# General Specifications

# Panel Mounted Converter for Conductivity or Resistivity Model SC150



Housed in a compact panel mounted case with IP65 front and featuring an intuitive interface with touch screen, the EXAxt SC150 is ideally suited to the creation of control systems where panel size is at a premium.

With the certified sensors from Yokogawa measurement and control of SC (specific conductivity) or resistivity is made easy. The SC150 is ideally suited for use in the field of water treatment, where it provides accurate monitoring and control in an economical and convenient package.

Derived from the famous EXA series, the SC150 has the selfdiagnostic features that have made EXA a market leader.

Included in the 96mm x 96mm square housing are two isolated mA outputs with linearisation, HART communication and PID control functions. Two SPDT relay contact outputs provide alarm and control functions. Remote range change can be initiated by a contact input.

The unique touch screen interface provides simple, intuitive configuration and access to the display features. A large clear display with backlight makes it very easy to read primary and secondary values. Trend charts, diagnostics, logbook and configuration data are all readily available. A flip-up transparent dust cover is fitted to keep the display clean.

## FEATURES

- Compact panel mount design
- Interactive touch screen interface
- Trend display of SC, resistivity, concentration & temperature
- Specialized process temperature compensations
- Simple calibration adjustment
- On-line sensor checking
- HART communications (DD available)
- Event logbook
- Programmable security codes
- Adjustable output damping
- IP65 front panel
- English language interface
- French, German, Spanish or Japanese as second language.

### SYSTEM CONFIGURATION











Sensors

Cables

Fittings

Transmitters

# Accessories

YOKOGAWA

Tagende de la construcción de la

GS 12D7B4-E-H 1st Edition

## General specifications of FXAvt SC150

A)       Input specifications       : Two or four decideodes         initiality       : Two four decideodes       : Sa x 4 d incli)         isolation       : Sa x 4 d incli)       : approximate this nyme wave exclusion, using mex (En (2005)         isolation       : Sa x 4 d incli)       : approximate this nyme wave exclusion, using mex (En (2005)         isolation       : Sa x 4 d incli)       : approximate this nyme wave exclusion, using method the prevent exclusion exclusion, using method the prevexclusion andin term exclusion and the prevent exclusion	General specification	s of EXAxt S	C150	K) Shipp	oing detail	s			
measurement with square wave excitation using max Solo (2011) cable (WL4GWH10) and call constants from 0.056 to S00 cm cable (WL4GWH10) and call constants from 0.056 to S00 cm cable (WL4GWH10) and call constants from 0.056 to S00 cm cable (WL4GWH10) and call constants from 0.056 to 200 cm call call call call call call call call	A) Input specifications : Two or four electrodes			Package s	size w x h x	kd :	180 x 161 x	243 mm	
excitation, using max 60m (2001 excitation, using max 60m (2001 excitation, using max 60m (2001 excitation), using max 60m (2001) excitation), using max 60m (2001) excitation, using max 60m (2001) excitat	,	measurement w	ith square wave				(7.1 x 6.3 x 9.6 inch)		
<ul> <li>cable (W140(WF16) and coll constraints from 0.065 to 0.00 cm<sup>1</sup></li> <li>produce how books of a process importance.</li> <li>transaction of process importance.</li> <li>transaction of process importance.</li> <li>PHO200. 120 to 250°C</li> <li>NTO 0. 20 to 200°C</li> <li>NTO 0. 200°C is 0. 40°C</li> <li>National adjustment to 4000.</li> <li>Control 40000.</li> <li>Control 40000.</li> <li>Status</li> <li>Diata otto 200°C is 0. 40°C</li> <li>Status</li> <li>Status</li> <li>Status</li> <li>No 0. 70°C</li> <li>Another subspand</li> <li>Status and hyteresis.</li> <li>S</li></ul>		excitation, using max 60m (200ft)		Package weight			app. 1.1 kg (	2.4lbs)	
<ul> <li>B) Input ranges</li> <li>Conductivity</li> <li>1 µSAC to 200 mSAC at process</li> <li>2 0.05 % /C Co PRIOD</li> <li>1 µSAC to 200 mSAC at process</li> <li>2 0.05 % /C Co PRIOD</li> <li>2 0.05</li></ul>		cable (WU40/W	F10) and cell	L) Hous	ing		L Pala a sella		
<ul> <li>B) Input ranges</li> <li>Conductivity</li> <li>I LySAC to 200 mSAO at process targenature</li> <li>Presistivity</li> <li>Status</li> <li>B) Input ranges</li> <li>Control function</li> <li>Dirace 2002 mSAO at process thrip particle</li> <li>Process</li> <li>Process</li></ul>		constants from	0.008 to 50.0 cm <sup>-1</sup>	Enclosure		:	High quality (	chemical resista	
Conductivity i 1 (JaSk) to 200 mis/C at process to properature 200 mis/C at process to process to properature 200 mis/C at pro	B) Input ranges						plastic front s	96X96 MM.	
Beastlity       5 DC to MLDC at process torriperature       Control torriperature       Contoriperature       Control torriperatu	Conductivity	: 1 µSxC to 200	mSxC at process				denth 08 mn	behind the parte	
<ul> <li>Preserved with the process of the server of</li></ul>	Descient in	temperature.	10				(121 mm incl	udina cover)	
Temperature       Employed, 20 to 280°C         PT100, 20 to 280°C       PT100, 20 to 280°C         Control function       : 0.05% /*C         D1 Transmission Signals       Two isolated outputs of 4-20 mA, 20 to 4-55 °C         General       : Wo isolated outputs of 4-20 mA, 20 to 4-55 °C         Gontrol function       : Units or 21-sign 18ble for Control function       : Environment agray I, Pollutio         Gontrol function       : Units or 21-sign 18ble for Control function       : Environment agray I, Pollution cell for agray infairance.         Gontrol function       : Droy SPDT relay contacts with display indicatos.       : Environment agray I, Pollution cell for agray infairance.         Gontrol function       : On / Off       Poor office       Poor Pollution cell for agray infairance.         Gontrat function       : On / Off       P	Resistivity	: 5 $\Omega/C$ to 1 M $\Omega$	/C at process	Mounting			Panel-mounte	d design in a sta	
<ul> <li>Hampataulus</li> <li>Hampatau</li></ul>	Tomporatura	temperature.	20 to 25000	mounting			DIN-size 92x9	12 mm cutout.	
<ul> <li>Nittou</li> <li>20 to 200°</li> <li>Nittou</li> <li>20 to 200°</li> <li>Nittou</li> <li>20 to 120°</li> <li>Pro8,</li> <li>20 to 120°</li> <li>Pro8,</li> <li>20 to 120°</li> <li>(JIS R65, -10 to 120°</li> <li>(JIS R66, -10 to 120°</li></ul>	Temperature	. FL1000, . Pt100	-20 to 200°C	M) Powe	r supply	:	85-265 VAC	(47-63 Hz) 10V/	
<ul> <li>NTC Bess, -10 to 120°C (JS NTC 68), -20 to 20 to 20°C mA outputs : 5 0.02 mÅ Ambient temperature influence : 1 - to 10 solated outputs of 4-20 mÅ. Control function : 1 - to isolated outputs of 4-20 mÅ. Control function : 1 - to isolated outputs of 4-20 mÅ. Control function : 1 - to isolated outputs of 4-20 mÅ. Control function : 1 - to isolated outputs of 4-20 mÅ. Control function : 1 - to isolated outputs of 4-20 mÅ. Control function : 1 - to isolated outputs of 4-20 mÅ. Control function : 1 - to isolated outputs of 4-20 mÅ. Control function : 1 - to isolated outputs of 4-20 mÅ. Control function : 1 - to isolated outputs of 4-20 mÅ. Control function : 2 - to isolated outputs of 4-20 mÅ. Control function : 2 - to isolated outputs of 4-20 mÅ. Bern up (21 0mÅ) or burn down (3.6mÅ) to ignal failure. EPI Contact outputs : Bern up (22 0mÅ) or burn down (3.6mÅ) to ignal failure. EPI Contact outputs : Bern up (22 0mÅ) or burn down (3.6mÅ) to ignal failure. EPI Contact outputs : Status : Hight. Ow process alarms, 2 - EN electronal HART digital communication, superimpoated on mA1 (+220 ignal. De available insel and process alarms, 2 - En electronal HART digital communication, superimpoate or 2 - Lare programmable matrices. Following available in the display. High Voltage : Software record of important events and display. <b>Contact Important</b> <b>Contact Import</b></li></ul>		· Ni100, -20 to 2000		,			9.6-30 VDC	10W max	
<ul> <li>Piede.</li> <li>20 to 120°C (JIS NIC 68)</li> <li>Contactivity/resistanty</li> <li>≤ 0.5 % of reading temperature</li> <li>≤ 0.5 % of reading</li> <li>≤ 0.5 % of reading</li> <li>≤ 0.0 mA</li> <li>Ambient temperature</li> <li>≤ 0.05 % of council function</li> <li>Control function</li> <li>Con (Control function conterview)</li> <li>Control function&lt;</li></ul>		: NTC 8k55.	-10 to 120°C	N) Regulatory compliance					
(JE NTC 66)       Low Voltage       Emission contorn EN 65022         Conductivity/resistivity       : 0.6 % of reading       Immunity contorn EC 6100-1, UL/2U         Tamparature       : 0.6 % of reading       Control 5, 0.6 % of reading         Ambient temperature       : 0.05% of C         Difference       : 0.05% of C         Control function       : Univ isolated outputs of 4-20 mA. Do grant and a Boo no reagative. Maximum load BOO.         Difference       : Difference         EP Contact outputs       : Too SPDT relay contacts with display indicators.         Barrenal       : Too SPDT relay contacts with display indicators.         Status       : High/Low process alarms, selected frequency control. RPD duty cycle or pulsed frequency control		: Pb36.	-20 to 120°C	EMC		:	Meets directiv	e 89/336/EEC	
C) Accuracy       Image: Second provide status       Second provide status       Second provide status         Conductivity/resistivity       : 5 0.3 % of reading       Second provide status       Second provide status         Maximum load 6000.       : 0 05% / °C       Control function       Second provide status       Second provide status         Control function       : Unear or 21-step table for Conductivity/resistivity, concentration or temperature. PID control.       PD control.       PD control.         Burn up (21.0mA) or burn down (3.6mA) to signal failure.       PD control.       Strage temperature       : 20 to +55 °C         PD control.       Burn up (21.0mA) or burn down (3.6mA) to signal failure.       Strage temperature       : 20 to +65 °C         Switch capacity       : Maximum values to 0 VA, 260 VAC, 5 Amps.       Strage temperature       : 20 to +66 °C         Status       : High/Low process alarms, selected frequency control.       FALL alarm       EPROM for to measurement.         Control function       : On / Off       PD duty cycle or pulsed frequency control.       FALL alarm         F) Temperature compensation       : Defrection HART digital communication in targapy.       : Second language - German Second languag		(JIS NTC 6k)					Emission conf	orm EN 55022 c	
Conductivily/resistivity importune importune influence D) Transmission Signals General D Transmission Signals Control function EJ Contact outputs General d Sgrow ho signal failure. EJ Contact outputs Status Control function Control fu	C) Accuracy	, ,					Immunity cont	form IEC 61000-	
Temperature mototputs       : 5 0.3 °C (5 0.4 °C for Pt100)       Control function       Control f	Conductivity/resistivity	$1 \le 0.5$ % of read	ling	Low Volta	ge	:	Meets directiv	e 73/23/EEC	
<ul> <li>if 0.02 mA</li> <li>if vo isolated outputs of 4-20 mA. D. Transmission Signals</li> <li>General</li> <li>Two isolated outputs of 4-20 mA. D. Control function</li> <li>Unear or 21+sep table for Conductivity/resistivity.</li> <li>Conductivity/resistivity.</li> <li>Conductivity/resistivity.</li> <li>Conductivity/resistivity.</li> <li>Conductivity/resistivity.</li> <li>Control function</li> <li>Unear or 21+sep table for Conductivity/resistivity.</li> <li>Conductivity/resistivity.</li> <li>Conductivity/resistivity.</li> <li>Conductivity/resistivity.</li> <li>Control function</li> <li>Two SPDT relay contacts with (3.6 mA) to signal failure.</li> <li>Five OxAC, 5A mps.</li> <li>Control function</li> <li>Two SPDT relay contacts with (3.6 mA) to signal failure.</li> <li>Two SPDT relay contacts with (3.6 mA) to signal failure.</li> <li>Two SPDT relay contacts with (3.6 mA) to signal failure.</li> <li>Two SPDT relay contacts with (3.6 mA) to signal failure.</li> <li>Control function</li> <li>Control function</li> <li>Control function</li> <li>On / Off</li> <li>PD duty cycle or pulsed frequency control.</li> <li>FAIL alarm</li> <li>Foresets to measurement.</li> <li>FAIL alarm</li> <li>Foresets compensation by compensation conductivity.</li> <li>Control function</li> <li>Control function</li> <li>Automatic stability check.</li> <li>Manual adjustment to grab sample.</li> <li>Settivate record of important evertist and diagnal, DD available) sample.</li> <li>Logbook</li> <li>Software record of important evertist and diagnals.</li> <li>Display</li> <li>Display</li> <li>Display</li> <li>Display</li> <li>Display</li> <li>Contact time and hysteresitic or alternative languages.</li> <li>Contact time and hysteresitic control function</li> <li>Display</li> <li>Display</li> <li>Display</li> <li>Display</li> <li>Display</li></ul>	Temperature	: ≤ 0.3 °C (≤ 0.4 °C for Pt100)						Conform IEC 61010-1, UL/cUL	
Ambient temperature       Image: 1 standard communication         Control function       1 uncer or 21-step table for Conductivity/resistivity, concentration or temperature. PID control.       Image: 1 standard communication       Image: 1 standard communication         E)       Control function       1 uncer or 21-step table for Conductivity/resistivity, concentration or temperature. PID control.       Image: 1 standard communication       Image: 1 standard communication         E)       Control function       1 wo SPDT relay contacts with display indicators.       Image: 1 standard communication       Image: 1 standard communication         Status       Image: 1 standard communication       Image: 1 standard communication       Image: 1 standard communication       Image: 1 standard communication         Status       Image: 1 standard communication       Image: 1 standard communication       Image: 1 standard communication       Image: 1 standard communication         Control function       1 worset       Image: 1 standard communication       Image: 1 standard communication       Image: 1 standard communication         F)       Temperature compensation       Procescommension by configurable temperature cocordingurable tem	mA outputs	: ≤ 0.02 mA						3101-1 and CSA 22.2 No. 101	
Initiation       :± 0.059 AC       Control         General       : Two isolated outputs of 4.20 mA. Do with common negative. Maximum load 6000.       Control function         Control function       : Linear or 21 step table for Conductivity/resistivity, concentration or temperature. PID control. Burn up (21 0mA) or burn down (3.6mA) to signal failure.       O) Environment and operational conductins Ambient temperature       :-20 to 45 °C         E) Contact outputs       : Two SPDT relay contacts with display indicators. Maximum values 100 VA, 250 VAC, 5 Amps.       :: Two SPDT relay contacts with display indicators. Maximum values 50 Watts, 250 VDC, 5 Amps.       :: Two SPDT relay contacts with display indicators. Maximum values 50 Watts, 250 VDC, 5 Amps.       :: Two SPDT relay contacts with display indicators. Maximum values 50 Watts, 250 VDC, 5 Amps.       :: Two SPDT relay contacts with display indicators. Maximum values 50 Watts, 250 VDC, 5 Amps.       :: Two SPDT relay contacts with display indicators. Maximum values 50 Watts, 250 VDC, 5 Amps.       :: Two SPDT relay contacts with display indicators. Maximum values 50 Watts, 250 VDC, 5 Amps.       :: Two SPDT relay contacts with display indicators. Maximum values 50 Watts, 250 VDC, 5 Amps.       :: Two SPDT relay contacts with display indicators. Maximum values 50 Watts, 250 VDC, 5 Amps.       :: Two SPDT relay contacts with display indicators. Maximum values 50 Watts, 250 VDC, 5 Amps.       :: Two SPDT relay contacts with display indicators. Proceedicient, NAC coruve, 12 pre-defined matrices or 2 user procedinient matrices. Maximum values in the display. Maximum values in the display. Maximum value adjustment to grab sample.       :: Two SPDT relay contacts with display in the d	Ambient temperature						Installation ca	legory II, Pollutio	
D) Transmission Signals       Even isolated outputs of 4-20 mA. DC with common negative. Maximum load 6000.       Arma Kerma Keur and Gepütte Sch Arma Keur and Gepütte Sch OI Environment and post Common scheme and Negative.         Control function       : Linear or 21-step table for Conductivity/resistivity. concentration or temperature. PID control. Burn up (21.0rmA) or burn down (3.6mA) to signal failure.       OI Environment and post Common scheme and Negative.         E) Contact outputs       Even SpD Trelay contacts with display indicators.       Even SpD Trelay contacts with display indicators.       Even SpD Trelay contacts with display indicators.         Switch capacity       : Maximum values 50 WAts, 250 VOC, 5 Arms.       Even Neasurement.       Auto return to measuring multiput Common when touchscreen is untouc for 10 min.         Status       : High/Low process alarms, selected from conductivity, resistivity, concentration or temperature. Configurable delay time and hysteresis.       Model       Soft X       Dever down         F) Temperature compensation       : Automatic calibration using pre-configurable matrices. coefficient, NaCi curve, 12 pre-configurable matrices. Soft at tables, with automatic stability check.       National distribution of tables, with automatic stability check.         H) Display       : Graphical Quarter VGA (320 x 240 pixel) CD with LED backingti and touchscreen. Plain (English) language messages, with choice of attemative languages.       Soft X       Contact Ing automatic stability check.         H) Display       : Graphical Quaretr VGA (320 x 240 pixel) Quarter VGA (320 x 240 pixe	influence	: ± 0.05% /°C					Cortification n	onding for oCSA	
General       1 Wo isolated outputs of 4-20 mA. Do With common negative. Maximum lead 6000.       O) Environment and operational conditions         Control function       1: Inser or 21: step table for Conductivity/resistivity, concentration or temperature. PID control. Burn up (21 0mA) or burn down (3.6mA) to signal failure.       O) Environment and operational conductivity and bar temperature         E) Contact outputs       Environment all protection       1: but to 90% EH at 40 °C (up to 10 min.         Status	D) Transmission Signals						Koma Kour ar	d Genrüfte Sich	
Control function $Control function C in Contact outputs and C and C in $	General	: I wo isolated ou	itputs of 4-20 mA.	O) Envir	onment a	nd onerat	ional conditi	ons	
Control function       interain of 21-step table for Conductivity/resistivity, concentration or temperature. PID control.       Storage temperature PID control.       : 30 to +70 °C         Burn up (21.0mA) or burn down (3.6mA) to signal failure.       Environmental protection       : P65 (NEMA 4X) front panel, burn up (21.0mA) or burn down (3.6mA) to signal failure.       Environmental protection       : P65 (NEMA 4X) front panel, burn up (21.0mA) or burn down (3.6mA) to signal failure.         E) Contact outputs       General       : Two SPDT relay contacts with display indicators.       : Data protection       : EPFCM for configuration do and logbook. Lithium cell for watchoog timer         Switch capacity       : Maximum values 50 Watts, 250 VDC, 5 Amps.       : Maximum values 50 Watts, 250 VDC, 5 Amps.         Status       : High/Low process alarms, selected from conductivity, resistivity, concentration or temperature. Configurable delay time and hysteresis.       Nodel       Scriso       Panel mount SC converture coefficient, NaCl curve, 12 process configurable temperature coefficient, NaCl curve, 12 pro-defined matrices or 2 user programmable matrices.       Signals         G) Calibration       : Bu-directional HART digital communication superimposed on mA1 (4-20) signal. (Da vailable)       Sensor Im 14 g w_1 g signal (2 wavelable in the display, available in the display, and touctscreen. Pain (English) and touctscreen. Pain (English) tanguage messages, with choice of atternative lediplay available in atternative lediplay available in the display.		DC with comm	eooo	Ambient te	emperature		-20 to +55 °	7	
<ul> <li>Linka of 2 Freightable for Conductivity resistivity, concentration or temperature. PID control. Burn up (21.0mA) or burn down (dspa) indicators.</li> <li>Switch capacity</li> <li>Wasimum values 100 VA, 250 VAC, 5 Amps.</li> <li>Status</li> <li>High/Low process alarms, selected from conductivity, resistivity, concentration or temperature. Configurable delay time and hysteresis.</li> <li>Control function</li> <li>Automatic or manual. Process compensation factors.</li> <li>Formetrian emperature. Configurable matrices.</li> <li>Control function</li> <li>Configurable matrices.</li> <li></li></ul>	Control function	· Linear or 21-ste	oousz. on table for	Storage te	emperature		-30 to +70 °C	2	
<ul> <li>concentration or temperature. PID control. Burn up (21.0mA) or burn down (3.6mA) to signal failure.</li> <li>Environmental protection</li> <li>Environmental prote</li></ul>	Control function	Conductivity/res	sistivity	Humidity	·	:	Up to 90% F	RH at 40 °C	
PD control. Burn up (21.0mA) or burn down (3.6mA) to signal failure.       Environmental protection       : PBe5 (NEMA 42) front panel, behind the panel         E) Contact outputs       General       : Two SPDT relay contacts with display indicators.       Data protection       : EEPROM for configuration da and logbook. Lithium cell for Others microprocessor.         Switch capacity       : Maximum values 100 VA, 250 VAC, 5 Amps. Maximum values 50 Watts, 250 VAC, 5 Amps.       Watchdog timer 250 VAC, 5 Amps.       Checks microprocessor.         Status       : High/Low process alarms, selected from conductivity, resistivity, concentration or temperature. Configurable delay time and hysteresis.       Model       Suffix       Option         Control function       : On / Off PD duty cycle or pulsed frequency control. FAL alarm       Model       Suffix       Option         F) Temperature compensation Function       : Automatic or manual. Process compensation by configurable temperature, coefficient, NaCi curve, 12 pre-defined matrices or 2 user programmable matrices.       Signals         G) Calibration       : Semi-automatic calibration using pre-configured OlML (KCI) buffer tables, with automatic stability check.       ID available       Image for and touchscreen. Plain (English) tanguage missages, with choice of alternative languages.       Sensor Ing and touchscreen. Plain (English) tanguage missages, with choice		concentration or temperature.				(non-condensing)			
Burn up (21.0mÅ) or burn down (3.6mÅ) to signal failure.Data protectionbehind the panelGeneral: Two SPDT relay contacts with display indicators.Data protection: EEPROM for configuration do and logbook. Lithium cell for Second language. SecondSwitch capacity: Maximum values 100 VA, 250 VAC, 5 Amps. Maximum values 50 Watts, 250 VAC, 5 Amps. Status: Maximus values 50 Watts, 250 VAC, 5 Amps. Status: Auto return to measuring m when touchscreen is untouc for 10 min.Status: High/Low process alarns, selected from conductivity, resistivity, concentration or temperature. Configurable delay time and hysteresis. FAIL alarmData protectionControl function: On / Off PID duty cycle or pulsed fraquency control. FAIL alarmModelSecond language - German Second language - SpanishF) Temperature compensation process compensation by configurable temperature coefficient, NaCl curve, 12 pre-configurable temperature coefficient, NaCl curve, 12 pre-configurable temperature coefficient, NaCl curve, 12 pre-configurable to protection mA1 (4-20) burger tables, with automatic stability check. Manual adjustment to grab sample.SignalsH) Logbook (t) Logbook (t) Logbook: Software record of important events and diagnostic data readily paralable in the display. of alternative language.Sensor Ing and touchscreen. Plain (English) language messages, with choice of alternative languages.Sensor Ing and touchscreen. Plain (English) language messages, with choice(a) Display: Graphical Quarter VGA (B20 x 240 pixels) (CO whit LED backlight and touchscreen. Plain (English) la		PID control.		Environme	ental protec	ction :	IP65 (NEMA	4X) front panel,	
<ul> <li>(3.6mÅ) to signal failure.</li> <li>(4.2mÅ) signal.</li> <li>(3.6mÅ) to signal failure.</li> <li>(4.2mÅ) signal.</li> <li>(3.6mÅ) to signal failure.</li> <li>(3.6mÅ) to signal failure.</li> <li>(4.2mÅ) signal.</li> <li>(3.6mÅ) to signal failure</li></ul>		Burn up (21.0mA) or burn down					behind the panel		
<ul> <li>E) Contact outputs</li> <li>General</li> <li>Two SPDT relay contacts with display indicators.</li> <li>Maximum values 100 VA, 250 VAC, 5 Amps. Maximum values 50 Watts, 250 VAC, 5 Amps. Maximum values 50 Watts, 250 VAC, 5 Amps.</li> <li>Status</li> <li>High/Low process alarms, selected from conductivity, resistivy, concentration or temperature. Configurable delay time and hysteresis.</li> <li>Control function</li> <li>On / Off PID duty cycle or pulsed frequency control. FAL alarm</li> <li>F) Temperature compensation by configurable temperature coefficient, NaCl curve, 12 pre-defined matrices or 2 user programmable matrices.</li> <li>G) Calibration</li> <li>Semi-automatic calibration using pre-cofficient, NaCl curve, 12 pre-defined matrices or 2 user programmable matrices.</li> <li>G) Calibration</li> <li>Semi-automatic calibration using pre-cofficient, NaCl curve, 12 pre-defined matrices or 2 user programmable matrices.</li> <li>G) Calibration</li> <li>Semi-automatic calibration using pre-cofficient, NaCl curve, 12 pre-defined matrices or 2 user programmable matrices.</li> <li>G) Calibration</li> <li>Semi-automatic calibration using pre-cofficient, NaCl curve, 12 pre-defined matrices or 2 user programmable matrices.</li> <li>G) Logbook</li> <li>Software record of important events and diagnostic data readily available in the display.</li> <li>G) Display</li> <li>Graphical Quarter VGA (320 x 240 pixels) LCD with LED backlight and touchscreen. Plain (English) language messages.</li> </ul>		(3.6mA) to sign	al failure.	Data prote	ection	:	EEPROM for	configuration da	
General       : Two SPDT relay contacts with display indicators.       Two SPDT relay contacts with display indicators.         Switch capacity       : Maximum values 100 VA, 250 VDC, 5 Amps.       Power down 250 VDC, 5 Amps.       : Auto return to measuring me when touchscreen is untouc for 10 min.         Status       : High/Low process alarms, selected from conductivity, resistivity, concentration or temperature. Configurable delay time and hysteresis.       Description         Control function       : On / Off PID duty cycle or pulsed frequency control. FAL alarm       Panel mount SC converter second language - German Second language - Japanes Second language - Japanes Sec	E) Contact outputs				P		and logbook.	Lithium cell for	
display indicators.       Power down       - Present to measurement.         Switch capacity       Maximum values 50 VA, 250 VAC, 5 Amps.       - Automatic safeguard       - Automatic safeguard         Status       : High/Low process alarms, selected from conductivity, resistvity, concentration or temperature. Configurable delay time and hysteresis.       - Model       Code       Code <t< td=""><td>General</td><td>: Two SPDT relay</td><td>y contacts with</td><td>Watchdog</td><td>g timer</td><td></td><td>Checks micro</td><td>oprocessor.</td></t<>	General	: Two SPDT relay	y contacts with	Watchdog	g timer		Checks micro	oprocessor.	
Switch capacity (Maximum Values 100 VA, 250 VAC, 5 Amps. Maximum values 50 Watts, 250 VDC, 5 Amps. Status Status	o	display indicato	rs.	Automatic	WII	1		asurement.	
250 VAC, 5 Amps.       Maximum values 50 Watts,         250 VDC, 5 Amps.       Status         Status       : High/Low process alarms,         selected from conductivity,       resistivi, concentration or         time and hysteresis.       96 265 VAC power supply         Control function       : On / Off         PID duty cycle or pulsed       FAL alarm         F/IL alarm       FAL alarm         F) Temperature compensation       FAL alarm         Function       : Automatic or manual.         Process compensation by       configurable temperature         coefficient, NaCl curve, 12       pre-defined matrices or 2 user         pro-defined matrices or 2 user       programmable matrices.         G) Calibration       : Semi-automatic calibration using         pre-defined matrices or 2 user       matrices or 2 user         pro-defined matrices are 2 user       matrices or 2 user         pre-defined matrices are 2 user       matrices or 2 user         pre-defined matrices or 2 user       matrices or 2 user         pre-defined matrices are 2 user       matrices or 2 user         pre-defined matrices or 2 user       matrices or 2 user         pre-defined matrices or 2 user       matrice align and diagnostic data readily available         amal (4-20) signal. (DD avail	Switch capacity	: Maximum value	es 100 VA,	Automatic	saleguaru		when touchs	creen is untouc	
Note that the service of the service o		250 VAC, 5 Am	ips.				for 10 min		
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of alternative languages.		language mess	ages, with choice		24	0V/5A AC/DC	22	Contact Inr	
		of alternative lar	nguages.		+	100VA/50W			

: Meets directive 89/336/EEC Emission conform EN 55022 class A Immunity conform IEC 61000-6-2 : Meets directive 73/23/EEC Conform IEC 61010-1, UL/cUL 3101-1 and CSA 22.2 No. 1010, Installation category II, Pollution

Certification pending for cCSAus, Kema Keur and Geprüfte Sicherheit

: IP65 (NEMA 4X) front panel, IP20

: EEPROM for configuration data and logbook. Lithium cell for clock.

Second language - Japanese

mA Outputs

Sensor Input

Contact Input

: Checks microprocessor. : Reset to measurement. : Auto return to measuring mode when touchscreen is untouched

: High quality chemical resistant plastic front 96x96 mm. SS housing behind the panel depth 98 mm behind the panel (121 mm including cover) : Panel-mounted design in a standard DIN-size 92x92 mm cutout. : 85-265 VAC (47-63 Hz) 10VA max

#### PROCESS TEMPERATURE COMPENSATION

The graph shows the strong influence that temperature has on the measurement of conductivity. Of special note is the nonlinear response, seen in each solution, and the fact that purer solutions show a much larger change with temperature. This is explained by the fact that two separate forces are at work. The speed at which ions move through the solution is temperature dependent, but so too is the dissociation of water into ions.



**Note:** - K = Specific conductivity at process temperature Kr = SC at reference temperature.

EXAxt SC150 has three sorts of user-configurable compensation. 1) The NaCl (Sodium Chloride) compensation to IEC 746-3 uses the relationship shown in the graph to correct readings at process temperature to their equivalent at the 25°C reference temperature. This is a perfect compensation for neutral treated water.

2) Temperature coefficient setting, which is easily determined from measuring a sample at two different temperatures. This is a simple compensation for systems with repeatable conditions.

3) Matrix table compensation that gives the user an accurate compensation over a range of temperature and concentration for a given system. There are matrices for pure water cation, and alkalized feed water, as well as for the common mineral acids and alkalis. In addition, the user may create his own matrix based on laboratory data.

#### DISPLAYS AND OPERATING INTERFACE

The display is a large clear graphical LCD with LED back-light and QVGA resolution. Operation is by touch screen. Graphical keys on the right, and other areas of the screen respond to contact as virtual push buttons.



#### Setup Screen

<sup>2</sup> Commissioning		-Home (go to main			
<ul> <li>Measurement setup</li> <li>Output setup</li> <li>Input contact setup</li> </ul>		Go back one level			
<ul> <li>Error configuration</li> <li>Logbook</li> </ul>	<b>•</b>	Scroll down			
<ul> <li>Advanced setup</li> <li>Display setup</li> </ul>	Enter	Enter (data select)			

#### **OUTPUT AND ALARM FUNCTIONS**

Two isolated mA outputs are provided, and can be set for linear or scaled output signals. Alternatively PID analogue control is available on either or both mA outputs. The transmitter or control parameter may be SC, resistivity, concentration or temperature. Control settings are fully configurable.

Two SPDT relays are included as standard, and can be configured by the user as conventional process alarms, or in one of 2 control modes:

#### 1) PID duty cycle control

In this type of control, the on/off ratio is controlled to vary the dose rate through a solenoid valve. This is a very economic way of achieving PID control.



#### 2) PID pulse frequency control

The pulsing frequency is regulated to control electrical valve opening or pump stroke.

In each case the setpoint, PB, I and D terms are all easily adjustable in the SC150.



#### **MAINTENANCE & CALIBRATION**

For best results it is important that the system should be well maintained. The time needed for calibration and maintenance of an EXAxt SC150 is minimal. The calibration (cell constant) of the sensor is determined by its dimensions, and as long as the sensor is undamaged these will not change. Routine maintenance is thus limited to keeping the sensor clean. SC150 helps the user to achieve this.

A pollution alarm is built in to the unit that will detect the early onset of sensor fouling, and will warn the user of a developing problem before the reading is substantially affected. This is a particularly important feature in monitoring systems where the unit is often unattended for long periods.

When the sensor is kept clean and the instrument properly adjusted, regular calibration is unnecessary. The user should limit calibration checks to a simple comparison with a certified or trusted portable instrument, or by use of a check with solutions of known value above 50 µS/cm. The use of low conductivity solutions for calibration checks is not advisable. Contact your local Yokogawa sales office or representative for more detailed advice about calibration

#### **USP23 Monitoring**

SC150 monitors water quality according to the USP23 directive (United States Pharmacopeia). Both compensated and uncompensated conductivity values can be read from the display, as can the solution temperature. A warning indication can be set to show that the signal is nearing or exceeding the USP23. USP23 determines a level of uncompensated conductivity for each temperature. The water must be below this level to be acceptable. This curve is preprogrammed into SC150.



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