OPERATING MANUAL

UT125 - Universal transmitter

umn_ut125_vs1.04_en

06/2025

senseca

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1 Intended use (areas of application)

Note

Refer to the chapter 'Product description' for detailed specifications for the area of application. The operational safety of the device is only assured when used as intended in accordance with the specifications in the operating manual. Intervention beyond the actions described in the operating manual may only be carried out by personnel authorised by the manufacturer for safety and warranty reasons. Conversions or modifications made on one's own authority are expressly prohibited. Application-specific dangers can emanate from this device when used improperly or not as intended.

Caution!

Application-specific dangers can emanate from this device when used improperly or not as intended. The device is not intended for use in explosion-prone areas and safety-related system parts in accordance with SIL.

1.1 General safety instructions, use

This operating manual must be kept in a location such that qualified personnel can refer to it at all times.

Any processes described in this operating manual may only be carried out by trained, qualified personnel who are authorised by the owner and wearing protective clothing. All rights reserved

1.2 Safety signs and symbols

Warning notices are identified in this document as described hereunder:

Danger!

This symbol warns of imminent danger which can result in death, severe bodily injury, or severe property damage in case of non-observance.

Attention!

This symbol warns of potential dangers or harmful situations which can cause damage to the device or to the environment in case of non-observance

Note

Blue underlining indicates processes which can have a direct influence on operation or can trigger an unforeseen reaction in case of non-observance.

1.3 Safety instructions

Danger!

Read the product description before commissioning the device. Ensure that there are no limitations for use of the product for the relevant applications..

The owner is responsible for ensuring the fault-free operation of the device. The owner is obligated to ensure compliance and to observe the required work and safety measures of the current applicable regulations for the entire duration of use.

1.4 Product liability and warranty

Exclusion of liability:

The contents of the operating manual have been checked to ensure conformity with the described device. However, deviations cannot be entirely ruled out. Therefore, we cannot assume any guarantee for complete conformity. The specifications in this document are checked regularly and any necessary corrections are incorporated into subsequent versions. This document is subject to technical changes. In addition, all claims are based on the valid 'Standard Terms for the Supply of Products and Services of the Electrical Industry'.

Note

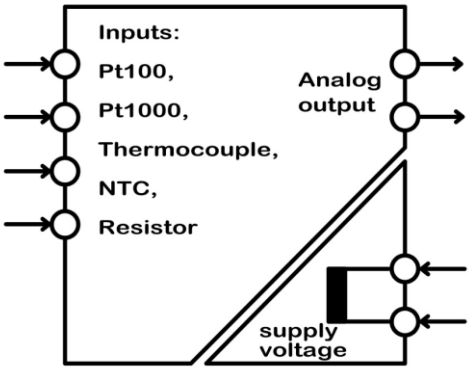
Senseca cannot inspect or repair any devices without the required form having been filled in completely (refer to the chapter 'Returns').

2 Product description

The UT125 series of universal transmitters are designed for the affordable transformation of standard signals, temperatures and potentiometer into a current signal of 4..20 mA. The universal configurability of the measuring inputs reduces the stock requirement for various applications.

The measuring inputs and analog output are not galvanically isolated.

The housing width of only 12.5 mm enables space-saving installation in the switch cabinet.



2.1 Scope of delivery

- UT125
- this operating manual
- further documents, if applicable

2.2 Functional principle

An analog output with 4..20 mA is actuated depending on the selected measuring range.

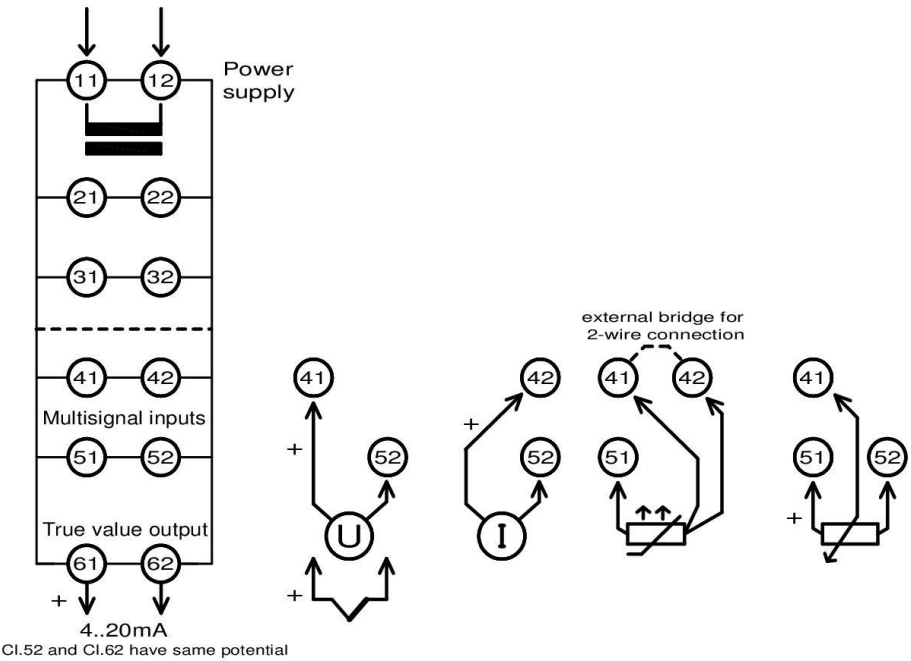
The temperature measuring ranges are linearised.

The device configuration takes place via DIP switch.

The power supply can be provided via an internal wide range power supply (20..125 V DC / 20..253V AC) or via a DC voltage power supply with 24 V DC.

With the DC voltage power supply, the power supply can be done via the plug-in device terminals or via a carrier rail bus (PowerRail) on the device, depending on the device type.

2.3 Connection diagram



Attention!

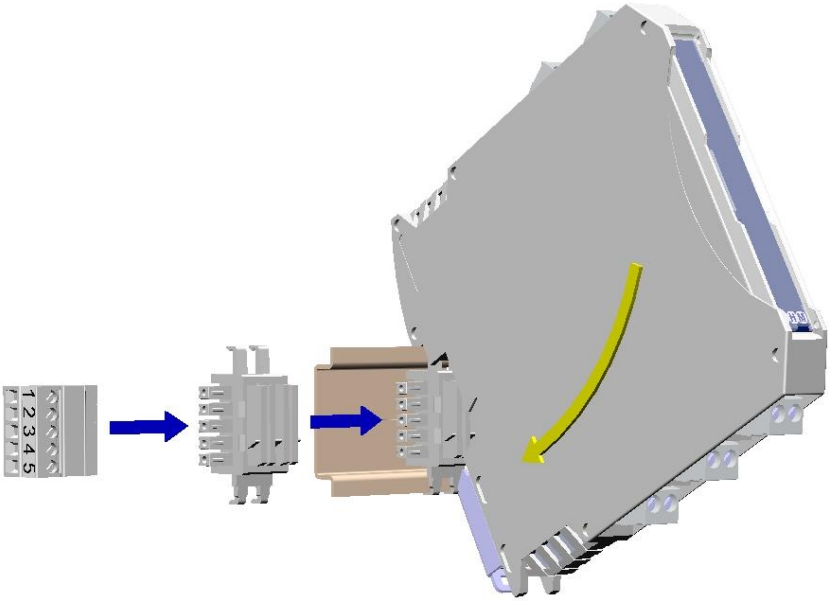
Input signals should be connected via separate 2 or 3 core cables. Grounded leads may cause problems with the not galvanical isolated analog true value output.

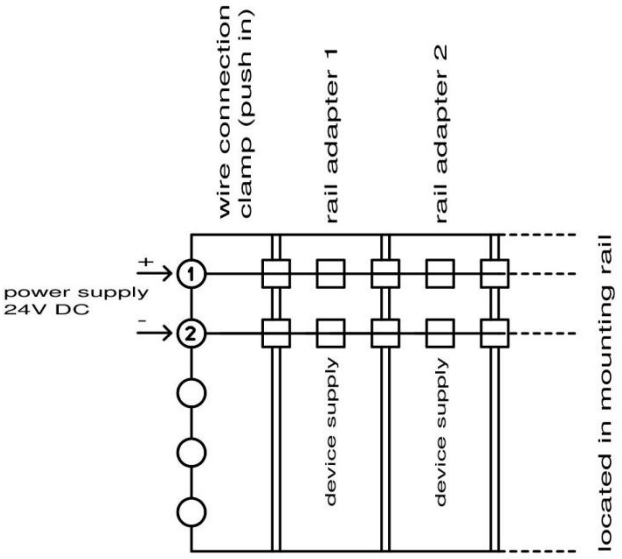
2.4 PowerRail

The supply of multiple devices can be concentrated in the mounting carrier rail (TH35) of a bus system. An equivalent version is available for the entire LP series of our rail devices in 12.5mm wide housing.

Before mounting the device to be supplied, a series-compatible bus adapter must be connected on the carrier rail. For this purpose, an adapter piece is required for each device. The supply of the bus then takes place via a plug-in terminal strip.

In the device version UT125LP provided for this purpose, the supply terminals 11 and 12 on the upper side of the device are omitted.


1 2 3 4 5


wire connection clamp (push in)
rail adapter 1
rail adapter 2
power supply 24V DC
+
-
1
2
device supply
device supply
located in mounting rail

2.5 Type plate

The type plate includes the most important identification data

- Type and article name
- Technical data
- Serial number / bar code
-

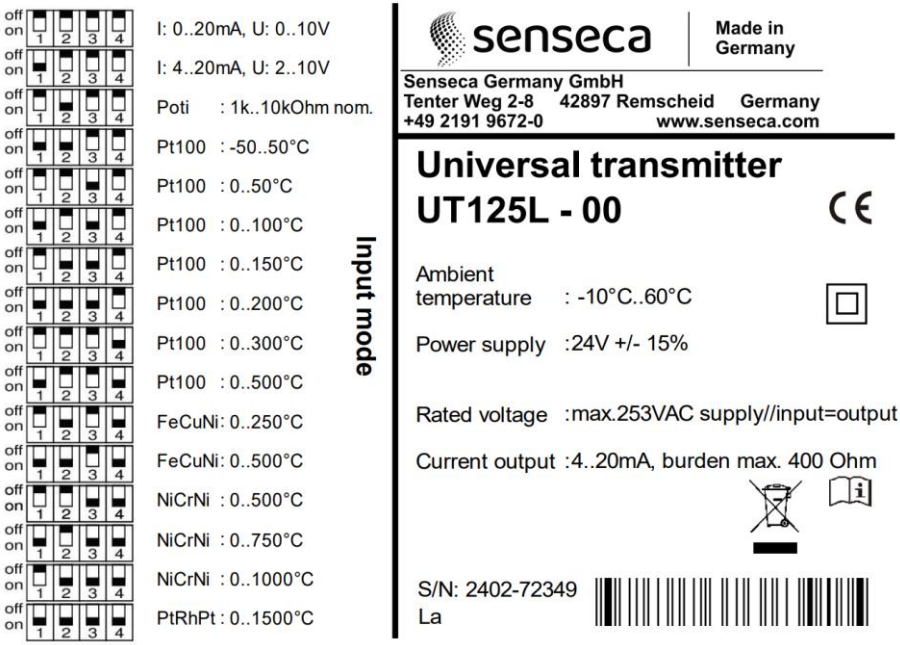


Fig. 3 Type plate

3 Assembly and installation

3.1 Mechanical assembly

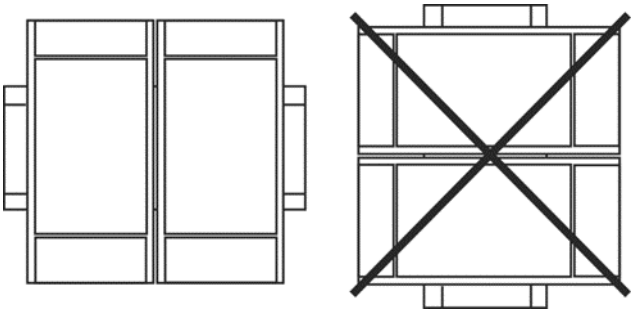


Fig. 4

Carrier rail mounting TH35. The mounting of multiple devices without spaces is only permitted on horizontally mounted carrier rails.

3.2 Electrical installation

Danger!

The device may only be installed by an electrician. The national and international regulations for connection of electrical systems in the respective user country apply.

Power supply in accordance with DIN EN 60664-1, SELV, PELV.

Observe the connection diagram for installation of the inputs and outputs.

The supply voltage is connected to pins 11 and 12 of the plug-in terminal strip.

Terminals 41, 42, 51 and 52 are provided for sensor connection.

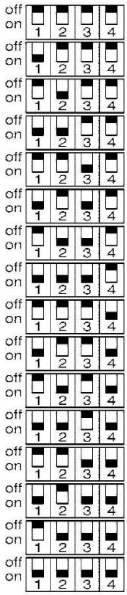
Terminals 61 and 62 are provided for analog output.

4 Controls and functional description

Status-LED

DIP switches 1-4

Selection of the measuring range takes place with DIP switches 1-4:
current / voltage, potentiometer, Pt100, thermocouple



I: 0..20mA, U: 0..10V
I: 4..20mA, U: 2..10V
Poti : 1k..10kOhm nom.
Pt100 : -50..50°C
Pt100 : 0..50°C
Pt100 : 0..100°C
Pt100 : 0..150°C
Pt100 : 0..200°C
Pt100 : 0..300°C
Pt100 : 0..500°C
FeCuNi: 0..250°C
FeCuNi: 0..500°C
NiCrNi : 0..500°C
NiCrNi : 0..750°C
NiCrNi : 0..1000°C
PtRhPt: 0..1500°C

The black fields symbolize the position of the DIP switches.

(When voltage and current are injected simultaneously the result is an addition of the input related signals)

4.1 Sensor brake and sensor short-circuit

In the measuring ranges with Pt100 sensors, breaks and short-circuits are monitored.

The analog output drops to approx. 0mA

5 Commissioning, maintenance and service

5.1 Commissioning

1. Ensure that the connection assignment takes place according to the connection diagram and matches the supply voltage.
2. Ensure that the terminals are firmly screwed in.
3. After switching on the power, check to ensure the correct device function.

5.2 Maintenance

Housing:
No cleaning or maintenance is required when operated as intended.

5.3 Service

Note
Service of the device is only possible at the factory.

6 Technical Data

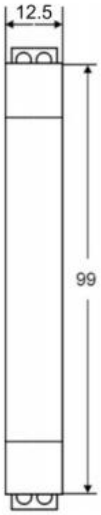
Wide-range power supply	
Supply voltage	20..125 V DC and 20..250 V AC (47..63Hz), max.1.5W
24 V power supply	
Supply voltage	24 V DC +/-15%, max. 1.5W
Combined data	
Rated voltage	253V AC pollution degree 2, overvoltage category II
Test voltage	3kV AC between supply voltage // input = output
Working temperature	-10…60 °C
Storage temperature	-20…80 °C
Air humidity	10..90 % (no condensation)
Conformity	CE
Measurement inputs	
Voltage	0/2..10 V, Ri approx. 20 kΩ
Current	0/4..20 mA, Ri approx. 60 kΩ
Pt100	linearized, measurement current approx. 1.6 mA
Thermocouple	linearized with reference junction compensation (optional without internal compensation)
Resistance	Potentiometer (3-wire), rated value 500 Ω..20 kΩ internal reference voltage approx. 1.5 V
Analog output	4..20 mA, max. burden 400 Ω (burden failure at 400 Ω max. 0,2%) No galvanic isolation from the input signal

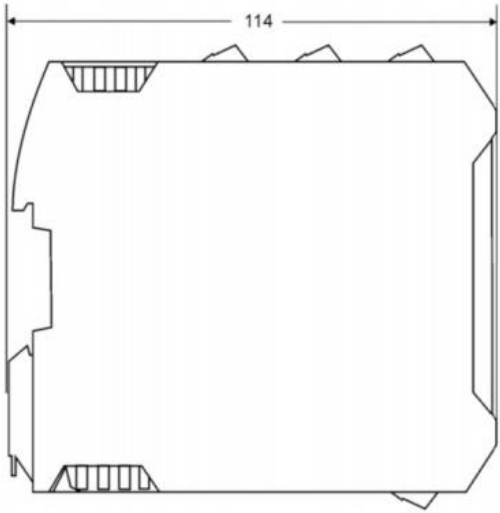
Input signal	Basic precision - analog output	Temperature deviation *)
0/2..10V	0,2%	0,004%/K
0/4..20mA	0,2%	0,004%/K
Potentiometer	1%	0,007%/K
Pt100 -50.. 50°C	0,5%	0,03%/K
Pt100 0.. 50°C	0,9%	0,04%/K
Pt100 0..100°C	0,5%	0,03%/K
Pt100 0..150°C	0,2%	0,02%/K
Pt100 0..200°C	0,4%	0,02%/K
Pt100 0..300°C	0,3%	0,01%/K
Pt100 0..500°C	0,2%	0,007%/K
FeCuNi 0..250°C	1,0%	0,04%/K
FeCuNi 0..500°C	0,5%	0,03%/K
NiCrNi 0..500°C	0,5%	0,04%/K
NiCrNi 0..750°C	0,4%	0,03%/K
NiCrNi 0..1000°C	0,3%	0,02%/K
PtRhPt 0..1500°C	1,0%	0,04%/K

*) Measurement deviation depending on the environmental temperature in the switch cabinet (- 10..+60°C)

Casing	
Dimensions (WxDxH)	12,5 x 115 x 108 [mm]
Material	PA6.6, light grey, flammability class V0 (UL94)
Weight	120g
Protection rating	IP 20
Screw terminals	0,2..2,5 mm², AWG 24..14, removable, coded
Push-in terminals (spring terminals)	0.5..1.5 mm², AWG 25..16, double connection (12A between the connections), removable, coded
Power Rail	8A over the entire bus system (Supply via removable terminals 0.2..2.5 mm², AWG 24..14

6.1 Mechanical design / dimensions





7 Order code

UT125 **1.** **2.**

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1.	**Device version**	
	125L	Supply voltage 24V DC +/- 15%
	125LP	Supply voltage 24V DC +/-15% with Carrier rail bus connection *)
	125M	Wide-range power supply 20..125VDC / 20..253V AC
2.	**Options**	
	00	No options
	01	Push-in terminals (plug-in)
*) Supply including matching bus adapter piece, see chapter 'PowerRail'		

8 Device transport and storage

Gentle and tension-free packaging of the housing must be ensured for transport (no machine wrapping of the package). The device must be stored in the environmental conditions specified in the technical data.

9 Returns

Danger!

The legal regulations for environmental protection and our personnel require that devices which are sent back which have come into contact with liquid are handled without risk to people or the environment.

If you send a device back to us for inspection or repair, we must request that you strictly observe the following requirements:

On the Senseca Germany homepage under ‘Info desk’ a return shipment form can be downloaded.

The repair can be performed quickly and without call-back questions if:

1. a filled-in form is provided for each device,
2. the device has been cleaned and packaging which prevents damage to the device,
3. a safety data sheet for the measuring medium is affixed to the outside of the package, if the device has come into contact with a critical substance.

10 Disposal

Separation ny material and recycling of device components and packaging must take place when the device is disposed of. The valid legal regulations and directives applicable at the time must be observed.

The device may not be disposed of with household waste. If the device should be disposed of, return it to us with the return shipment form filled in the chapter 'Returns'. We will then arrange for the proper disposal.

11 EU-Konformitätserklärung

EU-KONFORMITÄTSERKLÄRUNG
EU-DECLARATION OF CONFORMITY

Senseca | Senseca Germany GmbH | Tenter Weg 2-8 | 42897 Remscheid | GERMANY

Dokument-Nr. / Monat.Jahr:
Document-No. / Month.Year: **2047 / 01.2024**

Wir erklären hiermit unter alleiniger Verantwortung, dass die folgenden Produkte konform sind mit den Schutzzielen der Richtlinie des Europäischen Parlaments:
We declare herewith under our sole responsibility that the following products are in compliance with the protection requirements defined in the European Council directives:

Produktbezeichnung:
Product identifier: **UT125L / UT125LP / UT125M**

Produktbeschreibung:
Product description: **Universal-Messumformer**
Universal converter

Die Produkte entsprechen den folgenden Europäischen Richtlinien:
The products conforms to following European directives:

Richtlinien / *Directives*	
2014/30/EU	EMV-Richtlinie / *EMC directive*
2014/35/EU	Niederspannungsrichtlinie / *Low Voltage Directive*
2011/65/EU	RoHS / *RoHS*

Angewandte harmonisierte Normen oder angeführte technische Normen:
Applied harmonized standards or mentioned technical specifications:

Harmonisierte Normen / *harmonized standards*	
EN 61326-1:2013	Allgemeine EMV-Anforderungen / *General EMC requirements*
EN IEC 60664-1:2020	Allgemeine Isolationsanforderungen / *General isolating requirements*
EN IEC 63000:2018	Beschränkung der gefährlichen Stoffe / *Restriction of hazardous substances*

Diese Erklärung wird verantwortlich für den Hersteller abgegeben durch:
The manufacturer is responsible for the declaration released by:

Walter Vogelsberger
Senior Director Research & Development

Remscheid, 02. Januar 2024

Diese Erklärung bescheinigt die Übereinstimmung mit den genannten Harmonisierungsrechtsvorschriften, beinhaltet jedoch keine Zusicherung von Eigenschaften
This declaration certifies the agreement with the harmonization legislation mentioned, contained however no warranty of characteristics.

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