

InPro® 8600 Sensor Series

Transmitter Trb 8300 D

Hygienic turbidity system for the low to medium particle concentration range

Technical data



InPro 8600

Short description

The forward and sideward scatter turbidity systems InPro 8600 from METTLER TOLEDO are designed for reliable measurements of turbidity in the low to medium particle concentration range. The main applications are in the food and beverage industry, mainly in breweries.

The measuring principle is based on forward and sideward scattering of light. The system is intended for inline detection of undissolved (suspended) substances in liquid media.

Outstanding sensor features are:

- attractive prize / performance ratio
- highest accuracy
- measurement range 0 ... 400 FTU (0 ... 100 EBC)
- hygienic design (EHEDG certification pending)
- maintenance-free optical windows due to sapphire and no O-rings
- for operation with digital turbidity transmitter Trb 8300 D or turbidity configuration tool from METTLER TOLEDO.



Trb 8300 D

Transmitter features are:

- factory-defined and process calibration routines
- full text guided menu in three languages, including online help texts
- three configurable parameter sets with remote access
- four galvanic isolated current outputs 0/4 ... 20 mA according to NAMUR NE 43 guidelines.



PDA

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METTLER TOLEDO

Sensor specifications InPro 8600

Measuring principle	Light scattering Ratio measurement Light detection at 25 ° and 90 ° angles
Light source	650 nm, LED (Light Emitting Diode)
Measurement range	0 ... 400 FTU (Formazin Turbidity Units)
Measurement accuracy	0.01 FTU (value < 1 FTU) 1 % of the measured value (> 1 FTU)
Repeatability	0.01 FTU
Resolution	0.01 FTU
Response time (T90)	< 2 sec.
Units	FTU, EBC, ASBC, ppm SiO ₂ , mg/l SiO ₂
Factory calibration	10-point calibration, based on formazin standards
Process conditions	
Max. pressure	Max. 16 bar (232 psi)
Temperature (process media)	0 ... 80 °C (32 ... 176 °F), at 25 °C (77 °F) ambient temperature with air cooling 0 ... 70 °C (32 ... 158 °F), at 25 °C (77 °F) ambient temperature without air cooling Max. 120 °C (248 °F), short time, 1 h
Temperature (ambient)	0 ... 60 °C (32 ... 140 °F)
Materials and dimensions	
Sensor head (wetted)	Stainless steel (1.4404 / 316L)
Measurement windows (wetted)	Sapphire
Flange O-rings (wetted)	EPDM
Sensor housing	Stainless steel (1.4404 / 316L)
Surface roughness	Ra ≤ 0.8 µm
Protection rating	IP65
Cable lengths	5, 10 and 20 m (16.4, 32.8 and 65.6 ft), others on request

Sensor specifications InPro 8600

Installation

Process connection	Tuchenhagen-Varivent® N 50/40
Process pipe dimension	≥ DN 40

InPro 8600 / D

Communication	Digital (RS 485)
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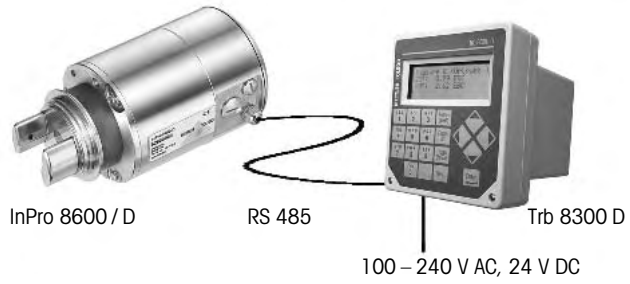
InPro 8600 / W

Communication	Wireless (Bluetooth®)
Output	3 × 0/4 ... 20 mA current output, individually configurable
Distance Bluetooth®	5 m (16.4 ft)
Power supply	24 V DC (± 2 V)

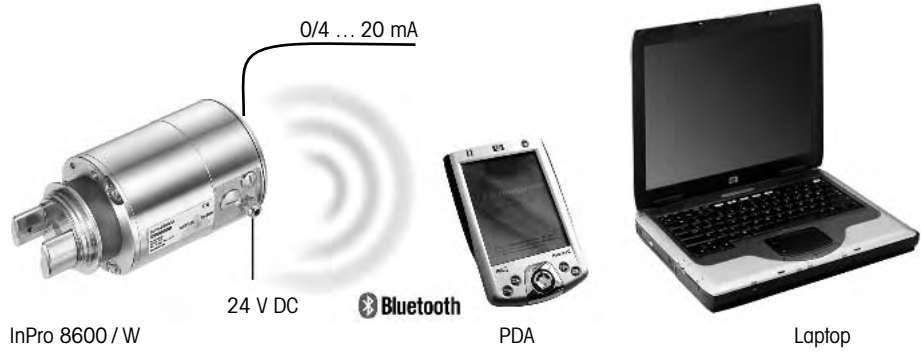
Certificates

Quality / end control	•
PED	•
Hygienic design (EHEDG)	• (pending)
CE	•

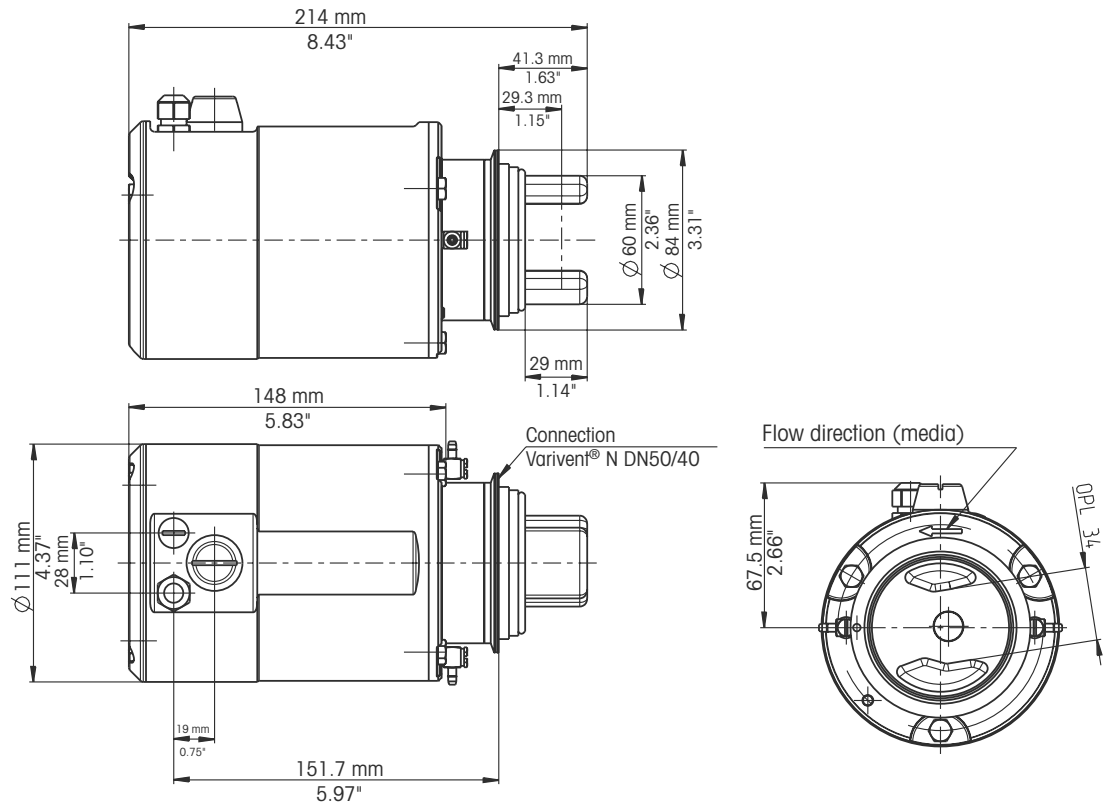
InPro 8600 / D – digital sensor with transmitter



InPro 8600 / W – sensor with wireless configuration unit



Dimensional drawing InPro 8600



Terminal assignment turbidity sensor InPro 8600

Strip	Terminal	Connection
KL2	8	RS 485 + (yellow)
	9	RS 485 - (green)
KL1	10	24 V DC - (white)
	11	24 V DC + (brown)
	12	Shield

Transmitter Trb 8300 D

Power requirement	100 ... 240 VAC, max. 25 Watt, 47...63 Hz or 20...32 VDC, max. 25 Watt Data storage in non-battery supported EPROM in the event of power failure. Clock does not function without power supply.
Sensor connections	Digital input / output (RS 485) for turbidity sensors InPro 8600 D
Measuring range	Selectable: 0 ... 400 FTU (Formazin Turbidity Units) 0 ... 400 NTU (Nephelometric Turbidity Units) 0 ... 100 EBC (Turbidity scale acc. to European Brewery Convention) 0 ... 1000 ppm (Parts per millions solids content) 0 ... 1.0 g/l (Solids content) 0 ... 7000 ASBC (American Society of Brewing Chemists)
Resolution	0.01 FTU
Parameter sets	Three configurable parameter sets (A-C), storable and retrievable via software menu or by remote access via digital inputs.
Digital inputs	4 buffered digital inputs (0 ... 5 V) – 1 digital input for "HOLD" function – 3 digital inputs for activating stored parameter sets A to C
System calibration (operational modes)	
Factory-defined calibration	Specific factory-set sensor data.
Process calibration	Single-point calibration simultaneously with sampling (adjustment of offset or slope, user-defined).
Preset calibration parameter	Software reset restores calibration data to factory-set sensor data.
Password protection	Password-protected menu access for different operator levels (Master, User 1 and 2), able to be activated.
Current outputs	Four analog outputs 0/4 ... 20 mA. Burden max. 500 Ω, galvanic isolated. Accuracy ± 0.05 mA. The outputs can be freely assigned to individual parameter sets, with choice of scaling in linear, bi-linear, logarithmic or dual-range format.
Alarm contact	Relay contact, SPDT, floating
Contact capacity	AC < 250 V/< 5 A DC < 30 V/< 5 A
Contact function	N/C (fail-safe type)
Alarm delay	000...600 s

Transmitter Trb 8300 D

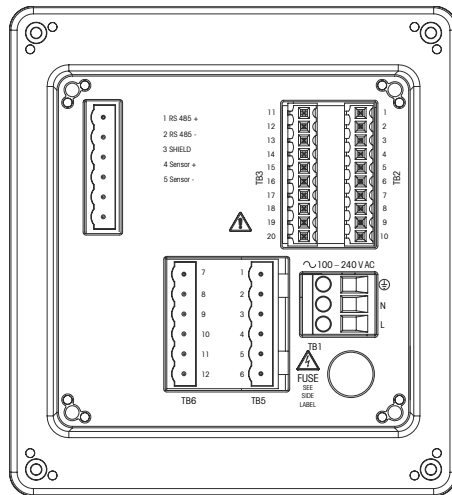
Wash contact	Relay contact, SPDT, floating AC < 250 V/< 5 A DC < 30 V/< 5 A
Contact function	N/O or N/C
Cleaning interval	0.0...999.9 h (0.0 h = cleaning function switched off)
Duration of cleaning	000...600 s
Limit values (2)	2 relay contacts, SPDT, floating
Contact capacity	AC < 250 V/< 5 A DC < 30 V/< 5 A
Contact function	N/O or N/C
Delay	000...600 s
Switching point	Hi-hi / hi-lo / lo-lo
Hysteresis	0.0...50.0%
Digital interface	For updating of main program software and for printing of instrument configuration.
RS232 standard	Max. cable length 15 m
Baud Rate	1200, 2400, 4800, 9600, 19.2k and 38.4k
Parity	Odd, even or none
Display	Liquid crystal display (LCD), 20 alphanumerical characters x 4 lines, backlit
Keypad	20 keys, membrane-type keypad
Languages	Selectable via software: German, English or French for menu and Help texts
Diagnostic functions	Sensor mA outputs Display Keypad Instrument Serial interface Contacts Self-test

Transmitter Trb 8300 D

Data retention	Configuration and calibration data in non-battery supported, non-volatile storage.
CE	
Emission	EN 55022 Class A ISM emissions.
Immunity	EN 61326 1997 Measurement, Control and Laboratory Equipment EMC requirements - industrial use.
Safety	IEC 61010-1 Safety requirements for electrical equipment for measurement, control and laboratory use
US UL	3111-1 Electrical Measuring and test Equipment
CAN / CSA	C22.2, No. 1010.1
Nominal operating conditions	
Ambient temperature	-10 ... +55 °C (14 ... 131 °F)
Transport and storage temperature	-20 ... +80 °C (-4 ... 176 °F)
Relative humidity	0 ... 80 % at 31 °C (88 °F), linear decline to 50 % at 40 °C (122 °F)
Enclosure	
Composite	ABS-PC, resistant to UV and chemicals
Cutout	For panel installation: 96 x 96 mm (3.78" × 3.78") 1/4 DIN
Dimensions	H: 125 mm × W: 114 mm × L: 162 mm (H: 4.92" × W: 4.50" × L: 6.39")
Protection	Sealed face, IP 65
Weight	0.9 kg (2 lbs.)

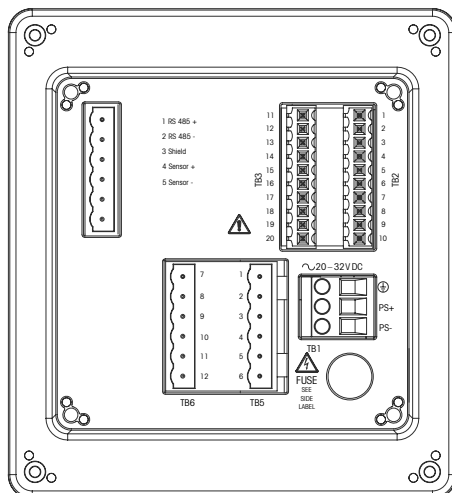
Terminal assignment transmitter Trb 8300D 100 ... 240 V AC

Strip	Terminal	Connection
TB1	⊕	Ground
	N	Neutral
	L	Phase



Terminal assignment transmitter Trb 8300D 20 ... 32 V DC

Strip	Terminal	Connection
TB1	⊕	Ground
	PS-	DC minus
	PS+	DC plus



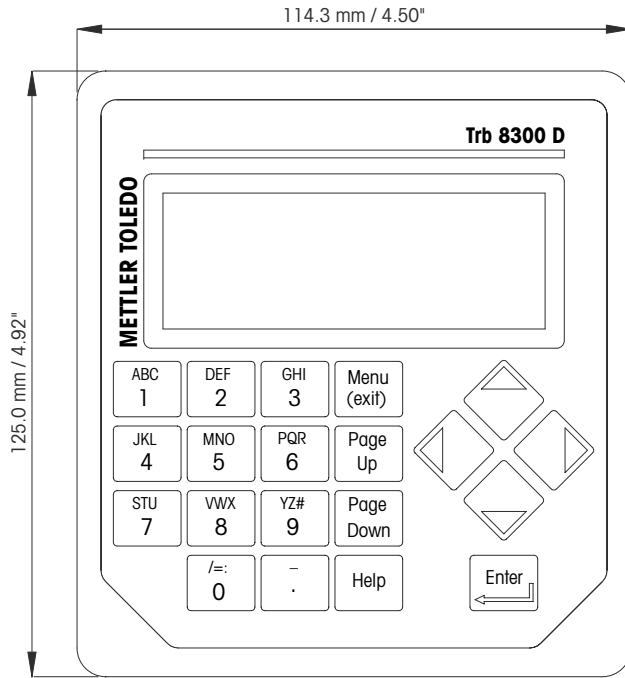
Sensor connections

Strip	Terminal	Connection
TB7	1	RS 485 + sensor (green)
	2	RS 485 – sensor (yellow)
	3	Shielding
	4	Sensor voltage + 24 V DC (brown)
	5	Sensor voltage – 24 V DC (white)

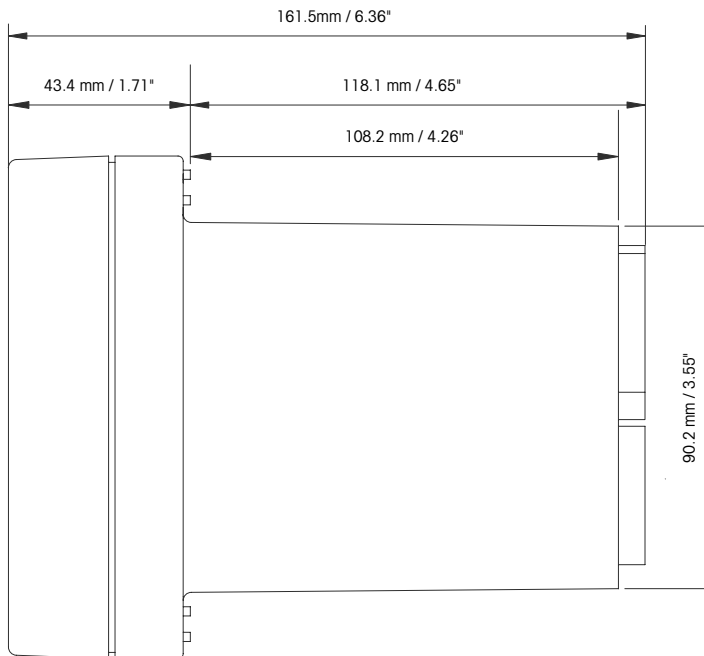
Other

Strip	Terminal	Connection
TB2	1	Not to be used!
	2	Parameter sets A, B and "HOLD" (Digital 2)
	3	Not to be used!
	4	Parameter set B (Digital 1)
	5	Not to be used!
	6	"HOLD" (Digital 1)
	7	Parameter set A (Digital 1)
	8	RS 232 ground
	9	RS 232, receive
	10	RS 232, transmit
TB3	11	Not to be used!
	12	Parameter set C (Digital 2)
	13	Parameter set C (Digital 1)
	14	Not to be used!
	15	Current output 4+
	16	Current output 3+
	17	Current output –
	18	Current output –
	19	Current output 2+
	20	Current output 1+
TB5	1	Alarm, normally closed
	2	Alarm "Common"
	3	Alarm, normally open
	4	Wash, normally closed
	5	Wash, "Common"
	6	Wash, normally open
TB6	7	Limit value 1, normally closed
	8	Limit value 1, "Common"
	9	Limit value 1, normally open
	10	Limit value 2, normally closed
	11	Limit value 2, "Common"
	12	Limit value 2, normally open

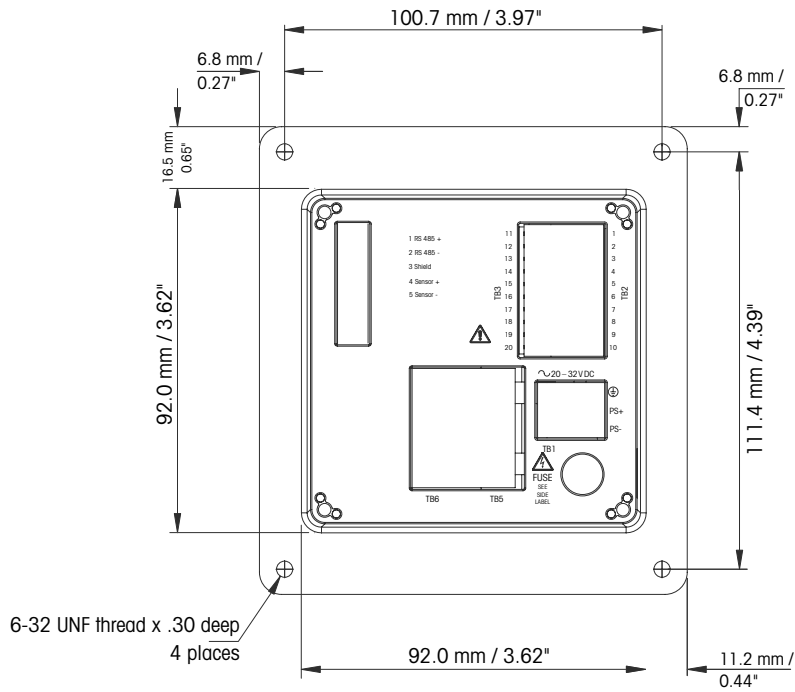
Front



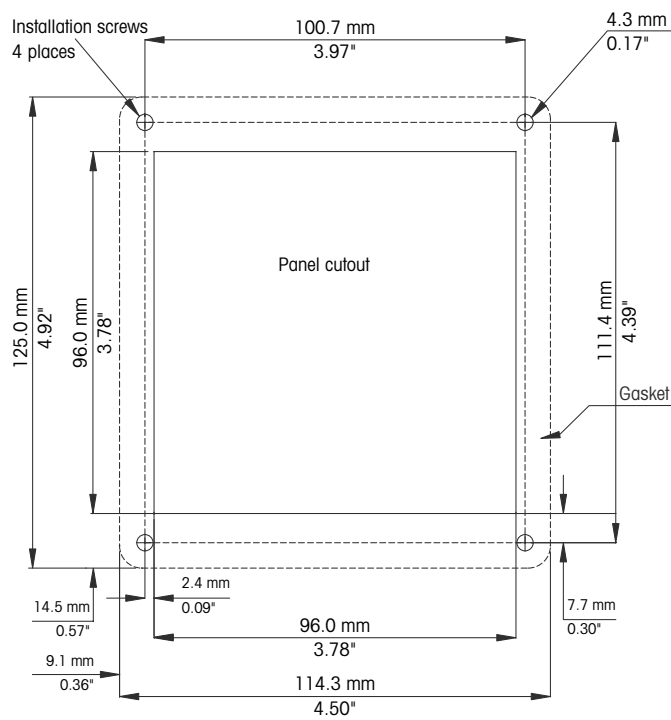
Side



Rear panel



Cutout for panel installation



Ordering information

Designation	Order no
Sensors	
InPro 8600/D / 2	52 800 980
InPro 8600/W / 2	52 800 990
Accessories	
RS 485 cable for InPro 8600 D, 5 m (16.4 ft)	52 800 979
RS 485 cable for InPro 8600 D, 10 m (32.8 ft)	52 800 981
RS 485 cable for InPro 8600 D, 20 m (65.6 ft)	52 801 005
Air purge connectors (2 pieces) for InPro 8600	52 800 983
Configuration tool for InPro 8600/W (PDA and Software)	52 800 986
Transmitter	
Trb 8300D 24 V DC	52 800 928
Trb 8300D 100 ... 240 V AC	52 800 927
Spare parts	
O-ring 60.00 x 3.00 EPDM for Tuchenhausen-Varivent®	20 3031 210 IG
Field enclosure, IP 66 wall mounted	52 800 867
Data acquisition software package	52 800 929
RS 232 interface cable, 10 m (32.8 ft)	58 080 111
Varivent® blanking plate, black	52 800 984

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