



# Operating Instructions

AXIF 108 FW version 2.0 and higher, AXIF 108 ETH

## AXIF 108



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## List of related standards

Standard	Name
EN IEC 62368-1 ed 2	Audio/video equipment, information and communication technology - Part 1: Safety requirements
EN IEC 61000-6-2 ed 4	Electromagnetic compatibility (EMC) - Part 6-2: Generic standards - Immunity for industrial environments
EN IEC 61000-6-3 ed 3	Electromagnetic compatibility (EMC) - Part 6-3: Generic standards - Emission standard for equipment in the residential environment

## Purpose of the Operating Instructions

The information described in this User's Manual is intended for personnel performing handling, installation, commissioning, field service, and maintenance of the AXIF 108 interface for controllable voltage sources.

The operating instructions must be kept for the entire time the equipment is in operation and must be located so that they are accessible to the AXIF 108 operator.

Before starting operation, the operator must be familiar with the contents of this manual and must follow the instructions and observe all safety precautions in this manual.

## Equipment manufacturer

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## 1 Safety provisions

### 1.1 Purpose of use

The AXIF 108 interface extends the control capabilities of the AX4 and AX5 series power supplies beyond direct control via the built-in CAN interface. With AXIF 108, power supplies can be controlled by analog signals, PWM signals, RS485 or Ethernet.

### 1.2 Limitation of liability

If the AXIF 108 is used in a manner other than that specified above, damage to the AXIF 108, damage to connected equipment, and possible injury to the operator may occur. The manufacturer is not responsible for such use of the product and any damage resulting therefrom.





The manufacturer shall not be liable for material damage or personal injury caused by failure to follow the safety and other instructions in these Instructions.

### 1.3 Illegal use


AXIF 108 is not intended for use in other than industrial or residential environments.

### 1.4 Warning notices

Observe the warning notices in this Owner's Manual.

Symbol	Signal word	Meaning of	Consequences for non-compliance
	<b>DANGER</b>	Imminent danger	<ul style="list-style-type: none"> <li>- death</li> <li>- severe physical injury</li> <li>- significant material damage</li> </ul>
	<b>WARNING</b>	Possible dangerous situation	<ul style="list-style-type: none"> <li>- death</li> <li>- severe physical injury</li> <li>- significant material damage</li> </ul>
	<b>ATTENTION</b>	A potentially dangerous situation	<ul style="list-style-type: none"> <li>- slight physical injury</li> <li>- material damage</li> </ul>
	<b>NOTICE</b>	Tip, useful Information	

Structure of warning messages:

	<p><b>SIGNAL WORD</b></p> <p>Type and source of danger</p> <p>Consequences if the warning is ignored</p> <p><b>That's why: Observe measures to avert danger</b></p>
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## 1.5 Emissions of harmful substances, noise level

The AXIF 108 does not produce noise or any harmful substances during operation.

## 1.6 Responsibility of the operator

The operator is responsible for ensuring that the AXIF 108 is operated in accordance with its intended use and these Operating Instructions.

## 1.7 Qualification of professional staff

Operation of the AXIF 108 interface, maintenance and servicing may only be carried out by persons who have been trained and familiarised with the contents of this manual and who, based on their professional qualifications, knowledge and experience, are competent to carry out these activities.

## 1.8 Safety instructions

Before operating the equipment, you must read this manual and follow the instructions given:

- Do not use in wet areas or otherwise adverse conditions
- the equipment may only be used in its complete state, it cannot be operated without a cover or with other unauthorised modifications
- Changing the parameters of the device can only be carried out by an authorised technician
- if the equipment is not working properly, the fault and its description must be reported to the supplier as soon as possible
- never attempt to repair the equipment yourself

## 1.9 Warranty conditions

The AXIF 108 comes with a standard warranty of 2 years from the date of purchase. In the event of a defect, please contact your supplier.



### **WARNING**

**Do not under any circumstances repair the equipment yourself. There is a risk of electric shock.**

The life and health of staff may be at risk. Damage and loss of warranty.

**That's why: Only trained service technicians may repair the equipment.  
your supplier's staff.**

## 1.10 End-of-life disposal and recycling of AXIF 108



### NOTICE

Do not dispose of the AXIF 108 as normal municipal waste!

To comply with the European Directive 2002/96/EC on waste electrical and electronic equipment and its implementation in national law, take the AXIF 108 to an approved recycling centre for environmentally sound disposal at the end of its useful life. Any electrical equipment that is already decommissioned must either be returned to the dealer or taken to an approved collection and recycling point. Failure to comply with this European Directive may have adverse effects on the environment and your health!

If you dispose of AXIF 108 in a country outside the EU, follow the laws of that country.

As well as the AXIF 108, dispose of its accessories and packaging in an environmentally friendly manner.

## 2 Technical description

The AXIF 108 interface extends the control capabilities of the AX4 and AX5 series power supplies beyond direct control via the built-in CAN interface. With AXIF 108, power supplies can be controlled by analog signals, PWM signals, RS485 or Ethernet.

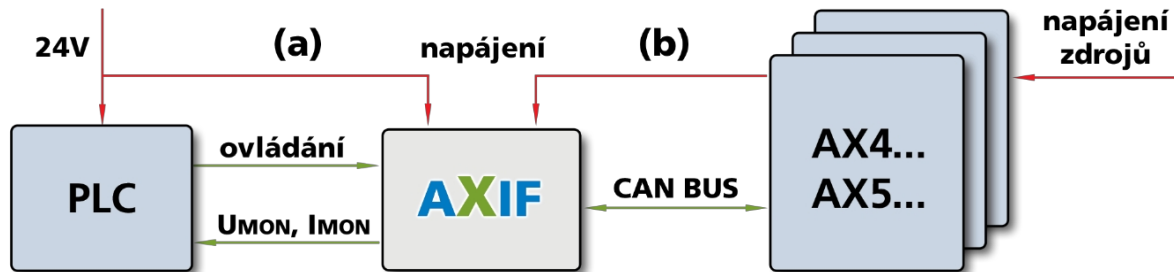


Fig. 1 - Technical description of the AXIF 108

### 2.1 Safety instructions

Before operating the equipment, you must read this manual and follow the instructions given:

- Do not use in wet areas or otherwise adverse conditions
- the equipment may only be used in its complete state, it cannot be operated without a cover or with other unauthorised modifications
- Changing the parameters of the device can only be carried out by an authorised technician
- if the equipment is not working properly, the fault and its description must be reported to the supplier as soon as possible
- never attempt to repair the equipment yourself

### 2.2 Technical parameters

Power	
Supply voltage	24 VDC $\pm$ 25 %
Supply current at 24VDC	max. 120 mA

Voltage control inputs	
Input voltage range	0 - 10 VDC
Input resistance	13 kOhm

Current loop	
Range of input currents	0 - 20 mA
Input resistance	47 Ohm

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PWM control	
Frequency range	200 Hz - 1000 Hz
Voltage	24 VDC $\pm$ 25 %

ENABLE input	
Active level	>18 VDC
Maximum voltage	30 VDC

RS485 interface	
Speed	9600/19200/38400/57600/115200 Bd
Protocol	MODBUS RTU


Ethernet interface (AXIF 108 ETH version only)	
Protocol	MODBUS TCP

Monitors of output variables	
Output voltage	0 - 10 V
Internal resistance of the load (connected meters)	>10 kOhm

Voltage reference	
Output voltage	10 VDC $\pm$ 1 %
Internal resistance of the load (connected meters)	20 mA

Indicating relay	
Maximum switching current	2 A resistive load
Maximum switching voltage	250 VAC or 30 VDC



Safety, standards	
Security (LVD)	EN 62368-1
EMC immunity	EN 61000-6-2
EMC radiation	EN 61000-6-3
Class of protection	
Pollution class	2
Coverage	IP20

Storage, working environment	
Working environment	-10 °C to +50 °C, max. relative humidity 80 %, non-condensing
Storage	In dry areas -25 °C to +80 °C, max. r. v. 80 %

Other parameters	
Recommended resistance of external potentiometers	1 kOhm - 5 kOhm
Number of connected sources	1 - 16

Table of supported power supply types, their output voltage and current

Nominal input voltage	Type	Max. output voltage [V]	Max. output current [A]
<b>230 VAC</b>	AX4MP24	35	100
	AX4MP48	70	50
	AX4MP96	140	25
	AX4MP24-60	35	60
<b>3x400 VAC</b>	AX4MV24	35	100
	AX4MV48	70	50
	AX4MV96	140	25
	AX5MV48	70	100
	AX5MV96	140	50
	AX5MV220	300	24
	AX5MV400	600	12
<b>3x480 VAC</b>	AX4MU24	35	100
	AX4MU48	70	50
	AX4MU96	140	25
	AX5MU48	70	100
	AX5MU96	140	50
<b>3x400 VAC</b> ... <b>3x480 VAC</b>	AX5MX220	300	24
	AX5MX400	600	12
	AX5MX600	800	9

## 3 Preparing and installing the AXIF 108 for operation

### 3.1 Transport and storage

The AXIF 108 is supplied complete with an Operating Manual. A functional test is performed on each device by the manufacturer. The AXIF 108 is shipped to the customer in a cardboard package, during transport and storage, please observe the information on the package: protection against adverse weather (rain, snow), against shocks and falls, orientation during transport.

For any further handling, transport the AXIF 108 in suitable packaging. Store the device in a dry indoor environment with temperatures ranging from  $-25^{\circ}\text{C}$  to  $+80^{\circ}\text{C}$  with a relative humidity of up to 80% (non-condensing).

### 3.2 Installation of the device

The AXIF 108 interface is designed for mounting on a DIN rail on a mounting panel in a vertical position. Adequate space must be left for handling the terminal block when cabling.

The following connections must be made for the device to function properly:

- Supply voltage supply (from an external power supply or internal power supply of one of the controlled sources)
- ENABLE input for enabling the output of controlled sources, can be connected directly to the supply voltage for the AXIF 108 interface or switched by another required element (signal from PLC, via safety switch, etc.)
- in case of controlling the output voltage or current by external signals, connect the corresponding input terminals. The different control methods are described in detail below
- Use the communication cable to connect the AXIF 108

controlled sources to the Instrument Configuration:

- set the desired method of controlling output variables, voltage control and current control are set separately, both methods can be combined (switches S1-1 to S1-6)
- set the number of connected sources (switches S2-1 to S2-4)

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Description of terminals and controls



Ethernet connector



Fig. 2 - Description of the terminals and controls of the AXIF 108

### 3.3 Cabinet dimensions and dimensions for installation on a vertical surface

Mechanical data	
Dimensions (W x H x D)	114.5 x 107 x 22.5 mm
Weight	0,15 kg
Recommended cross-section of connecting wires	0.5 - 1.5 mm

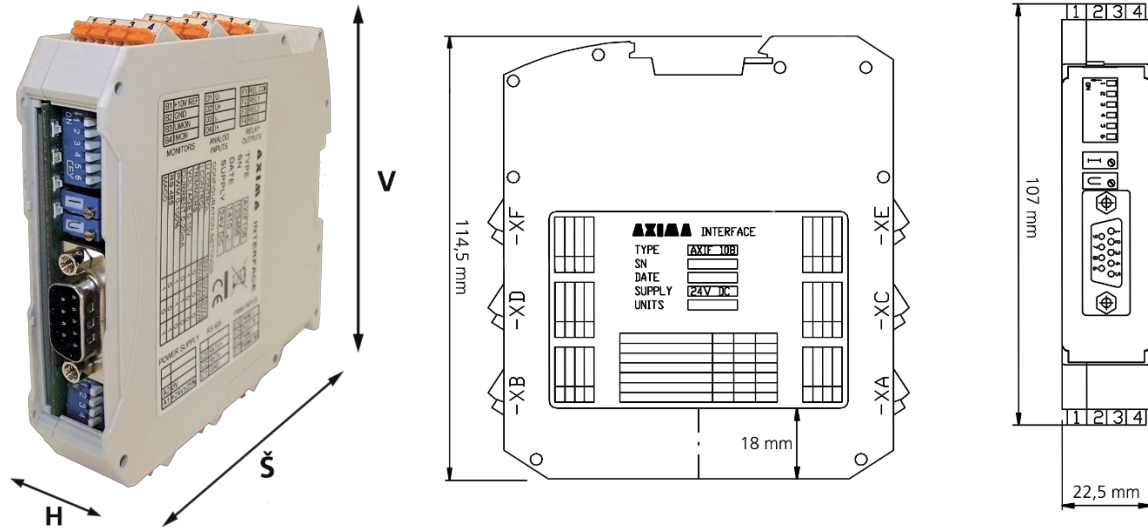


Fig. 3 - Dimensions of the AXIF 108

## 4 Operation and maintenance of AXIF 108

### 4.1 Power

The power supply voltage is  $24\text{ VDC} \pm 25\%$ . An external power supply of suitable parameters can be used for power supply, or the AXIF 108 can be powered from the auxiliary power supply of one of the controlled power supplies. It can be connected to the latter via a connector in its front panel. A connection cable is supplied as an optional accessory.

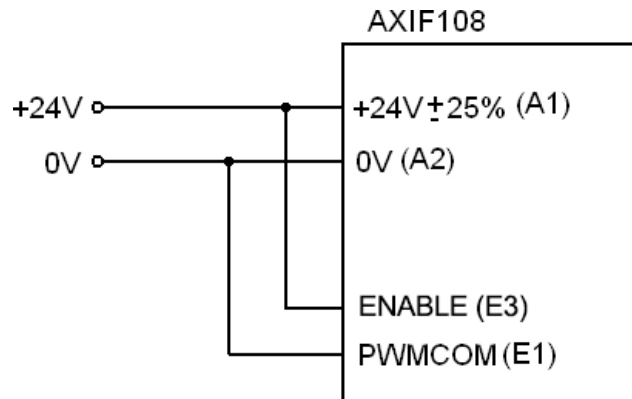


Fig. 4 - Wiring diagram of the AXIF 108 power supply

### 4.2 Enabling input ENABLE

In order to supply power at the output of connected sources, the ENABLE input must be enabled. This can be activated by directly connecting the supply voltage to the AXIF 108 or it can be controlled in another suitable way (PLC output, safety switch, etc.).

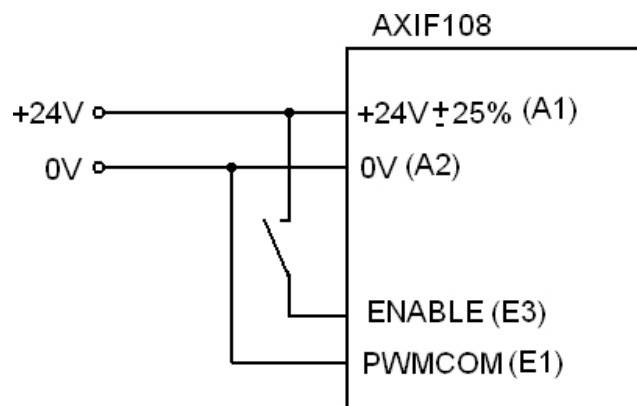


Fig. 5 - Wiring diagram of the ENABLE input of the AXIF 108

### 4.3 Output voltage and current settings

Various methods of setting the output voltage and current are described below. The described methods can be combined using configuration switches S1-1 to S1-6 (e.g. output voltage can be controlled by an external voltage source, current can be set by a built-in trimmer).

The selection of the method of setting the desired voltage value is made by switches S1-1 to S1-3, the selection of the method of setting the desired current value is made by switches S1-4 to S1-6.

U CONTROL	S1-1	S1-2	S1-3	I CONTROL	S1-4	S1-5	S1-6
Trimmers	0	0	0	Trimmers	0	0	0
VOLTAGE 0 - 10 V	ON	0	0	VOLTAGE 0 - 10 V	ON	0	0
CURRENT 0 - 20 mA	0	ON	0	CURRENT 0 - 20 mA	0	ON	0
PWM 0 - 100%	ON	ON	0	PWM 0 - 100%	ON	ON	0
MODBUS	0	0	ON	MODBUS	0	0	ON
MACO	ON	0	ON	MACO	ON	0	ON

#### 4.3.1 TRIMMERS - Built-in trimmers

Output voltage and current can be adjusted using the built-in multi-turn trimmers.

#### 4.3.2 VOLTAGE 0 - 10 V

##### 1) Control using an external voltage source 0 - 10 V

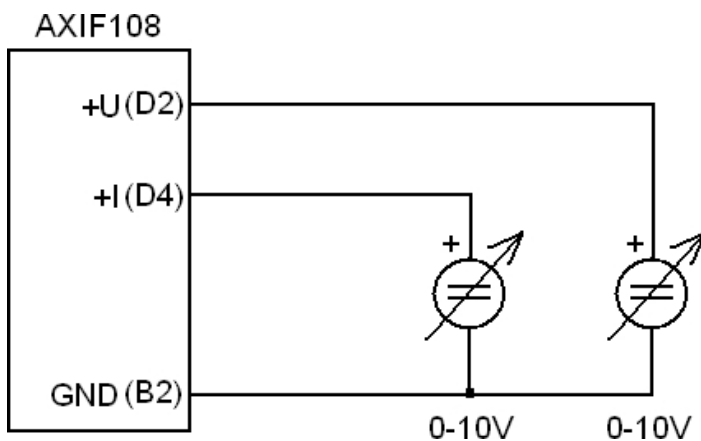


Fig. 6 - Schematic diagram of control using an external voltage source

**2) Control via connected potentiometers**

The recommended range of resistance values for external potentiometers is 1 kΩ to 5 kΩ. The settings of the configuration switches are identical to those of the external voltage source control, except that an internal 10 V reference is used instead of an external source.

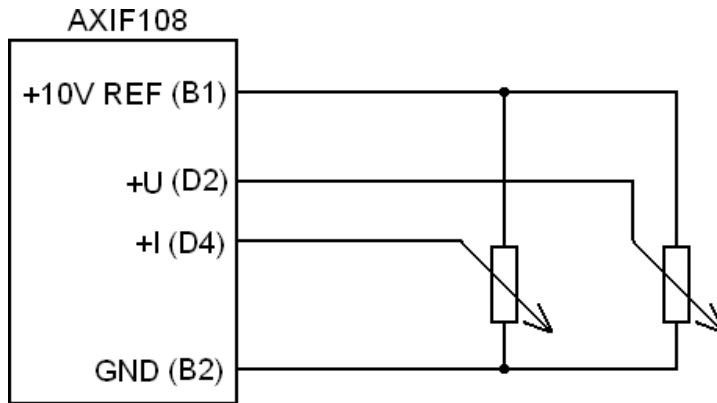


Fig. 7 - Schematic diagram of the control voltage using the connected potentiometers

**4.3.3 CURRENT 0 - 20 mA - Current loop 0 - 20 mA**

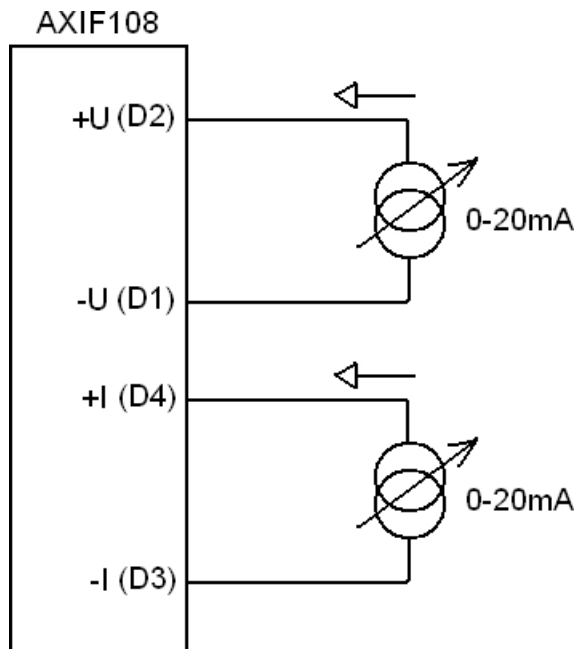


Fig. 8 - Circuit diagram of current loop control



#### 4.3.4 PWM 0 - 100% - PWM signal

The recommended PWM signal frequency range is 200 to 1000 Hz, voltage 24 V±25%.

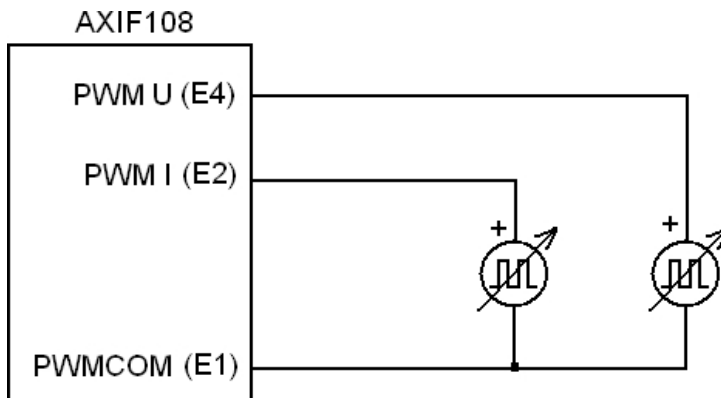


Fig. 9 - Schematic diagram of PWM control

#### 4.3.5 MODBUS communication

The registers can be accessed simultaneously using the Modbus RTU protocol via the RS485 serial link or the MODBUS TCP protocol via Ethernet (only in the case of AXIF 108 ETH).

Standard MODBUS functions are implemented:

- 3 - Read Holding Registers
- 4 - Read Input Register
- 6 - Write Single Register
- 16 - Write Multiple Registers

Preset communication configuration after loading the program or after resetting the EEPROM memory:

- MODBUS Device address: 1
- RS485:
  - Speed: 19200 baud (optional 9600/19200/38400/57600/115200 Bd)
  - Parity: None (optional None / Odd / Even)
  - Stop the 1 (optional 1/2)  
bits:
  - Data bits: 8
- Ethernet:
  - IP: 169.254.0.10
  - Subnet mask: 255.255.0.0
  - Automatic MAC address: 06:6C:A9:FE:00:0A
  - MODBUS TCP Port: 502

If the communication configuration has already been changed, the default communication configuration can be temporarily applied at any time by switching all contacts of switch S1 to the ON position. In this state, all three LEDs flash. When switch S1 is switched off, the preset configuration is applied again.

The default IP address is chosen to facilitate any initial configuration using a PC. This is an IP address in the so-called link-local range. If the automatic configuration of the IP address is set in the PC, communication should work without any further configuration in the PC after the AXIF 108 is directly connected to the PC.

The Ethernet communication module used does not have its own unique MAC address. Therefore, it must be selected in the configuration. You can enter the MAC address manually or use the option to automatically generate the MAC address according to the set IP address. The default and automatically generated MAC address is selected in the so-called locally administered range starting with the value 0x06. It must be ensured that no two devices with the same MAC address are on the same subnet!

Interface configuration can also be done using a simple webserver on the device.

## List of MODBUS user registers

Address	Access	Permanent Memory	Data type	Default value	Allowed values Enrollment	Description
0	R	No	UINT16	-	-	<b>Firmware version</b> <20000 = AXIF 108 older FW version >20000 = AXIF 108 for FW 2.0 and later <ul style="list-style-type: none"> <li>the first 3 digits indicate the version number</li> <li>the last 2 digits are the development version number (Release Candidate)</li> </ul>
1	RW	No	UINT16	(Reg. 11)	0...65535	<b>Required voltage for MODBUS control mode</b> The value depends on the Ku scale (See register 9) After switching on, the value from register 11 is set
2	RW	No	UINT16	(Reg. 12)	0...65535	<b>Required current for MODBUS control mode</b> The value depends on the Ki scale (See register 10) After switching on, the value from register 12 is set
3	R	No	UINT16	-	-	<b>Monitor U</b> Output voltage measured by power modules (Maximum voltage from all modules) Value depends on Ku scale (See register 9)
4	R	No	UINT16	-	-	<b>Monitor I</b> Output currents measured by power modules. (Sum of all module currents) The value depends on the Ki scale (See register 10)
5	R	No	UINT16	-	-	<b>Number of currently connected modules</b>
6	R	No	UINT16	-	-	<b>Relay and LED status</b> Bit 0...2 = Relay 1...3 Bit 4 = Green LED Bit 5 = Yellow LED Bit 6 = Red LED
7	R	No	UINT16	-	-	<b>The resulting desired U-value</b> The value depends on the Ku scale (See register 9)
8	R	No	UINT16	-	-	<b>Resulting desired value I</b> The value depends on the Ki scale (See register 10)
9	RW	Yes	UINT16	100	1...65535	<b>Scale of U (Ku) values</b> Scale of values in registers representing voltages of power modules. It allows, for example, values greater than 655.35 V to be entered and displayed at a scale of Ku = 10. Example: at Ku = 100: Register value 1234 = 12.34 V When a change is made, the writable registers with the Ku scale are reset.
10	RW	Yes	UINT16	100	1...65535	<b>Scale of values I (Ki)</b> Scale of values in registers representing the current of power modules. When a change is made, the writable registers with the Ki scale are reset Example: with Ki = 100: Register value 1234 = 12.34 A
11	RW	Yes	UINT16	0	0...65535	<b>Initial value of register 1 after power-up</b> Only applicable if register 13 = 0
12	RW	Yes	UINT16	0	0...65535	<b>Initial value of register 2 after switching on</b> Only applicable if register 13 = 0
13	RW	Yes	UINT16	0	0...65535	<b>Timeout for MODBUS control mode</b> Time in milliseconds (0 = No timeout). If no new values are written to register 1 or 2 within the set time, registers 1 and 2 are set to 0.
15	RW	Yes	UINT16	0	0...65535	<b>Ramp-up of the desired U and I values</b> Ramp-up time in milliseconds (0...200 = No ramp)

Addresses	Access	Permanent Memory	Data type	Default value	Allowed write values	Description
16	R/W	(Yes)	UINT16	(100)	1...65535	<b>(Scale of U and I values)</b> The register is preserved for backward compatibility with AXIF 108 1G. AXIF 108 2G allows you to set the U and I scales separately using the new registers 9 and 10. Writing sets registers 9 and 10 to the same value. Reading returns the value of registers 9 and 10 if they are the same, otherwise it returns 0.
17	R/W	Yes	UINT16	1	1...255	<b>MODBUS - Device address</b>
18	R/W	Yes	UINT16	192	96 / 192 / 384 / 576 / 1152	<b>RS485 - Communication speed</b> Example: 192 = 19200 baud
19	R/W	Yes	UINT16	0	0 / 1 / 2	<b>RS485 - Parity</b> 0 = None 1 = Odd 2 = Even
20	R/W	Yes	UINT16	1	1 / 2	<b>RS485 - Number of Stop bits</b>
21	R/W	Yes	UINT16	0	0...65535	<b>MACO - Output voltage</b> Required output voltage. The value depends on the Ku scale (See register 9)
22	R/W	Yes	UINT16	0	0...65535	<b>MACO - Current limitation</b> Maximum output current. The value depends on the Ki scale (See register 10)
23	R/W	Yes	UINT16	0	0...65535	<b>MACO - Unom Signalling Level</b> If this voltage value is reached, the REL1 relay is switched on. The value depends on the Ku scale (See register 9)
24	R/W	Yes	UINT16	0	0...65535	<b>MACO - Signalling level Imin</b> When the current drops below this limit, the REL2 relay is activated. The value depends on the Ki scale (See register 10)
25	R/W	Yes	UINT16	1	0 / 1	<b>MACO - Green LED mode</b> 0 = Green LED indicates ENABLE input status (as in other modes) 1 = Green LED does not light when output current is less than Imin, at output current >Imin flashes with alternation (Iout - Imin)/(Imax - Imin), 100% alternation is at Imax (lit permanently)
26	R/W	Yes	UINT16	50	0...65535	<b>MACO - Hysteresis of Unom signalling</b> Hysteresis for switching off REL1 relay signalling reaching the Unom limit. If the voltage drops below the value given by the difference of registers 23 and 26, REL1 is open. It is entered in the same units as the value of register 23. The value depends on the Ku scale (See register 9)
27	R/W	Yes	UINT16	50	0...65535	<b>MACO - Hysteresis of Imin signalling</b> Hysteresis for switching off REL2 relay signalling current drop below Imin. If the current rises above the value given by the sum of the values of registers 24 and 27, REL2 unbuttoned. It is entered in the same units as the value at address 24. The value depends on the Ki scale (See register 10)
28	R/W	Yes	UINT16	1	0 / 1	<b>MACO - Active input level ENABLE</b> 0 = ENABLE input is active at 0 V 1 = ENABLE input is active at 24 V
35	R	No	UINT16	-	-	<b>Maximum output U of the stored module assembly</b> The value depends on the Ku scale (See register 9)
36	R	No	UINT16	-	-	<b>Maximum output I of the stored module assembly</b> The value depends on the Ki scale (See register 10)
200	R/W	No	UINT16	-	0 / 1	<b>Ethernet - Configuration - Apply settings</b> 1 = Apply Ethernet configuration setpoints 0 = Set default Ethernet configuration values The set values of the Ethernet configuration are applied after a reboot or after writing 1 to register 200.
201	R/W	Yes	UINT16	169	0...255	<b>Ethernet - Configuration - IP Address - Part 1</b>
202	R/W	Yes	UINT16	254	0...255	<b>Ethernet - Configuration - IP Address - Part 2</b>
203	R/W	Yes	UINT16	0	0...255	<b>Ethernet - Configuration - IP Address - Part 3</b>
204	R/W	Yes	UINT16	10	0...255	<b>Ethernet - Configuration - IP Address - Part 4</b>
205	R/W	Yes	UINT16	255	0...255	<b>Ethernet - Configuration - Subnet Mask - Part 1</b>

206	R/W	Yes	UINT16	255	0...255	Ethernet - Configuration - Subnet Mask - Part 2
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Addresses	Access	Permanent Memory	Data type	Default value	Allowed write values	Description
207	R/W	Yes	UINT16	0	0...255	<b>Ethernet - Configuration - Subnet Mask - Part 3</b>
208	R/W	Yes	UINT16	0	0...255	<b>Ethernet - Configuration - Subnet Mask - Part 4</b>
209	R/W	Yes	UINT16	0	0...255	<b>Ethernet - Configuration - IP Default Gateways - Part 1</b>
210	R/W	Yes	UINT16	0	0...255	<b>Ethernet - Configuration - IP Default Gateways - Part 2</b>
211	R/W	Yes	UINT16	0	0...255	<b>Ethernet - Configuration - IP Default Gateways - Part 3</b>
212	R/W	Yes	UINT16	0	0...255	<b>Ethernet - Configuration - IP Default Gateways - Part 4</b>
213	R/W	Yes	UINT16	0	0 / 1	<b>Ethernet - Configuration - MAC Address - Automatic setting by IP</b> 0 = Use the set MAC address 1 = Use the MAC address generated by the configured IP address The Ethernet module used does not have its own unique MAC address. Therefore, it is necessary to select it. The automatically generated MAC address is in the locally administered range: The first value 6, the second value 108 and the last 4 values are equal to the set IP address. Example: IP = 192.168.0.4 --> MAC = 06:6C:C0:A8:00:04
214	R/W	Yes	UINT16	6	0...255	<b>Ethernet - Configuration - MAC Address - Part 1</b>
215	R/W	Yes	UINT16	108	0...255	<b>Ethernet - Configuration - MAC Address - Part 2</b>
216	R/W	Yes	UINT16	108	0...255	<b>Ethernet - Configuration - MAC Address - Part 3</b>
217	R/W	Yes	UINT16	108	0...255	<b>Ethernet - Configuration - MAC Address - Part 4</b>
218	R/W	Yes	UINT16	108	0...255	<b>Ethernet - Configuration - MAC Address - Part 5</b>
219	R/W	Yes	UINT16	108	0...255	<b>Ethernet - Configuration - MAC Address - Part 6</b>
220	R/W	Yes	UINT16	502	0...65535	<b>Ethernet - Configuration - MODBUS TCP Server - Port number</b>
240	R	No	UINT16	-	-	<b>Ethernet - Info - Ethernet communication is available</b> 0 = Module for Ethernet communication is not installed or is faulty 1 = Ethernet module is available and functional
241	R	No	UINT16	-	-	<b>Ethernet - Info - IP Address - Part 1</b> Current used IP address
242	R	No	UINT16	-	-	<b>Ethernet - Info - IP Address - Part 2</b> Current used IP address
243	R	No	UINT16	-	-	<b>Ethernet - Info - IP Address - Part 3</b> Current used IP address
244	R	No	UINT16	-	-	<b>Ethernet - Info - IP Address - Part 4</b> Current used IP address
245	R	No	UINT16	-	-	<b>Ethernet - Info - Subnet Mask - Part 1</b> Current subnet mask used
246	R	No	UINT16	-	-	<b>Ethernet - Info - Subnet Mask - Part 2</b> Current subnet mask used
247	R	No	UINT16	-	-	<b>Ethernet - Info - Subnet Mask - Part 3</b> Current subnet mask used
248	R	No	UINT16	-	-	<b>Ethernet - Info - Subnet Mask - Part 4</b> Current subnet mask used
249	R	No	UINT16	-	-	<b>Ethernet - Info - IP Default Gateways - Part 1</b> Current IP address of the default gateway in use
250	R	No	UINT16	-	-	<b>Ethernet - Info - IP Default Gateways - Part 2</b> Current IP address of the default gateway in use
251	R	No	UINT16	-	-	<b>Ethernet - Info - IP Default Gateways - Part 3</b> Current IP address of the default gateway in use
252	R	No	UINT16	-	-	<b>Ethernet - Info - IP Default Gateways - Part 4</b> Current IP address of the default gateway in use
253	R	No	UINT16	-	-	<b>Ethernet - Info - MAC Address - Part 1</b> Current MAC address used
254	R	No	UINT16	-	-	<b>Ethernet - Info - MAC Address - Part 2</b> Current MAC address used
255	R	No	UINT16	-	-	<b>Ethernet - Info - MAC Address - Part 3</b> Current MAC address used
256	R	No	UINT16	-	-	<b>Ethernet - Info - MAC Address - Part 4</b> Current MAC address used
257	R	No	UINT16	-	-	<b>Ethernet - Info - MAC Address - Part 5</b> Current MAC address used
258	R	No	UINT16	-	-	<b>Ethernet - Info - MAC Address - Part 6</b> Current MAC address used

Address	Access	Permanent Memory	Data type	Default value	Allowed write values	Description
1000	R	No	UINT16	-	-	<b>Code of the current signalled error</b> 0 = No error 1 = Internal error - EEPROM memory 2 = Internal error - Invalid calibration 3 = CAN communication error (no power module communicating) 4 = Incorrect number of connected modules 5 = Module identification not completed 6 = Unknown module type 7 = Max. voltage of connected modules does not match 8 = Loss of module 9 = Invalid assembly 10 = Module is not ready to deliver power
1001	R	No	UINT16	-	-	<b>Code of previous signalled error</b> See register 1000
1100	R	Yes	UINT16	0	-	<b>Stored valid assembly - Group 1 - Module type code</b>
1101	R	Yes	UINT16	0	-	<b>Stored valid report - Group 1 - Number of modules of the type</b>
1102	R	Yes	UINT16	0	-	<b>Stored valid assembly - Group 2 - Module type code</b>
1103	R	Yes	UINT16	0	-	<b>Stored valid report - Group 2 - Number of modules of the type</b>
1104	R	Yes	UINT16	0	-	<b>Stored valid assembly - Group 3 - Module type code</b>
1105	R	Yes	UINT16	0	-	<b>Stored valid report - Group 3 - Number of modules of the type</b>
1106	R	Yes	UINT16	0	-	<b>Stored valid assembly - Group 4 - Module type code</b>
1107	R	Yes	UINT16	0	-	<b>Stored valid report - Group 4 - Number of modules of the given type</b>
1108	R	Yes	UINT16	0	-	<b>Stored valid assembly - Group 5 - Module type code</b>
1109	R	Yes	UINT16	0	-	<b>Stored valid report - Group 5 - Number of modules of the given type</b>
1110	R	Yes	UINT16	0	-	<b>Stored valid assembly - Group 6 - Module type code</b>
1111	R	Yes	UINT16	0	-	<b>Stored valid report - Group 6 - Number of modules of the given type</b>
1112	R	Yes	UINT16	0	-	<b>Stored valid report - Group 7 - Module type code</b>
1113	R	Yes	UINT16	0	-	<b>Stored valid report - Group 7 - Number of modules of the given type</b>
1114	R	Yes	UINT16	0	-	<b>Stored valid assembly - Group 8 - Module type code</b>
1115	R	Yes	UINT16	0	-	<b>Stored valid report - Group 8 - Number of modules of the given type</b>
1116	R	Yes	UINT16	0	-	<b>Stored valid report - Group 9 - Module type code</b>
1117	R	Yes	UINT16	0	-	<b>Stored valid report - Group 9 - Number of modules of this type</b>
1118	R	Yes	UINT16	0	-	<b>Stored valid report - Group 10 - Module type code</b>
1119	R	Yes	UINT16	0	-	<b>Stored valid report - Group 10 - Number of modules of the given type</b>
1120	R	Yes	UINT16	0	-	<b>Stored valid report - Group 11 - Module type code</b>
1121	R	Yes	UINT16	0	-	<b>Stored valid report - Group 11 - Number of modules of the given type</b>
1122	R	Yes	UINT16	0	-	<b>Stored valid assembly - Group 12 - Module type code</b>
1123	R	Yes	UINT16	0	-	<b>Stored valid report - Group 12 - Number of modules of the given type</b>
1124	R	Yes	UINT16	0	-	<b>Stored valid assembly - Group 13 - Module type code</b>
1125	R	Yes	UINT16	0	-	<b>Stored valid report - Group 13 - Number of modules of the given type</b>
1126	R	Yes	UINT16	0	-	<b>Stored valid assembly - Group 14 - Module type code</b>
1127	R	Yes	UINT16	0	-	<b>Stored valid report - Group 14 - Number of modules of the type</b>
1128	R	Yes	UINT16	0	-	<b>Stored valid assembly - Group 15 - Module type code</b>
1129	R	Yes	UINT16	0	-	<b>Stored valid report - Group 15 - Number of modules of the given type</b>
1130	R	Yes	UINT16	0	-	<b>Stored valid assembly - Group 16 - Module type code</b>
1131	R	Yes	UINT16	0	-	<b>Stored valid report - Group 16 - Number of modules of this type</b>
1150	R	No	UINT16	-	-	<b>Current report found - Group 1 - Module type code</b>
1151	R	No	UINT16	-	-	<b>Current found assembly - Group 1 - Number of modules of the given type</b>
1152	R	No	UINT16	-	-	<b>Current report found - Group 2 - Module type code</b>
1153	R	No	UINT16	-	-	<b>Current found assembly - Group 2 - Number of modules of the given type</b>
1154	R	No	UINT16	-	-	<b>Current report found - Group 3 - Module type code</b>
1155	R	No	UINT16	-	-	<b>Current found assembly - Group 3 - Number of modules of the given type</b>
1156	R	No	UINT16	-	-	<b>Current report found - Group 4 - Module type code</b>
1157	R	No	UINT16	-	-	<b>Current found assembly - Group 4 - Number of modules of the given type</b>
1158	R	No	UINT16	-	-	<b>Current report found - Group 5 - Module type code</b>
1159	R	No	UINT16	-	-	<b>Current found assembly - Group 5 - Number of modules of the given type</b>
1160	R	No	UINT16	-	-	<b>Current found report - Group 6 - Module type code</b>
1161	R	No	UINT16	-	-	<b>Current found assembly - Group 6 - Number of modules of the given type</b>
1162	R	No	UINT16	-	-	<b>Current found report - Group 7 - Module type code</b>

Addresses	Access	Permanent Memory	Data type	Default value	Allowed write values	Description
1163	R	No	UINT16	-	-	Current found assembly - Group 7 - Number of modules of the type
1164	R	No	UINT16	-	-	Current found report - Group 8 - Module type code
1165	R	No	UINT16	-	-	Current found assembly - Group 8 - Number of modules of the given type
1166	R	No	UINT16	-	-	Current report found - Group 9 - Module type code
1167	R	No	UINT16	-	-	Currently found report - Group 9 - Number of modules of the type
1168	R	No	UINT16	-	-	Currently found report - Group 10 - Module type code
1169	R	No	UINT16	-	-	Current found assembly - Group 10 - Number of modules of the type
1170	R	No	UINT16	-	-	Currently found report - Group 11 - Module type code
1171	R	No	UINT16	-	-	Currently found report - Group 11 - Number of modules of the given type
1172	R	No	UINT16	-	-	Current report found - Group 12 - Module type code
1173	R	No	UINT16	-	-	Current found assembly - Group 12 - Number of modules of the type
1174	R	No	UINT16	-	-	Currently found report - Group 13 - Module type code
1175	R	No	UINT16	-	-	Currently found report - Group 13 - Number of modules of the given type
1176	R	No	UINT16	-	-	Currently found report - Group 14 - Module type code
1177	R	No	UINT16	-	-	Currently found report - Group 14 - Number of modules of the given type
1178	R	No	UINT16	-	-	Current report found - Group 15 - Module type code
1179	R	No	UINT16	-	-	Currently found report - Group 15 - Number of modules of the given type
1180	R	No	UINT16	-	-	Current found report - Group 16 - Module type code
1181	R	No	UINT16	-	-	Current found assembly - Group 16 - Number of modules of the type
1300	R	No	UINT16	-	-	Number of modules found
1301	R	No	UINT16	-	-	Modules - Flags of completed identification Bits 0...15 => Module 1...16
1302	R	No	UINT16	-	-	Modules - Flags of the current connection Bits 0...15 => Module 1...16
1303	R	No	UINT16	-	-	Modules - Configuration bit set states sent Bits 0...15 => Module 1...16
1304	R	No	UINT16	-	-	Modules - Received actual states of the Configuration bit Bits 0...15 => Module 1...16
1305	R	No	UINT16	-	-	Modules - Accepted actual relay states Bits 0...15 => Module 1...16
1306	R	No	UINT16	-	-	Modules - Received actual Shutdown signal states Bits 0...15 => Module 1...16
1320	R	No	UINT32	-	-	Module 1 - Serial number
1321						
1322	R	No	UINT32	-	-	Module 2 - Serial Number
1323						
1324	R	No	UINT32	-	-	Module 3 - Serial Number
1325						
1326	R	No	UINT32	-	-	Module 4 - Serial Number
1327						
1328	R	No	UINT32	-	-	Module 5 - Serial Number
1329						
1330	R	No	UINT32	-	-	Module 6 - Serial Number
1331						
1332	R	No	UINT32	-	-	Module 7 - Serial Number
1333						
1334	R	No	UINT32	-	-	Module 8 - Serial Number
1335						
1336	R	No	UINT32	-	-	Module 9 - Serial Number
1337						
1338	R	No	UINT32	-	-	Module 10 - Serial Number
1339						
1340	R	No	UINT32	-	-	Module 11 - Serial Number
1341						
1342	R	No	UINT32	-	-	Module 12 - Serial Number
1343						
1344	R	No	UINT32	-	-	Module 13 - Serial Number
1345						
1346	R	No	UINT32	-	-	Module 14 - Serial Number
1347						

Addresses	Access	Permanent Memory	Data type	Default value	Allowed write values	Description
1348 1349	R	No	UINT32	-	-	<b>Module 15 - Serial Number</b>
1350 1351	R	No	UINT32	-	-	<b>Module 16 - Serial Number</b>
1352	R	No	UINT16	-	-	<b>Module 1 - Received monitor U</b> The value depends on the Ku scale (See register 9)
1353	R	No	UINT16	-	-	<b>Module 2 - Received U monitor</b> The value depends on the Ku scale (See register 9)
1354	R	No	UINT16	-	-	<b>Module 3 - Received U monitor</b> The value depends on the Ku scale (See register 9)
1355	R	No	UINT16	-	-	<b>Module 4 - Received U monitor</b> The value depends on the Ku scale (See register 9)
1356	R	No	UINT16	-	-	<b>Module 5 - Received U monitor</b> The value depends on the Ku scale (See register 9)
1357	R	No	UINT16	-	-	<b>Module 6 - Received U monitor</b> The value depends on the Ku scale (See register 9)
1358	R	No	UINT16	-	-	<b>Module 7 - Received U monitor</b> The value depends on the Ku scale (See register 9)
1359	R	No	UINT16	-	-	<b>Module 8 - Received U monitor</b> The value depends on the Ku scale (See register 9)
1360	R	No	UINT16	-	-	<b>Module 9 - Received U monitor</b> The value depends on the Ku scale (See register 9)
1361	R	No	UINT16	-	-	<b>Module 10 - Received U monitor</b> The value depends on the Ku scale (See register 9)
1362	R	No	UINT16	-	-	<b>Module 11 - Received U monitor</b> The value depends on the Ku scale (See register 9)
1363	R	No	UINT16	-	-	<b>Module 12 - Received U monitor</b> The value depends on the Ku scale (See register 9)
1364	R	No	UINT16	-	-	<b>Module 13 - Received U monitor</b> The value depends on the Ku scale (See register 9)
1365	R	No	UINT16	-	-	<b>Module 14 - Received U monitor</b> The value depends on the Ku scale (See register 9)
1366	R	No	UINT16	-	-	<b>Module 15 - Received monitor U</b> The value depends on the Ku scale (See register 9)
1367	R	No	UINT16	-	-	<b>Module 16 - Received monitor U</b> The value depends on the Ku scale (See register 9)
1368	R	No	UINT16	-	-	<b>Module 1 - Received monitor I</b> The value depends on the Ki scale (See register 10)
1369	R	No	UINT16	-	-	<b>Module 2 - Received monitor I</b> The value depends on the Ki scale (See register 10)
1370	R	No	UINT16	-	-	<b>Module 3 - Received monitor I</b> The value depends on the Ki scale (See register 10)
1371	R	No	UINT16	-	-	<b>Module 4 - Received monitor I</b> The value depends on the Ki scale (See register 10)
1372	R	No	UINT16	-	-	<b>Module 5 - Received monitor I</b> The value depends on the Ki scale (See register 10)
1373	R	No	UINT16	-	-	<b>Module 6 - Received monitor I</b> The value depends on the Ki scale (See register 10)
1374	R	No	UINT16	-	-	<b>Module 7 - Received monitor I</b> The value depends on the Ki scale (See register 10)
1375	R	No	UINT16	-	-	<b>Module 8 - Received monitor I</b> The value depends on the Ki scale (See register 10)
1376	R	No	UINT16	-	-	<b>Module 9 - Received monitor I</b> The value depends on the Ki scale (See register 10)
1377	R	No	UINT16	-	-	<b>Module 10 - Received monitor I</b> The value depends on the Ki scale (See register 10)
1378	R	No	UINT16	-	-	<b>Module 11 - Received monitor I</b> The value depends on the Ki scale (See register 10)
1379	R	No	UINT16	-	-	<b>Module 12 - Received monitor I</b> The value depends on the Ki scale (See register 10)
1380	R	No	UINT16	-	-	<b>Module 13 - Received monitor I</b> The value depends on the Ki scale (See register 10)



Addresses	Access	Permanent Memory	Data type	Default value	Allowed write values	Description
1381	R	No	UINT16	-	-	<b>Module 14 - Received monitor I</b> The value depends on the Ki scale (See register 10)
1382	R	No	UINT16	-	-	<b>Module 15 - Received monitor I</b> The value depends on the Ki scale (See register 10)
1383	R	No	UINT16	-	-	<b>Module 16 - Received monitor I</b> The value depends on the Ki scale (See register 10)
1384	R	No	UINT16	-	-	<b>Module 1 - Received error flags</b> Bit 0 = E8 - Mains error (undervoltage / overvoltage / phase failure) Bit 1 = E7 - Diode heatsink temperature Bit 2 = E6 - Transistor cooler temperature Bit 3 = E5 - Output overvoltage/overcurrent Bit 4 = E4 - Output relay error (Voltage on contact closed) Bit 5 = E3 - Loss of communication (CAN bus) Bit 6 = E2 - Control supply voltage error Bit 7 = E1 - Output value discrepancy
1385	R	No	UINT16	-	-	<b>Module 2 - Received error flags</b> (See register 1384)
1386	R	No	UINT16	-	-	<b>Module 3 - Received error flags</b> (See register 1384)
1387	R	No	UINT16	-	-	<b>Module 4 - Received error flags</b> (See register 1384)
1388	R	No	UINT16	-	-	<b>Module 5 - Received error flags</b> (See register 1384)
1389	R	No	UINT16	-	-	<b>Module 6 - Received error flags</b> (See register 1384)
1390	R	No	UINT16	-	-	<b>Module 7 - Received error flags</b> (See register 1384)
1391	R	No	UINT16	-	-	<b>Module 8 - Received error flags</b> (See register 1384)
1392	R	No	UINT16	-	-	<b>Module 9 - Received error flags</b> (See register 1384)
1393	R	No	UINT16	-	-	<b>Module 10 - Received error flags</b> (See Register 1384)
1394	R	No	UINT16	-	-	<b>Module 11 - Received error flags</b> (See Register 1384)
1395	R	No	UINT16	-	-	<b>Module 12 - Received error flags</b> (See register 1384)
1396	R	No	UINT16	-	-	<b>Module 13 - Received error flags</b> (See register 1384)
1397	R	No	UINT16	-	-	<b>Module 14 - Received error flags</b> (See register 1384)
1398	R	No	UINT16	-	-	<b>Module 15 - Received error flags</b> (See register 1384)
1399	R	No	UINT16	-	-	<b>Module 16 - Received error flags</b> (See register 1384)
1400	R	No	SINT16	-	-	<b>Module 1 - Received temperature of diode cooler [°C]</b>
1401	R	No	SINT16	-	-	<b>Module 2 - Received temperature of diode cooler [°C]</b>
1402	R	No	SINT16	-	-	<b>Module 3 - Received temperature of diode cooler [°C]</b>
1403	R	No	SINT16	-	-	<b>Module 4 - Received temperature of diode cooler [°C]</b>
1404	R	No	SINT16	-	-	<b>Module 5 - Received temperature of diode cooler [°C]</b>
1405	R	No	SINT16	-	-	<b>Module 6 - Received temperature of diode cooler [°C]</b>
1406	R	No	SINT16	-	-	<b>Module 7 - Received temperature of diode cooler [°C]</b>
1407	R	No	SINT16	-	-	<b>Module 8 - Received temperature of diode cooler [°C]</b>
1408	R	No	SINT16	-	-	<b>Module 9 - Received temperature of diode cooler [°C]</b>
1409	R	No	SINT16	-	-	<b>Module 10 - Received temperature of diode cooler [°C]</b>
1410	R	No	SINT16	-	-	<b>Module 11 - Received temperature of diode cooler [°C]</b>
1411	R	No	SINT16	-	-	<b>Module 12 - Received temperature of diode cooler [°C]</b>
1412	R	No	SINT16	-	-	<b>Module 13 - Received temperature of diode cooler [°C]</b>
1413	R	No	SINT16	-	-	<b>Module 14 - Received temperature of diode cooler [°C]</b>
1414	R	No	SINT16	-	-	<b>Module 15 - Received temperature of diode cooler [°C]</b>
1415	R	No	SINT16	-	-	<b>Module 16 - Received temperature of diode cooler [°C]</b>

Address	Access	Permanent Memory	Data type	Default value	Allowed write values	Description
1416	R	No	SINT16	-	-	<b>Module 1 - Received temperature of the transistor cooler</b> [°C]
1417	R	No	SINT16	-	-	<b>Module 2 - Received temperature of the transistor cooler</b> [°C]
1418	R	No	SINT16	-	-	<b>Module 3 - Received temperature of the transistor cooler</b> [°C]
1419	R	No	SINT16	-	-	<b>Module 4 - Received temperature of the transistor cooler</b> [°C]
1420	R	No	SINT16	-	-	<b>Module 5 - Received temperature of the transistor cooler</b> [°C]
1421	R	No	SINT16	-	-	<b>Module 6 - Received temperature of the transistor cooler</b> [°C]
1422	R	No	SINT16	-	-	<b>Module 7 - Received temperature of the transistor cooler</b> [°C]
1423	R	No	SINT16	-	-	<b>Module 8 - Received temperature of the transistor cooler</b> [°C]
1424	R	No	SINT16	-	-	<b>Module 9 - Received temperature of the transistor cooler</b> [°C]
1425	R	No	SINT16	-	-	<b>Module 10 - Received temperature of the transistor cooler</b> [°C]
1426	R	No	SINT16	-	-	<b>Module 11 - Received temperature of the transistor cooler</b> [°C]
1427	R	No	SINT16	-	-	<b>Module 12 - Received temperature of the transistor cooler</b> [°C]
1428	R	No	SINT16	-	-	<b>Module 13 - Received temperature of the transistor cooler</b> [°C]
1429	R	No	SINT16	-	-	<b>Module 14 - Received temperature of the transistor cooler</b> [°C]
1430	R	No	SINT16	-	-	<b>Module 15 - Received temperature of the transistor cooler</b> [°C]
1431	R	No	SINT16	-	-	<b>Module 16 - Received temperature of the transistor cooler</b> [°C]
1432	R	No	UINT16	-	-	<b>Module 1 - Requested U sent</b> The value depends on the Ku scale (See register 9)
1433	R	No	UINT16	-	-	<b>Module 2 - Requested U sent</b> The value depends on the Ku scale (See register 9)
1434	R	No	UINT16	-	-	<b>Module 3 - Requested U sent</b> The value depends on the Ku scale (See register 9)
1435	R	No	UINT16	-	-	<b>Module 4 - Requested U sent</b> The value depends on the Ku scale (See register 9)
1436	R	No	UINT16	-	-	<b>Module 5 - Requested U sent</b> The value depends on the Ku scale (See register 9)
1437	R	No	UINT16	-	-	<b>Module 6 - Requested U sent</b> The value depends on the Ku scale (See register 9)
1438	R	No	UINT16	-	-	<b>Module 7 - Requested U sent</b> The value depends on the Ku scale (See register 9)
1439	R	No	UINT16	-	-	<b>Module 8 - Requested U sent</b> The value depends on the Ku scale (See register 9)
1440	R	No	UINT16	-	-	<b>Module 9 - Requested U sent</b> The value depends on the Ku scale (See register 9)
1441	R	No	UINT16	-	-	<b>Module 10 - Requested U sent</b> The value depends on the Ku scale (See register 9)
1442	R	No	UINT16	-	-	<b>Module 11 - Requested U sent</b> The value depends on the Ku scale (See register 9)
1443	R	No	UINT16	-	-	<b>Module 12 - Requested U sent</b> The value depends on the Ku scale (See register 9)
1444	R	No	UINT16	-	-	<b>Module 13 - Requested U sent</b> The value depends on the Ku scale (See register 9)
1445	R	No	UINT16	-	-	<b>Module 14 - Requested U sent</b> The value depends on the Ku scale (See register 9)
1446	R	No	UINT16	-	-	<b>Module 15 - Requested U sent</b> The value depends on the Ku scale (See register 9)
1447	R	No	UINT16	-	-	<b>Module 16 - Outgoing Requested U</b> The value depends on the Ku scale (See register 9)
1448	R	No	UINT16	-	-	<b>Module 1 - Outgoing Requested I</b> The value depends on the Ki scale (See register 10)
1449	R	No	UINT16	-	-	<b>Module 2 - Outgoing Requested I</b> The value depends on the Ki scale (See register 10)
1450	R	No	UINT16	-	-	<b>Module 3 - Outgoing Requested I</b> The value depends on the Ki scale (See register 10)
1451	R	No	UINT16	-	-	<b>Module 4 - Outgoing Requested I</b> The value depends on the Ki scale (See register 10)
1452	R	No	UINT16	-	-	<b>Module 5 - Outgoing Requested I</b> The value depends on the Ki scale (See register 10)
1453	R	No	UINT16	-	-	<b>Module 6 - Outgoing Requested I</b> The value depends on the Ki scale (See register 10)

Addresses	Access	Permanent Memory	Data type	Default value	Allowed write values	Description
1454	R	No	UINT16	-	-	<b>Module 7 - Outgoing Requested I</b> The value depends on the Ki scale (See register 10)
1455	R	No	UINT16	-	-	<b>Module 8 - Outgoing Requested I</b> The value depends on the Ki scale (See register 10)
1456	R	No	UINT16	-	-	<b>Module 9 - Outgoing Requested I</b> The value depends on the Ki scale (See register 10)
1457	R	No	UINT16	-	-	<b>Module 10 - Outgoing Requested I</b> The value depends on the Ki scale (See register 10)
1458	R	No	UINT16	-	-	<b>Module 11 - Outgoing Requested I</b> The value depends on the Ki scale (See register 10)
1459	R	No	UINT16	-	-	<b>Module 12 - Outgoing Requested I</b> The value depends on the Ki scale (See register 10)
1460	R	No	UINT16	-	-	<b>Module 13 - Outgoing Requested I</b> The value depends on the Ki scale (See register 10)
1461	R	No	UINT16	-	-	<b>Module 14 - Outgoing Requested I</b> The value depends on the Ki scale (See register 10)
1462	R	No	UINT16	-	-	<b>Module 15 - Outgoing Requested I</b> The value depends on the Ki scale (See register 10)
1463	R	No	UINT16	-	-	<b>Module 16 - Outgoing Requested I</b> The value depends on the Ki scale (See register 10)

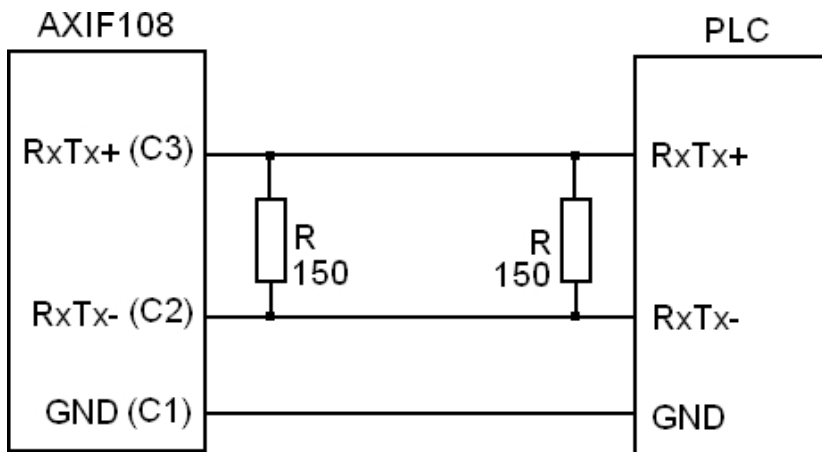


Fig. 10 - Schematic of the connection between AXIF 108 and PLC

#### 4.3.6 MACO mode

This mode is primarily intended for use in MACO devices. The output voltage and current limit is determined by the values in the registers, which can be modified using the MODBUS protocol. The values in registers 21 and 22 are used only as initial values after power-up. In this mode, it is also possible to set levels to signal current drop and voltage exceeding a certain value. The set values are stored in the EEPROM, so they are retained even after the power is turned off.

When writing the value to any of the addresses 21-27, the value is also written to the EEPROM memory to store the values even in case of power failure. The meaning of the corresponding registers is shown in the table.

**REL1 relay function**

If the output voltage on the controlled sources reaches or exceeds the value set in register 23, the REL1 relay is switched on. The relay is switched off if the output voltage falls below the value in register 23 reduced by the value in register 26 (hysteresis). If a value of 0 is stored in register 26, the relay is not switched on. If a value of 60001 is stored in register 26, the relay will be permanently energized.

**REL2 relay function**

If the total output current on the controlled sources drops below the value set in register 24, relay REL2 is switched on. The relay is switched off if the output current increases above the value in register 24 increased by the value in register 27 (hysteresis). If a value of 0 is stored in register 27, the relay is not switched on. If a value of 60001 is stored in register 27, the relay will be permanently energized.

## 4.4 Setting the number of modules

The number of connected modules is entered by switches S2-1 to S2-4 according to the following table:

	Number of modules															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
S2-1	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1
S2-2	0	0	0	0	1	1	1	1	0	0	0	0	1	1	1	1
S2-3	0	0	1	1	0	0	1	1	0	0	1	1	0	0	1	1
S2-4	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1

If a different number of modules is connected than the number set by the switches, the last known configuration for the set number of modules is used. In addition, a red LED is lit to indicate an error.

Only modules with the same output voltage level can be connected, see the table of supported module types in the Technical Parameters chapter. In case of simultaneous connection of power supplies with different output voltage levels, their control is blocked to prevent damage.

## 4.5 Output voltage and current monitor

### Voltage monitor

0 V at the monitor output corresponds to zero output voltage of the connected sources.

The 10 V value at the monitor output corresponds to the maximum possible output voltage of the connected power supplies (indicated on the power supply label).

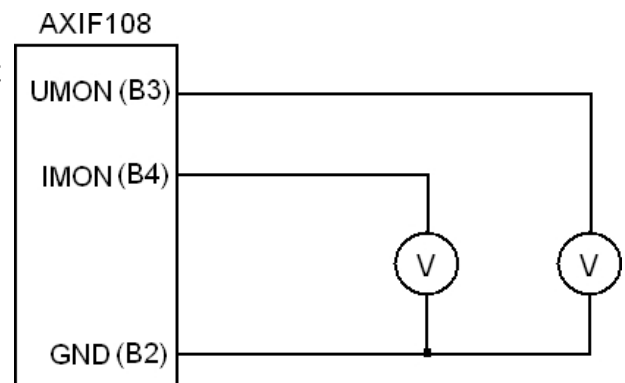


Fig. 11 - Wiring diagram of voltage monitors

### Current monitor

0 V at the monitor output corresponds to zero output current of the connected sources. If the number of connected sources is equal to the number set by switches S2-1 to S2-4, then the value of 10 V at the monitor output corresponds to the current value given by the sum of the maximum current values of the individual sources (the indication on the source label). Otherwise (e.g. in case of a source failure), the last configuration where the number of connected sources was equal to the number set by switches S2-1 to S2-4 is considered valid.

## 4.6 Signalling LEDs and relays



Fig. 12 - Description of the signalling LEDs

The relay contacts are wired to the terminal block, see description Fig. 2 on page 12.

REL1 - is switched on if the required voltage has been reached at the output of the controlled sources (the sources do not operate in current limitation)

REL2 - is switched on if the total output current of the controlled sources has reached the set current, the sources are therefore operating in current limitation

REL3 - is on when no fault is detected, open when fault is detected

## 5 Maintenance and service

### Warranty

The equipment comes with a standard warranty of 2 years from purchase. In case of equipment failure, please contact your supplier. Never repair the equipment yourself!

## 6 Error messages

The error is indicated by red and yellow LEDs and relay REL3. The relay is switched on if no error is detected.

After power-up, there is a short delay to clear any errors. During this delay, neither the red nor the yellow LED is lit and the REL3 relay remains open until any errors have passed.


The yellow LED is lit if no module responds to the CAN communication.

The red LED is lit if any other error is present besides the CAN communication error. If the red LED is lit even when CAN communication is disconnected, this indicates an internal error of the AXIF 108.

Red LED	Yellow LED	REL 3 relay	CAN Communications	Status
-	-	Sepruto	OK	No mistake. The correct number of modules are connected and all are ready to deliver power.
-	Shining	-	Error	CAN communication error (no module communicating) No other error.
Shining	Shining	-	Error	CAN communication error (no module is communicating) At the same time one of the internal errors is active: <ul style="list-style-type: none"> <li>EEPROM memory is corrupted or recovery has failed</li> <li>Invalid calibration</li> </ul>
Shining	-	-	OK	Module error: <ul style="list-style-type: none"> <li>Incorrect number of connected modules</li> <li>Module identification not completed</li> <li>Unknown module type</li> <li>Max. voltage of connected modules does not match</li> <li>Loss of module</li> <li>Invalid module set</li> <li>The module is not ready to deliver power</li> </ul>
-	-	-	Error	Initial delay after switching on. CAN communication error (modules have not started yet) or another error. The error is not yet signalled by LED.

The active and previous error code can be read from the MODBUS registers.





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