ifm electronic

CE

# Operating instructions
# AS-i module
# ecomat300

**AC2218**
**AC2219**

UK

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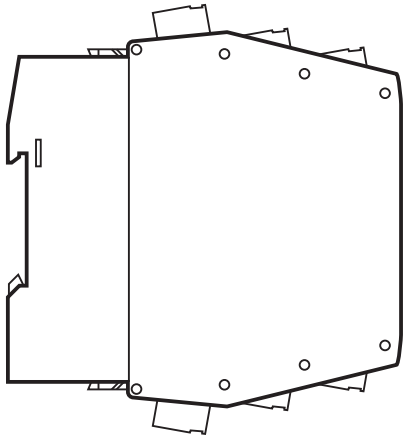


# Contents


1 Preliminary note ..... 3

2 Safety instructions ..... 3

3 Functions and features ..... 3

4 Addressing ..... 4
4.1 Addressing with the AC1154 addressing unit ..... 4

5 Mounting ..... 4

6 Electrical connection ..... 4
6.1 Wiring ..... 5
6.2 Connection analogue module AC2218 (0...20 mA) ..... 5
6.2.1 Connection of an actuator without separate voltage supply ..... 5
6.2.2 Connection of an actuator with intrinsic supply ..... 6
6.2.3 Connection of an actuator with separate 24 V supply ..... 6
6.2.4 Electrical connection 0 V terminal ..... 6
6.3 Connection analogue module AC2219 (0...10 V) ..... 8
6.3.1 Connection of an actuator with intrinsic supply ..... 8
6.3.2 Connection of an actuator with separate 24 V supply ..... 8

7 Parameter setting ..... 9

8 Measuring range ..... 9
8.1 Analogue module AC2218 ..... 9
8.2 Analogue module AC2219 ..... 9
8.3 Transmission time of the analogue values ..... 10

9 Operation ..... 10

10 Maintenance, repair and disposal ..... 11

11 Technical data ..... 11

12 Scale drawing ..... 11

# 1 Preliminary note

▶ Instructions

> Reaction, result

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

Information
Supplementary note.



# 2 Safety instructions

- Please read the operating instructions prior to set-up of the device. Ensure that the product is suitable for your application without any restrictions.
- The unit conforms to the relevant regulations and EC directives.
- Improper or non-intended use may lead to malfunctions of the unit or to unwanted effects in your application.
- Installation, electrical connection, set-up, operation and maintenance of the unit must only be carried out by qualified personnel authorised by the machine operator.

# 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 V2.1.

- Current output 0..20mA (AC2218) or voltage output 0..10 V (AC2219)
- AS-i profile S-7.3.6
- Actuators are connected via Combicon terminals
- Maximum number of modules per AS-i system: 31
- $R_{max}$ for current output 600 W; $R_{min}$ for voltage output > 1 kW
- Conversion time (digital - analogue) in the slave with four channels: < 1 ms
- Actuator supply from AS-i (max. 90 mA) or external 24 V PELV voltage source (the supply is selected automatically as soon as an external voltage is applied)

- 16 bits/1 µA (AC2218) or 16 bits / 1 mV (AC2219)

# 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 Mounting

▶ Fix the module onto a 35mm rail.

# 6 Electrical connection

The unit must be connected by a qualified electrician.

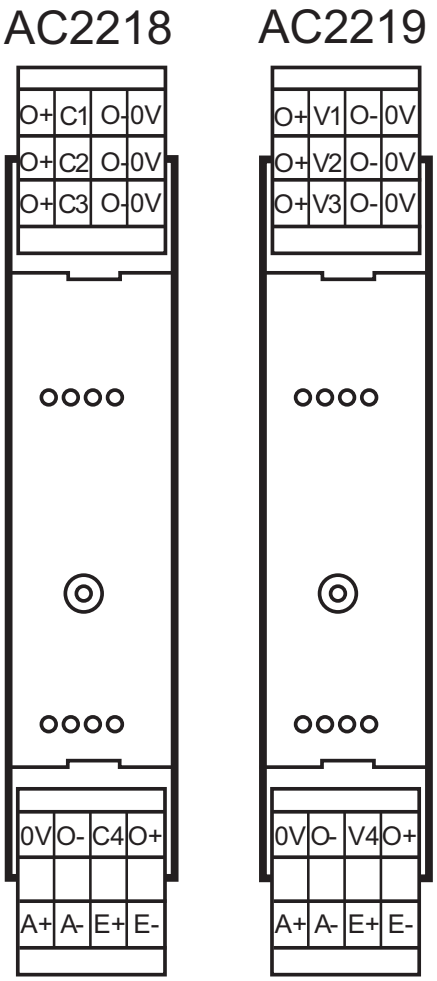
The national and international regulations for the installation of electrical equipment must be adhered to.

▶ Disconnect power.

▶ Connect the unit.

## 6.1 Wiring

| | |
|---|---|
| O+ | Actuator supply +24 V |
| C1...C4 | Analogue output current (AC2218) |
| V1...V4 | Analogue output voltage (AC2219) |
| 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 |

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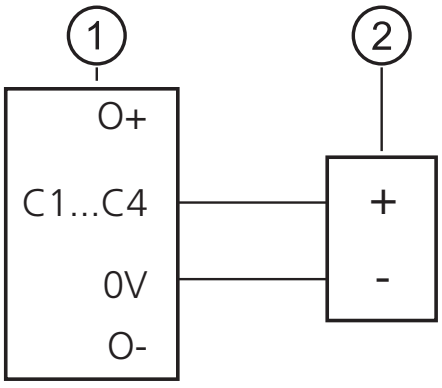
## 6.2 Connection analogue module AC2218 (0...20 mA)

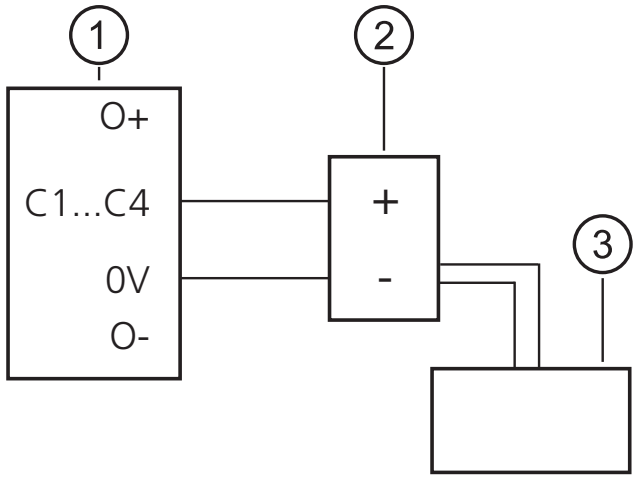
### 6.2.1 Connection of an actuator without separate voltage supply




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.

1: Analogue module
2: Actuator without separate supply

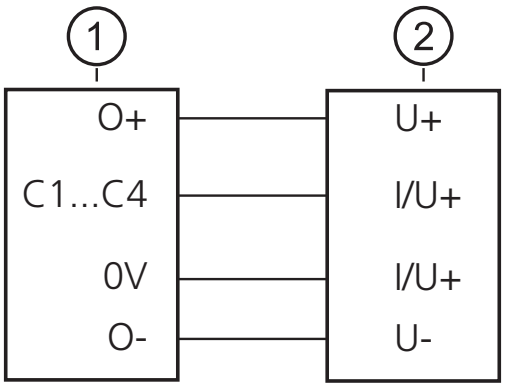
### 6.2.2 Connection of an actuator with intrinsic supply




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.

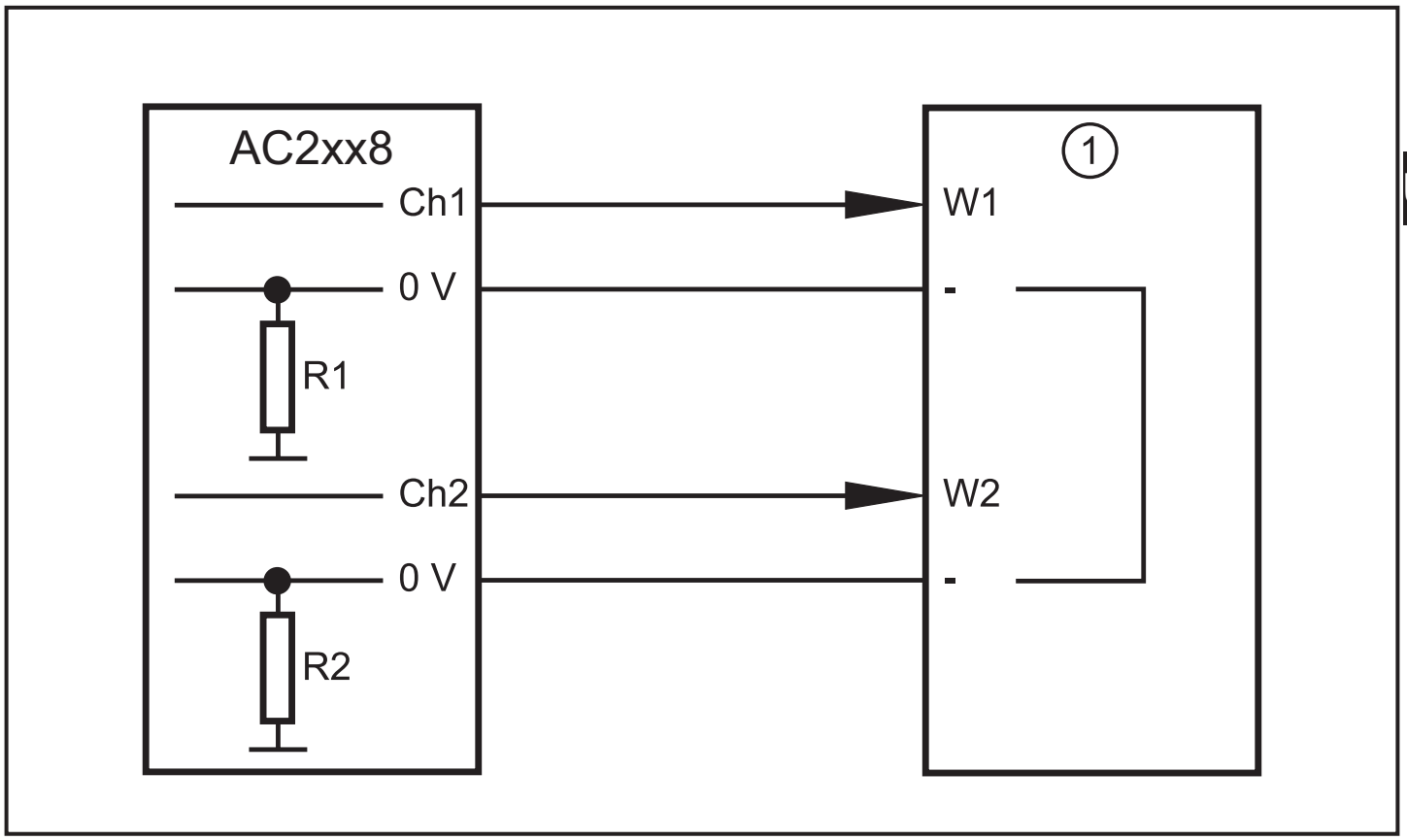
> This connection leads to faulty current signals.

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.

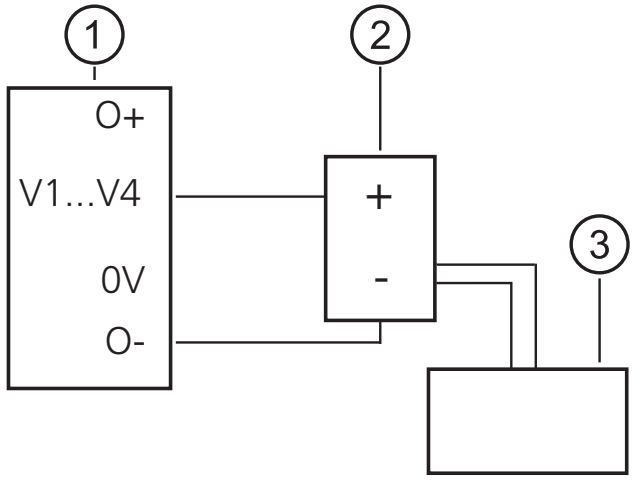



1: Frequency converter

▶ As a remedy, use two current output modules.

## 6.3 Connection analogue module AC2219 (0...10 V)

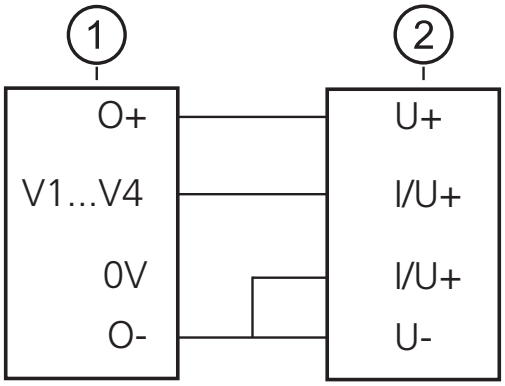
### 6.3.1 Connection of an actuator with intrinsic supply




An actuator with intrinsic supply (e.g. a voltmeter) is connected via the terminals V1..V4 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 0V. The terminals O- and 0V 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<br>not used | 1 reserved<br>0 reserved |
| P1<br>not used | 1 reserved<br>0 reserved |
| P2<br>periphery fault | 1 error indication active<br>0 error indication inactive |
| P3<br>not used | 1 reserved<br>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 AC2218

| Range<br>0...20 mA | Units<br>dec. | Units<br>hex. | LEDs<br>O1...O4<br>analogue | Description |
|---|---|---|---|---|
| 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 | flashes | overflow |

## 8.2 Analogue module AC2219

| Range<br>0...10 V | Units<br>dec. | Units<br>hex. | LEDs<br>O1...O4<br>analogue | Description |
|---|---|---|---|---|
| 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 | flashes | 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 | Periphery fault.<br>A periphery fault is indicated if at least one of the analogue signals is outside the value range. |
| LED yellow DIAG | Internal diagnosis |
| - DIAG lights | - no error |
| - DIAG flashes | - internal fault (replace module) |
| - DIAG off | - internal fault (replace module) |

# 10 Maintenance, repair and disposal

The operation of the unit is maintenance-free. After use dispose of the unit in an environmentally friendly way in accordance with the applicable national regulations.

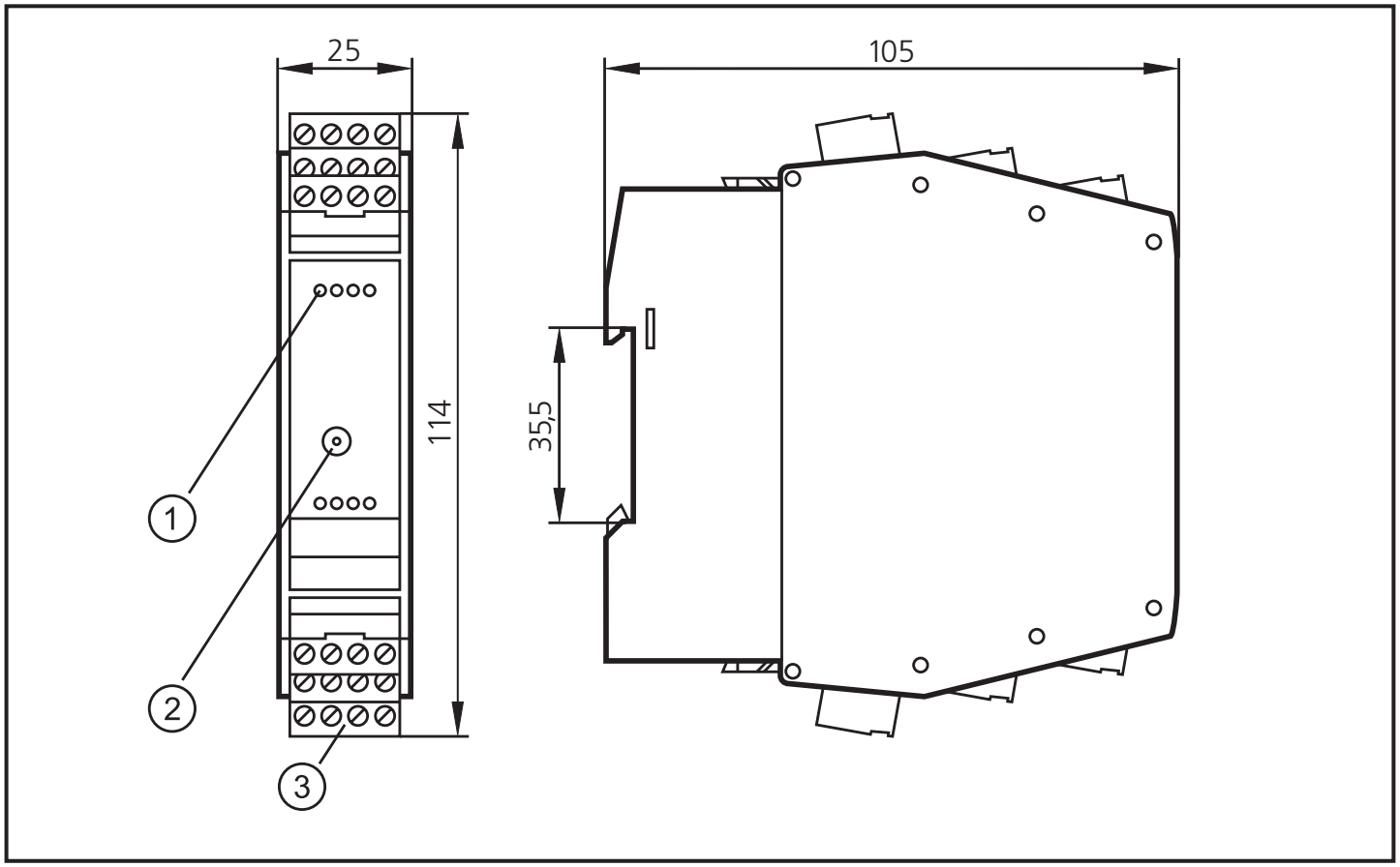
# 11 Technical data

Technical data and further information at

www.ifm.com → Select your country → Data sheet search



# 12 Scale drawing




1: LEDs
2: Addressing socket
3: Combicon terminals