operation manual
systec SYS MMF/MTF

SYS-MMF

systec Controls GmbH
Lindberghstrasse 4, 82178 Puchheim, Germany
Telephone +49 89 - 80906-0, Fax +49 89 - 80906-200
Email: info@systec-controls.de
http://www.systec-controls.de

Table of Contents

systec Controls GmbH
Lindberghstrasse 4, 82178 Puchheim, Germany
Telephone +49 89 - 80906-0, Fax +49 89 - 80906-200
Email: info@systec-controls.de
http://www.systec-controls.de

1 Description

1.1 Introduction

The SYS-MMF is a low-cost, simple to use multivariable transmitter for mass flow measurement using the differential pressure method. In addition to the differential pressure, the transmitter internally measures the static pressure P1 and has a PT100 3-wire input to compensate for the fluid temperature. The SYS-MTF type has only one differential pressure sensor and one temperature input (no pabs sensor). It can be used for saturated steam, for example, or if the pressure in the pipeline can be assumed to be constant.

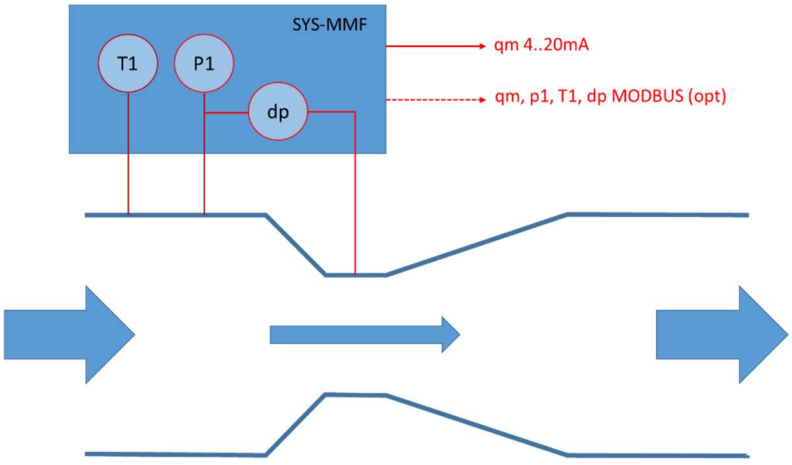
The SYS-MMF can be completely setup very quickly and easily by means of a simple parameterization using the three front keys. Complex parameterization software is not required for this.

The SYS-MMF is a 2-wire 4..20mA transmitter (HART-capable) as standard. An additional Modbus interface is available as an option.

The SYS-MMF can be used for gases, saturated and superheated steam and for water.

1.2 Measuring principle

The SYS-MMF compensates the influence of pressure and temperature on flow measurements working with the differential pressure principle. From the measured static pressure and temperature, the SYS-MMF calculates the standard volume flow (gases) or the mass flow (steam) and transmits this measured variable directly as a 4..20mA signal.



The SYS-MMF can be used with all common primary elements such as orifices, venturis and nozzles.

The use in combination with the deltaflow pitot tube is particularly advantageous: A PT100 element can be integrated into the deltaflow and the transmitter can be mounted directly on the sensor. This completely eliminates the need for complex piping and cabling and the complete mass flow meter is installed via only one stud to the pipe.

1.3 Applications

Typical areas of application are steam, air, gases, water, liquids and exhaust gases in a wide pressure and temperature range.

2 Parameter Design

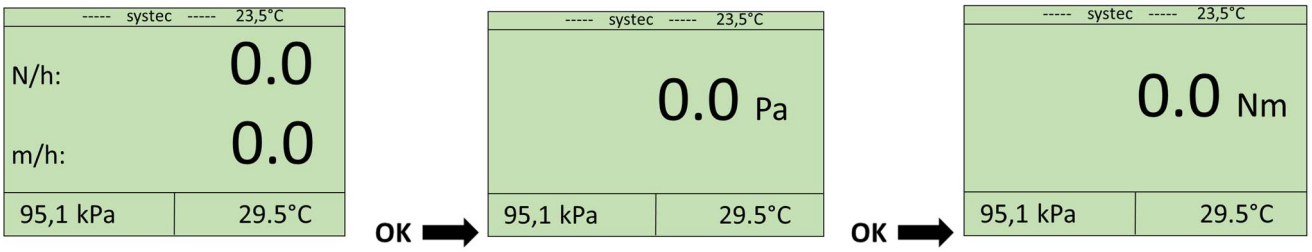
The SYS MMF, as a multivariable flow meter, requires only two additional numerical inputs: the flow coefficient (Flow Coef) and the KEPS value, as well as the maximum flow rate. Designing and calculating the parameters is very easy using the deltacalc Excel design spreadsheet. This design file is included with the flow meter. If you order the SYS MMF together with a deltaflow, you will automatically receive the design and parameter file with your delivery. Please note that deltacalc Excel contains macros and VB code. Therefore, running it under Windows requires approval in the Excel Trust Center. You can find this in Excel under File/Options/Trust Center, or contact your system administrator.

The design and calculation of the parameters is very easy with the deltacalc Excel design table. You receive this design file with the transmitter. If you order the SYS-MMF together with a deltaflow, you will automatically receive the design and parameter file with the delivery.

https://www.systec-controls.de/produkte-industrie/software/deltacalc.html

3 Display / Setup

After the SYS-MMF is supplied with power (11-30VDC, 3.8..22.5mA), the device shows the standard operating display. The operating display can be changed with the OK button. If desired, you may setup the disply in the meun to “rolling” which leads to an automatic rolling display without pressing the OK-key.



Flow rate display

Differential pressure display (Zero Calibration possible)

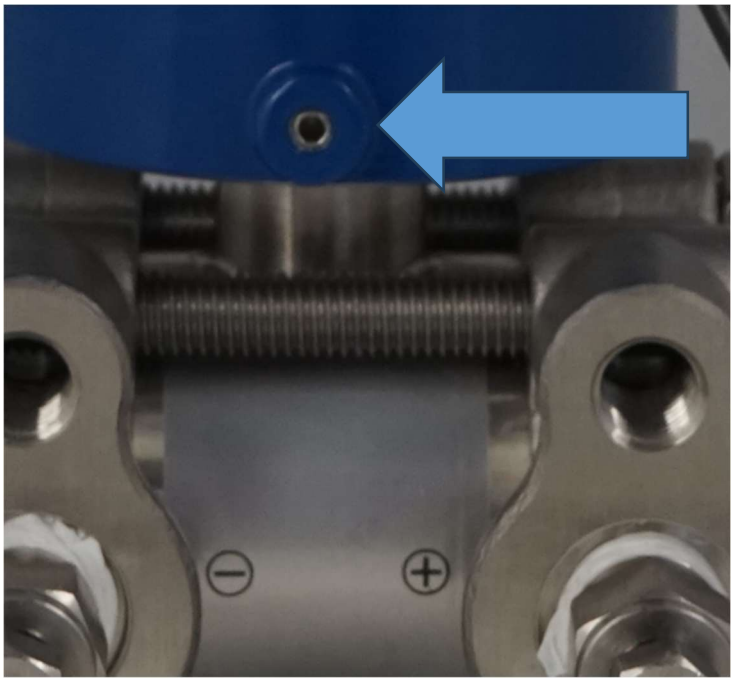
Totalizer display

Depending on the medium selected, the units for flow rate and totalizer change. For gases, the values Nm³/h and Nm³ or m³/h and m³ are displayed (the unit is selected via the flow coefficient). For water and liquids m³/h and m³ or kg/h and kg, for steam kg/h and kg.

3.1 Rotating the Display

The display can be rotated in 90-degree increments. First, disconnect the transmitter from the power supply. Open the display housing cover and remove the two screws on the left and right of the display. Carefully remove the cover and the display. Rotate the display board to the desired position

and reattach it to the corresponding connector. Please ensure that the plug and socket are correctly connected and that no pins are left unconnected! Screw the cover and the display board back on tightly and then power on the transmitter. Check the display and then close the housing cover.



Furthermore, the entire converter head can be rotated 340°. To do this, loosen the Allen screw on the housing head, rotate it to the desired position, and tighten the screw again.

3.2 Zero Point Adjustment

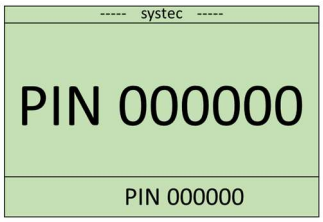
The zero point adjustment can be performed on the dp display. Zero point adjustment must be carried out after initial installation and should then be repeated at appropriate intervals. For steam flow measurements, the condensate reservoir must be filled before zero point adjustment. The frequency depends on the accuracy requirements and the environmental conditions of the transmitter (temperature changes, vibration, pressure pulsations, etc.). Initially, please check the zero point drift at short intervals, e.g., after one week. If it is minimal, you can gradually increase the intervals. A six-month interval should not be exceeded.

CAUTION: Only perform the zero-point adjustment if it is ensured that exactly the same pressure is present at both process ports of the transmitter (e.g., by an open bypass on the three-way valve - process shut off and bypass open). Adjustment under flow or differential pressure will lead to measurement errors!

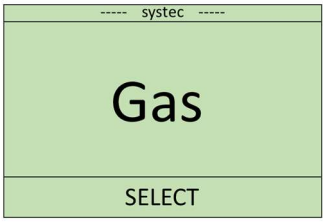
To calibrate, press and hold both arrow keys for 5 seconds, then select "Yes" using the ^ key and confirm with the OK key. The calibration takes approximately 3 seconds. Afterwards, the dp display should show 0.0 Pa.

4 Setup of the meter

To access the parameterization menu, press and hold the OK button (5 seconds). The standard PIN is 00000, confirm the PIN with OK

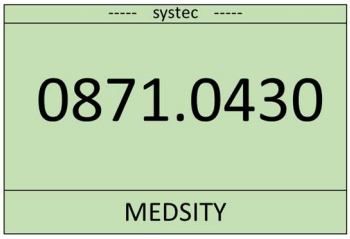


In the next step select the medium

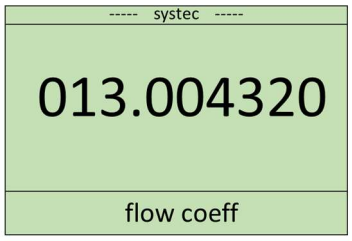


Select your medium with the ^ key and confirm the selection with OK. You can choose between Gas (gases), Water (water), Liquid (general liquids), Sat_steam (saturated steam) and Suph_steam (superheated steam).

When selecting Liquid (a liquid other than water), you must enter the operating density of the liquid in kg/m³ in the next step: The density at the design point applies.

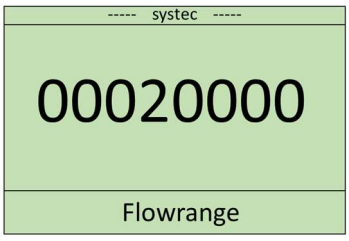


The next menu item is the entry of the calibration factor (flow coefficient). The flow coefficient is calculated from the design data of your primary element and the measuring cell used. The flow coefficient of your application will be calculated by systec Controls, or you can simply calculate the coefficient online at www.systec-controls.de/flowcoeff



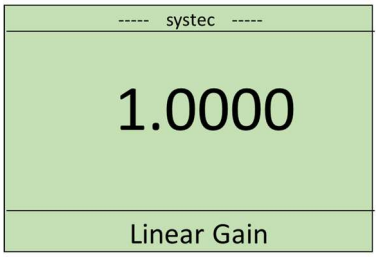
Entering the KEPS factor is used to compensate for the expansion number of the primary element. If there is no influence or if the expansion number is assumed to be constant, the default value is 1.0000

In the next menu item, the end value of the measuring range is entered (design measuring range.

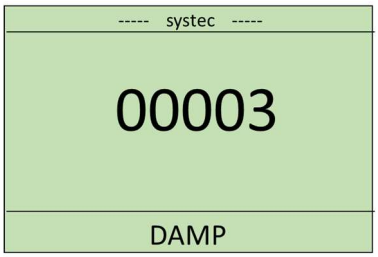


The unit depends on the selected medium:
Gas: Nm^3/h
Steam/saturated steam: kg/h
Water/Liquid: m^3/h
If the indicated flow unit is incorrect, please check the flow coeff. Setting.

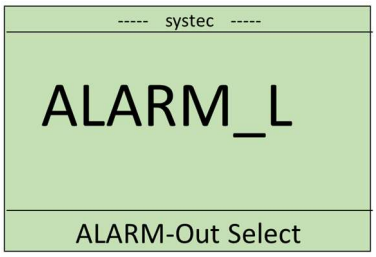
The following menu item "Linear Gain" enables a linear flow rate correction from 80% (0.80000) to 120% (1.20000). You can use this to set your flow measurement to the correct value, for example after a calibration. The flow value calculated by the SYS-MMF is multiplied by this constant.



This is followed by the input of a damping in seconds / moving average)

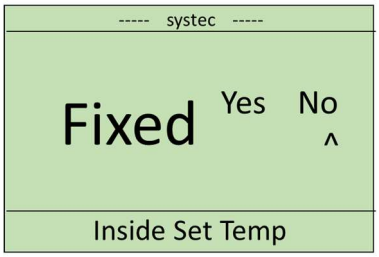


In the next menu item you can select the alarm (fault) current for the output.



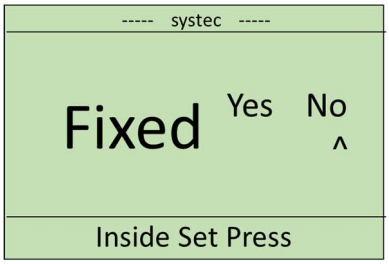
If ALARM_L (low) is selected, the transmitter supplies an error current of <=3.6mA. When selecting ALARM_H (high) >=21.6 mA

In the "Fixed Temp" menu item, you have the option of selecting a fixed medium temperature if you do not want to measure the temperature.



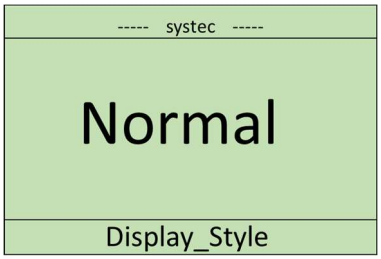
If you select "Yes" with the ^ key and confirm with OK, you must enter a constant medium temperature in the next item.

In the "Fixed Press" menu item, you have the option of selecting a fixed medium pressure if you do not want to measure the process pressure.

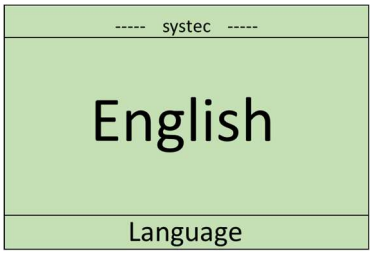


If you select "Yes" with the ^ key and confirm with OK, you must enter a constant medium pressure in the next item.

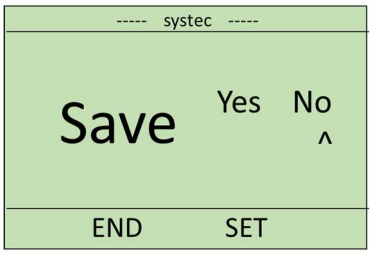
In the "Display Style" menu, you can set whether the status display scrolls or advances manually.



In the Language menu , select the language. You can choose between "German / English / Chinese)



In the last menu save or discard your settings:



To save and exit, use the ^ key to select "Yes" and confirm with OK. This takes you back to the operating display.

5 Wiring

The standard variant has a hard-capable two-wire 4..20mA connection (11-30VDC supply) and an input for the PT100 3-wire element.
The Modbus variant requires a separate voltage connection (approx. 40mA, 11-30VDC) and, in addition to the 4..20mA output, also has the RS485 two-wire Modbus connection.

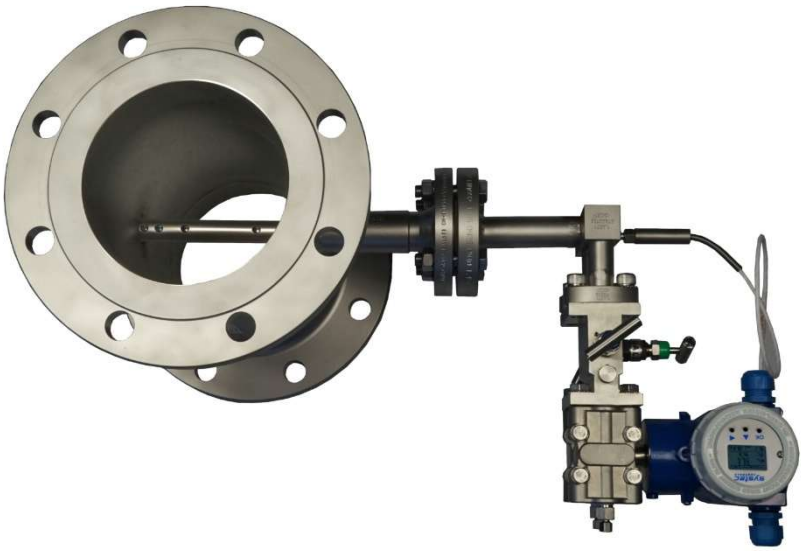
6 process connection

The flange connection on the transmitter corresponds to the flange pattern according to DIN EN 61518. 7/16 UNF screws of a suitable length must be used as mounting screws. The transmitter can be flanged on both sides, ¼"NPT locking bolts for the back of the flange are included in the delivery.

Attention: Please always use a suitable lubricant when screwing on the measuring cell flange and the locking bolts, especially with NPT screw connections, there is a risk of cold welding with stainless steel!

The use of an intermediate flanged 3- or 5-way valve block is recommended for compact installation on dynamic pressure probes. If necessary, a zero point adjustment or dismantling of the transmitter is possible without interrupting the process.

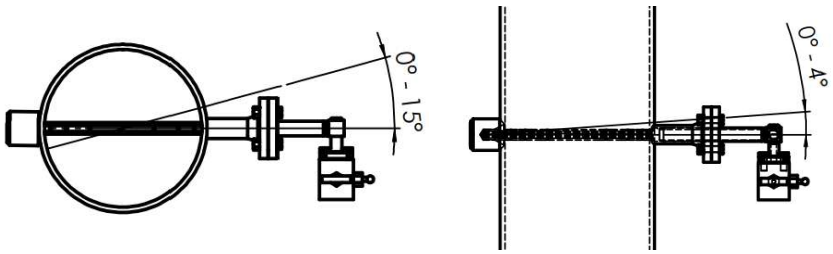
The orientation of the transmitter should follow the recommendations of the primary element manufacturer and observe the instructions in DIN 19216.



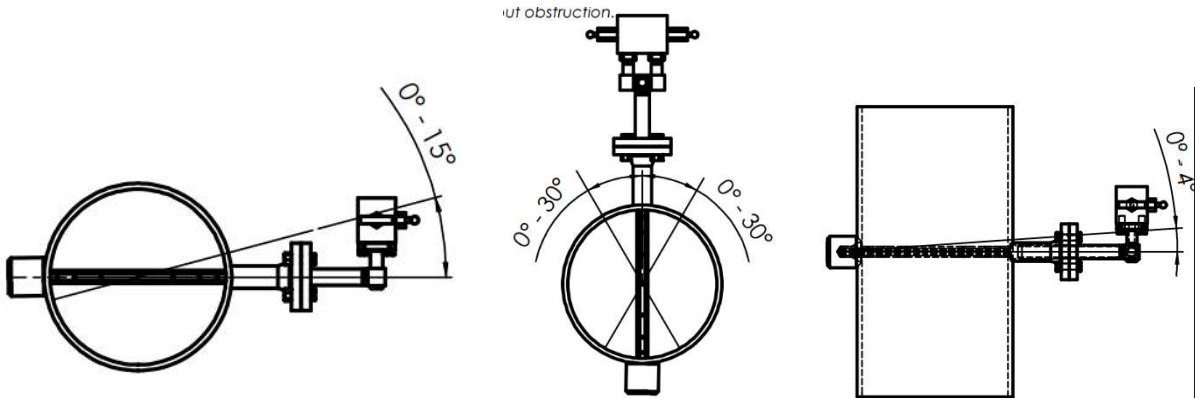
deltaflow DF25 for with integrated PT100, condensate trap, three-way block
and SYS-MMF in a horizontal DN100 steam line

When using dynamic pressure probes, particular attention should be paid to:

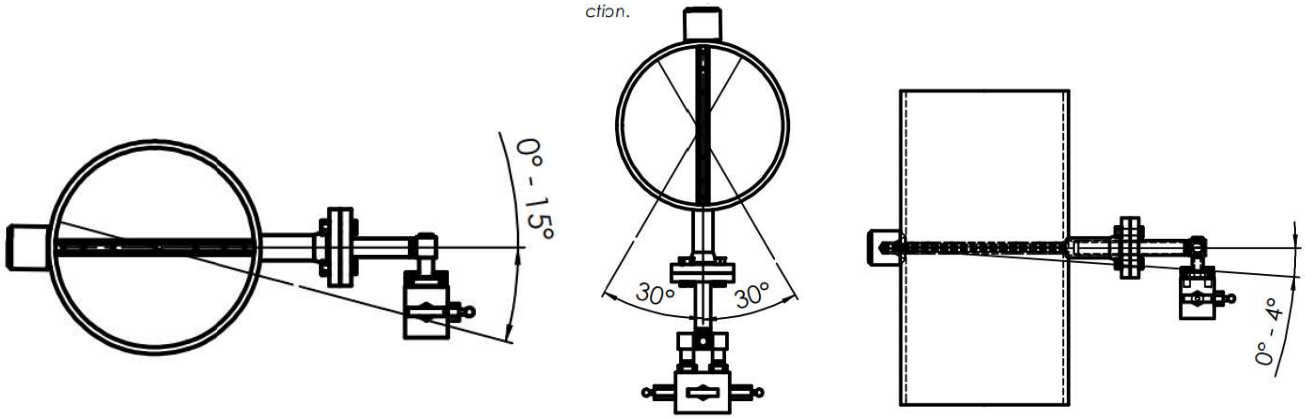
STEAM: When used in steam lines, a condensate trap must protect the transmitter from overheating, so the transmitter is usually located below the tapping point.



Gases: When used in gas lines, attention must be paid to drainage, condensates and liquids should not accumulate in the impulse lines. The transmitter is therefore usually located above the tapping point.



Liquids; In the case of liquid lines, ensure that the impulse lines are vented so that no gas rumbling collects in front of the measuring cell. The transmitter is therefore usually located under the tapping point.



7 Maintenance / Recalibration

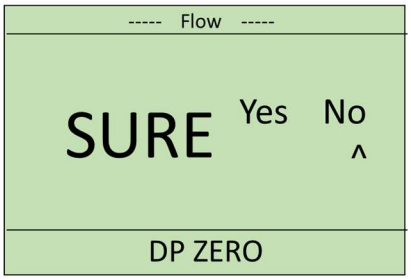
The SYS MMF transmitter is maintenance-free.

A recalibration interval of 2 years (additional uncertainty dp/pabs 0.05% os, T 0.2K) or 5 years (additional uncertainty dp/pabs 0.1% os, T 0.5K) is recommended.

8 dp zero point setting:

The zero point should be checked or readjusted every 6 months. If the accuracy requirements are particularly high in the lower flow ranges or if there are strong temperature fluctuations in the measuring cell, this may be necessary more often.

To adjust the zero point, you must first establish a “physical zero” between the positive and negative pressure ports. In most installations, a 3- or 5-way valve is mounted in front of the transmitter.
As soon as the differential pressure has been equalized, switch to the dp display in the operating display using the OK button and press the two arrow buttons together for 5 seconds. The confirmation display will then appear:



If you are sure, select “YES” using the ^ button and confirm with OK.

ATTENTION: Always make sure that you have no differential pressure at zero point. For steam applications in which protective water columns are in front of the transmitter, it is important that both pulse pipes are reliably filled with condensate and that no “condensate slant” affects the transmitter.

9 Usage of the Transmitters in the Hazardous Area (Ex)

Validity

Various processes and instructions in this operating manual require special measures to ensure the safety of the people involved.

Target group, personnel

The responsibility for planning, assembly, commissioning, operation, maintenance and dismantling lies with the system operator. The personnel must be appropriately trained and qualified for the assembly, installation, commissioning, operation, maintenance and dismantling of the device. The specialist personnel must have read and understood the operating manual.

Reference to further documentation

Observe the laws, standards and guidelines applicable to the intended use and the place of use. In connection with potentially explosive areas, observe Directive 1999/92/EC in particular.
The corresponding data sheets, manuals, declarations of conformity, EU type examination certificates, certificates and drawings (where applicable) are an integral part of this document.

Intended use

The Ex-marked SYS-MMF and SYS MTF transmitters are designed for pressure and temperature compensated flow measurement on dp primary elements. The housings are certified according to ATEX II 3G Ex dp IIC T6 Gc (Zone 2) and ATEX II 2G Ex dp IIC T6 Gb (Zone 1)
They are made of corrosion-resistant, powder-coated aluminum and stainless steel.

Assembly and installation

Comply with the installation regulations according to IEC/EN 60079-14.
If you install the device or housing in areas where it could be exposed to aggressive substances, make sure that the specified surface materials are compatible with these substances. If necessary, contact systec for further information.

If you mount the housing on brick or concrete walls, use suitable fastening material (dowels/expansion anchors). If you mount the housing on a steel frame, use vibration-resistant mounting material. Protect the device from long-term or strong mechanical vibrations.
When installing cable and line entries, observe the following points:

- Only use cable and line entries (cable glands) that are certified for the application. (These are included in the scope of delivery from systec if they were ordered)
- Only use cable glands with a temperature range suitable for the application.

• Make sure that the protection class is not impaired by the cable and line entries.

Mount the device so that the specified protection class according to IEC/EN 60529 is maintained. Make sure that the protection class is not impaired by the cable and line entries and the blind screw connections. Close all unused housing openings with the appropriate blind screw connections.

Do not damage the threaded surfaces of the terminal compartment and the display cover during assembly and commissioning, ensure that the environment and storage areas are clean.
If the threads are damaged, the covers or screws or, if necessary, the measuring transducer must be replaced.

Protect the surfaces of the threads (ignition path) with a thin layer of a suitable protective grease. To ensure the ignition path, threads must be screwed in at least 8mm deep. Make sure that all fastenings are in place. When attaching the housing cover, make sure that all fastenings are tightened.

Observe the wiring plan when connecting the measuring transducer. Make sure that the ground connection is wired, in good condition and not damaged or corroded.

10 Service Menu (PIN 86123)

With the parameter access PIN 86123 you can expand the parameter menu with a number of additional parameters that are not required for normal settings. The following menu items will additionaly appear when entering the Service PIN

Parameter	Setting	Comment
PIN	86123	Standard PIN für die Parametrierung ist 0000
4-20mA Ausgang	 FLOW DP** P ThermalE	Der 4..20mA-Ausgnag kann folgende Größe ausgeben Flow Differential prressure Absolute pressure Power (thermal, when setup stema or water) **Note: Both the MTF and the MMF can be used as "normal" differential pressure transmitters without a compensation function. To do this, the "DP" option must be selected for 4-20mA output in the service menu 86123. After leaving the service menu and re-calling the normal parameterization menu (PIN00000), the menu is adjusted accordingly.
4.0mA Out Test	MOD Yes/No	If "Yes" is selected, the transmitter outputs 4.0mA. By changing the displayed digital value, the output can be trimmed up or down.
20.0mA Out Test	MOD Yes/No	If you select "Yes", the transmitter outputs 4.0mA. By changing the displayed digital value, the output can be trimmed up or down.

11 Error Codes

Attachment 1 : Error Code Table (ERR code in the display)

Error Code	Error Type	Possible Solution
ERR 1*	bus communication error	Check the connection cable, or return to the factory for repair
ERR 2*	Instantaneous flow over range	the flow coefficient is wrong, or the Pt100 thermal resistance is connected Fault
ERR 3*	Incorrect saturated vapor density	The measured pressure or temperature does not meet the saturated steam properties, check that the process pressure and temperature are correct
ERR 4*	Incorrect superheated steam density	The measured pressure or temperature does not satisfy the superheated steam properties, check that the process pressure and temperature are correct
ERR 5*	water density is incorrect	The measured pressure or temperature does not meet the water propertiess, please check process pressure and temperature are correct
ERR 6*	Pt100 thermal resistance failure	Check whether the Pt100 thermal resistance wiring is correct or broken
ERR 7	The ambient temperature is greater than 70 ℃	Take heat isolation or enhance heat dissipation to ensure that the transmitter ring If the ambient temperature is lower than 70 ℃ , it is recommended to change to split installation
ERR 8	Medium temperature is greater than 800 ℃	Check whether the wiring of the external Pt100 thermal resistance is correct, or RTD failure
ERR 9	Differential pressure (DP) measurement lower limit alarm	The zero point is not calibrated; the diaphragm surface (high and low pressure side) is installed Reverse; or the high-pressure side pressure guide tube is blocked, clean up the guide pressure tube clogged
ERR 10*	Differential pressure (DP) measurement upper limit alarm	The low-pressure side conduit is blocked or unthight to the ambient, or the differential pressure range of the transmitter is selected wrong. Check settings, mounting, cleanines or select a higher dp-renge
ERR 11	Absolute pressure (P) measurement lower limit alarm	under high vacuum
ERR 12	Absolute pressure (P) measurement upper limit alarm	Transmitter range selection error

Note*: If the meter displays an “Error 1, 2, 3, 4, 5, 6, 10”, the analog output 4..20mA will switch to the selected error current 21.6mA, 3.6mA or an individually set error current

12 order codes

SYS_MV Multivariable Messumformer

	Range	Language	Front	Options	Ex certificate	Notes
SYS-MMF	-	-	-	-		Multivariable Mass Flow Transmitter, dp, p_abs and T
SYS-MTF						Multivariable Mass Flow Tranmitter, dp and T (no p_abs)
	BB					dp apsn 10mbar, p_abs span 20bar, PT100 3ltr, PN160
	BD					dp span 60mbar, p_abs span 20bar, PT100 3ltr, PN160
	DE					dp span 400mbar, p_abs span 100bar, PT100 3ltr, PN160
	EDN					dp span 2500mbar, p_abs span 250bar, PT100 3ltr, PN250
	BBG					dp span 10mbar, p_abs span 20bar, PT100 3ltr, goldplated
	BDG					dp span 60mbar, p_abs span 20bar, PT100 3ltr, goldplated
	DEG					dp span 400mbar, p_abs span 100bar, PT100 3ltr, goldplated
	EDNG					dp span 2500mbar, p_abs span 250bar, PT100 3ltr, goldplated
		02				German / English/ Chinese
			0			systec Front
				HT		4..20mA / Hart
				RS		Modbus (additional)
				10P		10 point calibration
						no
					Ex2	Zone 2 II 3G Ex dp IIC T6 Gc (inkl cable glands)
					Ex1	Zone 1 II 2G Ex dp IIC T6 Gb (inkl cable glands)
						Standardtypes, 1-5 Weeks
						Othertypesn 4-8 Weeks

13 Technical specifications

13.1 dp measurement

Type *BB*: 0..10mbar
Type *BD*: 0..60mbar
Type *DE*: 0..400mbar
Type *DN*: 0..2500mbar

The permitted single port pressure (one-sided pressure load) must not exceed 1.5 x the measuring range of the absolute pressure cell.

13.2 pabs measurement

Types BB/BD/BBG/BDG: 0..20 bar abs, double overload protection
Types DE/DEG: 0..100 bar abs, 1.5-fold overload protection
Types EDN/EDNG: 0..250bar abs, 1.5x overload protection

13.3 Temperature measurement (compensated measuring ranges)

Measuring range gases: -40..500°C
Measuring range liquids/water: -40..650°C
Measuring range superheated steam: 100-650°C
Measuring range saturated steam: 99-372°C

13.4 Ambient conditions transmitter

Ambient temperatures: -20..75°C, non-condensing

13.5 Degree of protection

IP67

14 CE Declaration of Conformity

systec Controls
Meß- und Regeltechnik GmbH
Lindberghstraße 4
D 82178 Puchheim
Germany
Telefon 089 – 8 09 06 – 0
Telefax 089 – 8 09 06 – 200

Sitz Puchheim
Reg. Ger. München
Handelsregister HRB 107972
USt-IdNr.: DE166745632

Geschäftsführer
Oliver H. Betz Dipl. Ingenieur

DECLARATION OF CE CONFORMITY
CE KONFORMITÄTSERKLÄRUNG

Multivariable Transmitter SYS-MMF and SYS-MTF
Multivariabler Transmitter SYS-MMF und SYS-MTF

We hereby confirm that the devices type
Hiermit bestätigen wir, dass die Geräte der Typen

SYS-MMF
SYS-MTF

Bearing the marks / mit der Kennzeichnung

Ex II 3G Ex db IIC T6 Gc

comply with the protection requirements that are defined in the following directives:
entsprechen den Schutzanforderungen, die in den folgenden Richtlinien definiert sind:

2014/35/EU Low voltage directive
2014/30/EU Electromagnetic compatibility

Test specifications
EN 55011 (2018-05); EN 61000-4-2 (2009-12), EN 61000-4-3 (2011-04);
EN 61000-4-4 (2013-04); EN 61000-4-5 (2015-03); EN 61000-4-6 (2014-08)
EN 61000-4-8 (2010-11); EN 61000-4-11 (2005-02)

Test requirements
EN 61000-6-1 (2016-05); EN 61000-6-3 (2011-09)

Have been manufactured in accordance with / wurden in Übereinstimmung gefertigt nach:

EN IEC 60079-0:2018; EN 60079-1:2014/AC2018

Notes/Bemerkungen:

The equipment has to be installed and operated in accordance with the safety requirements described in the manual and those declared in the machinery directive. Any deviation hereof and any manipulation of the housing will lead to the invalidity of this declaration.

Die Geräte sind in Übereinstimmung mit den geltenden Betriebsanleitungen und den darin zu findenden Sicherheitsbestimmungen zu installieren und zu betreiben. Die geltenden Maschinenrichtlinien sind zu beachten. Jede Abweichung hiervon sowie jeder Umbau oder jede Manipulation am Gehäuse der Geräte führt zum Erlöschen dieser Erklärung.

systec Controls
Meß- und Regeltechnik GmbH; Puchheim, 02.08.2024

Oliver Betz
Geschäftsführer

verification проверка verificación verification проверка verificación verification проверка verificación verification

VERIFICATION OF CONFORMITY

S/N: 011845

No.: **ICR/VC/HS241234**

Name and address of Applicant	systec Controls Mess- und Regeltechnik GmbH Lindberghstrasse 4 D- 82178 Puchheim, Germany
Name and address of manufacturer:	systec Controls Mess- und Regeltechnik GmbH Lindberghstrasse 4 D- 82178 Puchheim, Germany
Product name:	Multivariable Transmitter
Product types:	SYS-MMF-####-##-#-###-EX1, SYS-MTF-####-##-#-###-EX1
Product trademark:	systec-controls
Declared marking:	Ex II 2G Ex db IIC T6 Gb

Verification was carried within following scope:

Information on the Declaration of Conformity:

Result:	**Legislation:**	**Standard:**
✓	ATEX [2014/34/EU]	EN IEC 60079-0: 2018 EN 60079-1:2014+AC:2018

The assessment process has been carried out in accordance with individual rules and conditions agreed with the applicant.
Evaluation has been carried out in accordance with:

Test report:	TH2409147-C01-R01
Issue date:	13.12.2024
Expiration date:	12.12.2029

Remarks:
- VoC was issued on voluntary basis and does not imply meeting all essential requirements listed in Declaration of Conformity.
- For introducing this product on European market may be needed EC/EU-type examination conducted by appropriate Notified Body.

ICR Co. Ltd.
www.icrqa.com
www.icrpolska.com
cert@icrqa.com

CEO, ICR Co., Ltd.

Edition: 5.1.1.B of 06.03.2024

14.1 Validity

Various procedures and instructions in this operating manual require specific measures to ensure the safety of the personnel involved.

14.2 Target Group, Personnel

The plant operator is responsible for planning, assembly, commissioning, operation, maintenance, and dismantling. Personnel must be appropriately trained and qualified for the assembly, installation, commissioning, operation, maintenance, and dismantling of the equipment. The qualified personnel must have read and understood the operating manual.

14.3 Reference to Further Documentation

Observe the laws, standards, and guidelines applicable to the intended use and the place of operation. In connection with potentially explosive atmospheres, pay particular attention to Directive 1999/92/EC.

The relevant data sheets, manuals, declarations of conformity, EU type-examination certificates, certificates, and drawings (where applicable) are an integral part of this document.

14.4 Intended Use

The SYS-MMF and SYS MTF transmitters are designed for pressure- and temperature-compensated flow measurement on dp primary elements. The housings are certified according to ATEX II 3G Ex dp IIC T6 Gc (Zone 2) and ATEX II 2G Ex dp IIC T6 Gb (Zone 1).

They are made of corrosion-resistant, powder-coated aluminum.

14.5 Mounting and Installation

Comply with the installation instructions according to IEC/EN 60079-14.

If you are installing the device or housing in areas where it may be exposed to aggressive substances, ensure that the specified surface materials are compatible with these substances. If necessary, contact systec for further information.

If you are mounting the housing on concrete, use expansion anchors. If you are mounting the enclosure in a steel frame, use vibration-resistant mounting hardware. Protect the device from prolonged or severe mechanical vibrations.

When installing cable and conduit entries, observe the following points:

- Use only cable and conduit entries that are certified for the application.
- Use only cable glands with a temperature range suitable for the application.
- Ensure that the degree of protection is not compromised by the cable and conduit entries.

Mount the device in such a way that the specified degree of protection according to IEC/EN 60529 is maintained. Ensure that the degree of protection is not compromised by the cable and conduit entries and the blanking plugs. Seal all unused enclosure openings with the appropriate blanking plugs.

Do not damage the threaded surfaces of the terminal box and the display cover during installation and commissioning. Ensure a clean working environment and storage areas. If the threads are damaged, the covers or, if necessary, the transmitter must be replaced.

Protect the thread surfaces (ignition path) with a thin layer of suitable protective grease. To ensure proper ignition path, threads must be screwed in at least 8 mm deep. Ensure all fasteners are present. When attaching the housing cover, ensure all fasteners are tightened securely.

Refer to the wiring diagram when connecting the transmitter. Ensure the grounding connections are wired, in good condition, and not damaged or corroded.

15 Contact

systec Controls measuring and control technology GmbH
Lindberghstrasse 4
D-82178 Puchheim, Germany
www.systec-controls.de

Phone: +49-(0)89-80 90 6-0
Fax: +49-(0)89-80 90 6 - 200
info@systec-controls.de