

InTrac 776e For Liquid-Filled pH Electrodes



**USP
Class VI**



The retractable InTrac 776e housings are designed for applications in processes which utilize pH/ORP sensors that have a liquid electrolyte reference system such as the InPro 2000 and Ingold 465 series electrodes. The housing has a built-in flushing chamber in which the electrode can be cleaned and calibrated if necessary, both accomplished without interruption of the process. This enhanced housing incorporates the Tri-Lock™ safety system which increases process safety and reliability even in harsh applications.

Specifications

Operation	Manual or pneumatic	
Ambient temperature	Polypropylene:	0 to 70 °C (32 to 158 °F)
	Stainless steel:	- 10 to 70 °C (14 to 158 °F)
Functional pressure range	Manual:	0 to 5 bar (0 to 73 psig)
	Pneumatic:	0 to 6 bar (0 to 87 psig)
Max. permissible pressure	Polypropylene (PP):	6 bar at 20 °C (87 psig at 68 °F)
	PVDF, PEEK:	6 bar at 20 °C (87 psig at 68 °F)
	316 L stainless steel:	6 bar at 140 °C (87 psig at 276 °F)
	Hastelloy /Ti:	6 bar at 140 °C (87 psig at 276 °F)
Insertion lengths	70 mm, 100 mm, 200 mm (2.76", 3.94", 7.87")	
Wetted parts	316 L stainless steel, Hastelloy –C22, titanium, PP, PVDF, PEEK	
Wetted O-rings	Viton®-FDA, EPDM-FDA, Kalrez®-FDA-USP Class VI	
Housing length	70/100 mm:	545 mm (21.8") in process
		710 mm (28") retracted from process
	200 mm:	645 mm (25.4") in process 1110 mm (43.7") retracted from process
Pneumatic conditions	4 to 8 bar (58 to 116 psig)	
Flushing connections (water, steam)	2 to 6 bar (29 to 87 psig)	
Position monitoring (options)	Pneumatic check (3/2 way valve), G1/8"	
	Inductive check, non-Ex, M12 × 1	
	Inductive check, Ex, M12 × 1	

Certificates and Approvals

CE;
Pressure Equipment Directive guidelines (PED);
Certificate of conformity according to EN10204-2.1;
Material certificate according to 3.1;
ATEX, FM and MaxCert

Sensor Fit Guide (for Liquid-Filled Glass pH Electrodes)

Sensor Length	Insertion Length		
	70 mm	100 mm	200 mm
250 mm	•	•	–
450 mm	–	–	•

Many housing options are available. Please use the product configurator found on p. 123.



Did You Know

Measurement loops from METTLER TOLEDO can be automated with the EasyClean systems for rinsing, cleaning and calibrating. See pages 126–131 for more information.

www.mt.com/InTrac776

InTrac 777 e/779 e

The Reliable All-Rounder



Features Overview

- Advanced Tri-Lock safety system
- Remove sensor without interrupting of the process
- Automation with EasyClean

Other Highlights

- Multiple process connections available
- For use with 12 mm Ingold sensors
- MaxCert covers necessary certifications
- Increased operational safety and reliability
- Several materials of construction available

▶ www.mt.com/InTrac777
 ▶ www.mt.com/InTrac779

The retractable InTrac 777 e/779 e housings are specifically designed for applications in processes which utilize 12 mm pH, ORP, dissolved oxygen, CO₂, conductivity, and turbidity (InTrac 779 e) sensors. The housing has a flushing chamber in which the electrode can be cleaned and calibrated if necessary, both accomplished without interruption of the process. This enhanced housing incorporates the Tri-Lock safety system which increases process safety and reliability even in harsh applications. Multiple process connections and materials of construction make the InTrac 777 e/779 e an excellent choice for use in either the chemical, biopharmaceutical or food and beverage industries.

Specifications

Operation	Manual or pneumatic (295 mm version pneumatic only)
Ambient temperature	Polypropylene: 0 to 70 °C (32 to 158 °F) Stainless steel: – 10 to 70 °C (14 to 158 °F)
Functional pressure range	Manual: 0 to 5 bar (0 to 73 psig) Pneumatic: 0 to 16 bar (0 to 232 psig)
Max. permissible pressure	Polypropylene (PP): 6 bar / 20 °C (87 psig / 68 °F) PVDF, PEEK: 6 bar / 20 °C (87 psig / 68 °F) 316 L stainless steel: 16 bar / 140 °C (232 psig / 276 °F) Hastelloy / Ti: 16 bar / 140 °C (232 psig / 276 °F)
Insertion lengths	70 mm, 100 mm, 200 mm, 295 mm (2.76", 3.94", 7.87", 11.61")
Wetted parts	316 L stainless steel, Hastelloy-C22*, titanium, PP*, PVDF*, PEEK*, * not available for 295 mm version
Wetted O-rings	Viton®-FDA, EPDM-FDA, Kalrez®-FDA and USP Class VI
Housing length	70 / 100 mm: 360 mm (14.2") in process 515 mm (20.3") retracted from process 200 mm: 460 mm (18.1") in process 915 mm (36") retracted from process
Pneumatic conditions	4 to 8 bar (58 to 116 psig)
Flushing connections (water, steam)	2 to 6 bar (29 to 87 psig)
Position monitoring (options)	Pneumatic check (3/2 way valve), G 1/8" Inductive check, non-Ex, M12 × 1 Inductive check, Ex, M12 × 1
Certificates and Approvals	CE; Pressure Equipment Directive guidelines (PED); Certificate of conformity according to EN10204-2.1; Material certificate according to 3.1; ATEX, FM and MaxCert

Many housing options are available. Please use the product configurator and sensor fit guide found on p. 123.



Did You Know

Measurement loops from METTLER TOLEDO can be automated with the EasyClean systems for rinsing, cleaning and calibrating. See pages 126–131 for more information.

InTrac 797 e/799 e When Sterile Conditions Are Required



**USP
Class VI**

FDA

CE

Ex

**FM
APPROVED**

Features Overview

- Twin-chamber lock effectively prevents any external contamination
- Advanced Tri-Lock safety system
- Remove sensor without interrupting of the process

Other Highlights

- Multiple process connections available
- For use with 12 mm Ingold sensors
- Double flushing chamber
- Increased operational safety and reliability

The retractable InTrac 797 e/799 e housings are specifically designed for applications in processes which utilize 12 mm pH, ORP, dissolved oxygen, CO₂, conductivity, and turbidity (InTrac 799 e) sensors. This sterilizable housing has a double flushing chamber which was designed to meet the highest demands of the pharmaceutical and food and beverage industries where sterile conditions are required. The double flushing chamber allows complete sterilization of the upper and lower sections of a sensor and insertion shaft allowing the electrode/ sensor to be removed and replaced under a completely sterile environment.

Specifications

Operation	Manual or pneumatic	
Ambient temperature	Stainless steel: – 10 to 70 °C (14 to 158 °F)	
Functional pressure range	Manual:	0 to 5 bar (0 to 73 psig)
	Pneumatic:	0 to 16 bar (0 to 232 psig)
Max. permissible pressure	316 L stainless steel: 16 bar/130 °C (232 psig at 266 °F)	
Insertion lengths	100 mm (3.94")	
Wetted parts	316 L stainless steel	
Wetted O-rings	Viton®-FDA, EPDM-FDA, Kalrez®-FDA-USP Class VI	
Housing length	100 mm:	460 mm (18.1") in process 715 mm (28.2") retracted from process
Pneumatic conditions	4 to 8 bar (58 to 116 psig)	
Flushing connections (water, steam)	2 to 6 bar (29 to 87 psig)	
Position monitoring (options)	Pneumatic check (3/2 way valve), G1/8"	
	Inductive check, non-Ex, M12 × 1	
	Inductive check, Ex, M12 × 1	

Certificates and Approvals

CE;
Pressure Equipment Directive guidelines (PED);
Certificate of conformity according to EN10204-2.1;
Material certificate according to 3.1;
ATEX, FM and MaxCert

InTrac 797 e/InTrac 799 e Sensor Fit Guide

Sensor Length	Insertion Length	
297 mm	100 mm	∅ 12 mm Sensor / electrode
320 mm	•1	Turbidity
325 mm	•2	O ₂ , CO ₂
	•2	pH/ORP

1 InTrac 799 e only

2 InTrac 797 e only

Many housing options are available. Please use the product configurator found on p. 124.

▶ www.mt.com/InTrac797

▶ www.mt.com/InTrac799

InTrac 781/784

Designed for the Toughest Process Conditions



InTrac 781

InTrac 784

Other Highlights

- Multiple process connections available
- Large choice of materials for wetted parts
- Variable insertion length
- Compliance with international standards
- Long life and easily exchangeable seals

The InTrac 781/784 retractable housings combine rugged design with great versatility to meet the demands of the harshest process conditions in chemical, petrochemical, pulp and paper, or utilities applications.

The InTrac 781 operates mainly with the 12 mm diameter (Pg 13.5) sensors, while the InTrac 784 operates with the InPro 2000 (i)/465 pH/ORP sensor.

The retractable housing material is specially designed for a range of harsh applications. Wetted parts are available in different materials (1.4404/SS 316L; Alloy C-22, PP; PVDF or PEEK), offering installation flexibility in many applications. The intelligent sensor locking system in the housing enhances operational safety. Without the presence of a sensor, the housing cannot be inserted into the process. Also, it makes it possible to remove the sensor from the housing when in the service position.

Specifications

Operation	Manual or pneumatic or pneumatic with inductive check back
Ambient temperature	SS 316L, Alloy C-22: -10 to 70 °C (14 ... 158 °F) PP, PVDF, PEEK: 0 to 70 °C (32 ... 158 °F)
Max. permissible pressure and temperature	SS 316L, Alloy C-22: 16 bar/120 °C or 10 bar/140 °C (232 psi/248 °F or 145 psi/284 °F) PP: 4 bar/60 °C or 2 bar/70 °C (58 psi/140 °F or 29 psi/158 °F) PVDF: 6 bar/90 °C or 4 bar/100 °C (87 psi/194 °F or 58 psi/212 °F) PEEK: 10 bar/100 °C or 6 bar/120 °C (145 psi/212 °F or 87 psi/248 °F)
Insertion length	80 mm (3.15") or 280 mm (11.02")
Wetted parts	SS 316L, Alloy C-22, PP, PVDF, PEEK or PVDF
Wetted O-rings	Viton®, Kalrez® or EPDM
Process connections	Flanges: DIN or AISI, or NPT 1 1/4"
Pneumatic condition	4 to 6 bar
Flushing condition (water)	1 to 6 bar
Certificates and Approvals	CE; Pressure Equipment Directive guideline (PED); ATEX and FM

Many housing options are available. Please use the product configurator found on p. 125.

Features Overview

- Highly efficient cleaning chamber
- Intelligent sensor locking system to prevent unintentional removal of the sensor
- Integrated sensor protective cage to protect the sensor in cases of fast process flow
- Specially designed drive train allows sensor retraction from high process pressures and temperatures
- Automated sensor cleaning with EasyClean

Retractable Housings

Sensor Access Without Process Interruption



Housings

InTrac 785/787 For Harsh Applications



InTrac 785

InTrac 787

InTrac 785/787 is a rugged, retractable housing for the most demanding industrial applications. Sensor maintenance and replacement becomes a fast and easy task using the InTrac 785/787, and can be done without any interruption to your process. Once retracted, the integral ball valve completely seals off your process, preventing loss of medium or contamination. The design allows for direct mounting to process lines, tanks and reactor vessels.

The InTrac 785 allows a wide range of installation possibilities, thanks to the wide variety of process connections and materials for wetted parts. If the ball valve is already present or a factory standard needs to be used, this housing is also available without ball valve and process connection.

Specifications	InTrac 785	InTrac 787
Wetted parts	316L, C22, titanium Ball valve always made of 1.4408	Stainless 316L
Surface finish	N6 (Ra 32)	N6/N5 (Ra 32/Ra 16)
O-ring	Viton®, Kalrez®	Viton®-FDA
Sensor fitting	Pg 13.5	Pg 13.5
Temperature range	Up to 140 °C/276 °F	Up to 140 °C/276 °F
Pressure rating	16 bar (232 psi)	9 bar (130 psi)
(Sensor dependent)		
Certificates and Approvals	CE, Pressure Equipment Directive guidelines (PED)	

Suggested Sensors InTrac 785

pH	DO	CO ₂	Conductivity	Turbidity
All 425 mm	All 420 mm	N/A	InPro 7100/425*	All 409 mm

* with InTrac 785 without protective cage

Suggested Sensors InTrac 787 (all 120 mm length)

pH	DO	CO ₂	Conductivity	Turbidity
InPro 3030	InPro 6050	N/A	InPro 7001	InPro 8050
InPro 3100 (i)	InPro 6800 (G)		InPro 7108	InPro 8100
InPro 3250 (i)	InPro 6850 (i) (G)		InPro 7100 (i)	InPro 8200
InPro 4010	InPro 6900 (i) (G)			
InPro 4260 (i)	InPro 6950 (i) (G)			
InPro 4281 i				
InPro 4800 (i)				
InPro 4881 (i)				
DPA				
DPAS				
DXK				

Many housing options are available. Please use the product configurator for InTrac 785 found on p. 124 or ordering information for InTrac 787 found on p. 125.

Features Overview

- Anti-blowout tip prevents accidental blowout
- Variable insertion length
- Flushing chamber available
- Wide range of installation options
- Flexibility in maintenance intervals due to sensor access during running process
- Smooth and reliable operation even in applications with high fiber concentration

▶ www.mt.com/InTrac785
▶ www.mt.com/InTrac787

Product Configurators

InTrac 777 e/InTrac 779 e Sensor Fit Guide

Sensor Length	Insertion Length			
	70 mm	100 mm	200 mm	295 mm
205 mm (Turbidity)	• ¹	• ¹	–	–
220 mm (O ₂ /CO ₂)	•	•	–	–
225 mm (pH/ORP)	•	•	–	–
407 mm (Turbidity)	–	–	• ¹	–
420 mm (O ₂ /CO ₂)	–	–	•	•
425 mm (pH/ORP/Conductivity)	–	–	•	•

¹ InTrac 779e only

Product configurator: InTrac 775 e, InTrac 776 e, InTrac 777 e, and InTrac 779 e – not all configurations are possible

Flushing chamber									
7	Single flushing chamber								
Electrode/sensor type									
5	pH electrodes with dual-membrane, pNa reference system (only available in PVDF or Titan with 70 or 100mm Insertion length)								
6	pH electrodes with liquid electrolyte (not available with the 295 mm version)								
7	pH electrodes with gel/polymer electrolyte and sensors with Pg 13.5 thread								
9	Turbidity sensors (not available with the 295 mm version)								
Operation mode									
M	Manual operation (not available with the 295 mm version)								
P	Pneumatic operation								
R	Pneumatic operation with pneumatic position indication								
I	Pneumatic operation with inductive position indication, non-Ex								
X	Pneumatic operation with inductive position indication, Ex								
Insertion length (H)									
	0	7	0	H=70 mm					
	1	0	0	H=100 mm					
	2	0	0	H=200 mm					
	2	9	5	H=295 mm					
Material (wetted parts)									
	4	4	0	4	DIN 1.4404/AISI 316 L (stainless steel)				
	C	2	2	–	DIN 2.4602/Alloy C22 (on request for 295 mm version)				
	T	i	–	–	Titanium (on request for 295 mm version)				
	P	P	–	–	Polypropylene (not available with the 295 mm version)				
	P	V	D	F	Polyvinylidene fluoride (not available with the 295 mm version)				
	P	E	E	K	Polyetherether ketone (not available with the 295 mm version)				
Process connection									
	D	0	0	0	Ingold DN25 weld-in socket				
	D	0	2	–	Flange DN32 PN16 (SS version only)				
	D	0	3	–	Flange DN40 PN16				
	D	0	4	–	Flange DN50-PN16				
	A	0	2	–	ANSI Flange A150-1 1/2"				
	A	0	3	–	ANSI Flange A150-2"				
	A	0	4	–	ANSI Flange A150-3"				
	N	0	1	–	NPT 1"				
	N	0	2	–	NPT 1 1/4"				
	N	0	3	–	NPT 1 1/2"				
	T	0	1	–	Tri-Clamp flange 1 1/2", straight				
	T	0	2	–	Tri-Clamp flange 2", straight				
	V	0	1	–	Varivent flange DN50, straight				
O-ring material									
	V	i	–	–	FKM Viton® FDA				
	E	P	–	–	EPDM FDA				
	K	a	–	–	FFKM Kalrez® 6230 FDA/USP Class VI				
Body material									
	A	–	–	–	PP conducting (not for 295 mm)				
	S	–	–	–	DIN 1.4404/316L				
Flushing connections									
	0	Without							
	1	Serto ss							
	2	PVC							
	3	PVDF							
	4	Gyrolok™ ss							
	5	Swagelok ss							
Special									
	0	Standard							
	1	Special							

InTrac 77X e
Hastelloy and titanium housings have cap nuts made of stainless steel. Varivent and Tri-Clamp flanges are available in stainless steel only.

InTrac 7 / / / / / /

Viton and Kalrez are registered trademarks of DuPont Performance Elastomers LLC

Retractable Housings

Sensor Access Without Process Interruption

Housings

Product configurator: InTrac 797 e, InTrac 799 e – not all configurations are possible

Flushing chamber																																					
9	Double flushing chamber																																				
Electrode/sensor type																																					
7	pH electrodes with gel/polymer electrolyte and sensors with Pg 13.5 thread																																				
9	Turbidity sensors																																				
Operation mode																																					
M	Manual operation																																				
P	Pneumatic operation																																				
R	Pneumatic operation with pneumatic position indication																																				
I	Pneumatic operation with inductive position indication, non-Ex																																				
X	Pneumatic operation with inductive position indication, Ex																																				
Insertion length (H)																																					
1	0	0	H=100mm																																		
Material (wetted parts)																																					
4	4	0	4	DIN 1.4404/AISI 316 L (stainless steel)																																	
Process connection																																					
D	0	0	Ingold DN25 weld-in socket																																		
T	0	1	Tri-Clamp flange 1 1/2", straight																																		
T	0	2	Tri-Clamp flange 2", straight																																		
V	0	1	Varivent flange DN50, straight																																		
O-ring material																																					
V	i	FKM Viton®-FDA																																			
E	P	EPDM-FDA																																			
K	a	FFKM Kalrez® 6230-FDA/USP Class VI																																			
Body material																																					
A	PP conducting																																				
S	DIN 1.4404/316L																																				
Flushing connections																																					
0	Without																																				
1	Serto ss																																				
4	Gyrolok ss																																				
5	Swagelok ss																																				
Special																																					
0	Standard																																				
1	Special																																				
InTrac 7				/				/					/					/					/					/					/				
	8	9	10		11	12	13		14	15	16	17		18	19	20	21		22	23	24	25		26	27	28	29		30								

Product configurator: InTrac 785 – not all configurations are possible

Electrode/Sensor type																																					
5	For pH, turbidity and oxygen sensors (length 425 mm/409 mm/420 mm)																																				
Sensor holder																																					
A	Standard with protective cage (sensor design Ø 12 mm shaft and Pg 13.5 thread)																																				
B	Without protective cage																																				
Flushing chamber																																					
F	Including flushing chamber																																				
N	No flushing chamber																																				
Insertion length																																					
2	2	0	220 mm/8.66" immersion length (Insertion length can be adjusted from 0–220 mm/0"–8.66")***																																		
Material (wetted parts)																																					
4	4	3	5	DIN 1.4435/316L																																	
C	2	2	-	DIN 2.4602/Alloy C22*																																	
T	i	-	-	Titanium*																																	
Process connections																																					
N	1	0	NPT 1"																																		
N	1	4	NPT 1 1/4" (with adapter 1" to 1 1/4")																																		
A	0	2	ANSI A150–1.5" (with adapter 1" NPT to ANSI A150–1.5")																																		
D	0	4	DIN DN50–PN16 (with adapter 1" NPT to DIN DN50–PN16)																																		
w	/	o	Without ball valve and process connection for direct installation**																																		
O-Ring material																																					
V	i	FKM Viton®																																			
K	a	FFKM Kalrez®																																			
Special																																					
-	Standard																																				
S	Special																																				
InTrac 7 8				/				/					/					/					/					/					/				
	10	11	12		13	14	15		16	17	18	19		20	21	22	23		24	25	26	27		28	29	30		31									

* Ball valve made of SS 1.4408, ** For exact ball valve requirements please refer to the instruction manual, *** Insertion length will be reduced by 40 mm/1.56" by using a flushing chamber.

