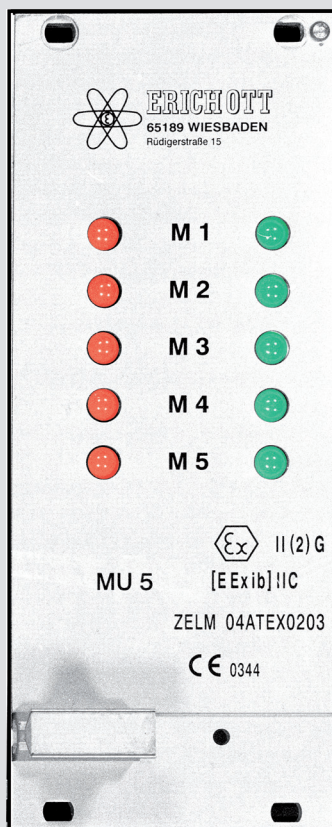



## EX MU 5

Selector unit



Identification	 II (2) GD [EExib] IIC
EC-type examination certificate	<b>ZELM 04 ATEX0203</b>
Nominal voltage	<b>220 V</b>
Current	<b>32 mA</b>
Ambient temperature range	<b>0 - 55°C</b>
Sensor current	<b>≥ 1 mA</b>
Measurement system	<b>2 or 3-wire switch</b>
Relay	<b>max. 250 V~, 6 A</b>
Measuring current	<b>0,1 - 500 mA</b>
Design	<b>19" board 3 HE, 10 TE (12 TE, 14 TE)</b>

### Selector unit

The device is used for cutover of sensor circuits, which are switched on a common measurement input. The selector unit is designed for the operation in switch panels. It is as standard integrated in 19" mounting cabinets.

Devices and protective systems for the intended use in potentially explosive atmospheres guideline 94 / 9 EG

Selector switch

MU 5

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### Warning

The installation, configuration and commissioning may only be carried out by accordingly trained persons. The on-site installation and safety regulations must be observed.



### Reservation

We reserve the right for technical changes. Changes, errors and printing errors do not justify any claim for damage. For safety components and systems the respective standards and regulations must be observed as well as the applicable operation and installation instructions.



### Installation

For erection/operation the EN 60079-14 ff and the respectively applicable installation regulations as well as the generally accepted engineering principles and this operating manual are relevant. The selector switch MU 5 is an element of a heating system and certified in association with the manufacturers declaration in combination with other components. Only in compliance with these instructions and the relevant VDE guidelines, the EC-type examination certificate is valid. In case of doubt the manufacturer or the competent expert for the plant should be consulted.

The devices may not be thrown or fall. If a deformation is detected at the device, it must be sent back for examination. Before the device is taken into operation, the installation must be checked without device. A mixing up of connectors can lead to immediate destruction of the device. The construction of heating systems is not certified in the EC-type examination certificate when using this device.

### Maintenance

The applicable rules of the EN 60079-14 for the repair/maintenance/examination must be observed. The equipment is maintenance free.



### Repair

The dismantling takes place in reverse order than the installation. Due to the little heavy metal abundance a defective device should be disposed as hazardous waste. The device may only be repaired by the manufacturer. An intrusion is not permitted. If there is no company standard for the installation on the part of the operator, we must be informed about this.

At non-compliance with the installation instructions the warranty expires.

Read through this operating manual before you take the device into operation. Keep the operating manual at a place accessible for all users at any time.

Please support us to improve this operating manual. We are grateful for your suggestions.

Contact us for technical information!

TELEPHONE: +49 (0)611 761 393

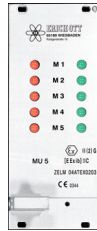
TELEFAX: +49 (0)611 711 462

E-Mail: erichott@gmx.de

## 1.0 DESCRIPTION

### Characteristics

Only 1 controller for up to 5 test points necessary
Ideal for heating circuit monitoring
Cost minimization
Simple overview



The device serves for the conversion of sensor circuits, which are switched on a common measurement input and for cyclical analysis and saving of the signal conditioning command with potential free contact for controlling.

\* Switchings of the five test points are made by use of a relay, which ensure as save galvanical separation with respect to the supply voltage.

\* Adapted for switching of intrinsically safe measuring lines.

\* The signal conditioning command, if the signal is not yet exceeded, is entered by means of a potential free contact. Due to this each switching contact of a controller is suitable signaler for saving.



\* The memory content of the five test points is signalled on the front side. Beside it is signalled, which temperature sensor is connected. The time base (stroke rythm) of the switching can be selected.

\* The analysis, if the signal "heating on" is valued with a and-register or a or-register, is adjustable. That means that if a measuring sensor has already exceeded the desired value, it is switched off (or), or all measuring inputs must have exceeded the desired value, only then it is switched off (and).

## 2.0 PROTECTIVE MEASURE

The sensor inputs are "intrinsically safe" inputs. For 3-wire switch the most adversarial measuring sensor is valid. Installation specifications for this must be observed. The user instructions have to be complied with after consultation of the competent expert for the plant. When properly installed no further values to be considered arise for the signal conditioning device.

## 3.0 TECHNICAL DATA

Nominal voltage	220 V ~ (200 V - 252 V), bzw. 24 V~
Current	32 mA
Fuse	80 mA
Sensor current	≥ 1 mA
Measuring system	2 or 3 wire switch
Ambient temperature	0 - 55 °C
Design	19 " - euro board 100 x 160; 3 HE, 10 TE, (12 TE, 14 TE)
Connector strip	Design 32-pol. DIN 41612 Configuration d + z für Ex i - version, b + z for standard version
Type of protection (gas)	EEx ib IIC
Interference voltage protection	EMC-compatibility (measured in mounting enclosure)
Relay	max. 250 V ~, 6 A
Measurement currents	0,1 - 500 mA, depending on signal conditioning device
Signal ouptut / input	Ui ≤ 30 V, Ii ≤ 500 mA
EC-type examination certificate	ZELM 04 ATEX0203
Identification	 0344  II (2) G [EEx ib] IIC

## 4.0 SWITCH POSITION

Switch 5 ON	Controller ON = Relay ON. Special device "MU5s": all 5 test points must have a temperature below the desired value, then the heating switches on.
Switch 6 ON	If only one test point falls below the desired value, the heating is switched on.
Switch 5 and 6 OFF	For Type MU5s: Relay has no function (OFF)

Switch 1- 4:

Switch	1	2	3	4		Coefficient	Cycle time
	1	1	1	1	2,4 sec	2 <sup>0</sup>	12 sec
	0	1	1	1	4,8 sec	2 <sup>1</sup>	24 sec
	1	0	1	1	9,6 sec	2 <sup>2</sup>	48 sec
	1	1	0	1	38,4 sec	2 <sup>3</sup>	
	1	1	1	0	10 min, 14 s	256 2 <sup>8</sup>	51 min, 12 s

If multiple switches are switched off, the coefficient of addition of the binary code applies.

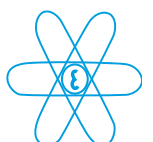
## 5.0 INSTALLATION SITE

The selector unit MU5 is designed for the operation within substations, mounted in a mounting enclosure type AG or equivalent 19" subrack, according to ICE 297-3/ DIN 41494 part 5, 3HE board depth 160mm, in a control cabinet. Observe EMC measures! Especially the distance to the main contactors. For 3-wire switch a substantially greater capacity against earth potential at the measuring input results for the signal conditioning device.

## 6.0 SIGNAL CONDITIONING DEVICE

All measured values as well as the EMC are measured with the temperature controller and limiter Ex TRB-P xx. For other processing units the necessary measurements must be defined first.

Further manifestations for the temperature controller - limiter also available as download on [www.erich-ott.de](http://www.erich-ott.de)





## 7.0 PRODUCTION NUMBER

xxxx / 03.03



## 7.1 TYPE CODE

EX MU 5



<b>1</b>	-	Standard for not intrinsically safe devices
	i	Ex i version

<b>2</b>	-	Standard Switches heating on, when a test point is below the desired value
	s	Special device Switches heating on, when all test points are below the desired value

## 8.0 CABLES AND LEADS

Cables for the analog signals must be laid separated from the cables which carry supply voltage. If this is not possible, appropriate EMC-tests must be made. Minimum cross-section of the cables 0,75 mm<sup>2</sup>, if voltage drop on the line or maximum admissible output resistance do not make larger cross-sections necessary.

VDE 100, VDE 106

The regulations for the laying of intrinsically safe cables and its connection must be observed.

**ERICH OTT**

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mail erichott@gmx.de  
web www.erich-ott.de

## 9.0 SENSOR

We supply suitable, certified Pt100 sensors in two basic versions.

Type EX TF Pt100L as remote sensor with minimal dimensions of 7,4 cm x 2,1 cm x 2,1 cm. Fully encapsulated in an aluminium cabinet with a measuring temperature of up to 200°C.

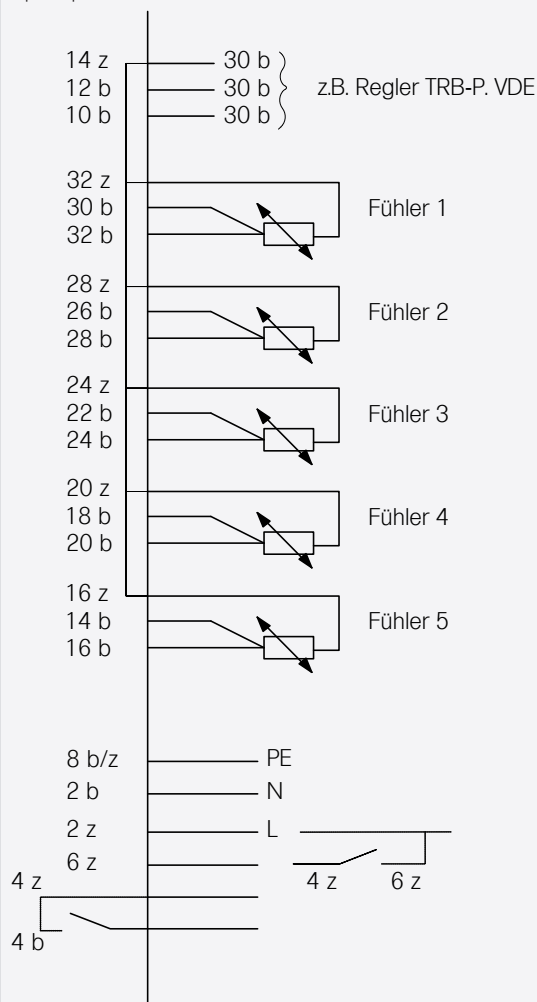
Type EX TF Pt100Ks with a sensor tip of 5 mm and a length of 23 cm. Fully encapsulated in an aluminium cabinet, a stainless steel sensor tip and a measuring temperature of up to 400°C.

Both sensors are proof of voltage stability.

Please take further details from the product literature Pt-100Ks or Pt-100L.

## 10.0 CONNECTION PLAN

All sensor inputs must be connected, if necessary switch 2 or more inputs parallel.



Pin assignment z and d