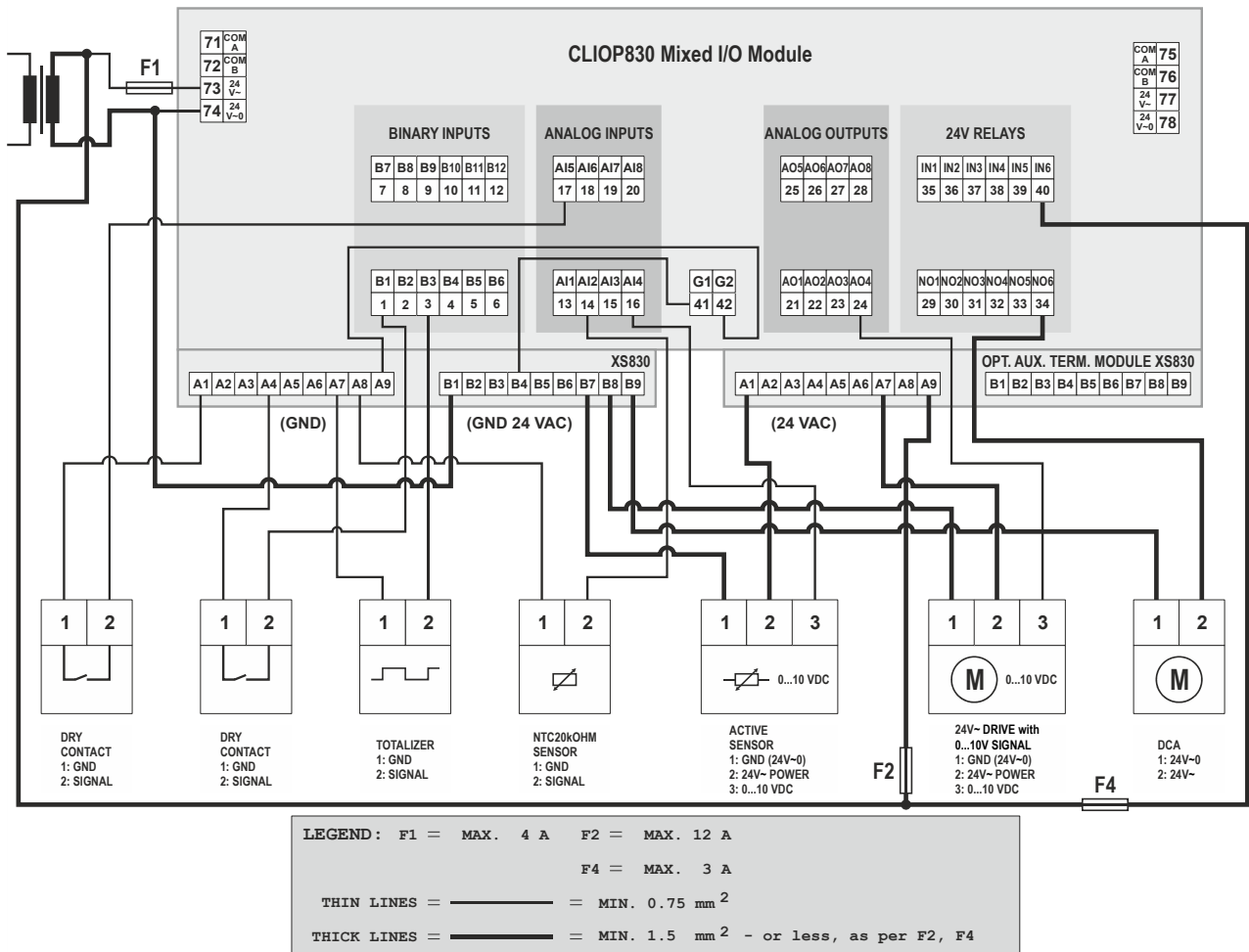


Fig. 32. CLIOP830 mixed Panel Bus I/O Module, wiring example: Actuators

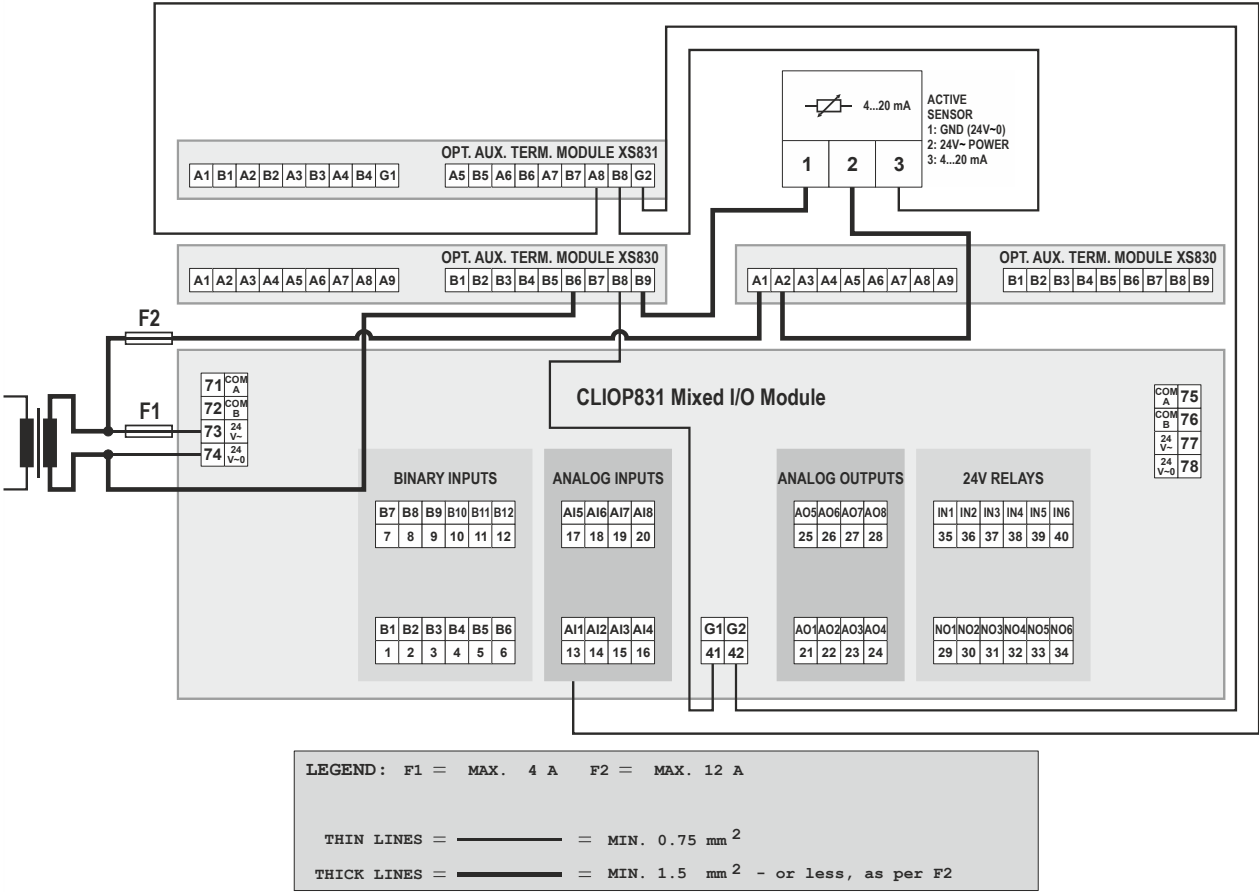


Fig. 33. CLIO831 mixed Panel Bus I/O Module, wiring example: Current inputs

## 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

### 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

**Table 7. Current requirements of CentraLine Panel Bus I/O Modules**

devices powered	supply voltage	
	24 Vac	24 Vdc
CLIOP821	130 mA	80 mA
CLIOP822, CLIOPR822	150 mA	90 mA
CLIOP823, CLIOL823	180 mA	130 mA
CLIOP824, CLIOPR824, CLIOPR825	140 mA	80 mA
CLIOP830, CLIOP831	200 mA	95 mA

## 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 CLIOP830 mixed Panel Bus I/O module has the dimensions: 216 X 110 X 93 mm (see also Fig. 35 on page 25).

The CLIOP831 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  $\geq$  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 8. BALCO 500**

Temp. [°C]	Resistance [ $\Omega$ ]	Terminal voltage [V]
-20.0	415	0.164
0.0	453	0.179
20.0	493	0.194
40.0	535	0.210
60.0	579	0.227
80.0	625	0.245
100.0	673	0.263
120.0	724	0.283

**Table 9. NTC 20 kOhm**

Temp. [°C]	Resistance [k $\Omega$ ]	Terminal voltage [V]
-20.0	221.0	8.08
0.0	70.2	6.76
20.0	25.3	4.75
40.0	10.2	2.81
60.0	4.52	1.51
80.0	2.17	0.792
100.0	1.11	0.425
120.0	0.61	0.238

**Table 10. Pt 1000**

Temp. [°C]	Resistance [ $\Omega$ ]	Terminal voltage [V]
-20.0	922	0.357
0.0	1000	0.386
20.0	1078	0.415
40.0	1155	0.443
60.0	1232	0.471
80.0	1309	0.499
100.0	1385	0.527
120.0	1461	0.554

**Table 11. Ni1000TK5000**

Temp. [°C]	Resistance [ $\Omega$ ]	Terminal voltage [V]
-20.0	913.5	0.354
0.0	1000.0	0.386
20.0	1090.7	0.420
40.0	1185.7	0.455
60.0	1285.4	0.491
80.0	1390.1	0.529
100.0	1500.0	0.568
120.0	1615.4	0.609

**Table 12. NTC 10 kOhm**

Temp. [°C]	Resistance [k $\Omega$ ]	Terminal voltage [V]
-20.0	97.073	7.241
0.0	32.650	5.299
20.0	12.490	3.207
40.0	5.327	1.724
60.0	2.488	0.898
80.0	1.258	0.478
100.0	0.680	0.265

**Table 13. Pt 3000**

Temp. [°C]	Resistance [k $\Omega$ ]	Terminal voltage [V]
-20.0	3.090	1.104
0.0	3.266	1.160
20.0	3.440	1.214
40.0	3.613	1.267
60.0	3.784	1.319
80.0	3.954	1.370
100.0	4.122	1.420
120.0	4.289	1.469



# Dimensions

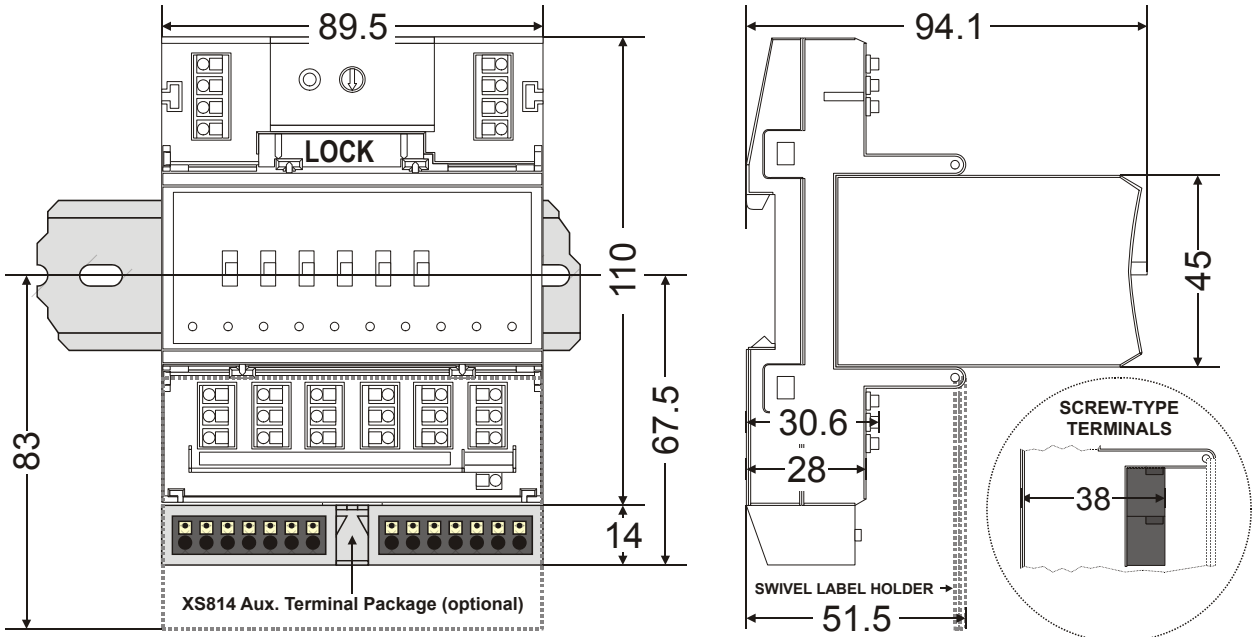


Fig. 34. CentraLine Panel Bus I/O Modules (example shows Manual Overrides), incl. Terminal Socket, outside dimensions (in mm)

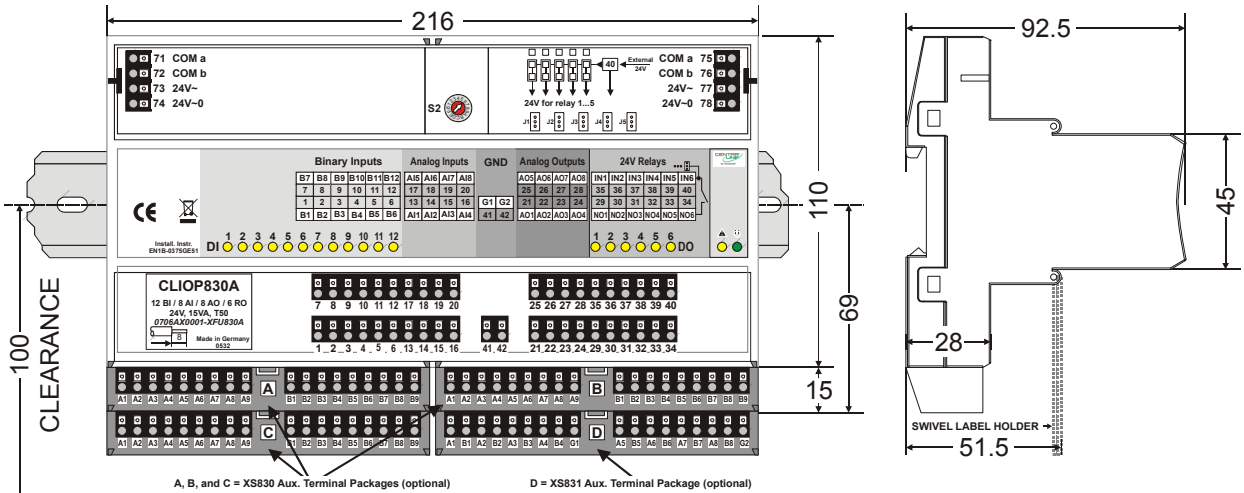


Fig. 35. CLIO830 mixed Panel Bus I/O module (shown with 4 auxiliary terminal packages), dimensions (in mm)

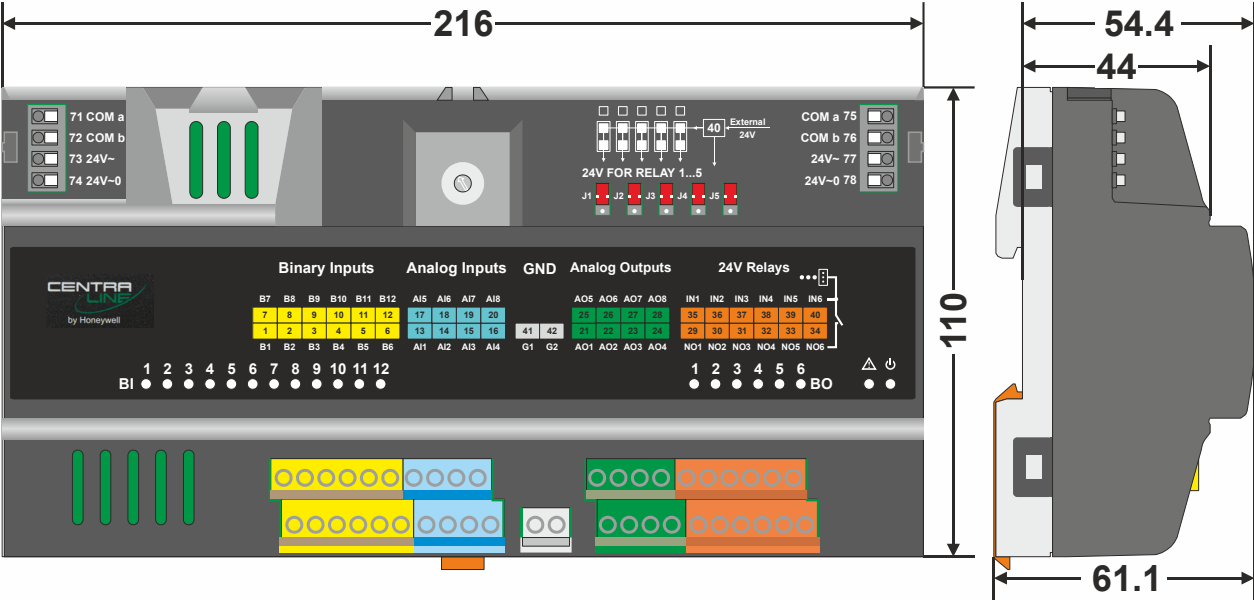


Fig. 36. CLIO831 mixed Panel Bus I/O module, dimensions (in mm)

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