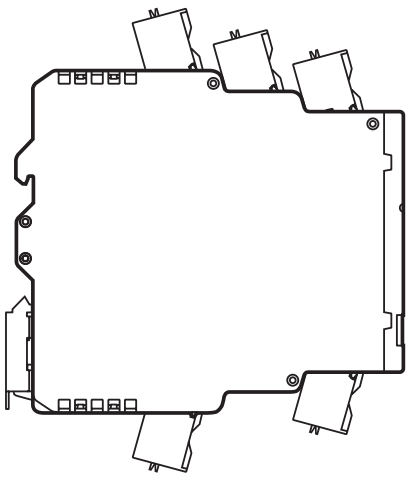
Operating instructions
AS-i SmartLine module

UK

AC3218
AC3219



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Contents

1 Preliminary note

Technical data, approvals, accessories and further information at www.ifm.com.

1.1 Explanation of symbols

▶ Instructions

> Reaction, result

→ Cross-reference

Important note
Non-compliance may result in malfunction or interference.

Information
Supplementary note.

2 Safety instructions

- Read this document before setting up the product and keep it during the entire service life.
- The product must be suitable for the corresponding applications and environmental conditions without any restrictions.
- Only use the product for its intended purpose (→ Functions and features).
- If the operating instructions or the technical data are not adhered to, personal injury and/or damage to property may occur.
- The manufacturer assumes no liability or warranty for any consequences caused by tampering with the product or incorrect use by the operator.
- Installation, electrical connection, set-up, operation and maintenance of the unit must be carried out by qualified personnel authorised by the machine operator.
- Protect units and cables against damage.

3 Functions and features

The slave receives data via the AS-Interface and converts them into analogue output signals. The AS-i module operates as a slave with bidirectional data transfer in the AS-i network.

The data transfer from the host to the slave is asynchronous according to the AS-i profile S-7.3 and the AS-i specification V2.11.

- The slave can be operated in conjunction with a version 2.11 master or higher (master profile M3 or M4).
- Current output 0..20 mA (AC3218) or voltage output 0...10 V (AC3219)
- R_{max} for current output 600 Ω (AC3218)
  R_{min} for voltage output > 1 kΩ (AC3219)
- AS-i profile S-7.3.6
- Maximum number of modules per AS-i system: 31
- Conversion time (digital - analogue) in the slave with four channels: < 1 ms
- Actuator supply from AS-i (max. 90mA) or external 24 V PELV voltage source (the supply is selected automatically as soon as an external voltage is applied)
- 16 bits / 1 µA (AC3218) or 16 bits / 1 mV (AC3219)
- The actuators are connected via COMBICON terminals

4 Addressing

► Assign a free address between 1 and 31.

The address is set to 0 at the factory.

4.1 Addressing with the AC1154 addressing unit

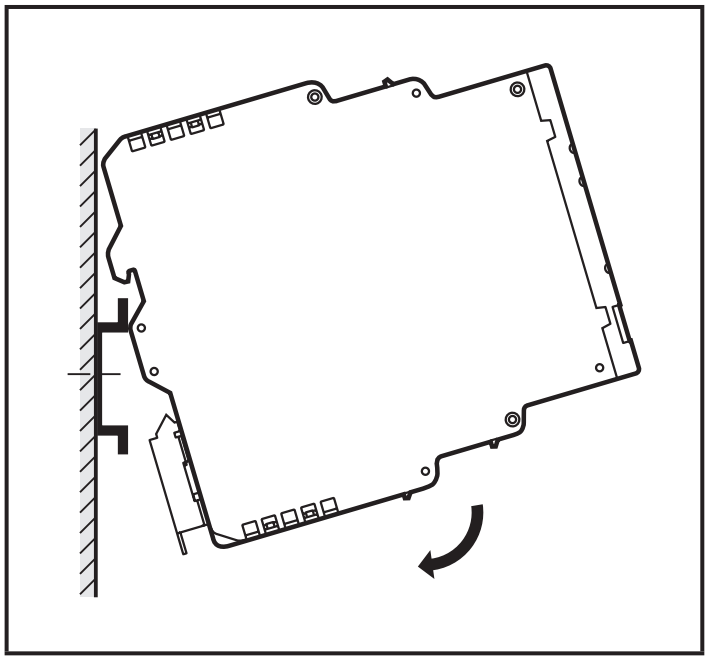
► When mounted and wired the module can be addressed with the addressing cable (E70213) via the integrated addressing interface.

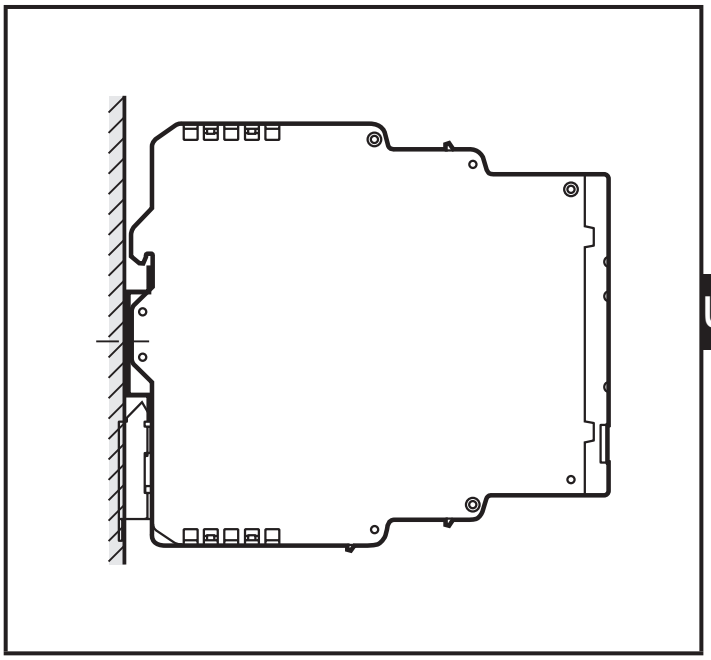
No addressing via the addressing socket while live.

5 Installation

5.1 Installation of the device

▶ Install the device on a 35 mm DIN rail.

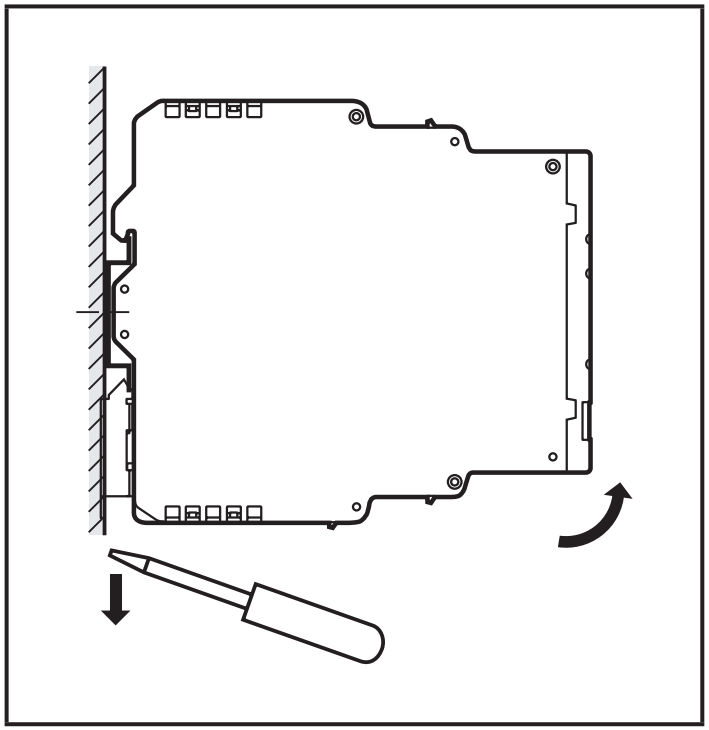




▶ Leave enough space between the unit and the top and bottom of the control cabinet to enable air circulation and to avoid excessive heating.

▶ Take into account the internal heating of all devices when mounting several devices side by side and observe the environmental conditions for every device.

5.2 Removal of the device



6 Electrical connection

The unit must be connected by a qualified electrician.

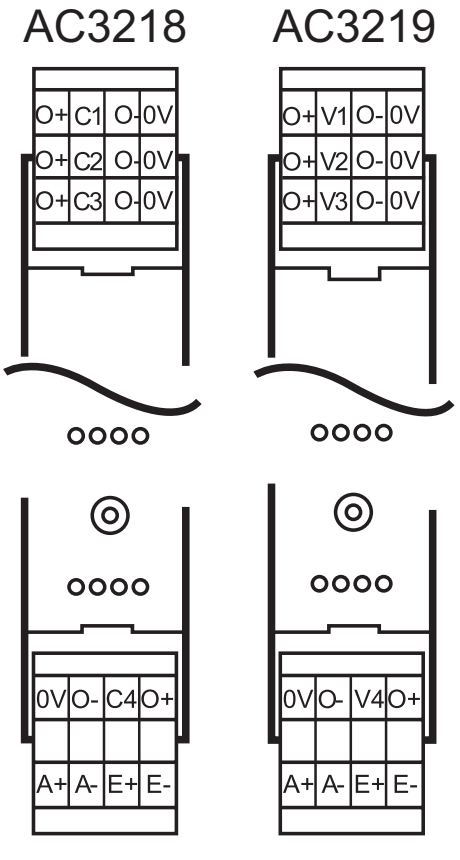
The national and international regulations for the installation of electrical equipment must be adhered to.

▶ Disconnect power.

▶ Connect the unit.

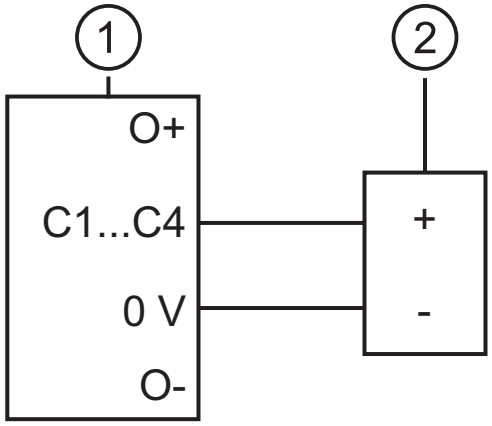
6.1 Wiring

O+	actuator supply +24 V
C1...C4	analogue output current (AC3218)
V1...V4	analogue output voltage (AC3219)
O-	actuator supply 0 V
0 V	analogue output 0 V
A+	AS-i +
A-	AS-i -
E+	external actuator supply +24 V
E-	external actuator supply 0 V



6.2 Connection analogue module AC3218 (0...20 mA)

6.2.1 Connection of an actuator without separate voltage supply

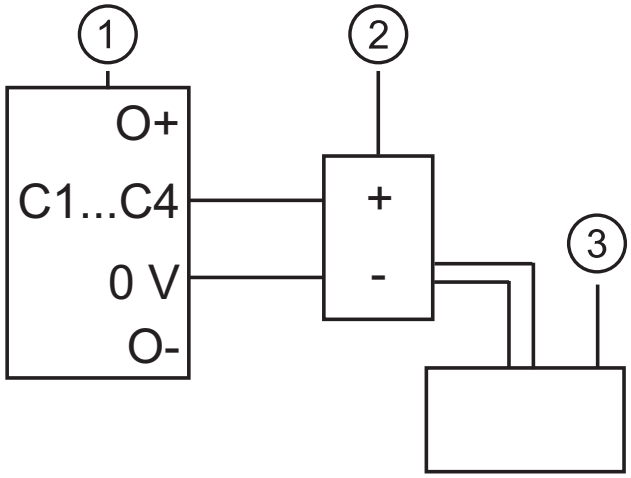


A 2-wire actuator is connected via the terminals C1...C4 and 0 V.
The terminals O+ and O- are not used with actuators without separate voltage supply.

UK

1: Analogue module
2: Actuator without separate supply

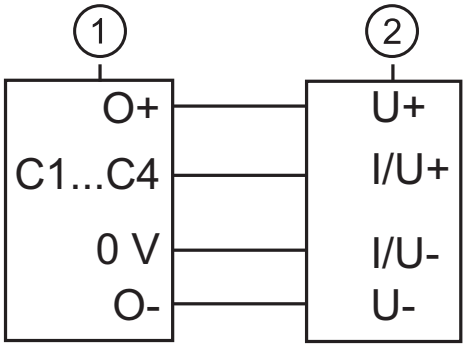
6.2.2 Connection of an actuator with intrinsic supply



A 2-wire actuator is connected via the terminals C1...C4 and 0 V.
The terminals O+ and O- are not used with actuators without separate voltage supply.

1: Analogue module
2: Actuator with intrinsic supply
3: Supply PELV ungrounded

6.2.3 Connection of an actuator with separate 24 V supply



An actuator with separate supply is connected to the external 24 V via the terminals O+ and O-. The signal can be taken from the terminals C1...C4 and 0 V.

1: Analogue module
2: Actuator with separate supply

6.2.4 Electrical connection 0 V terminal

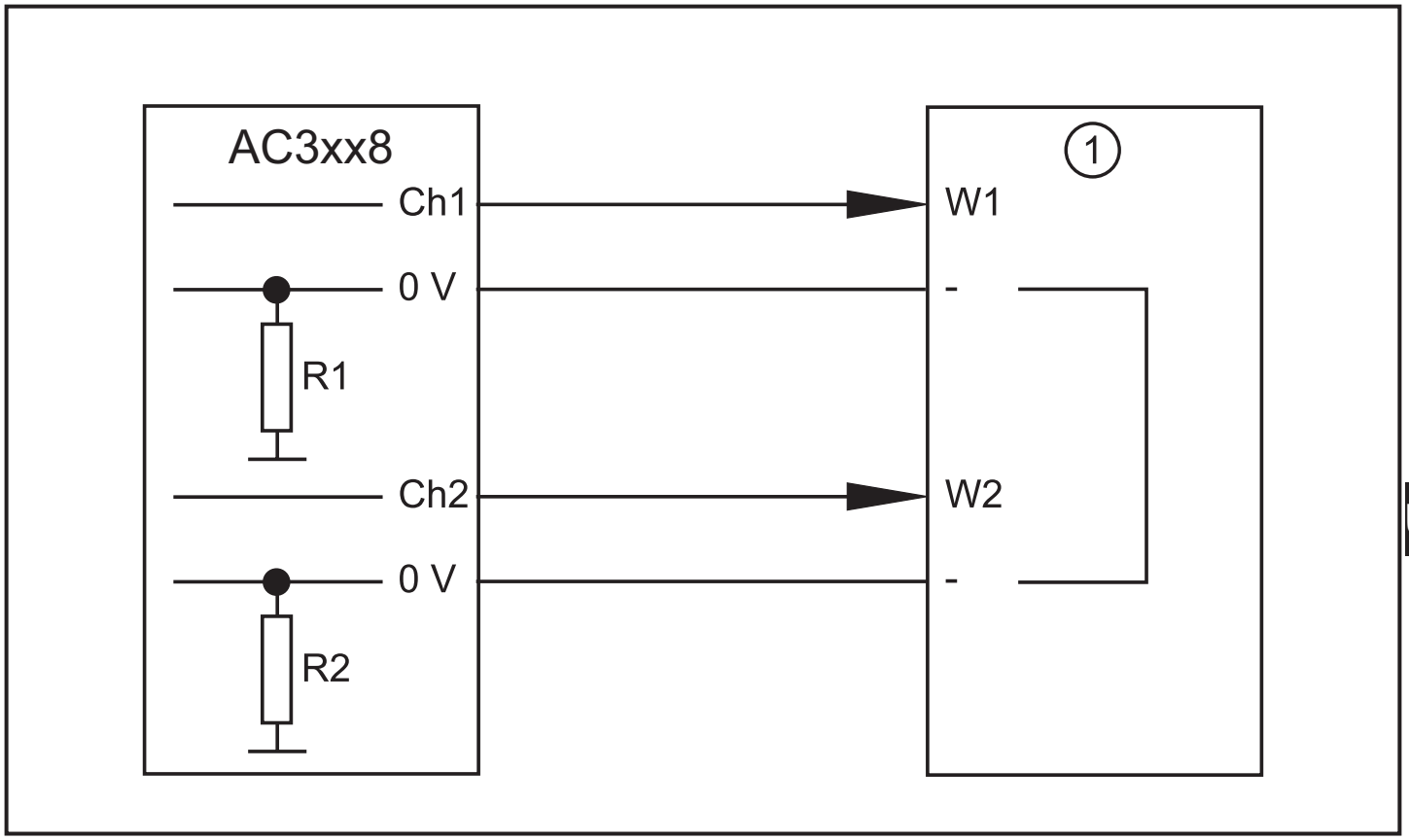
▶ Do not connect the 0 V terminals (analogue output 0 V) of the respective channels of the current output modules to each other.

> This connection leads to faulty current signals.

The connection of the 0 V terminals (analogue output 0 V) results in a parallel connection of the resistances R1 and R2 (see drawing). This leads to faulty current signals.

Example
This problem can occur when a frequency converter is connected, i.e. the connection of the 0 V terminal is established there (common-).

▶ Adhere to the documentation of the frequency converter.

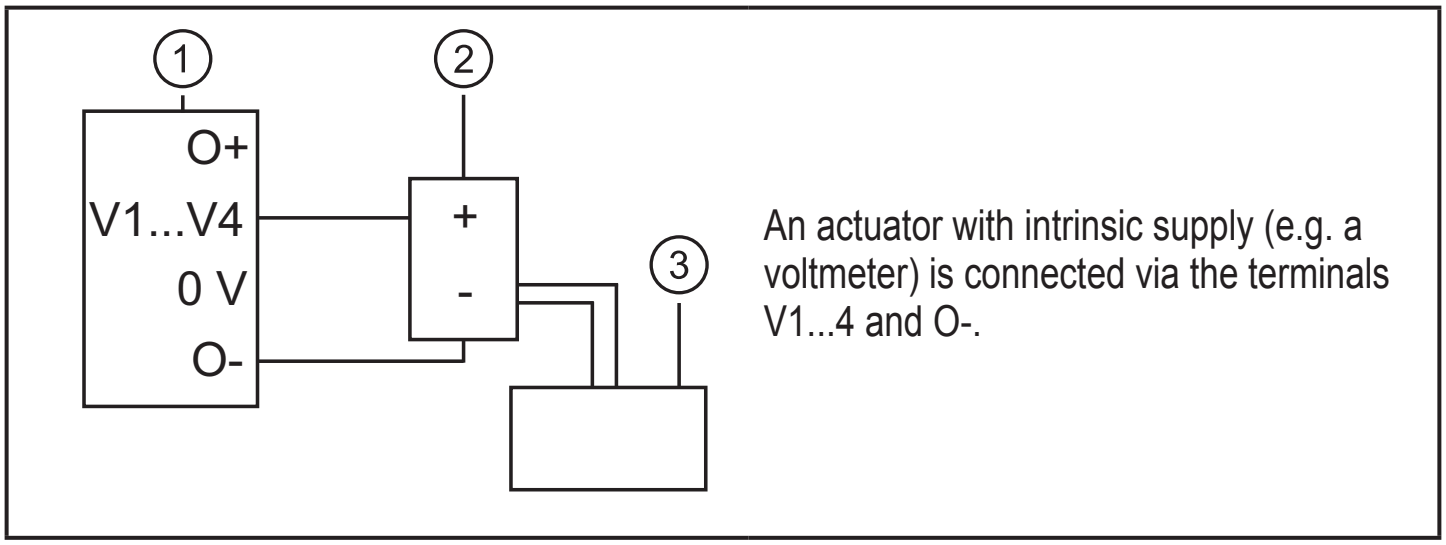


1: Frequency converter

▶ As a remedy, use two current output modules.

6.3 Connection analogue module AC3219 (0...10 V)

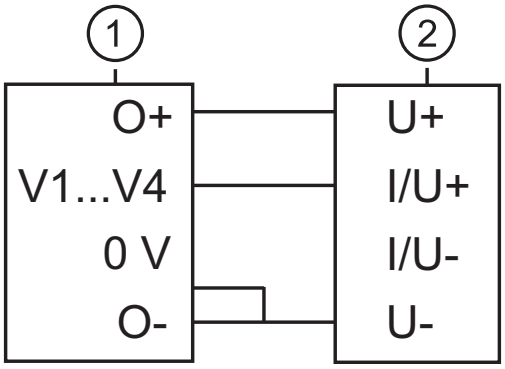
6.3.1 Connection of an actuator with intrinsic supply



An actuator with intrinsic supply (e.g. a voltmeter) is connected via the terminals V1...4 and O-.

1: Analogue module
2: Actuator with intrinsic supply
3: Supply PELV ungrounded

6.3.2 Connection of an actuator with separate 24 V supply



An actuator with separate supply is connected to the external 24 V via the terminals O+ and O-. The signal can be taken from the terminals V1...V4 and 0 V. The terminals O- and 0 V must be connected to each other via a link.

1: Analogue module
2: Actuator with separate supply

7 Parameter setting

Parameter bit / Designation	Description
P0 not used	1 reserved 0 reserved
P1 not used	1 reserved 0 reserved
P2 Peripheral fault	1 error indication active 0 error indication inactive
P3 not used	1 reserved 0 reserved

8 Measuring range

▶ The measuring ranges, the states of the LEDs and their meaning are indicated in the following tables.

8.1 Analogue module AC3218

Range 0...20 mA	Units dec.	Units hex.	LEDs O1...O4 analo-gue	Meaning
0...20 mA	0000...20000	0000...4E20	on	nominal range
20.001... 23 mA	20001...23000	4E21...59D8	on	above nominal range
> 23 mA	> 23000	> 59D8	flashing	overflow

8.2 Analogue module AC3219

Range 0...10 V	Units dec.	Units hex.	LEDs O1...O4 analo-gue	Meaning
0 ...10 V	0000...10000	0000...2710	on	nominal range
10.001...11.5 V	10001...11500	2711...2CEC	on	above nominal range
> 11.5 V	> 11500	> 2CEC	flashing	overflow

8.3 Transmission time of the analogue values

The transmission time of the analogue values depends on the conversion time of the digital signals into analogue signals in the AS-i module and on the transmission time via the AS-Interface.

The conversion time of the digital signals is approx. 1 ms.

The transmission time of the 4 16-bit values via the AS-interface ideally is 7 AS-i cycles per value. For a cycle time of 5 ms per AS-i cycle this results in a transmission time of 4 x 7 x 5 ms = 140 ms via the AS-Interface.

Thus the total transmission time for 4 analogue values ideally is approx. 1 ms (conversion time) + 140 ms (transmission time) = approx. 141 ms.

9 Operation

▶ Check the safe functioning of the unit.

Display by LEDs:

LED AS-i green lights	AS-i voltage supply OK
LED AUX green lights	External voltage supply 24 V OK
LEDs O1...O4 yellow light	Analogue signal within the measuring range or no actuator connected. It cannot be detected whether a 0 V signal is applied or whether no actuator is connected.
LEDs O1...O4 yellow flash	Analogue signal outside the measuring range (overflow)
LED FAULT red lights	Peripheral fault A peripheral fault is indicated if at least one of the analogue signals is outside the value range.
LED yellow DIAG - DIAG lights - DIAG flashes - DIAG off	Internal diagnostics - no fault - internal fault (replace module) - internal fault (replace module)

10 Maintenance, repair, disposal

10.1 Maintenance

The unit is maintenance-free.

10.2 Cleaning of the housing surface

▶ Disconnect the device.

▶ Clean the device from dirt using a soft, chemically untreated and dry cloth.

Micro-fibre cloths without chemical additives are recommended.

10.3 Repair

▶ The device must only be repaired by the manufacturer.

10.4 Disposal

▶ Dispose of the device in accordance with the national environmental regulations.

11 Scale drawing