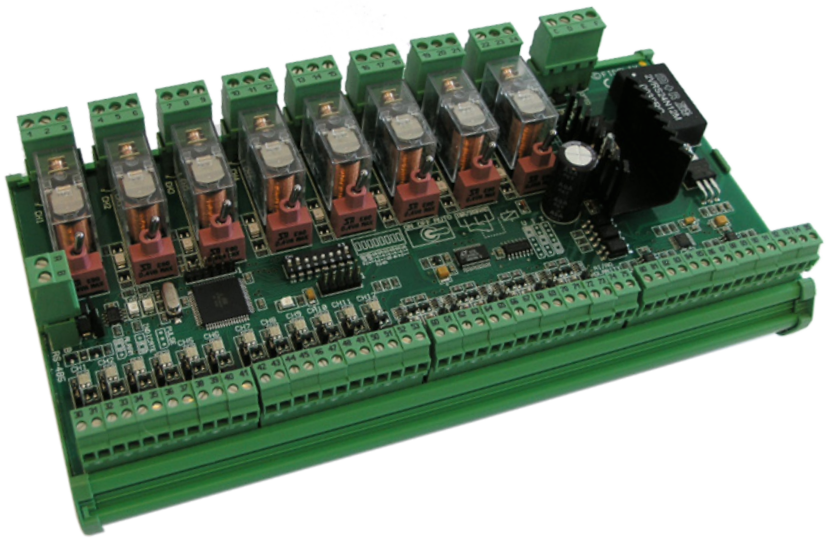
» COMBI-36
Input/Output combination module

- » 12 digital inputs
- » 8 analogue inputs
- » 8 digital outputs
- » 8 analogue outputs
- » DIN-rail mounting
- » Individually detachable connectors



Connect, measure and control

The 36 channel combination module is our most used module for multiple automation purposes. Combining the speed and precision of our four dedicated modules, the COMBI-36 offers enough connectors to be used for instance as the sole I/O-interface in a junction box to connect machines in a different room, or the ideal quantity distribution of I/O-points to use in any substation cabinet.

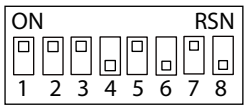
Connect the module to one of our outstations to get reliable and fast readings, and assure a precise control of your field equipment.

Technical features

Size (with DIN-rail clamps):	231mm x 126mm (x 65mm height)
Operating voltage:	20-26VDC
Operating temperature:	0 to +50°C
Supported sensor types (AI):	Resistive (NTC, PT1000, Ni, ...), 0(4)-20mA, 0(2)-10V
Output voltage (AO):	0-10V (individually adjustable)
Relays (DO):	max 6A at 250 V

Modbus address: The Combi-36 combination module is a combined module, thus occupying 4 Modbus addresses. The first of those four consecutive addresses is set by changing the position of dip-switches 3-8. Each dip-switch represents a binary value, as indicated on the module: dip-switch 3 (ST32) = 32, dip-switch 4 (ST16) = 16, dip-switch 5 (ST8) = 8, dip-switch 6 (ST4) = 4, dip-switch 7 (ST2) = 2, dip-switch 8 (ST1) = 1.

Example: To set the starting Modbus address of the module to 42, set dip-switches 3, 5 and 7 to ON, and dip-switches 4,6 and 8 to OFF .
(dip-switch 3 = 32, dip-switch 5 = 8, dip-switch 7 = 2. 32+8+2 = 42)



The Digital Input card's address (DI-12) is set with the dip-switches (= the main module address), the Digital Output card (DO-8) takes the next one (= the main module address + 1), the Analogue Input card (AI-8) the next one (= the main module address + 2), and the Analogue Output card (AO-8) the last one (= the main module address + 3).

Modbus speed: The Combi-36 combination module communicates using the Modbus RTU protocol over a serial RS485 connection. To set the Modbus speed at which the module sends and receives data, set dip-switch 1 (BR2) and 2 (BR1) as indicated in the table on the right.

Comm. speed (bps)	Dip-switch 1 (BR2)	Dip-switch 2 (BR1)
9 600	OFF	OFF
19 200	OFF	ON
38 400	ON	OFF
57 600	ON	ON

On the last module in the Modbus loop, the loop must be closed by connecting a 120 Ω resistor between the A and the B side of the RS-485 loop. This can be done using the modules own terminating resistance by closing the built-in jumper next to the Modbus connectors.

Digital Input: To use the digital input card on the module, connect a power supply (20 to 48 volts) to connector "F" (24 VDC to DI), which powers the even numbered connectors from 30 to 52 through a 10 kΩ resistor. The power supply from connector "E" (24 VDC in) can also be used by connecting a jumper cable between the two. Using the jumper on the small pins, the functioning of the LED indicator can be configured as follows:


- Connect pins 1 and 2 to make the LED indicator function as indication, switching the LED off if the loop is open and ON (green) if the loop is closed, regardless of the "open or closed contact" setting in the software on the outstation.


- Connect pins 2 and 3 to connect an alarm. An open or closed circuit can be configured in the software on the outstation. The LED indicator will go off and on or blink green or red according to the alarm status.


- Leave all pins free for impulse detection. The LED indicator will light up during the detection of the impulse, which can be individually configured for each input between 5-1275 ms in the software on the outstation.

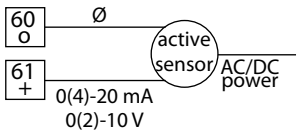
Accepted resistance for open circuits: 50 kΩ - ∞ (parallel) at 24 VDC, for closed circuits: 0-1 kΩ (serial) at 24 VDC.

Analogue Input: Supported sensor types: resistive sensors (NTC, PT1000, Ni1000, ...), 0(4)-20mA and 0(2)-10V or digital indication. A/D conversion resolution is 20 bits. The type of measurement (resistance, current, ...) is selected using the jumpers as indicated on the module:


- Connect pins 1 and 2 to select a resistive sensor, or a digital indication. The odd numbered connector will send out 2.5V. The loop current is 0.5 mA at 1kΩ or 0.2 mA at 10 kΩ.


- Connect pins 3 and 4 to select a current sending sensor. The odd numbered connector will read the incoming current. The on-board resitance is 100 Ω.


- Connect pins 5 and 6 to select a voltage sending sensor. The odd numbered connector will read the incoming voltage. The on-board resitance is 8.8 kΩ.



Digital Output: The 8 changeover type relays, each have a manual switch to override any programmed output. The maximum allowed throughput is 6A at 250 VAC. The consumption of the relays itself is ca. 26 mA / active relay. Each relay can preserve its output value or change to a pre-programmable value in case of a break in the communication with the outstation.

Each relay has a LED indication, lighting up when the linked DO-point is on. Connect a normally open circuit to connectors 2 and 3 (5 and 6, 8 and 9, ... , 23 and 24), or connect a normally closed circuit to connectors 1 and 3 (4 and 6, 7 and 9, ... , 22 and 24). Relays can be combined in the software to work as a tristate controller.

Analogue Output: To use the analogue output card on the module, connect a jumper cable from connector "C" (GND in) to connector "D" (GND ref. O), giving a ground connection to the even numbered connectors from 80 to 94. If needed, another ground level can be connected to connector "D". Bear in mind however, that there is only one ground level for all AO outputs.
Use analogue outputs to generate voltage controlling signals. All outputs are short circuit protected, and can be individually set to send out signals from 0-10V. In the software on the outstation you can change the minimum and maximum voltage to any desired value.

The maximum standard output current is 10 mA, and can be doubled to 20 mA for each channel individually by closing the jumpers next to the connector.

In case of a communication break between the module and the outstation, each output can preserve its output value or change to a pre-programmable value.