DS602en	Data Sheet	GRUNER
TUU1-Series (T)	**Universal Temperature Sensor with Active Output**	

The TUU1-Series (T) is designed to measure temperature for universal use

The sensor operates with low voltage power supply

In accordance with RESET® and WELL Building Standard™

Cover/buttom housing connected with magnets and two screws

The temperature sensor output is active

Use

Compatible to all common HVAC DDC and Analog Controls systems, with/without Building Automation System

Used in all common HVAC applications

Used in Commercial and Industrial Buildings

Features

Sensor with active output

Sensor outputs 0–10 V or 4–20 mA

Different immersion lengths for all common air duct and water pipe sizes

Reading/Parameter settings via NFC technology

Professional and practical product design

Cover/bottom housing connected with magnets and screws

Firmware updates via service connector

Easy to use, install and maintain

Product Range

Order Code	Output	Sensor Accuracy	Power Supply	Temperature Ranges	Sensor Shape	Cable Length	Protection
TUU1G.FA	0–10 V	±0.2 °C between 0 °C to +50 °C	AC/DC 24 V (±10 %)	−20 °C to +80 °C (default) −40 °C to +135 °C via NFC adjustable	Sensor Pocket Ø6 mm × 50 mm	2 m	IP65 to IEC60529
TUU1G.FD	4–20 mA						

Sensor Specification	**Sensor Specification**	Measured	Temperature
		Sensor Characteristics	Active
		Sensing Element	PT1000, Class A
		Sensor Output (s)	0–10 V or 4–20 mA
		Output Load	
		0–10 V output	Min. load 5 kΩ @ AC/DC 24 V
		4–20 mA output	Max. load 700 Ω @ DC 24 V
		Accuracy	±0.2 °C between 0 °C to +50 °C
		Default Measuring Range	−20 °C to +80 °C
		Maximum Measuring Range	Free selectable via NFC −40 °C to 135 °C
Technical Information	**Electrical Information**	Power Supply	AC/DC 24 V (±10 %)
		Frequency	50/60 Hz at AC 24 V
		Terminal Clamp	Screw terminal, max. 1.5 mm²
		Power Consumption	
		Type with 0–10 V output	≤1 W
		Type with 4–20 mA output	≤1 W
	Mechanical Information	Sensor shape	Ø6 mm × 50 mm
		Cable length	2 m
		Cable Entry	M16, Ø6~Ø8 mm cables
		Sensing Element Position	External, top of the copper plate
	Materials and Colours	Housing Cover	ABS, white
		Housing Bottom	ABS, white
		Lock Screws	US: AISI 304; EU: EN X 6 CrNi 18 10; GER: W.N. 1.301
		Lock Nuts	Brass
		Cable Gland	ABS, white
		Gland Rubber Seal	TPS, natural
		Protection Caps	ABS, white
		Immersion Rod	US:AISI 304; EU: EN X 6 CrNi 18 10; GER: W.N. 1.301
		Cable	Silicon (red)
	Environmental Conditions	Operation Temperature	−25 °C to +70 °C
		Operation Humidity	100 % RH, with condensation
		Transport Temperature	−35 °C to +70 °C
		Transport Humidity	<90 % RH
		Storage Temperature	−10 °C to +70 °C
		Storage Humidity	<85 % RH, no condensation
	Norms and Directives	IP-Rating	IP65 to IEC60529
		Product Safety	Safety class III, in accordance with EN IEC 60730-1
		Product Standard	Automatic electrical controls for household and similar use in accordance with EN IEC 60730-1:2022
		CE marking in accordance with Directive	2014/30/EU Electromagnetic Compatibility (EMC)
		EMC Emissions, in accordance with	EN IEC 60730-1:2022
		EMC Immunity, in accordance with	EN IEC 60730-1:2022
		RoHS Compliance, in accordance with	Directive 2011/65/EU, as amended by (EU) 2015/863
		Operation Climatic Condition	IEC 60 721-3-3
		Operation Mechanical Condition	IEC 60 721-3-2 to class2M2
		Transport to Climatic Condition	IEC 60 721-3-2
		Transport Mechanical Condition	IEC 60 721-3-2 to class2M2
		Storage Climatic Condition	IEC 60 721-3-1
		Storage Mechanical Condition	IEC 60 721-3-1 to class2M2
Miscellaneous	**Accessories**	Mounting Kit, included in delivery	
	Shipping & Handling	Minimum Order	1 box with 2 pieces, multiple of 2 pieces
		Package Material	Rigid cardboard packaging
	Order Note	Order Code	See product range, page 1, e.g. TUU1G.FA

Advices

Installation Notes

Observe the following general regulation for engineering and installation:

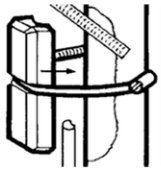
All relevant national and local electrical installation codes

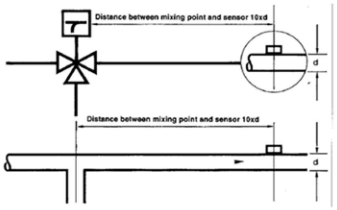
Other country-specific regulations

Comply with all local safety regulations, schematics, cable listings, dispositions, specifications, and arrangements from the engineering office in charge

Third-party specifications, e.g., general contractors' or constructors' notes

Mounting Advices





Disposal Notes

The device is considered an electronic device for disposal in terms of the European Directive 2012/19/EU

The device may not be disposed as domestic garbage

The device must be disposed through channels provided for this purpose

It is mandatory to comply with local currently applying laws and regulations

NFC Setting

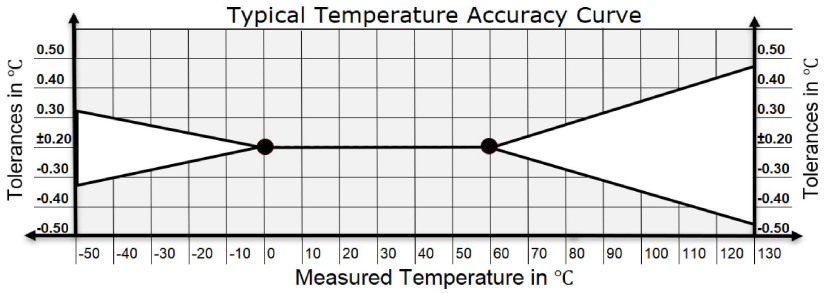
All devices marked with the NFC Logo can be parameterized via the Gruner AP NFC APP

The NFC APP is available on the Gruner AP Website, https://www.grunerasiapacific.com/

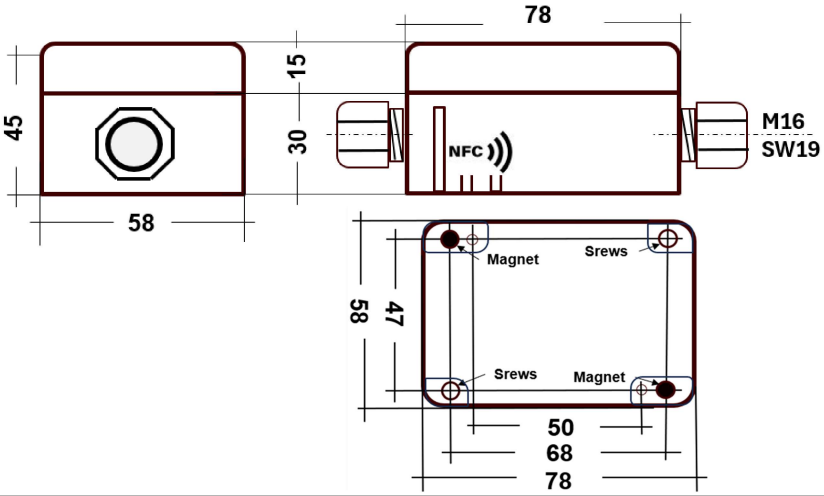
Hold your NFC-capable Android phone to the NFC Logo, the installed APP will start automatically

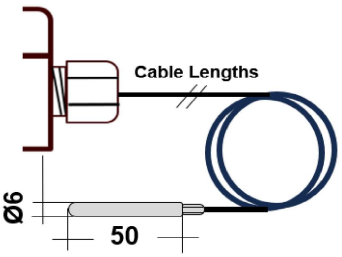
Commissioning Note: The sensor will reach its specified accuracy after 1 hour of being powered up

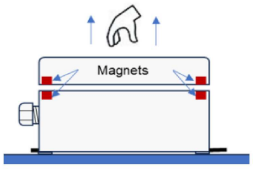
Accuracy Curves



Dimensional Drawing







Connections & Settings

Terminal Connections		
S1	S2	S3
UB+ 24V	GND	Temperature