



Operating instructions
Switching amplifiers

GB

N0537A
N0538A
N0539A

80299364 / 00 02 / 2021

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1 Preliminary note

You will find instructions, technical data, approvals and further information using the QR code on the unit / packaging or at www.ifm.com.

2 Safety instructions

- The unit described is a subcomponent for integration into a system.
 - The system architect is responsible for the safety of the system.
 - The system architect undertakes to perform a risk assessment and to create documentation in accordance with legal and normative requirements to be provided to the operator and user of the system. This documentation must contain all necessary information and safety instructions for the operator, the user and, if applicable, for any service personnel authorised by the architect of the system.
- 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 (→ Intended use).
- 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 product must be carried out by qualified personnel authorised by the machine operator.
- Protect units and cables against damage.

3 Intended use

The unit is used in instrumentation and control engineering (ICE) for galvanic isolation of signals, such as 20 mA and 10 V standard signals, or in addition for adapting and standardising signals. The unit features intrinsically safe circuits that are used to operate intrinsically safe field units within hazardous areas.

The unit is intended for installation on a 35 mm DIN rail according to EN 60715.

The unit is an associated equipment according to IEC/EN 60079-11.

The unit is not suitable for separating signals in power measurement technology.

The unit transmits binary signals of NAMUR sensors or mechanical contacts from the hazardous area into the non-hazardous area.

► Only use the unit within the permissible operating conditions.

► Only use the unit stationary.

3.1 Classification

Use in hazardous areas according to the classification

II 3 (1) G (group II, category 1G / 2G, apparatus for gas atmosphere).

The requirements of the standards EN IEC 60079-0:2018, EN 60079-11:2012, EN 60079-15:2010 are met.

II (1) D (group II, category 1D, apparatus for dust atmosphere).

The requirements of the standards EN IEC 60079-0:2018 and EN 60079-11:2012 are met.




3.2 ATEX certificate

FIDI 20 ATEX 0022X

3.3 IECEx certificate

IECEx FIDI 20.0003X

3.4 Identification

ATEX classification	Identification
 II 3 (1) G	Ex nA [ia Ga] IIC T4 Gc
 II (1) D	[Ex ia Da] IIIC
 I (M1)	[Ex ia Ma] I

4 Installation

► Do not install a damaged or dirty unit.

► Do not expose the unit to mechanical hazard,
Recommendation: Installation in a secondary housing.

- ▶ Install the unit outside the hazardous area.

The unit has the protection rating IP20 according to IEC/EN 60529.

- ▶ Only install and use the unit under operating conditions that do not exceed soiling degree 2 according to IEC EN 60664-1.
In case of use under operating conditions with a higher degree of soiling, the unit must be protected accordingly.
- ▶ Make sure all circuits connected with the unit comply at least with overvoltage category II according to IEC EN 60664-1.
- ▶ Only supplies providing protection against electrical shock (SELV or PELV) may be connected to supply modules.
- ▶ The installation regulations according to IEC/EN 60079-14 must be complied with,

4.1 Requirements for cables and connection cables

- ▶ The permissible wire cross section must be adhered to. In case multi-wire conductors are used, they have to be crimped with wire end ferrules.
- ▶ Make sure only one conductor per connecting terminal is used.
- ▶ Make sure the insulation of the conductor reaches all the way to the connecting terminal.
- ▶ The tightening torque for the screws of the connecting terminal must be adhered to.

If the voltage exceeds 50 V AC:

1. Switch off the voltage.
2. Attach or remove the terminal blocks.

4.2 Requirements in case of use as associated equipment

Circuits with Ex i type of protection that have been operated with non-intrinsically safe circuits must no longer be used as circuits with Ex i type of protection then.

The intrinsically safe circuits of the associated equipment may be routed into hazardous areas.

- ▶ Make sure the separation distances to all non-intrinsically safe circuits according to IEC/EN 60079-14 are observed.

- ▶ Make sure the separation distances between two neighbouring intrinsically safe circuits according to IEC/EN 60079-14 are observed.
- ▶ If the unit is connected to intrinsically safe equipment, the upper limiting values of the unit must be observed.
- ▶ If intrinsically safe units are connected to the intrinsically safe circuits of the corresponding equipment, the respective upper limiting values consistent with the explosion protection according to IEC/EN 60079-14 or IEC/EN 60079-25 must be observed (proof of intrinsic safety).

4.3 Requirements for use with equipment protection level Gc

The unit may only be installed and operated if installed in a secondary housing that complies with the requirements according to IEC/EN 60079-0 and that has the protection rating IP54 according to IEC/EN 60529.

When energised, non-intrinsically safe circuits may only be connected and disconnected if there is no explosive atmosphere present.

5 Electrical connection

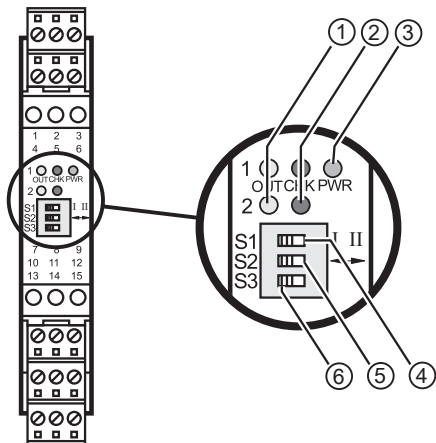
NAMUR switch	Mechanical switch Input circuit no.		
	1	2	3
	<p>$400 \Omega \leq R \leq 2 \text{ k}\Omega$</p>	<p>10 kΩ</p>	

Maximum permissible values of the control circuits in type of protection intrinsic safety	
Voltage	10.5 V
current	17.1 mA

Maximum permissible values of the control circuits in type of protection intrinsic safety

Power	45 mW
External inductance	200 mH (IIC) / 740 mH (IIB)
External capacitance	2.4 μ F (IIC) / 16.8 μ F (IIB)

6 Operating and display elements



1: LED yellow	Indication of the switching status output 1 / output 2; lights when the corresponding output is switched / the relay is en- ergised.
2: LED red	Fault indication for input circuit 1 / input circuit 2; lights in case of wire break or short circuit in the respective input circuit. The corresponding output is not active (transistor blocked, relay de-energised).
3: LED green	Lights when supply voltage is applied.

4: Selector switch S1	Programming the output function S1 / S2 = 1: direct operation (output switches like input signal: IN = ON → OUT = ON).
5: Selector switch S2	S1 / S2 = 2: inverted operation (output switches opposed to the input signal: (IN = ON → OUT = OFF). For single-channel units S2 has no function.
6: Selector switch S3	Setting for short circuit / wire monitoring <ul style="list-style-type: none"> • When proximity sensors are connected monitoring is always active. S3 must be in position I. • When mechanical switches are connected the following applies: <ul style="list-style-type: none"> – Monitoring active for input circuit no. 1; S3 must be in position I. – Without short circuit monitoring for input circuit no. 2 and S3 in position I. – Without short circuit and wire monitoring for input circuit no. 3 and S3 in position II.

7 Maintenance, repair and disposal

The operation of the unit is maintenance-free.

Only the manufacturer is allowed to repair the unit.

- ▶ After use dispose of the device in an environmentally friendly way in accordance with the applicable national regulations.