

# TF5A



## Benefits

- Temperature measurement range -200... 600 °C
- Compatible with all PT100
- Freely programmable outputs and scaling via NFC-Interface & supports NFC Powerless

## Applications

- Monitoring storage temperature of pharmaceutical drugs and vaccinations
- Pharmaceutical and industrial manufacturing
- Production, storage and drying processes



### New housing

- Robust, PC-ABS industrial-quality housing (IP65)
- Wall mount version
- Display with trend indicator and backlighting<sup>1</sup>

### Outputs

- The 2 analog outputs are freely selectable and scalable
- 2-wire (TF5A-2), 3/4- wire analog (TF5A-3) and 3/4- wire digital (TF5A-D) available
- RS485 signal on screw terminal for TF5A-D

### Power supply

- 2-wire: 10...28VDC
- 3/4-wire: 18...36VDC

### Flexible choice of probes

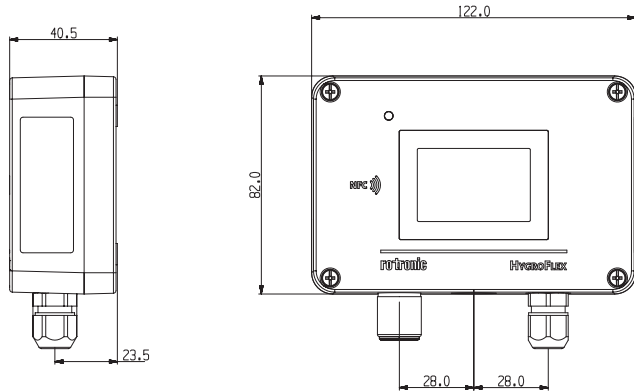
- Connection of a wide range of probes possible
- Compatible with all PT100 probes using a binder 4 pole connector.



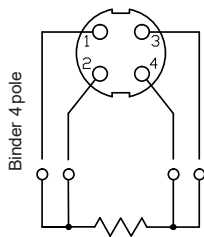
<sup>1</sup> Backlighting is available only for the TF5A-3 or TF5A-D version

# TECHNICAL INFORMATION

TF5A-2, TF5A-3, TF5A-D  
Wall version (W)



PT100 Connector pin-out



	TF5A-2 2-wire	TF5A-3 / TF5A-D 3/4-wire
Temperature probe	PT100 Class A probes, various types	
Accuracy @ 23°C	± 0.1°C	
Initialization time	Typically, 5 sec.	
Measurement interval	1 sec.	
Measurement range	-10...60 °C with display -40...80 °C without display	
Range of applications	-200...600°C (probe dependent)	
Display	Resolution to 2 decimal places	
Output signals analog	4...20 mA	Freely scalable 0...1/5/10 V, 0...20, 4...20 mA
Resolution analog output	15 Bit	
Output signal digital	-	RS-485 signals on screw terminal
Cable connections	1 x M12, screw terminals	
Power supply	10...28 VDC	18...36 VDC
Circuit type	2-wire	3 / 4 wire
Current consumption	2x23mA	max.80 mA (when both outputs are connected)
Load per analog output	Max. 500 Ω	
Interface	UART, NFC and USB	
Software	HygroSoft	
Housing material	PC-ABS	
Dimensions	122 x 82 x 40.5 mm	
Weight	204 g	
IP-Protection	IP65	
Soldering material	Lead free (RoHS-Directive 2011/65/ EU)	
Standards	CE Conformity 2014/30/EU	
Conformity	GAMP5	

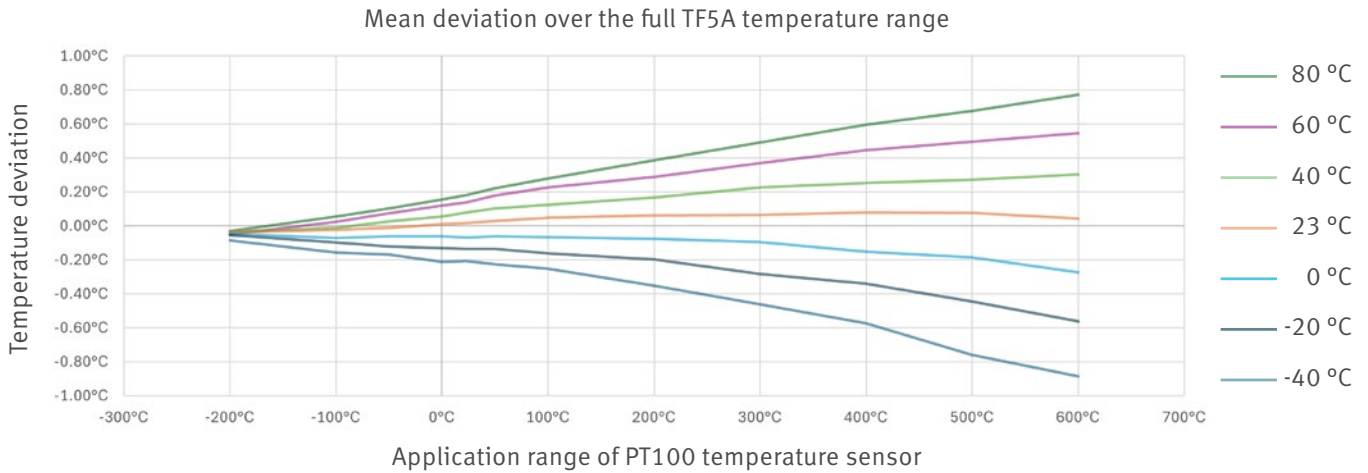
# PROBES FOR TEMPERATURE TRANSMITTERS

Order Code	Type	Accuracy @ 23°C (Class A)	Application Range	Cable / Operating range at connector
AC1900	Fixed probe, 100 mm x 3 mm	± 0.20 °C	-50...300 °C	-40...105 °C without cable
AC1903	Cable probe, 200 x 6 mm, not waterproof	± 0.20 °C	-50...350 °C	-40...105 °C 2 m, thermoplastic cable
AC1904	Cable probe, 50 mm x 6 mm, waterproof	± 0.20 °C	-50...105 °C	-40...105 °C 2 m, thermoplastic cable
AC1909	Fixed probe, 100 mm x 4.5mm, air measurement	± 0.20 °C	-50...150 °C	-40...105 °C without cable
AC1913-A	Kapton foil probe, 20 x 15 x 2 mm	± 0.20 °C	-50...200 °C	-40...105 °C 1 m, four PFA wires
AC1916-A-T	Cable probe, 60 mm x 6 mm, waterproof high temperature	± 0.20 °C	-100...250 °C	-40...85 °C 2 m PTFE cable

Compatibility: TF5A all versions

# PRECISION

## Typical temperature dependence for the transmitter



### Accuracy of the measurement system

Transmitter: TF5A (PT100 @ 600°C)	
Electronic measurement accuracy @ -40°C	± 0.89 °C
Electronic measurement accuracy @ -20°C	± 0.56 °C
Electronic measurement accuracy @ 0°C	± 0.27 °C
Electronic measurement accuracy @ 23°C	± 0.1 °C
Electronic measurement accuracy @ 40°C	± 0.3 °C
Electronic measurement accuracy @ 60°C	± 0.5 °C
Electronic measurement accuracy @ 80°C	± 0.77 °C
Sensors: AC1900 / AC1903 / AC1904 / AC1909 / AC1913-A / AC1916-AT	
Accuracy at -100 °C	± 0.35 °C
Accuracy at 0 °C	± 0.15 °C
Accuracy at 23 °C	± 0.20 °C
Accuracy at 100 °C	± 0.35 °C
Accuracy at 200 °C	± 0.55 °C
Accuracy at 300 °C	± 0.75 °C


### Example at different temperatures

Use of AC1900 @ 0 °C and TF5A @ 23 °C	
AC1900 accuracy @ 0 °C	± 0.15 °C
TF5A electronic measurement accuracy @ 23 °C	± 0.1 °C
Total accuracy @ 23 °C	± 0.25 °C <sup>1</sup>
Use of AC1900 @ 100 °C and TF5A @ 40 °C	
AC1900 accuracy @ 100 °C	± 0.35 °C
TF5A electronic measurement accuracy @ 40 °C	± 0.12 °C
Total accuracy @ 40 °C	± 0.47 °C <sup>1</sup>
Use of AC1900 @ -50 °C and TF5A @ -20 °C	
AC1900 accuracy @ -50 °C	± 0.25 °C
TF5A electronic measurement accuracy @ -20 °C	± 0.12 °C
Total accuracy @ -20 °C	± 0.37 °C <sup>1</sup>

<sup>1</sup> To calculate the overall accuracy of the transmitter, all variables must be added together.

Note: To improve the total measurement accuracy of the transmitter and PT100 probes, it possible to carry out a customer adjustment.

## ACCESSORY FOR TEMPERATURE TRANSMITTERS

Order Code	Accessories for Hygroflex Advanced Transmitters	
NFC-USB-READER		The Temperature Transmitter TF5A devices are equipped with an NFC-interface <sup>1</sup> through which the device can be configured. The NFC-interface can be accessed by means of a mobile phone or a computer equipped with an NFC reader. The NFC-USB-READER has an USB plug to connect the Reader with a Computer and requires no further configuration. The transmitter is compatible with HygroSoft software only.

<sup>1</sup> Rotronic Switzerland AG only support the NFC-USB-READER, which can be purchased through Rotronic. Devices from third party suppliers cannot be considered.