



# Operating Instructions

## ProVicom MT-65, MT-125

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R. STAHL HMI Systems GMBH  
Im Gewerbegebiet Pesch 14  
50767 Köln

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# 1 Preface

These operating instructions also cover Ex-relevant aspects.

## 2 Provicom MT-65, MT-125

### 2.1 Device function

The MT-65 and MT-125 operator interfaces are intelligent display and operating devices with text or graphic display for use in hazardous environments of zones 2 and 22 according to ATEX guideline 94/9/EC.

The easy and simple functions of the MT-65 guarantee less configuration time for your application and reduce the workload of your PLC.

The MT-125 operator interface offers many different styles of graphic display. Its many integrated functions also reduce the workload of your PLC.

- ☞ LCD monochrome graphic display, 240x64 dot resolution (MT-65), 240x128 dot resolution (MT-125)
- ☞ LED (MT-65) or CFL (MT-125) backlight
- ☞ Keyboard: extended 10 block
- ☞ MT-65 16 blank function keys that can be customised, 4 softkeys  
MT-125 12 blank function keys that can be customized, 4 set function keys,  
8 soft keys
- ☞ Winbond W77IC32 processor, 22 MHz
- ☞ Program memory 512 kByte RAM, data memory 512 kByte RAM (with 64 kByte boot part), main memory 128 kByte RAM
- ☞ RS-232-C programming and printer interface
- ☞ Either RS-232, RS-422 or RS-485 communication interface
- ☞ 2nd serial interface: optional Profibus DP or MPI module
- ☞ Reader interface via module if required
- ☞ MT-65 temperature range: -20 ... +70 °C
- ☞ MT-125 temperature range: -10 ... +60 °C
- ☞ 24V DC power supply with reverse voltage protection
- ☞ MT-65 4 freely controllable LEDs and 16 function keys with LEDs in the frontplate  
MT-125 4 freely controllable LEDs and 12 function keys with LEDs in the frontplate
- ☞ Real time clock and data retention capacitor are buffered.

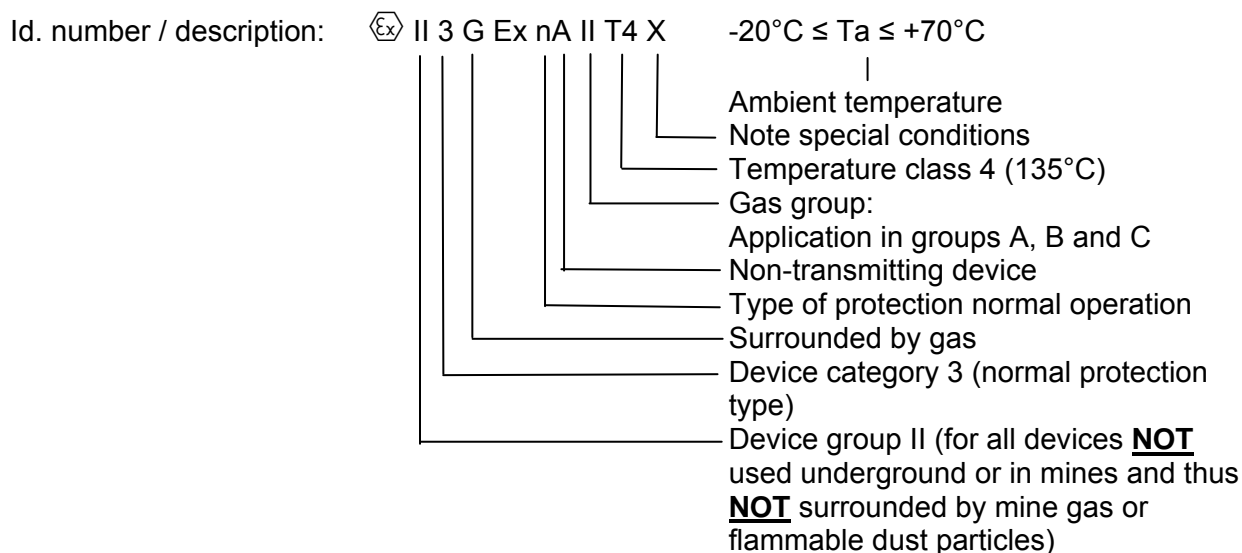
## 2.2 Product identification

The operator interfaces may only be installed according to the specifications on the type plate.

### 2.2.1 For Zone 2

Manufacturer:	R.STAHL HMI Systems GMBH
Type code:	MT-65 / MT-125
Ex classification:	MT-65: Ⓢ II 3 G Ex nA II T4 X $-20^{\circ}\text{C} \leq T_a \leq +70^{\circ}\text{C}$ MT-125: Ⓢ II 3 G Ex nA II T4 X $-10^{\circ}\text{C} \leq T_a \leq +60^{\circ}\text{C}$

#### 2.2.1.1 Identification number



2.2.2 For Zone 22

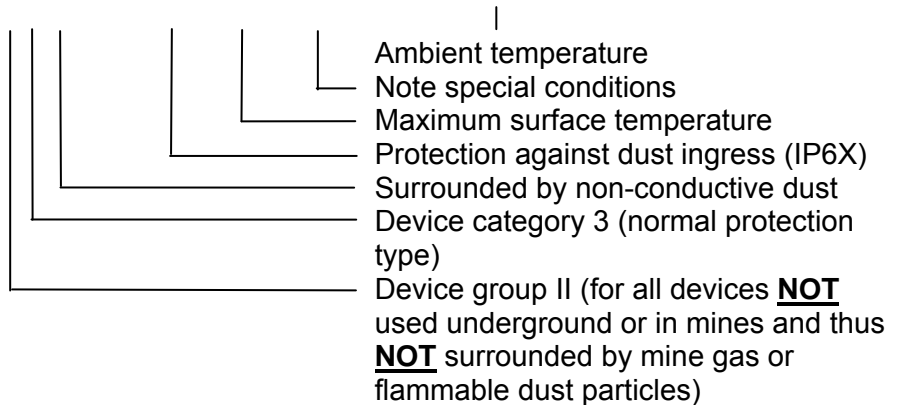
Non-conductive dust

Manufacturer:	R. STAHL HMI Systems GmbH
Type code:	MT-65
Ex classification:	$\text{Ex}$ II 3 D EEx IP65 T85°C X $-20^{\circ}\text{C} \leq T_a \leq +70^{\circ}\text{C}$ $\text{Ex}$ II 3 D EEx IP65 T65°C X $-20^{\circ}\text{C} \leq T_a \leq +50^{\circ}\text{C}$

Type code:	MT-125
Ex classification:	$\text{Ex}$ II 3 D EEx IP65 T75°C X $-10^{\circ}\text{C} \leq T_a \leq +60^{\circ}\text{C}$ $\text{Ex}$ II 3 D EEx IP65 T65°C X $-10^{\circ}\text{C} \leq T_a \leq +50^{\circ}\text{C}$

2.2.2.1 Product identification for MT-65 / MT-125

Product identification  $\text{Ex}$  II 3 D EEx IP65 T85°C X  $-20^{\circ}\text{C} \leq T_a \leq +70^{\circ}\text{C}$



Note concerning Zone 22:

MT-65:

- When the device is in operation in an ambient temperature range of  $T_a = -20^{\circ}\text{C}$  to  $+70^{\circ}\text{C}$ , the surface temperature will not exceed  $+85^{\circ}\text{C}$ .
- When the device is in operation in an ambient temperature range of  $T_a = -20^{\circ}\text{C}$  to  $+50^{\circ}\text{C}$ , the surface temperature will not exceed  $+65^{\circ}\text{C}$ .

MT-125:

- When the device is in operation in an ambient temperature range of  $T_a = -10^{\circ}\text{C}$  to  $+60^{\circ}\text{C}$ , the surface temperature will not exceed  $+75^{\circ}\text{C}$ .
- When the device is in operation in an ambient temperature range of  $T_a = -10^{\circ}\text{C}$  to  $+50^{\circ}\text{C}$ , the surface temperature will not exceed  $+65^{\circ}\text{C}$ .

## 2.3 Special conditions

### 2.3.1 Zone 2

1. This device is classified as a non-sparking apparatus with low power consumption.
2. The device housing must be of at least protection type IP54 at the point of assembly.
3. The devices must not be exposed to direct sunlight permanently.
4. **The error output (relay contact) must NOT be connected.**

### 2.3.2 Zone 22

The device housing must adhere to the EN 50281 requirements (such as the type 8146 or 8125 housings by R. STAHL Schaltgeräte GmbH).

## 2.4 Warnings / notes



**Warning !**

**The error output (relay contact) must NOT be connected if the operator interfaces are installed in zone 2 !**



**Warning !**

“Do not open device when switched on”



**Warning !**

“Do not remove fuse when device is switched on”



**Warning !**

“Do not remove connector when device is switched on”



**Note:**

“External leads must not be connected under strain”

### 2.4.1.1 Note concerning use in Zone 22



**Note:**

During assembly and operation of the operator interface electrostatic surface voltages must not exceed those caused by manual rubbing.

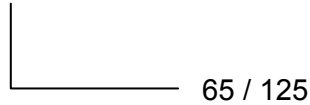
## 2.5 Power supply

Operator interface	Power supply			Current consumption
	Minimum	Nominal voltage	Maximum	Maximum
MT-65	19,2 VDC	24 VDC	28,8 VDC	105 mA
MT-125				215 mA

## 2.6 Type code

Type code:

Provicom MT-xxx



Product type:

Version	Description
	Type with
MT-xxx-RS232	RS-232 interface
MT-xxx-RS422	RS-422 interface
MT-xxx- RS422-DP	RS-422 and Profibus-DP interface
MT-xxx- RS422-MPI	RS-422 and MPI interface
MT-xxx-RS	RS interface for barcode or proximity reader
MT-xxx-WCR	WCR interface for Wiegand Effect reader

## 3 Installation and operation

### 3.1 General information

Electrical installations are subject to the relevant regulations for installation and operation.

### 3.2 Installation in Zone 2 and Zone 22

The users of electrical installations in hazardous environments must ensure that the equipment is kept in proper condition, is operated according to instructions and that maintenance and repairs are carried out. (RL 1999/92/EC, RL 94/9EC, IEC/EN 60079-14 are some of the regulations that apply).

However, any repairs should always be carried out by the manufacturer.

### 3.3 MT-65, MT-125

- The operator interfaces may be installed in zones 2 and 22 (non-conductive dusts).
- The devices are constructed according to protection type IP65 and must be protected accordingly from adverse environmental conditions such as splashed water or dirt exceeding pollution degree 2.
- Users must adhere to the "Special Conditions". Also of importance are the authorized electrical operating values.
- The external PA/≡ must be connected. The PA-connector had to be connected to the equipotential bonding system. A connection is provided on the back of the terminal housing for this purpose.
- The PA-connector must be connected to the equipotential bonding conductor of the hazardous area.

## 4 Application

The devices may only be used for the purposes detailed above and in accordance with current regulations; otherwise, the manufacturer's warranty shall become null and void !

In case of incorrect or unauthorised use or non-compliance with the instructions in this manual the manufacturer's warranty will become null and void !

No changes may be made to the devices or their components that compromise explosion protection.

The devices may only be installed and operated in an undamaged, dry and clean condition.



## 5 Assembly and disassembly

### 5.1 General information

Assembly and disassembly are subject to general technical rules. Additional, specific safety regulations apply to electronic and pneumatic installations. In Germany, for example, these include the BGI 547 (Information on and principles of workplace safety and health issued by the Government Safety Association).

### 5.2 MT-65, MT-125

When installing the device, particular care shall be taken that:

- the device has been properly installed according to instructions,
- the device is undamaged,
- all screws are tightened fast,
- the device's external bonding terminal is properly connected to the exponential bonding system at its place of use.

### 5.3 Cut-out MT-xxx

Make a cut-out with the following dimensions:

Device	Width	Height	Installation depth	Material thickness
MT-65	275.0 ± 0.5 mm	131.0 ± 0.5 mm	max. 80 mm	up to 10 mm
MT-125	300.0 ± 0.5 mm	180.0 ± 0.5 mm	max. 80 mm	up to 10 mm

## 6 Operation

### 6.1 Connections MT-xxx

Plug	Pin	Definition		Connection
X1	1	Power supply operator interface + 24V		Power supply of operator interface
	2	N.C. *		
	3	Power supply operator interface GND		
X2	1	N.C. *		Programming and Printer interface RS-232
	2	RxD		
	3	TxD		
	4	N.C. *		
	5	GND		
	6	CTS		
X3	1	Relay contact		Error output **
	2	Relay contact		
X4		RS-232	RS-422 / RS-485	Communication interface RS-232 or RS-422/485
	1	N.C. *	N.C. *	
	2	TxD	N.C. *	
	3	RxD	TxD-B	
	4	N.C. *	RxD-B	
	5	GND	N.C. *	
	6	N.C. *	RxD-A	
	7	CTS	N.C. *	
	8	RTS	N.C. *	
	9	N.C. *	TxD-A	

\* Not Connected

\*\* **Warning:**

The error output (relay contact) must **NOT** be connected if the operator interfaces are installed in zone 2.

X14 Plug	Pin	Definition		Connection
Version L2DP	3	RxD/TxD-P		Communication Profibus-DP
	4	RTS		
	5	M5V2		
	6	P5V2		
	8	RxD/TxD-N		
Version MPI	3	RxD/TxD-P		Communication MPI
	4	RTS/AS		
	5	GND		
	6	P5V2		
	8	RxD/TxD-N		
	9	RTS PG		

## 6.2 Dip switch settings S1 and S3

S1.1	S1.2	S1.3	S1.4	S1.5	S1.6	S1.7	S1.8	Definition
					on			Configuration menu released / activated
						on		Delete text memory
							X	Reserve
off	off	off	off	off	on	off	off	<i>Standard settings</i>

S3.1	S3.2	S3.3	S3.4	S3.5	S3.6	Definition
				on	off	RS-232
				off	on	RS-422/RS-485
on	on					RS-4xx RxD Terminating bus resistor and termination switched on
off	off					RS-4xx RxD Terminating bus resistor and termination switched off
		on	on			RS-4xx TxD Terminating bus resistor and termination switched on
		off	off			RS-4xx TxD Terminating bus resistor and termination switched off

## 7 Maintenance, service

Because the transmission of the devices remains reliable and stable over long periods of time, regular adjustments are not required.

- Only original parts provided by the manufacturer must be used.
- Fuses may only be replaced by equivalent fuse types.

System maintenance should focus on the following:

- a. Seal wear
- b. Monitor damage
- c. All screws are tightened fast
- d. All cables and lines are properly connected and undamaged



Note:

Associated equipment is subject to maintenance, service and testing according to guidelines 1999/92/EC, IEC 60079-19 and EN 60079-17 as well as EN 50281-1-2 (Zone 22) !

### 7.1 Servicing

In accordance with IEC 60079-19 and EN 60079-17, operators of electric plants in hazardous areas are obliged to have them serviced by qualified electricians.

## 8 Troubleshooting

Devices operated in hazardous areas must not be modified. Repairs may only be carried out by qualified, authorized staff specially trained for this purpose.



Repairs may only be carried out by specially trained staff who are familiar with all basic conditions of the applicable user regulations and – if requested – have been authorized by the manufacturer.

## 9 Disposal

Disposal of packaging and used parts is subject to regulations valid in whichever country the device has been installed.

The disposal of equipment sold after August 13<sup>th</sup>, 2005, and installed in countries under the jurisdiction of the EU is governed by directive 2002/96/EC on waste electrical and electronic equipment (WEEE). Under this directive, operator interfaces are classified as part of category 9 (monitoring and control instruments).

We shall take back our equipment according to our General Terms and Conditions.

### 9.1.1 ROHS directive 2002/95/EC

The prohibition of hazardous substances as detailed in directive 2002/95/EC on the restriction of the use of certain hazardous substances (ROHS) does not apply to electronic equipment of categories 8 and 9, and is therefore not applicable to the equipment described in these operating instructions.

### 9.1.2 China ROHS

According to a new administrative rule introduced in China 01.03.2007 all devices containing hazardous substances must be labelled accordingly.

The following applies to the MT-65 / MT-125 operator interfaces:

#### Names and Contents of Toxic or Hazardous Substances or Elements

Part Name	Toxic or hazardous Substances and Elements					
	Lead (Pb)	Mercury (Hg)	Cadmium (Cd)	Hexa- valent Chromium (Cr (VI))	Poly- brominated biphenyls (PBB)	Poly- brominated diphenyl ethers (PBDE)
Housing	○	○	○	○	○	○
Display	○	○	○	○	○	○
all PCBs	X	○	○	○	○	○
Misc.	○	○	○	○	○	○

- Indicates that this toxic or hazardous substance contained in all of the homogeneous materials for this part is below the limit requirement in SJ/T11363-2006.
- X Indicates that this toxic or hazardous substance contained in at least one of the homogeneous materials used for this part is above the limit requirement in SJ/T11363-2006.

# 10 Certificates

## 10.1 Provicom MT-65, MT-125

### 10.1.1 Declaration of EC conformity

EG - Konformitätserklärung  
 EC - Declaration of Conformity  
 CE - Déclaration de Conformité



Wir/ We /Nous

R. STAHL HMI Systems GmbH  
 Im Gewerbegebiet Pesch 14  
 D-50767 Köln

erklären in alleiniger Verantwortung, dass unser Produkt  
*declare under our sole responsibility that the product*  
 attestons sous notre responsabilité que le produit

#### ProVicom MT-65 & ProVicom MT-125

gekennzeichnet:	MT-65		II 3 G Ex nA II T4 X	-20 ≤ Ta ≤ 70°C
marked:			II 3 D EEx IP65 T 85°C X	-20 ≤ Ta ≤ 70°C
marqué:			II 3 D EEx IP65 T 65°C X	-20 ≤ Ta ≤ 50°C
	MT-125		II 3 G Ex nA II T4 X	-10 ≤ Ta ≤ 60°C
			II 3 D EEx IP65 T 75°C X	-10 ≤ Ta ≤ 60°C
			II 3 D EEx IP65 T 65°C X	-10 ≤ Ta ≤ 50°C

auf welches sich diese Erklärung bezieht, mit der /den folgenden Norm(en) oder normativen Dokumenten übereinstimmt:  
*which is the subject of this declaration, is in conformity with the following standard(s) or normative documents:*  
 auquel cette déclaration se rapporte, est conforme aux norme(s) ou aux documents normatifs suivants:

Bestimmung der Richtlinie <i>Terms of the directive</i> <i>Prescription de la directive</i>	Titel und/oder Nr. sowie Ausgabedatum der Norm <i>Title and/or No. and date of issue of the standard</i> <i>Titre et/ou No. ainsi que date d'émission des normes</i>
<b>94/9/EG : Geräte und Schutzsysteme zur bestimmungsgemäßen Verwendung in explosionsgefährdeten Bereichen</b> <i>94/9/EC: Equipment and protective systems intended for use in potentially explosive atmospheres</i> <i>94/9/CE: Appareils et systèmes de protection destinés à être utilisés en atmosphères explosibles</i>	EN 60079-0:2006 EN 60079-15:2005 EN 50281-1-1:1998
<b>98/336/EWG : Elektromagnetische Verträglichkeit</b> <i>98/336/EEC: Electromagnetic compatibility</i> <i>98/336/CEE: Compatibilité électromagnétique</i>	EN 61000-6-2 (2002) EN 61000-6-4 (2002)

Köln, den 19.05.2006

Ort und Datum  
*Place and date*  
 lieu et date

Joachim Düren  
 Technical Director

Werner Bertges  
 Quality Manager

## 11 Release notes

Starting with the version 1.7 of these operating instruction the chapter "Release notes" is implemented. In this chapter you can find the respective changes which was done regarding this document version.

### Version 1.7

- Changing the marking of the operator interfaces according to ATEX
- Replacement of EC - Declaration of Conformity
- Changing of the definition from the type code to the actual one
- Changing information to BGI 547
- Formal improvement