Thermo Scientific Alpha Process Products

Thermo Scientific Alpha 190/200 Series Controllers
• pH • ORP • Conductivity

Part of Thermo Fisher Scientific

Thermo SCIENTIFIC

One Source. Total Solution

Recognised internationally for industry-leading quality and accuracy, companies all over the world choose Thermo Scientific Process Products for reliable process monitoring and control across a broad range of water and wastewater applications:

- Wastewater Treatment
- Drinking Water
- Chemical Processing
- F&B Manufacturing
- Seawater Desalination
- Pharmaceutical
- Power
- Electroplating
- Semiconductor

Consistent monitoring and control of water quality are vital in many industries. Thermo Scientific products are built to stand up to the demands of on-line continuous use, even under the most severe conditions. With the Alpha 190 and 200 series, Thermo Scientific brings electrochemical processes in water and wastewater applications to a new level of reliability and versatility, offering flexible process control at an excellent price point.

Whether it's pH, ORP, Conductivity or TDS you are measuring, the Alpha 190 and 200 series delivers, accurately and consistently. Because at Thermo Scientific, reliability and ease-of-use aren't just features – they're fundamentals.

Reliability and ease-of-use aren't just features – they're fundamentals

Thermo Scientific Alpha 190/200 Series Controllers/Transmitters:

The Controllers/Transmitters:
The Thermo Scientific Alpha 190 and 200 series give you consistent, dependable control of pH, ORP, Conductivity and Total Dissolved Solids, with easy, uncomplicated operation.

- User-friendly **Alpha 190 Series** offers quick, easy calibration with SP1 and SP2 buttons that allow direct online adjustment of set-points, and a CAL button that enables direct access to the calibration menu
- For higher security needs, the **Alpha 200 Series** comes with two levels of password, protecting your meter and calibration settings from unauthorised tampering

The Electrodes:
Thermo Scientific offers a wide selection of process electrodes, buffers, standards and accessories to complement your process requirements.

- High-quality, double-junction **pH and ORP electrodes** with Kynar® or Annular PTFE reference junctions operate in environment from 0 °C up to 110 °C. Each electrode comes with integral low-noise semi-conductor cables (unless otherwise stated)
- 2-cell **Conductivity electrodes** that incorporate 3-wire Pt100 for automatic temperature compensation. Durable, low maintenance electrodes built with SS316 give consistent performances in high ambient temperature of up to 200 °C

Main Features:

Front Panel

SP1 & SP2 keys allows quick adjustent of hi/low set-points

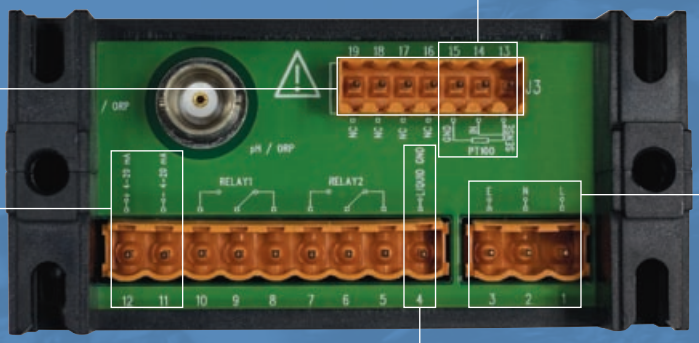
Large LED Display
Bright, clear and easy to read, even in dark ambients or from a distance

CAL button allows direct access to calibration menu

Toggle between pH, mV and °C readings easily with the **MODE** button

Two Levels of Password
to protect set points and calibration settings from unauthorised tampering

Back Panel



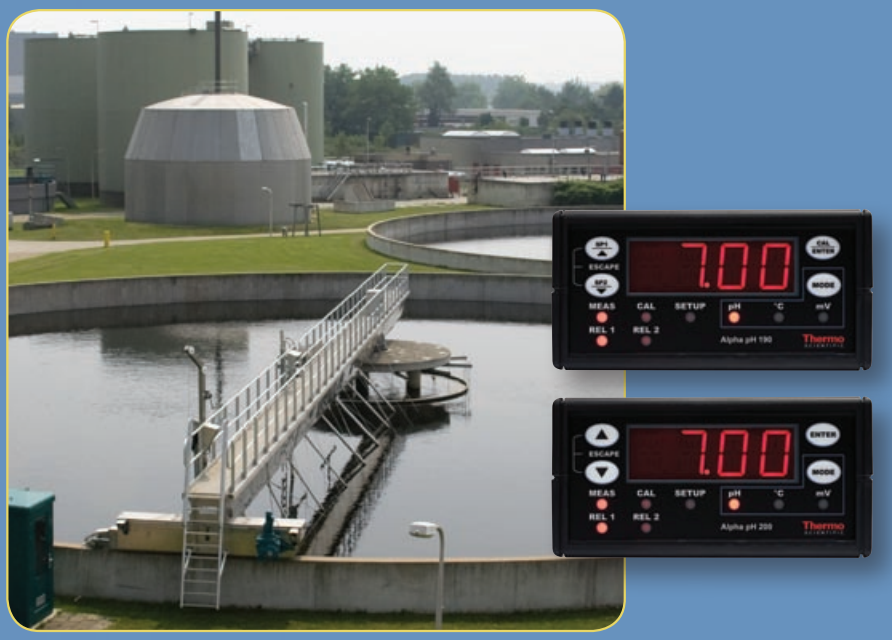
Detachable Terminal Blocks for easy wiring

4-20 mA Current Outputs for parameter measurements

Automatic Temperature Compensation or MTC without ATC probe. 3-wire system minimizes cable resistance errors. Independent settings for calibration and process temperature for accurate measurements

Power Supply
Accepts voltages from 85 to 250 VAC

Liquid Ground
Symmetrical Mode of Operation (pH/ORP measurements only) for accurate readings in electrically noisy environment



Thermo Scientific Alpha pH 190 & pH 200 pH/ORP Controller/Transmitter:

pH/ORP:

pH/ORP control is easy with the Alpha pH 190 and pH 200 limit controllers. Featuring 6 sub-menus accessible via a four-button keypad for quick, easy setup and calibration, the controller/transmitters also come with two levels of password to protect against unauthorised tampering.

For faster and more convenient control, choose the Alpha pH 190 which allows direct access to the set-point adjustment and calibration menus; for heightened security, use the Alpha pH 200 limit controller which only allows access to calibration and set-up menus via passwords.

- Easy push-button calibration with USA/NIST buffer recognition for fast, effortless calibration. Controller freezes data transmission and relay activities during calibration and maintenance
- Symmetrical mode of operation for clear, uninterrupted readings even in electronically noisy environments
- Two SPDT relays with independent hysteresis – effective high/low set-points limit control with minimal relay-chattering
- Choice of automatic or manual temperature compensation. Three-wire system compensates error due to cable resistance
- 85 to 250 VAC. 50/60 Hz or DC variable input allows controller to be used with a wide range of supply voltages
- Full-scale 4 to 20 mA galvanically isolated current output for process control

Easy, fuss-free pH control

Specification Information

pH/ORP Controller/Transmitter	Alpha pH 190	Alpha pH 200
Order Code	TSPHCTP0190	TSPHCTP0200
Part No.	01X275107	01X275106
pH:		
Range:	0.00 to 14.00 pH	
Resolution:	0.01 pH	
Accuracy:	±0.01 pH	
ORP:		
Range:	-999 to 1000 mV	
Resolution:	1 mV	
Accuracy:	±2 mV	
Temperature:		
Range:	-10 to 110 °C	
Resolution:	0.1 °C	
Accuracy:	±0.5 °C	
Sensor:	Pt100; 2 or 3 wire	
Compensation:	Auto/manual (0 to 100 °C)	
Set point & controller functions:		
Set point 1 (SP1) / set point 2 (SP2):	0.00 to 14.00 pH or -999 to 1000 mV	
Switching pH hysteresis:	0.00 to 2.00 pH	
Switching ORP hysteresis:	0 to 300 mV	
Function:	Limit control	
Contact outputs:	2 SPDT relays	
Switching voltage/current/power:	Max. 250 VAC / max. 3 A / max. 600 VA	
Electrical data & connections:		
Transmitter function:	4 to 20 mA scalable outputs for pH/ORP, galvanically isolated	
Load:	200 Ω	
pH/ORP input:	BNC (10^{12} impedance); asymmetrical/symmetrical	
Connection terminal:	3-pin, 7-pin & 9-pin terminal, detachable blocks	
Display:		
LED:	7 segments display	
Power supply:		
Input:	85 to 250 VAC, 50/60 Hz	
Main fuse:	250 mA, anti-surge, S504 Bussman	
EMC specifications:		
Emitted interference:	According to EN 61326	
Immunity to interference:	According to EN 61326	
Environmental conditions:		
Operating temperature range:	-10 to 50 °C	
Max. relative humidity:	10 to 95 % (non-condensing)	
Mechanical specifications:		
Dimensions (WxHxD):	96 x 48 x 150 mm	
Weight:	300 g (unit) / 350 g (packed)	
Ingress protection:	IP50	

pH/ORP Electrodes

Order Code	EC100GTSO20B	EC100GTSO10B	EC100GTSO05B	ECARGTSO05B	ECARHTTSO05B	ECARTSOHF05B	ECARTSO05B
Part No.	93X417005	93X417006	93X218865	93X218864	93X218860	93X218872	93X218859
pH Electrodes							
Classification	pH						
pH range	0 to 14					0 to 14, HF resistant	0 to 14
Reference	Annular PTFE, double junction						
Reference electrolyte	Saturated KCl, polymerized gel						
Operating temperature	0 to 80 °C / 32 to 176 °F				0 to 110 °C / 32 to 230 °F high temp.	0 to 80 °C / 32 to 176 °F	
Pressure tolerance	6 bars (87 psi)				9 bars (130 psi)	6 bars (87 psi)	
Temperature sensor	Pt100			–			
Potential matching pin/liquid ground	Platinum				–		
Material	PPS (Ryton®)						
Thread	¾" NPT						
Cable	Integral 20 m (65.6 ft) low-noise semi-conductor screened	Integral 10 m (32.8 ft) low-noise semi-conductor screened	Integral 5 m (16.4 ft) low-noise semi-conductor screened				
Connector	BNC						
Dimensions – Length	151 mm (excludes cable)						
Dimensions – Diameter	26 mm (external)						
Weight	950 g	850 g	650 g	430 g			

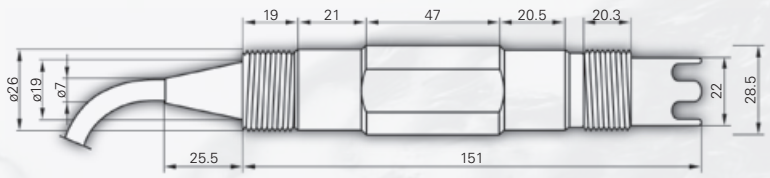
Order Code	ECHTAUTSO05B	ECHTPTTSO05B
Part No.	93X219128	93X219126
ORP Electrodes		
Classification	ORP	
Sensor	Gold	Platinium
ORP range	± 1000 mV	
Reference	Annular PTFE, double junction	
Reference electrolyte	Saturated KCl, polymerized gel	
Operating temperature	0 to 80 °C / 32 to 176 °F	
Pressure tolerance	6 bars (87 psi)	
Potential matching pin/liquid ground	Platinum	
Material	PPS (Ryton®)	
Thread	¾" NPT	
Cable	Integral 5 m (16.4 ft) low-noise semi-conductor screened	
Connector	BNC	
Dimensions – Length	151 mm (excludes cable)	
Dimensions – Diameter	26 mm (external)	
Weight	430 g	

Electrode Selection Guide

pH/ORP Electrodes	EC100GTSO20B 93X417005	EC100GTSO10B 93X417006	EC100GTSO-05B 93X218865	ECARGTSO-05B 93X218864	ECARHTTSO-05B 93X218860	ECARTSOHF-05B 93X218872	ECARTSO-05B 93X218859	ECHTAUTSO05B 93X219128	ECHTPTTSO05B 93X219126
General pH measurement	•	•	•	•	•	•	•		
pH measurement with ATC	•	•	•						
pH measurement in noisy environment eg. electroplating	•	•	•	•					
pH measurement at high temperatures (up to 110 °C/230 °F ; 9 bar/130 psi)					•				
pH measurement in the presence of Hydrofluoric Acid (HF)						•			
General ORP/Redox measurement								•	•
ORP measurement in noisy environment								•	•
ORP measurement in Cyanide treatment								•	
ORP measurements in oxidising applications (above 500 mV)									•
ORP measurements in reducing applications (below 500 mV)								•	

Line Diagram (All dimensions are in mm unless specified otherwise)

pH/ORP Electrodes
EC100GTSO20B
EC100GTSO10B
EC100GTSO05B
ECARGTSO05B
ECARTSOHF05B
ECARTSO05B
ECHTAUTSO05B
ECHTPTTSO05B



Ordering Information

Order Code	Part Number	Description
TSPHCTP0190	**01X275107**	Alpha pH 190 panel-mount pH/ORP controller/transmitter. Incl. terminal blocks, threaded rods, catch, etc
TSPHCTP0200	**01X275106**	Alpha pH 200 panel-mount pH/ORP controller/transmitter. Incl. terminal blocks, threaded rods, catch, etc
EC100GTSO20B	**93X417005**	Ryton®-body pH combi electrode with Pt100 RTD (ATC) & 20 m cable with BNC & PMP
EC100GTSO10B	**93X417006**	Ryton®-body pH combi electrode with Pt100 RTD (ATC) & 10 m cable with BNC & PMP
EC100GTSO05B	**93X218865**	Ryton®-body pH combi electrode with Pt100 RTD (ATC) & 5 m cable with BNC & PMP
ECARGTSO05B	**93X218864**	Ryton®-body pH combi electrode with 5 m cable with BNC & connector for PMP (no ATC)
ECARHTTSO05B	**93X218860**	Ryton®-body pH combi electrode with 5 m cable with BNC connector (no ATC); measures up to 110 °C
ECARTSOHF05B	**93X218872**	Ryton®-body pH combi electrode without ATC & 5 m cable with BNC connector. HF resistant glass
ECARTSO05B	**93X218859**	Ryton®-body pH combi electrode with 5 m cable with BNC connector (no ATC)
ECHTAUTSO05B	**93X219128**	Ryton®-body ORP gold electrode with 5 m cable with BNC & PMP (no ATC)
ECHTPTTSO05B	**93X219126**	Ryton®-body ORP platinum electrode with 5 m cable with BNC & PMP (no ATC)
ECCBLO5SMK50	**01X222801**	Low-noise 50 m coaxial SMK cable for pH/ORP electrodes (without ATC), 5 mm, open-ended with no connectors
28X088001	**28X088001**	Male BNC connector for 5 mm extension cable; 1 unit (need BNC crimping tool to connect to extension cable)
ECCBL030510	**01X222802**	Low-noise 10 m coaxial cable for pH/ORP electrodes (without ATC; with PMP), 3 mm/5 mm, male-male BNC connectors (for extending ECARGTSO05, ECHTAUTSO05B & ECHTPTTSO05B)
ECCBL030520	**01X222803**	Low-noise 20 m coaxial cable for pH/ORP electrodes (without ATC; with PMP), 3 mm/ 5 mm, male-male BNC connectors (for extending ECARGTSO05, ECHTAUTSO05B & ECHTPTTSO05B)
ECCONBNCBNC	**01X243102**	BNC to BNC adapter (for extension of cable connection) – a pack of 10 units
ECAC021011	**81X220801**	CPVC electrode tee for pH/ORP electrodes with ¾" to 1" adapter
ECAK061014	**81X220802**	Kynar® electrode tee for pH/ORP electrodes with ¾" to 1" adapter
ECPREAMP	**01X228601**	Pre-amplifier (for cable length exceeding 25 m) with female-female BNC connectors at each side of the junction box; batteries included
ECPHSIMULATOR	**01X373301**	Precision hi-low impedance & multiple buffers pH simulator (with BNC-BNC cable provided)

Thermo Scientific Alpha COND 190, COND 200, TDS 190 & TDS 200 Conductivity & TDS Controller/Transmitter:

Conductivity/TDS:

Measure from pure water to electroplating rinse tank water with Thermo Scientific's Alpha COND 190/200 and Thermo Scientific's Alpha TDS 190/200. Reliable with straightforward process control, these control/transmitters measures with up to ±1 % full scale accuracy across eight conductivity/TDS ranges.

For faster and more convenient control, choose the Alpha COND 190 and TDS 190 which allow direct access to the set-point adjustment and calibration menus. For heightened security, use the Alpha COND 200 and TDS 200 with two levels of password security to protect calibration and meter settings from unauthorised tampering.

- Measures up to eight ranges at ±1 % full range accuracy
- Easy push-button calibration. Controller freezes data transmission and relay activities during calibration and maintenance
- Selectable temperature coefficient for higher Conductivity/TDS accuracy
- Two SPDT relays allows high/low set-points limit control. Each relay comes with their independent hysteresis to prevent relay-chattering
- Choice of automatic or manual temperature compensation. Three-wire system compensates error due to cable resistance
- Full-scale 4 to 20 mA galvanically isolated current output for process control
- 85 to 250 VAC. 50/60 Hz or DC variable input allows controller to be used with a wide range of supply voltages

±1 % full scale accuracy across eight Conductivity/ TDS ranges

Specification Information

Conductivity/TDS Controller/Transmitter	Alpha COND 190	Alpha COND 200	Alpha TDS 190	Alpha TDS 200
Order Code	TSCONCTP0190	TSCONCTP0200	TSTDSCTP0190	TSTDSCTP0200
Part No.	01X275214	01X275212	01X275215	01X275213
Conductivity:				
Range:	... to 20.00 µS/cm ; ... to 200.0 µS/cm ; ... to 2000 µS/cm ; ... to 10.00 mS/cm ; ... to 20.00 mS/cm ; ... to 200.0 mS/cm		... to 10.00 ppm ; ... to 100.0 ppm ; ... to 1000 ppm ; ... to 5.00 ppt ; ... to 10.00 ppt ; ... to 100.0 ppt	
Resolution:	0.01 µS/cm ; 0.1 µS/cm ; 1 µS/cm ; 0.01 mS/cm ; 0.1 mS/cm		0.01 ppm ; 0.1 ppm ; 1 ppm ; 0.01 ppt ; 0.1 ppt	
Cell constant:	0.1 ; 1 ; 10			
Relative accuracy:	±1 % of full scale			
Temperature:				
Range:	-10 to 110 °C			
Resolution:	0.1 °C			
Accuracy:	±0.5 °C			
Sensor:	Pt100; 2 or 3 wire			
Compensation:	Auto/manual (0 to 50 °C)			
Coefficient:	0.0 to 5.0 %			
Normalisation:	10.0 °C to 30.0 °C			
TDS:				
Factor:	–		0.40 to 1.0	
Set point & controller functions:				
Set point 1 (SP1) / set point 2 (SP2):	... to 20.00 µS/cm or ... to 200.0 µS/cm or ... to 2000 µS/cm or ... to 10.00 mS/cm or ... to 20.00 mS/cm or ... to 200.0 mS/cm		... to 10.00 ppm or ... to 100.0 ppm or ... to 1000 ppm or ... to 5.00 ppt or ... to 10.00 ppt or ... to 100.0 ppt	
Switching Conductivity hysteresis:	0 to 10 % of full scale			
Switching TDS hysteresis:	0 to 10 % of full scale			
Function:	Limit control			
Contact outputs:	2 SPDT relays			
Switching voltage/current/power:	Max. 250 VAC / max. 3 A / max. 600 VA			
Electrical data & connections:				
Transmitter function:	4 to 20 mA scalable outputs for Conductivity, galvanically isolated			
Load:	200 Ω			
Conductivity/TDS input:	2-pin terminal			
Connection terminal:	3-pin, 7-pin & 9-pin terminal, detachable blocks, 1 fixed connector			
Display:				
LED:	7 segments display			
Power supply:				
Input:	85 to 250 VAC, 50/60 Hz			
Main fuse:	250 mA, anti-surge, S504 Bussman			
Rated input current (max.):	100 mA			
Insulation category:	II			
EMC specifications:				
Emitted interference:	According to EN 61326			
Immunity to interference:	According to EN 61326			
Environmental conditions:				
Operating temperature range:	-10 to 50 °C			
Max. relative humidity:	10 to 95 % (non-condensing)			
Mechanical specifications:				
Dimensions (WxHxD):	96 x 48 x 150 mm			
Weight:	300 g (unit) / 350 g (packed)			
Ingress protection:	IP50			

Conductivity Electrodes

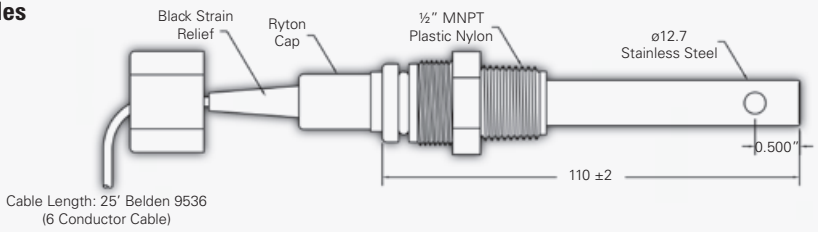
Order Code		ECCONSEN88X	ECCS10-0-1S	ECCS10-0-1SSP	ECCONSEN89X	ECCS10-1-0S	ECCS10-1-0SSP
Part No.		93X272101	93X219020	93X219055	93X272102	93X219021	93X219056
Conductivity Electrodes							
Conductivity range		0.01 to 2 mS/cm	0.5 to 200 µS/cm		0.1 to 200 µS/cm	0.01 to 100 mS/cm	0.01 to 200 mS/cm
Cell constant, K		1.0, 2-cell	0.1, 2-cell			1.0, 2-cell	
Temperature sensor		Pt100, 3-wire					
Pressure rating at 25 °C		1 bar (14 psi)	3.4 bar (50 psi)	6.8 bar (100 psi)	1 bar (14 psi)	3.4 bar (50 psi)	6.8 bar (100 psi)
Operating temperature		-5 to 50 °C / 23 to 122 °F		-5 to 150 °C / 23 to 302 °F	-5 to 50 °C / 23 to 122 °F		-5 to 120 °C / 23 to 248 °F
Material		Graphite	SS316		Graphite	SS316	
Fitting material		Nylon plastic		Stainless steel	Nylon plastic		Stainless steel
Thread		½" NPT					
Cable		Integrated 7.5 m (24.6 ft), 6-wire double-shielded, tinned ends					
Dimensions	**Length**	132 mm (excludes cable)	168 mm (excludes cable)		132 mm (excludes cable)	168 mm (excludes cable)	
	Diameter	12 mm (external)	12.8 mm (external)		12 mm (external)	12.8 mm (external)	
Weight		316 g	560 g	660 g	316 g	590 g	660 g

Electrode Selection Guide

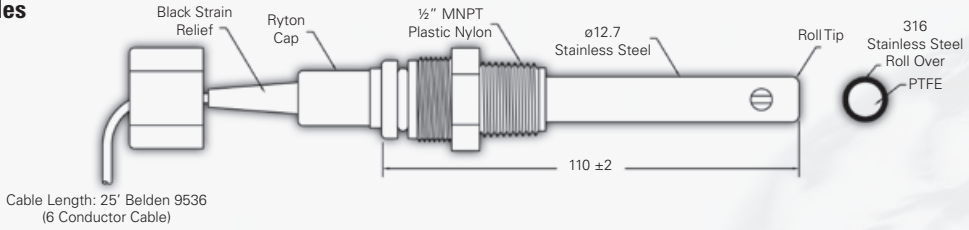
Conductivity Electrodes	ECCONSEN88X 93X272101	ECCS10-0-1S 93X219020	ECCS10-0-1SSP 93X219055	ECCONSEN89X 93X272102	ECCS10-1-0S 93X219021	ECCS10-1-0SSP 93X219056
General Conductivity measurements	•	•	•		•	•
Low Conductivity measurements		•	•	•		
Conductivity measurements with ATC	•	•	•	•	•	•
Conductivity measurements of boiler water			•			
Conductivity measurements of power plant & condensate water	•	•	•	•	•	•

Line Diagram (All dimensions are in mm unless specified otherwise)

Conductivity Electrodes
ECCS10-0-1S



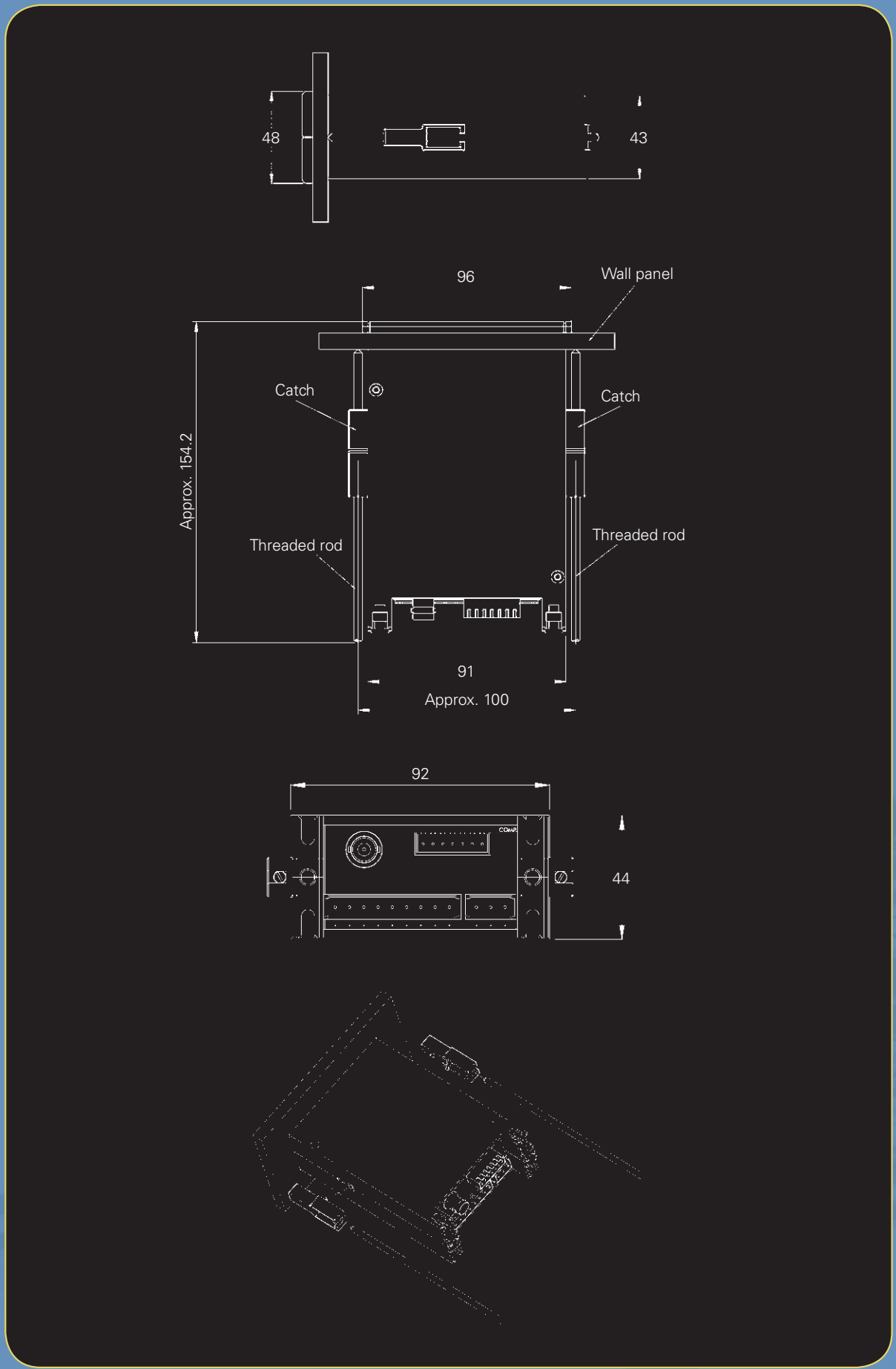
Conductivity Electrodes
ECCS10-1-0S



Ordering Information

Order Code	Part Number	Description
TSCONCTP0190	**01X275214**	Alpha COND 190 panel-mount Conductivity controller/transmitter. Incl. terminal blocks, threaded rods, catch, etc
TSCONCTP0200	**01X275212**	Alpha COND 200 panel-mount Conductivity controller/transmitter. Incl. terminal blocks, threaded rods, catch, etc
TSTDSCTP0190	**01X275215**	Alpha TDS 190 panel-mount TDS controller/transmitter. Incl. terminal blocks, threaded rods, catch, etc
TSTDSCTP0200	**01X275213**	Alpha TDS 200 panel-mount TDS controller/transmitter. Incl. terminal blocks, threaded rods, catch, etc
ECCONSEN88X	**93X272101**	Conductivity graphite 2-ring epoxy-body electrode with Pt100, cell constant K=1.0, 7.5 m tinned open-ended cable (COND 200/TDS 200)
ECCS10-0-1S	**93X219020**	Conductivity electrode with Pt100, cell constant K=0.1, stainless steel with 25 ft tinned open-ended cable (with ½ inch nylon plastic cap threading)
ECCS10-0-1SSP	**93X219055**	Conductivity electrode with Pt100, cell constant K=0.1, stainless steel with PEEK insert and 25 ft tinned open-ended cable (with ½ inch stainless steel cap threading)
ECCONSEN89X	**93X272102**	Conductivity graphite 2-ring epoxy-body electrode with Pt100, cell constant K=0.1, 7.5 m tinned open-ended cable (COND 200/TDS 200)
ECCS10-1-0S	**93X219021**	Conductivity electrode with Pt100, cell constant K=1.0, stainless steel with 25 ft tinned open-ended cable (with ½ inch nylon plastic cap threading)
ECCS10-1-0SSP	**93X219056**	Conductivity electrode with Pt100, cell constant K=1.0, stainless steel with PEEK insert and 25 ft tinned open-ended cable (with ½ inch stainless steel cap threading)
ECAC021022	**81X220803**	CPVC electrode tee for Conductivity/Resistivity electrodes with ½ " to 1 " adapter

Panel Mount – ⅛ DIN (in mm)



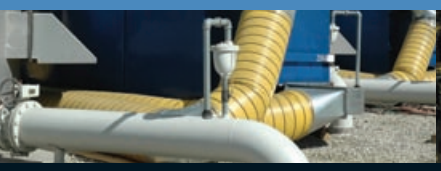
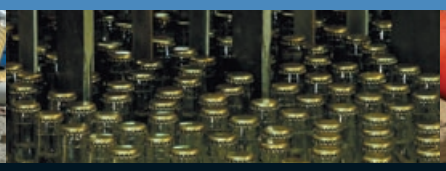
Trademarks Used:
Kynar® is a registered trademark of Arkema Inc.
Ryton® is a registered trademark of Chevron Philips Chemical Company LLC.

Warranty:
Thermo Fisher Scientific provides one year of warranty against manufacturing defects for meters, and six months for electrodes.

Disclaimers:
Specifications and terms are subject to change. Not all products are available in all countries. Please consult your local sales representative for details.
All drawings and diagrams are for illustration purposes only and are not drawn to scale.

About Thermo Fisher Scientific

Thermo Fisher Scientific (NYSE: TMO) is the world leader in serving science, enabling our customers to make the world healthier, cleaner and safer. With annual sales of more than $9 billion, we employ 30,000 people and serve over 350,000 customers within pharmaceutical and biotech companies, hospitals and clinical diagnostic labs, universities, research institutions, government agencies as well as environmental and industrial process control settings. Serving customers through two premier brands, Thermo Scientific and Fisher Scientific, we help solve analytical challenges from routine testing to complex research and discovery. Thermo Scientific offers customers a complete range of high-end analytical instruments as well as laboratory equipment, software, services, consumables and reagents to enable integrated laboratory workflow solutions. Fisher Scientific provides a complete portfolio of laboratory equipment, chemicals, supplies and services used in healthcare, scientific research, safety and education. Together, we offer the most convenient purchasing options to customers and continuously advance our technologies to accelerate the pace of scientific discovery, enhance value for customers and fuel growth for shareholders and employees alike.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