

Trnasmmitter for Conductivity OLM-223



SECHANG INSTRUMENTS

1.1



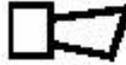
Warning



Double insulation



Caution



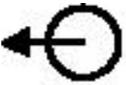
Alarm Relay



Note



Input



Output

1.2

1.3

=>

- OLM 223 (panel-mounted instrument)
- (&) 1
- 1set

1.4



OLM 223	
Version	CD Conductivity/resistance measurement (two-electrode sensor) CS Conductivity/resistance measurement (two-electrode sensor) with additional functions (S version) ID Conductivity measurement (ind. sensor) IS Conductivity measurement (ind. sensor) with additional functions (S version)
Power supply	0 230 V AC 1 115 V AC 5 100 V AC 8 24 V AC/DC
Measurement output	0 Conductivity/resistance 1 Conductivity/resistance and temperature
Contacts	05 No additional contacts 10 2 contacts (limit / PID / timer) 16 4 contacts (limit / PID / timer)
<div style="display: flex; align-items: center;"> <div style="border: 1px solid black; padding: 2px 5px; margin-right: 5px;">OLM223-</div> <div style="display: flex; gap: 5px;"> <div style="border: 1px solid black; width: 20px; height: 15px;"></div> <div style="border: 1px solid black; width: 20px; height: 15px;"></div> <div style="border: 1px solid black; width: 20px; height: 15px;"></div> <div style="border: 1px solid black; width: 20px; height: 15px;"></div> </div> </div>	complete order code

2.

**CHEMICALS, PHARMACEUTICALS, FOOD INDUSTRY,
DRINKING WATER TREATMENT, CONDENSATE TREATMENT,
MUNICIPAL SEWAGE TREATMENT PLANTS, WATER CONDITIONING.**

(Technical Data).

EN-61010-1

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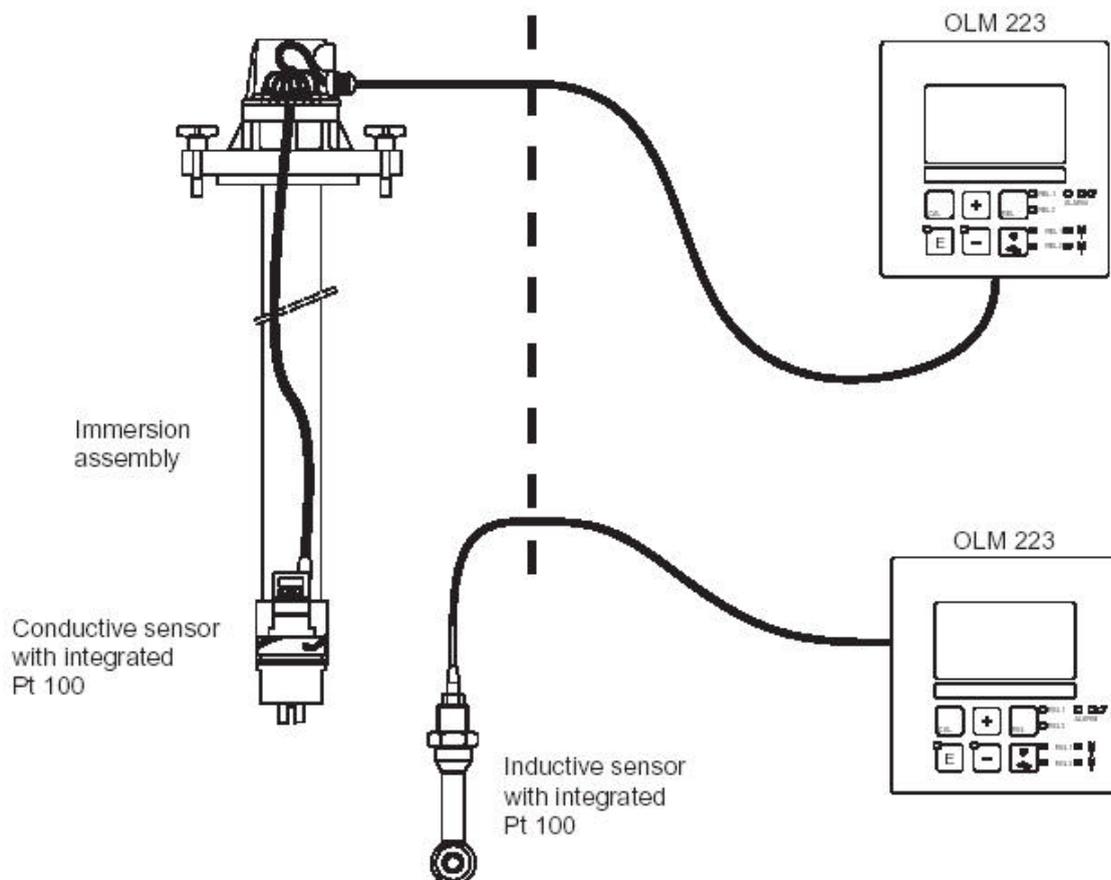
●

가

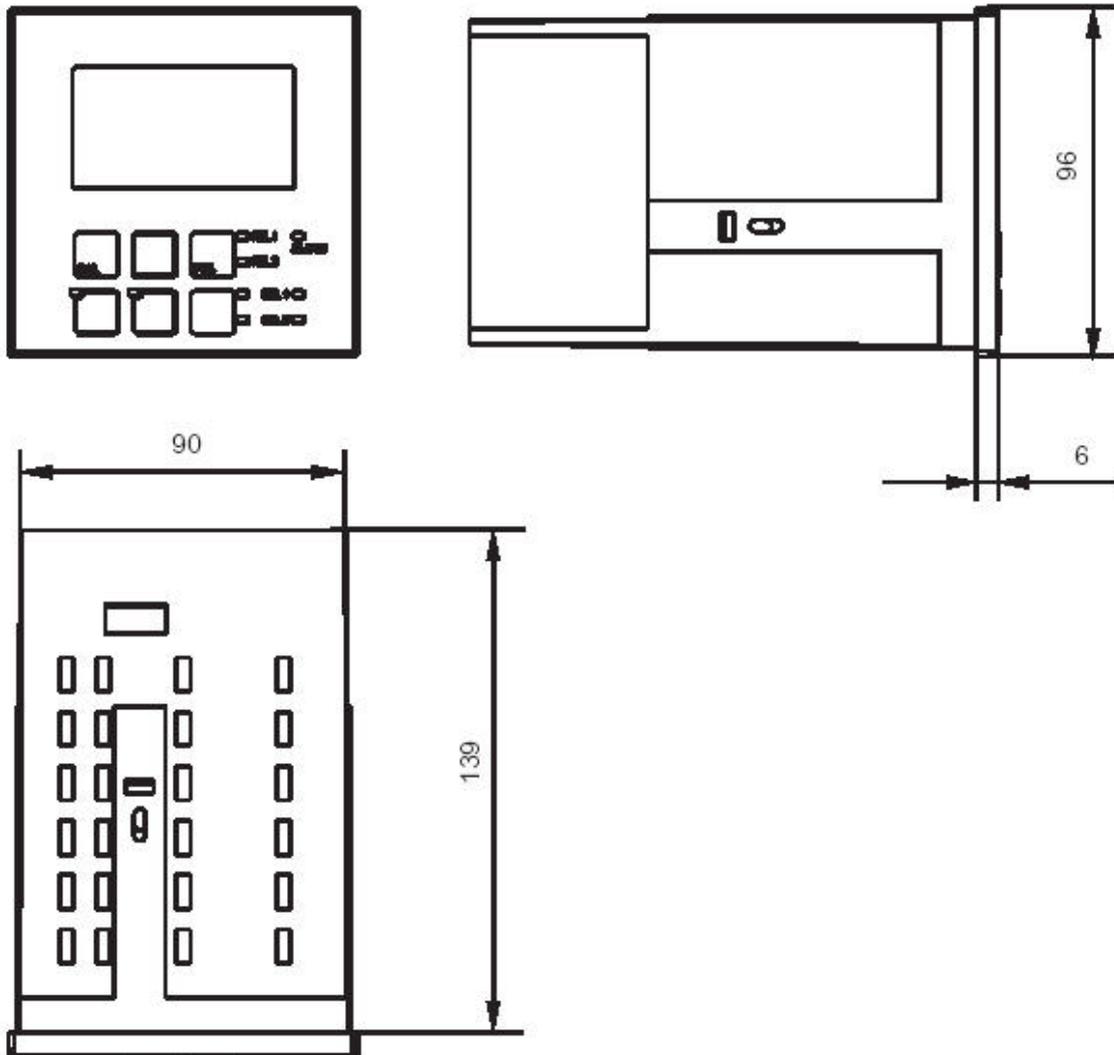
3.

3.1

- OLM 223
-
- Conductive (OYK 71) or Inductive (OLK 5)

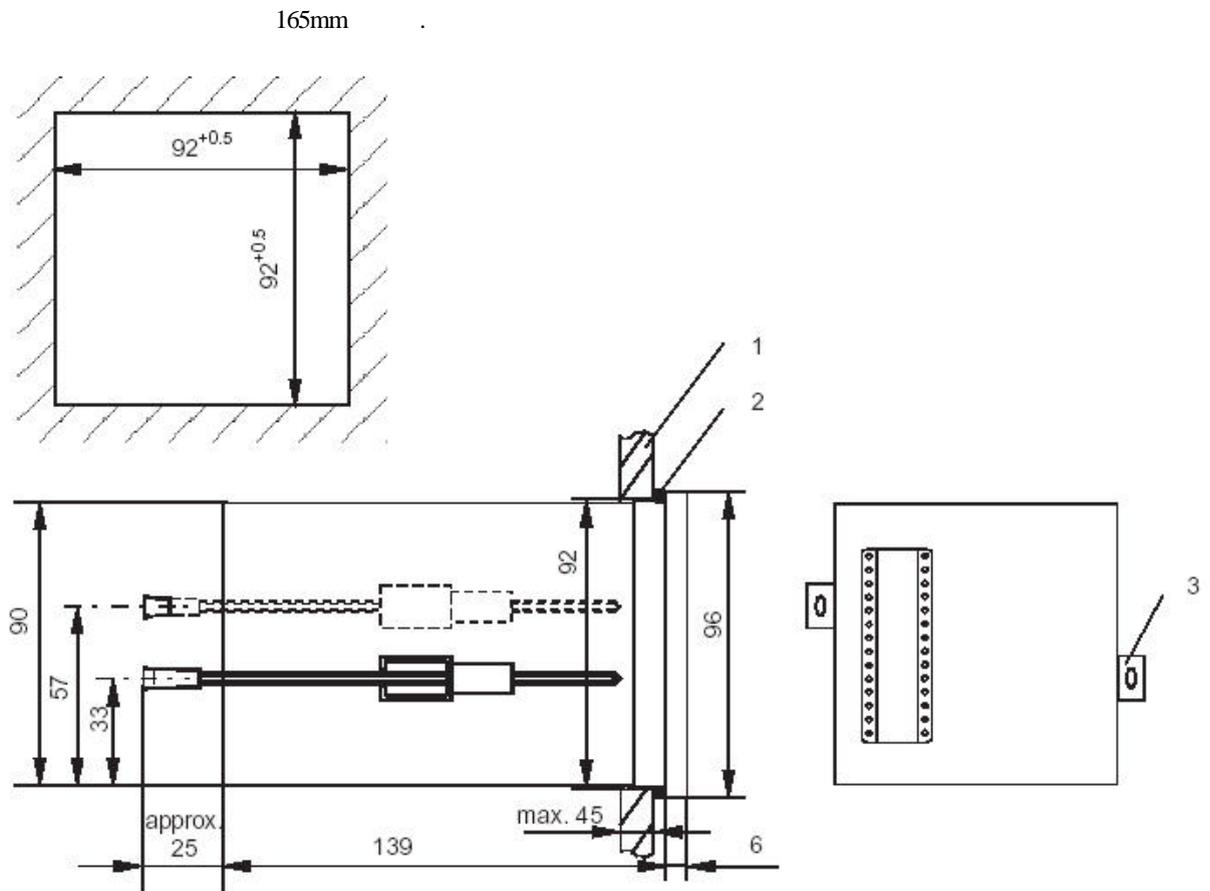


3.2



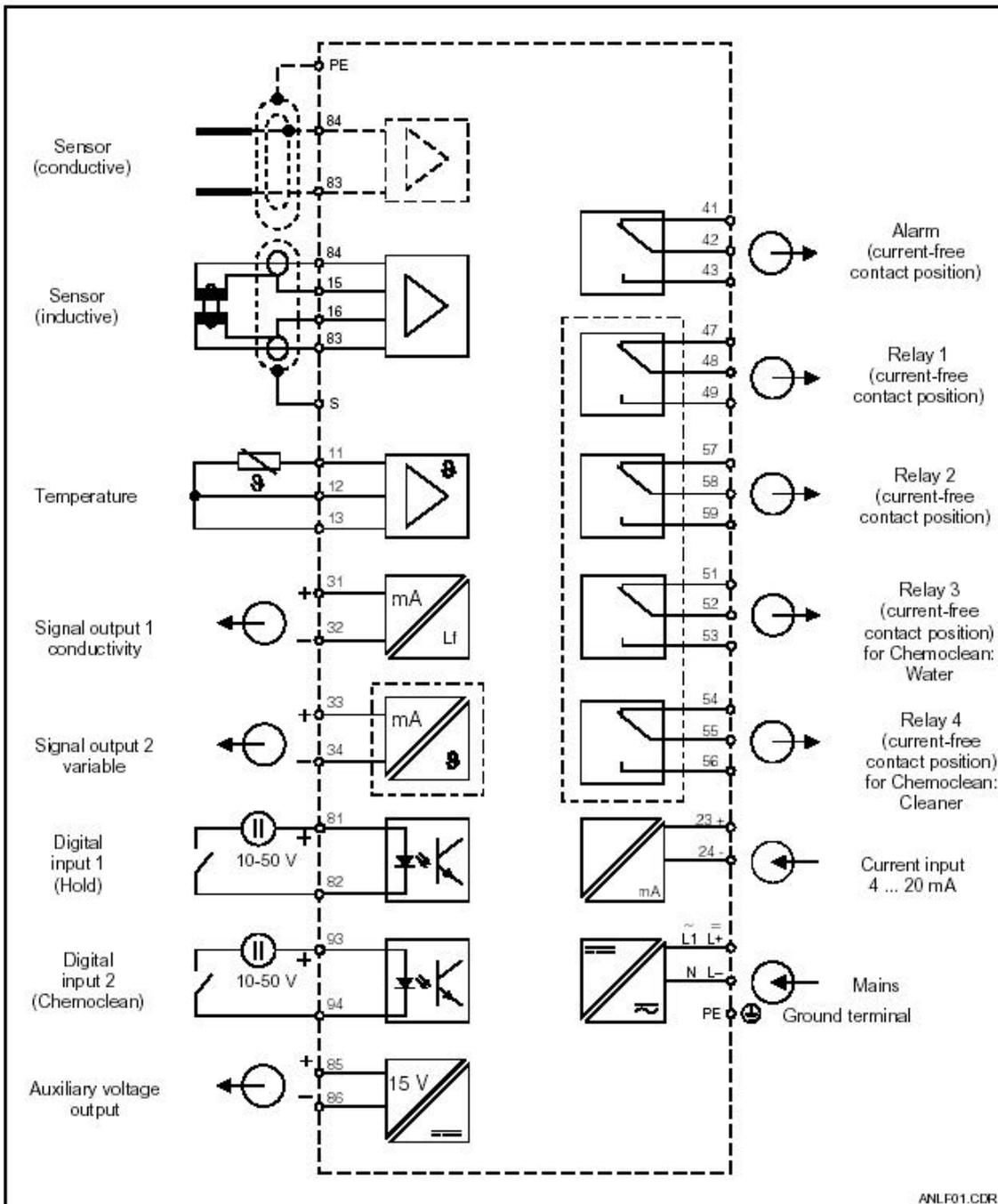
3.3

가

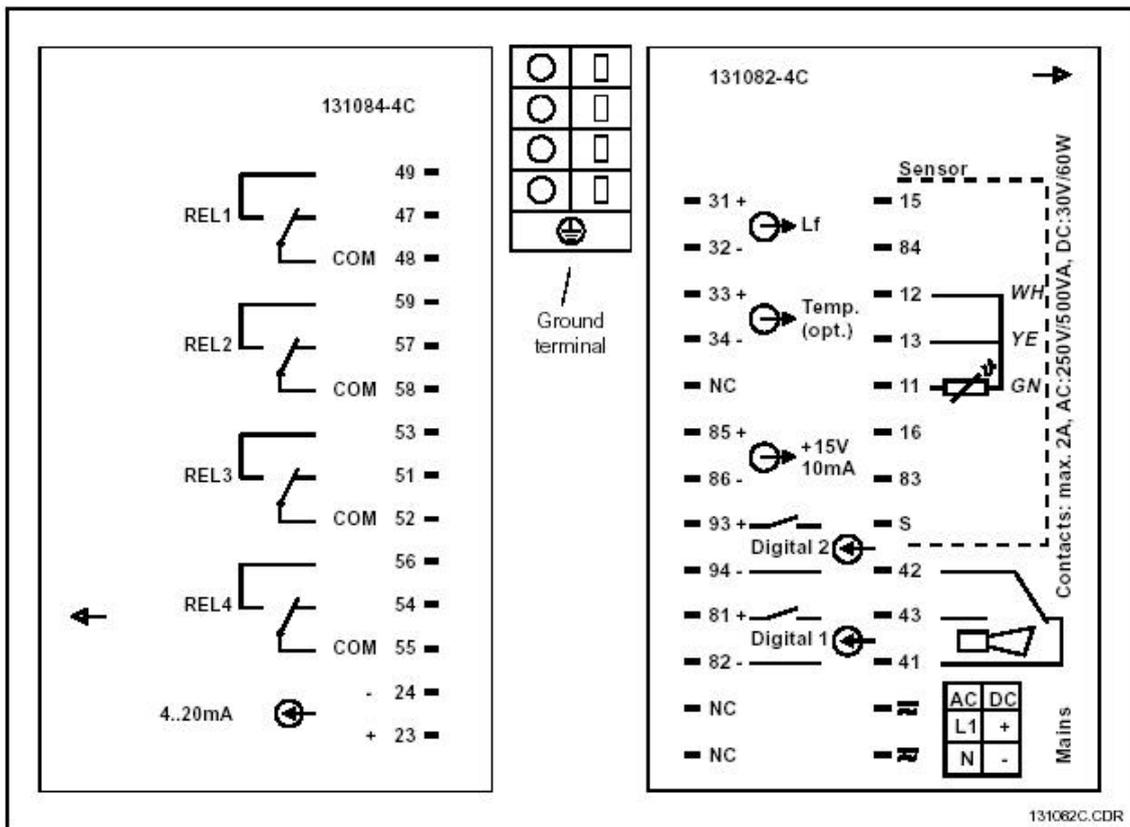


3.4 (Electrical Connection)

Connection Diagram :



OLM 223



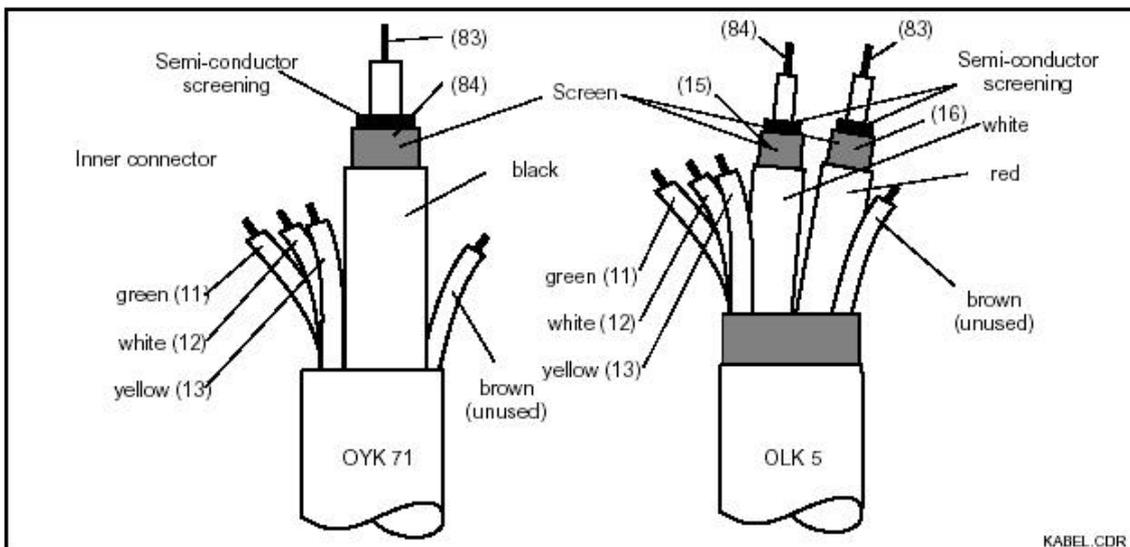
131082C.CDR

3.5

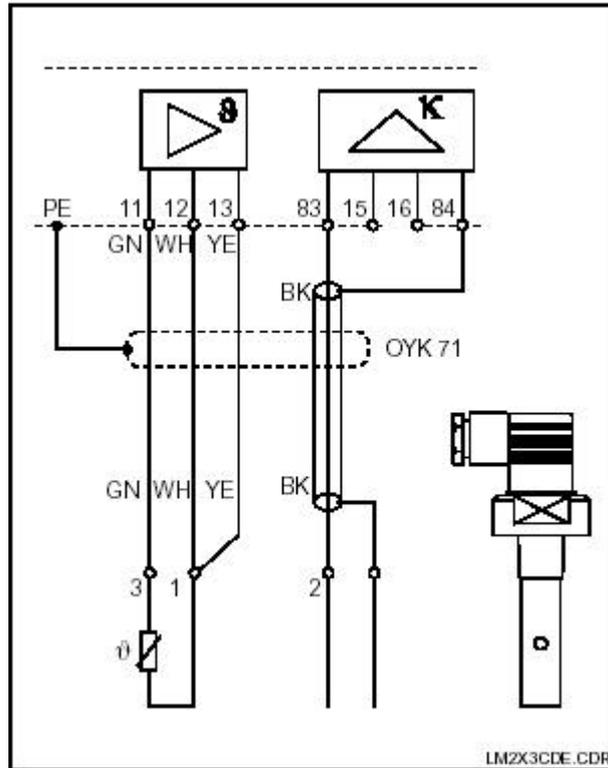


가

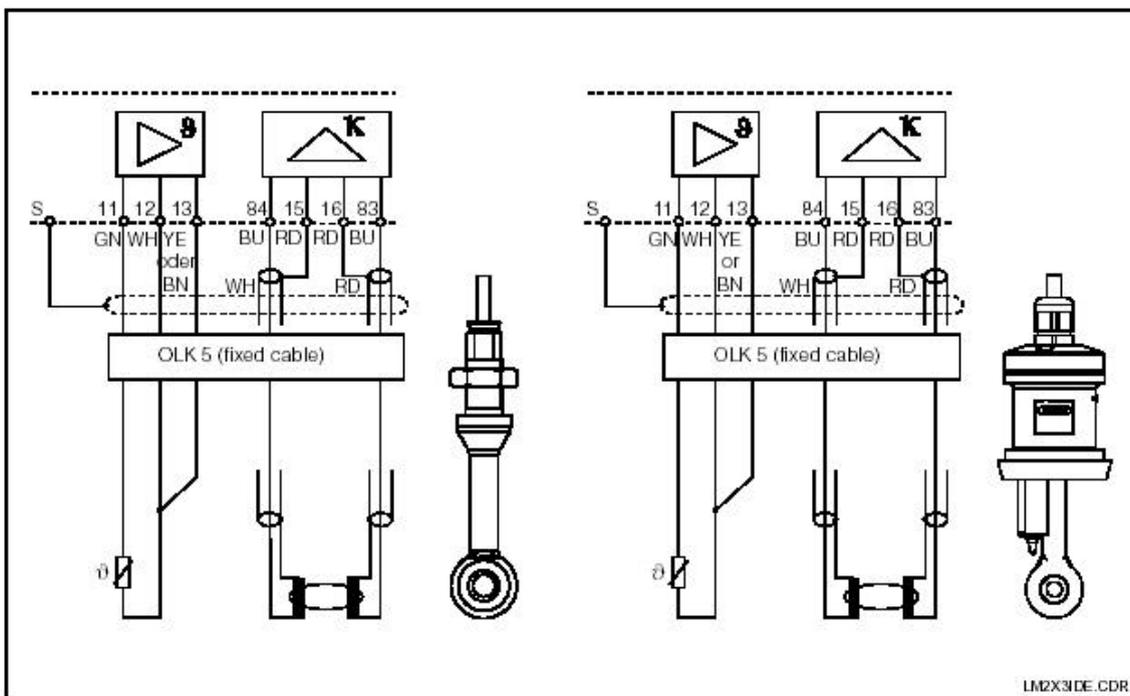
Measuring cable requirements		
Sensor type	Cable	Extension
2-electrode sensors with or without temperature sensor Pt 100	OYK 71	Junction box VBM + OYK 71
Inductive sensors OLS 50, OLS 52	Cable permanently attached to sensor	Junction box VBM + OLK 5
Maximum cable length		
Conductive conductivity measurement	max. 100 m with OYK 71 (corresponds to 10 nF)	
Resistance measurement	max. 15 m with OYK 71 (corresponds to 2 nF)	
Inductive conductivity measurement	max. 55 m (with OLK 5 and sensor cable)	



OYK-71(Left) and OLK-5(right)



(OLS 15, OLS 16, OLS 19, OLS 20, OLS 21, OLS30)

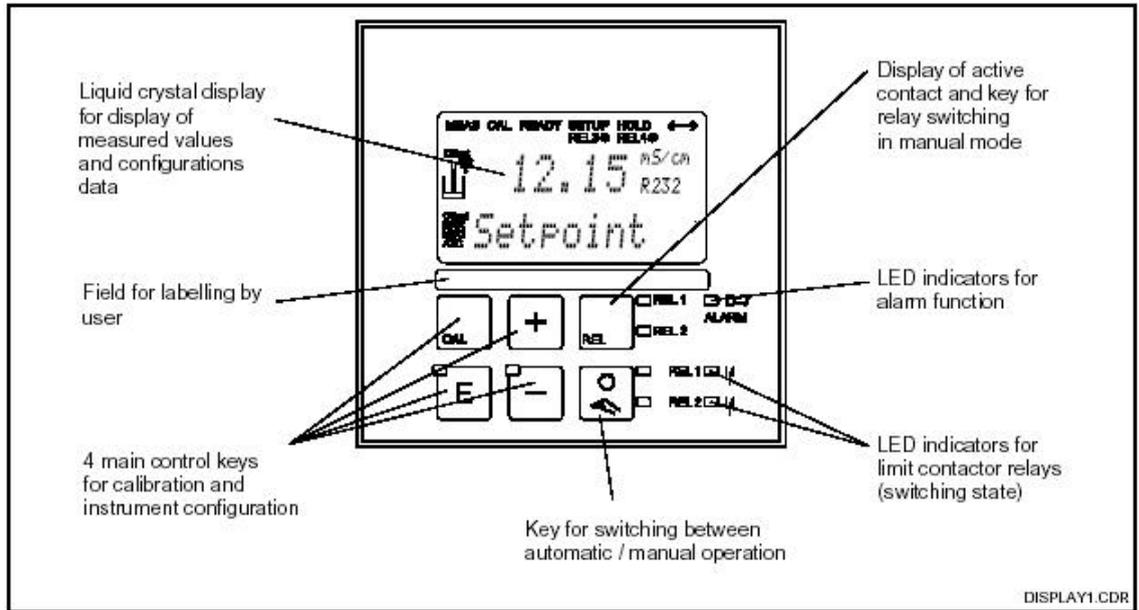


(: OLS 50, : OLS 52)

4.

4.5

4.1



“ISI Europa”

223

. 가

(LCD)가

4

(CAL, E, +,

-)

(REL, /)

LED가

4.2

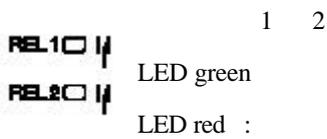
LED Indicators



가 (Maun, yellow LED) (Auto, green LED)

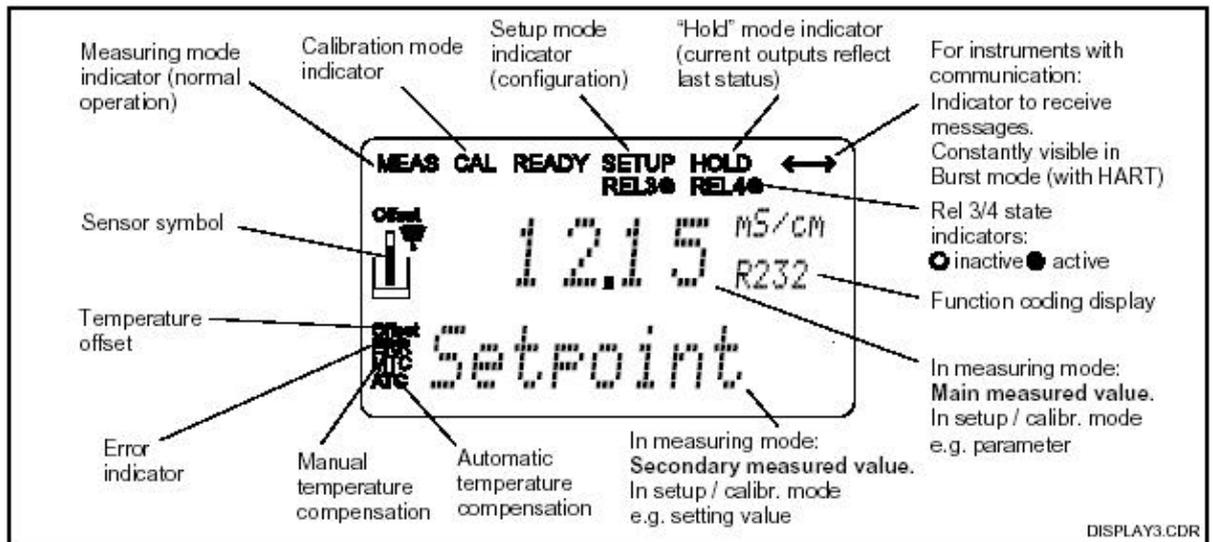


(red LED)

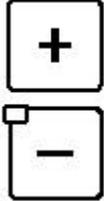
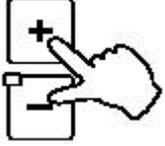


ALARM 0-7

Liquid Crystal Display

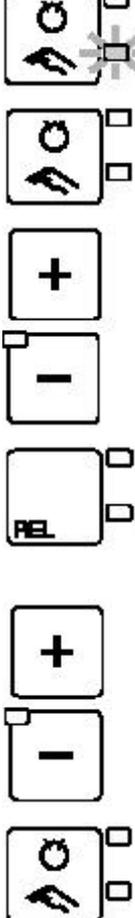


4.3

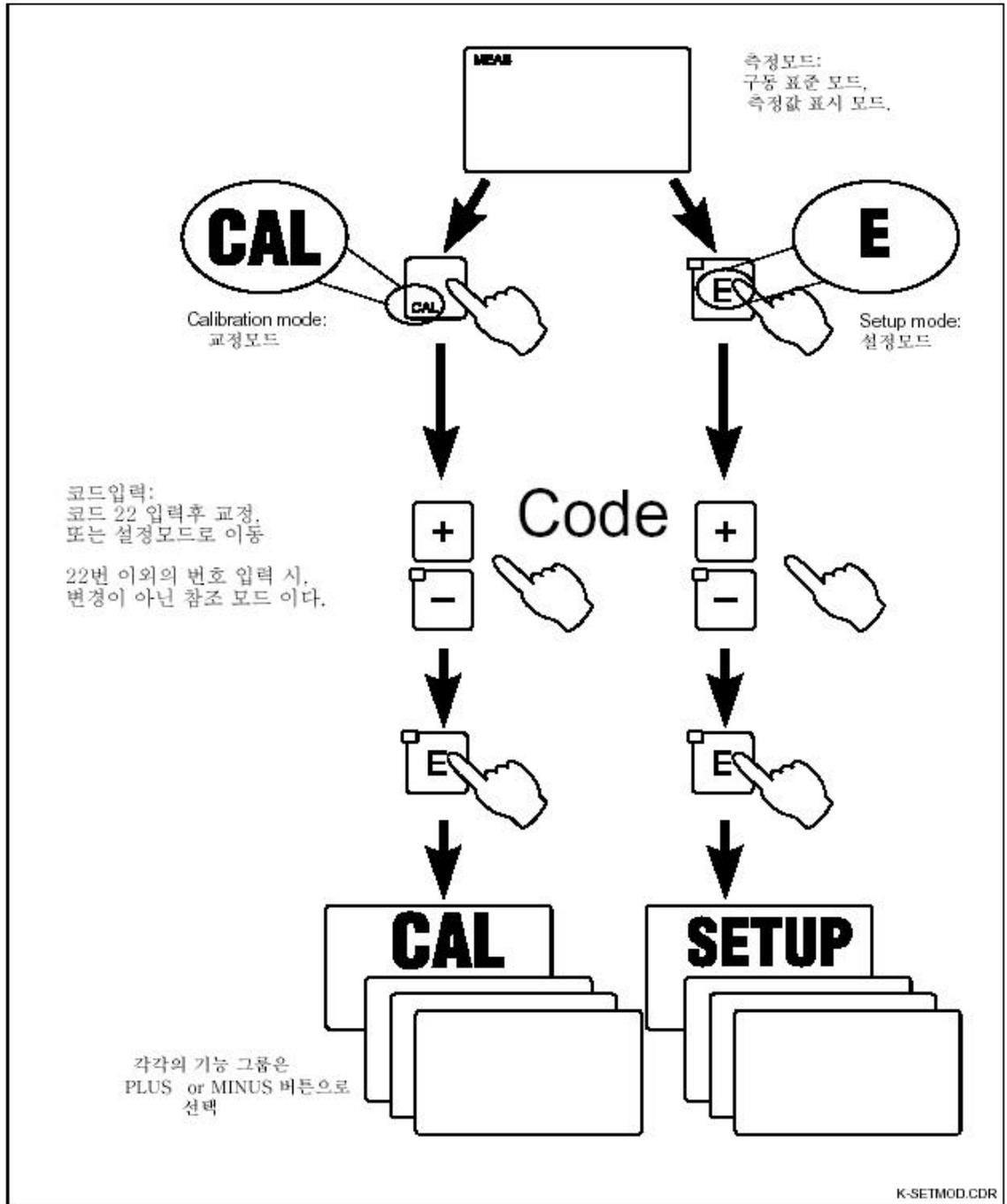
	<p>CAL</p> <p>(Calibration)</p> <p>22 ⇒ 가,</p>
	<p>ENTER</p> <p>(Setup Mode)</p> <p>1. , 2. , 3. .</p>
	<p>PLUS & MINUS</p> <p>/ (4.4)</p> <p>PLUS Current Input % mA ()</p> <p>PLUS</p> <p>1. (), 2. , 3. , 4. (%), 5. (mA), 6. .</p> <p>MINUS</p> <p>10 F</p>
	<p>REL</p> <p>REL Switch-on points(Limit contact) & Set points(PID controller) REL</p>
	<p>AUTO</p>
	<p>Escape Function PLUS & MINUS</p>
	<p>Locking the keypad()</p> <p>PLUS & ENTER 3 : 9999</p>

	<p>Unlocking the keypad()</p> <p>CAL & MINUS 3</p> <p>:0</p> <p>Lock</p>
---	--

4.4 /

	<p>Auto Mode()</p>
	<p>REL</p>
	<p>(Manual Mode)</p> <p>AUTO</p> <p>22 , ENTER</p> <p>REL (ON & OFF)가</p> <p>PLUS / ON,</p> <p>MINUS OFF</p> <p>AUTO</p>

4.5



Access codes ()

가.

- CAL + Code 22 : Offset
- ENTER + code 22: ,
- PLUS + ENTER + code 9999:
- CAL + MINUS + code 0:
- CAL or ENTER + any code:

() (Function groups) 가

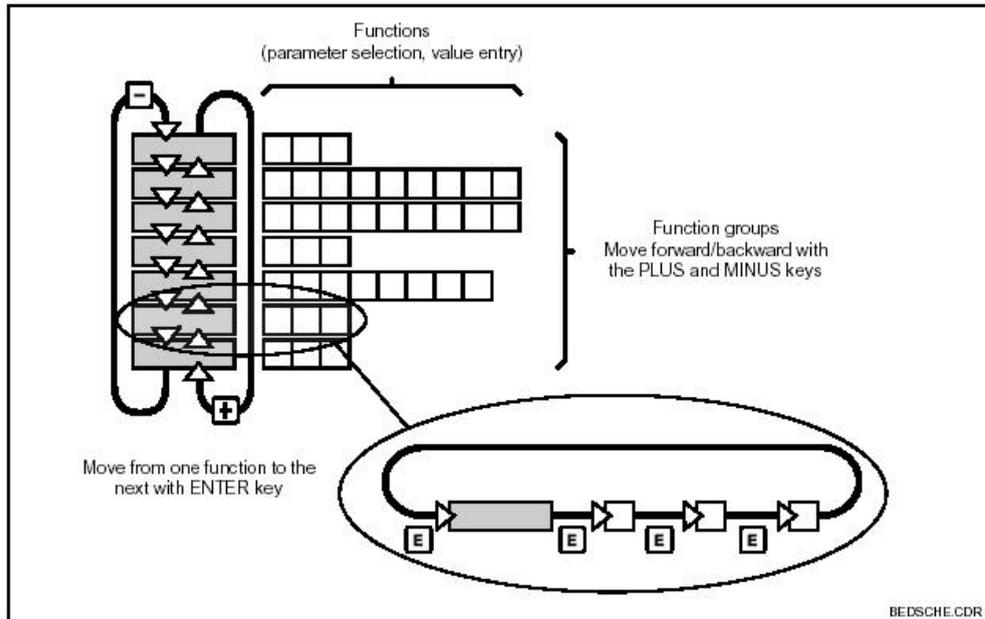
. 가 , +/- .

Enter . +/-

Enter , , +/-



ENTER ()



Hold :

가 .

가 .

HOLD가 . (5.6)

5.6 , S2

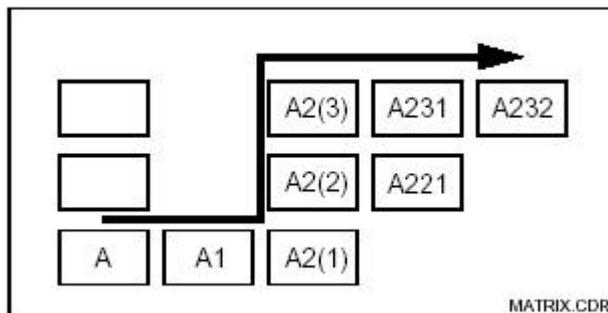
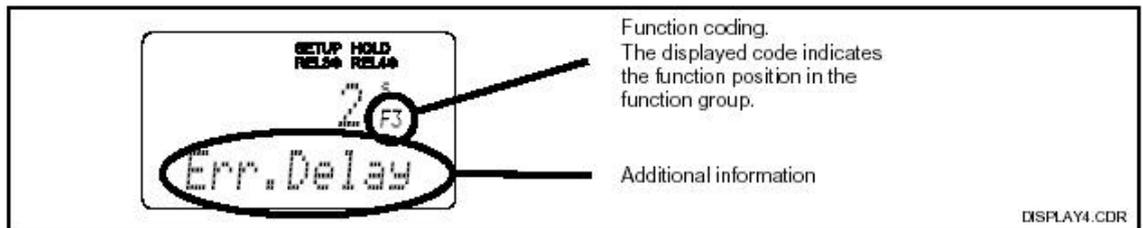
Normal position .

Active Hold .

(Field S3) Off .

5. (Instrument Configuration)

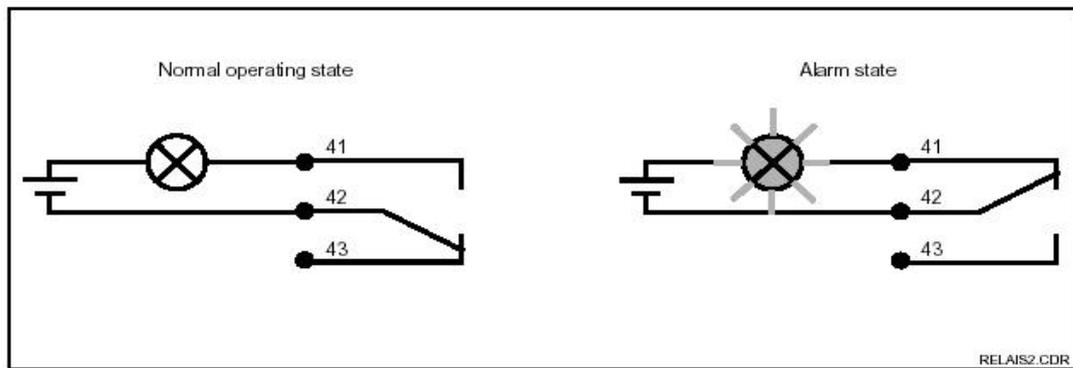
	Setup mode	
가	→ SETUP 1 (A)	see chap. 5.2.1
	→ SETUP 2 (B)	see chap. 5.2.2
	→ CURRENT INPUT (Z)	see chap. 5.3
	→ CURRENT OUTPUT (O)	see chap. 5.3
	→ ALARM (F)	see chap. 5.5.1
	→ CHECK (P)	see chap. 5.5.2
	→ RELAY (R)	see chap. 5.5
OFF가	→ ALPHA TABLE (T)	see chap. 5.6
	→ CONCENTRATION (K)	see chap. 5.7
	→ SERVICE 1 (S)	see chap. 5.8
	→ SERVICE 2 (E)	see chap. 5.9
	→ INTERFACE (I)	see chap. 5.10
	Calibration mode	
	→ CALIBRATION (C)	see chap. 5.11



Factory Setting,

Function	Factory setting
Type of measurement	Conductive conductivity, Temperature in °C
Temperature compensation type	Linear with reference temperature 25 °C
Temperature compensation	Automatic (ATC on)
Limit for controller 1	9999 mS/cm
Limit for controller 2	9999 mS/cm
Hold	Active during configuration and calibration
Measuring range	0 µS/cm ... 2 S/cm (no measuring ranges for setting). The setting is flowing and is guided by the connected sensors (see chapter 9).
Current outputs 1 and 2*	4 ... 20 mA
Current output 1: meas. value for 4 mA signal current	0.00 S/cm
Current output 1: meas. value for 20 mA signal current	2000 mS/cm
Current output 2*: temperature value for 4 mA signal current	35.0 °C
Current output 2*: temperature value at 20 mA signal current	250.0 °C

Alarm Contact



Normal Operating state : , (Green LED)

=> **Relay picked up / 42,43**

Alarm state :

(Red LED), , or (Alarm LED off) => **Relay dropped out**

/ 41,42

5.1 Start-up()

SERVICE (S)

SI :

SETUP 1(A)

, 5.2.1

SETUP 2(B)

, 5.2.2

5.2

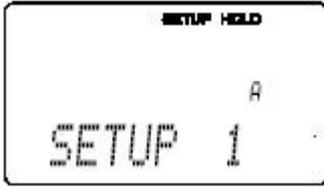
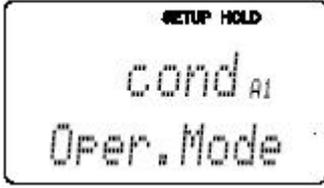
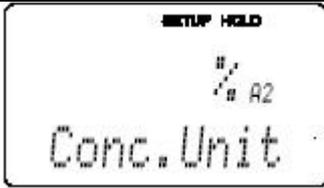
(Function Group) SETUP1 & SETUP2

SETUP1 & SETUP2

가

5.2.1 Setup 1()

22

	Field	& Bold :		
A	Function group SETUP 1			Setup 1
A 1		*Cond = conductive *ind = inductive *Mohm = resistance *Conc = concentration		- cond/resistance/conc - ind/conc.
A 2	(: plus package)	% ppm mg/L TDS without		A1=conc. 가

	A 3	()	XX.xx X.xxx XXX.x XXXX		A1=conc. 가 .
	A 4		Auto, $\mu\text{S}/\text{cm}$, mS/cm , $\mu\text{S}/\text{m}$, mS/m , S/m , auto , $\text{k}\Omega\text{-cm}$, $\text{M}\Omega\text{-cm}$, $\text{k}\Omega\text{-m}$.		A1=conc. Auto, auto 가
	A 5		Cond : $1,000\text{cm}^{-1}$ ind : 1.98cm^{-1} Mohm : 0.01cm^{-1} $0.0025 \sim 99.99\text{cm}^{-1}$		
	A 6		0 $0 \sim 99.99$		Conductive sensor 가 . CYK71 10
	A 7		1 $1 \sim 60$		

5.2.2 Setup 2()

	Field	& ,	Bold :		
B	Function group SETUP 2				Setup 2
B 1			*Pt100 *Pt 1K = Pt 1000 *NTC30 *fixed		“Fixed” => (MTC) => -B4.

	B 2		Lin= linear Tab = table NaCl = connon salt (IEC746) Pure = ultrapure water none	<p>SETUP HOLD lin_{B2} TempComp.</p>	(concentration) 가 *Pure: Conductive device 가 .
	B 3		2.10%/K 0.00 ~ 20.00%/K	<p>SETUP HOLD 2.10^{%/K}_{B3} alphaVal</p>	B2=Lin 가 B2=Lin
	B 4		25.0 -35.0 ~ 250.0	<p>SETUP HOLD 25.0^{°C}_{B4} ProcTemp.</p>	B1=fixed
	B 5		-35.0 ~ 250.0	<p>SETUP HOLD 0.0^{°C}_{B5} RealTemp.</p>	B1=fixed B6
	B 6		-5.0 ~ 5.0	<p>SETUP HOLD 0.0^{°C}_{B6} TempOffs.</p>	B1=fixed
	B 7		25.0 -5 ~ 100.0	<p>SETUP HOLD 25.0^{°C}_{B7} RefTemp.</p>	

5.3 (Current input)()

(e.g.) 4 ~ 20mA

OLM

223

	Flow in main stream	Current signal in mA	Current input signal in %
Lower range limit current input	Lower setting value flow meter	4	0
Upper range limit current input	Upper setting value flow meter	20	100

Main Stream

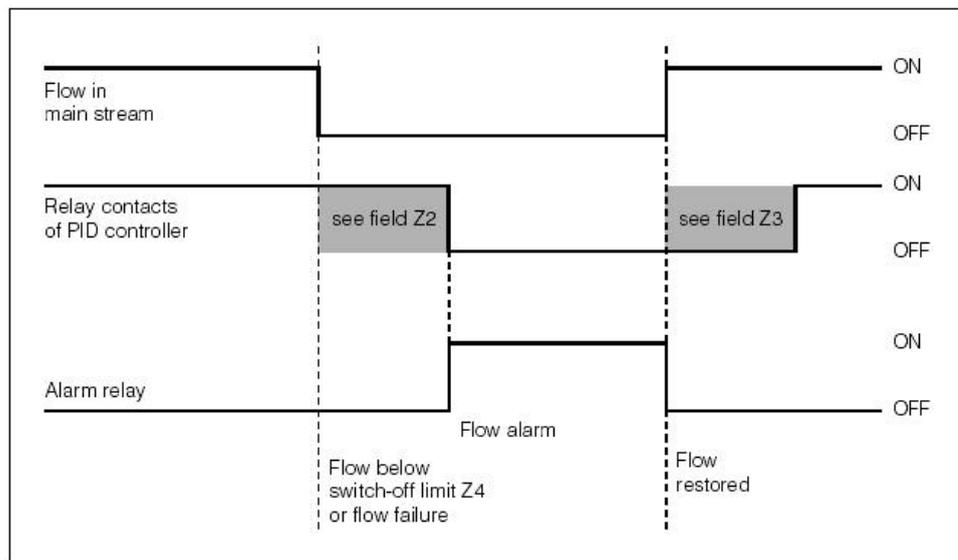
Sample Stream

Main Stream

가

Main Stream

Dosing Switch-off,

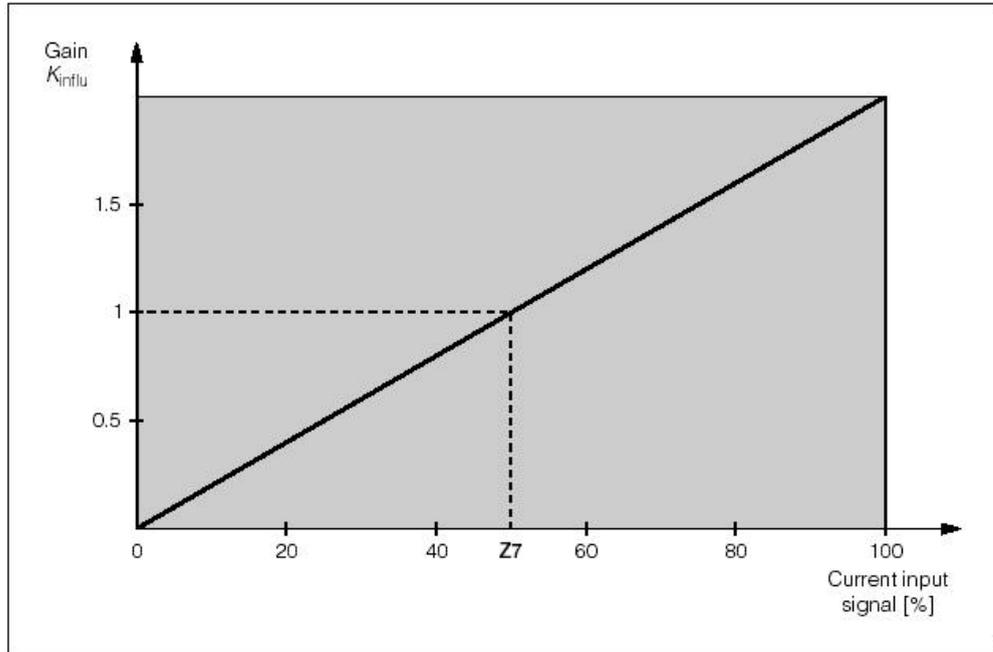


FeedForward control to PID controller.

가 , 가
(Flow Rate) 가

FeedForward

Multiplying Function

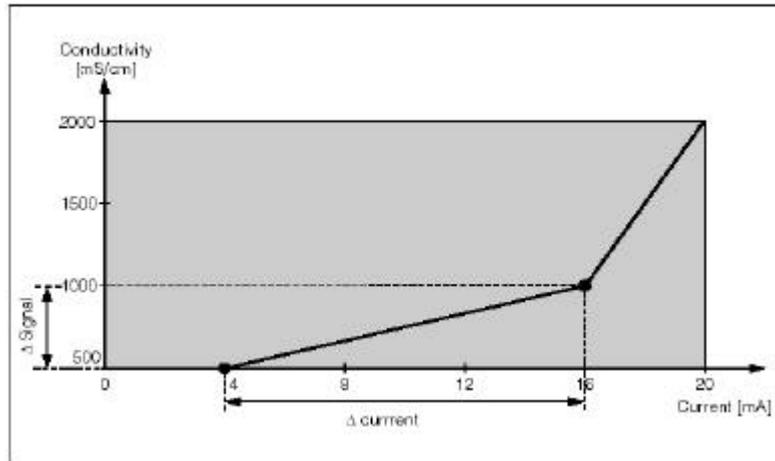


	Field	Bold :		
Z	Function group Current Input			Current Input
Z1	Main Stream (controller switch off)	Off Input	Off Cont. stop	*Main Stream Switch On 가 *Z1=off , Z2, Z5
Z2	< switch-off>	0 s 0 ~ 2000 s	0 ^s Off Delay	
Z3	< switch-on>	0 s 0 ~ 2000 s	0 ^s On Delay	
Z4	switch-off (Threshold)	50% 0 ~ 100%	50% A. Thresh	4 ~ 20mA 0 ~ 100%
Z5		Low High	Low Stop Dir	Z4 Low or High switch-off
Z6	PID Feedforward control	Off lin = linear Basic	Off PID influ	Z6=off , Z7
Z7	Modulation Gain =1 Feedforward	50% 0 ~ 100%	50% Kinflu=1	Feedforward 가 ON Feedforward 가 Off

5.4 (Current outputs)

CURRENT OUTPUT

linear (O3(1)) , Plus package
(O3(3)) (O3(2))
R237



2 Signal mA 0.5 %

가
mA

Value pair	Current output 1			Current output 2		
	pH / mV / % / °C []	Current [mA]	Distance per mA	pH / mV / % / °C []	Current [mA]	Distance per mA
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						

	Field	or (Bold:)		
0	Function Group CURRENT OUTPUT			
0 1		Out 1 Out 2		가
0 2		mS/cm Contr		02= Contr _____, R237 Curr(current output 2) 가 .
0 3(1)	_____	Lin=linear(1) sim=simulation(2) Tab=table(3)		- -/+ 가 - (02=Contr) 가 가

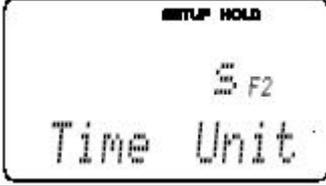
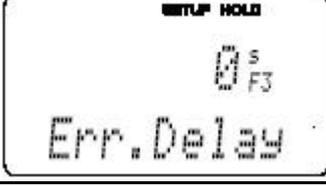
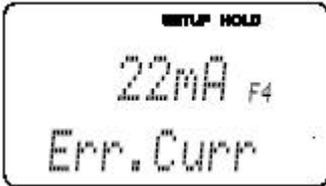
	0 311		4 ~ 20mA 0 ~ 20mA		
	0 312	0/4mA	Cond/ind: 0.00 μ s /cm Mohm: 0.00 k Ω *cm Conc: 0.00% Temp :0.0		0/4mA
	0 313	20mA	Cond/ind: 2000 ms /cm Mohm: 500 k Ω *cm Conc: 99.99% Temp :150.0		20mA
	0 3(2)		Lin=linear(1) Sim=simulation(2) Tab=table(3)		Simulation 가 03(1) 03(3)
	0 321		Current value 0.00 ~ 22.00mA		
	0 3(3)		Lin=linear(1) Sim=simulation(2) Tab=table(3)		
	0 331		read edit		
	0 332		1 1 ~ 10		X Y
	0 333	Table value pair	1 1 ~ number of table value pairs Finished		"0 333 ~ 0 335 "0 332" Finished가 "0 336"

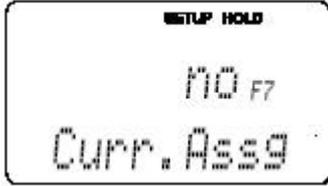
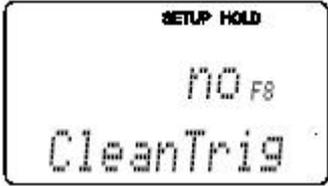
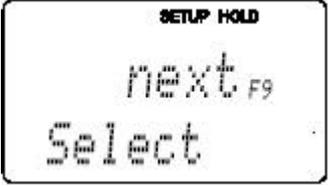
	0 334	x ()	Cond/ind: 0.00 μ s /cm Mohm: 0.00 k Ω *cm Conc: 0.00% Temp :0.0	<p>SETUP HOLD 0.00 μS/cm 0334 Meas.val.</p>	x value =
	0 335	y ()	4.00mA 0.00 ~ 20.00mA	<p>SETUP HOLD 0.00 mA 0335 mA value</p>	y value = 0 334
	0 336	Table OK	yes no	<p>SETUP HOLD yes 0336 Status ok</p>	Yes 03 No

5.5 (monitoring)

가 ,
 Error / (P1).
 .(F8)

5.5.1

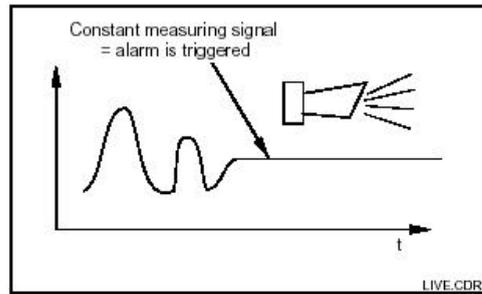
	Field	or (Bold :)		
F	Function Group ALARM			
F1	steady= fleeting=	Stead=steady contact Fleet=fleeting contact		
F2		s min		
F3		0 min (s) 0 ~ 2000 min (s)		F2
F4		22 mA 2.4 mA		F5 가 Switch off ! 0311 “0 ~ 20mA” “2.4mA” 가.
F5		1 1 ~ 255		7 Off.
F6		Yes no		“no” , (e.g. error delay). F5

F7		no yes		F4 F5
F8		no yes		7
F9	가	Next=next error < ----R		Next F5

5.5.2 Check

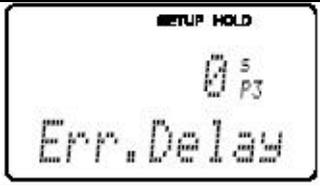
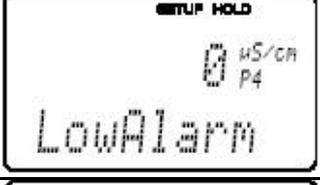
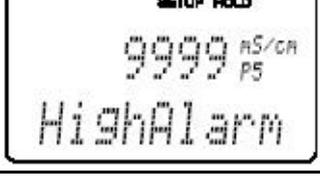
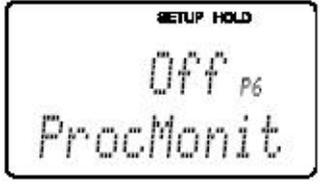
RELAY
가
(Polarization)

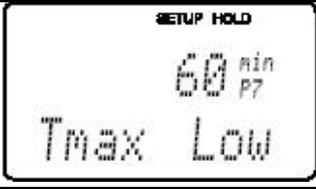
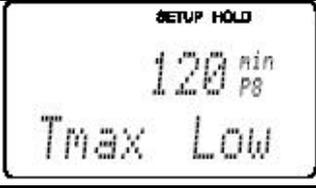
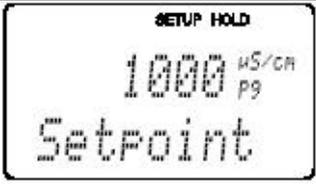
Plus-package



PCS (Process Check System)

=> _____ 가 _____

	Field	or (Bold :)		
P	Function Group Check			&
P1	ON or OFF (only conductive)	Off On		Conductive sensor 가 (Error no: E071)
P2	(live-check)	Off Low High Lo+Hi Low! High! LoHI!		* * *Monitoring Limit: 0.3%. (Error No: E152)
P3		0 min (s) 0 ~ 2000 min(s)		F2 P4 & P5
P4		0 μs / cm 0 ~ 9999ms/cm		
P5		9999 μs / cm 0 ~ 9999ms/cm		
P6	(PCS alarm)	Aus AC CC AC+CC AC! CC! ACCC!		*AC=sensor alternation check *CC=Controller check Switch-off *xxx= W/O switch-off *xxx!= W switch-off

	P7 (Lower monitoring limit violation)	60min 0 ~ 2000min		P6=CC or AC+CC
	P8 (Upper monitoring limit violation)	120min 0 ~ 2000min		P6=CC or AC+CC
	P9	1000 $\mu\text{s/cm}$ 0 ~ 9999ms/cm		Batch Process Single-sided limit switches

5.6 (Relay Contact)

가 Plus package

- > , R 2(1), > , R 2(2), >P(ID) controller, R 2(3),
- > , R 2(4), >ChemoClean function, R 2(5),
- >USP, R 2(6) (for Plus package, conductive only)

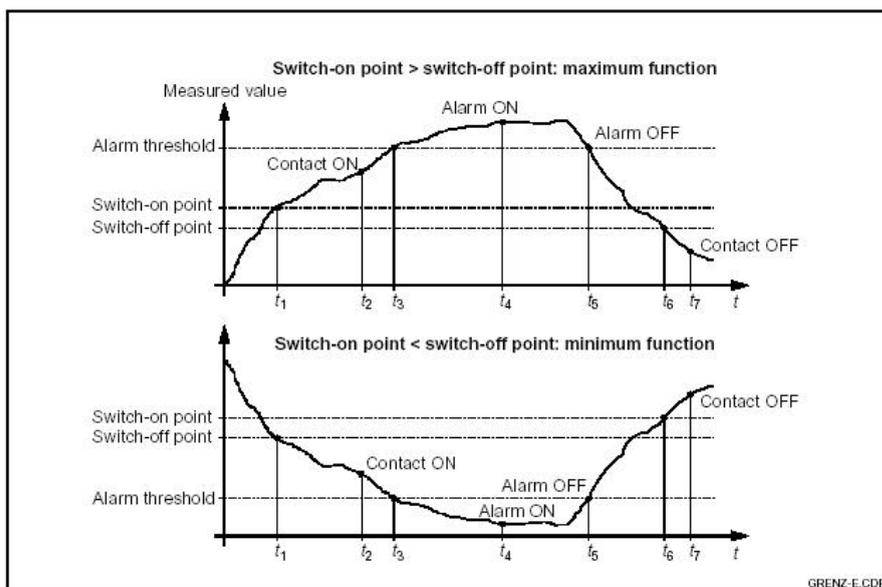
&

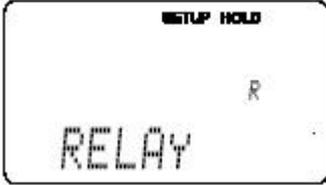
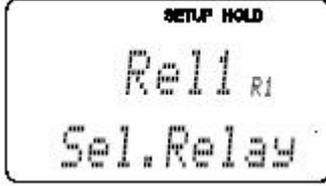
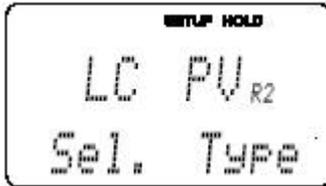
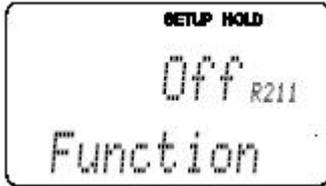
Max. Function:

Switch-on Point(t_1) , “ t_2 ”
 (Close). “ (t_2-t_1) ” Pickup Delay . (“ t_3 ”
 , 가 t_4 ON . , “ (t_4-t_3) ”
 (Alarm delay) .
 , (“ t_5 ”)
 Off . , Switch-off point(t_6) ,
 “ t_7 ” . “ $t_7 \sim t_6$ ”
 Dropout delay . Pickup Delay Dropout Delay 0 , Switch-on
 Point Switch-off Point 가 .

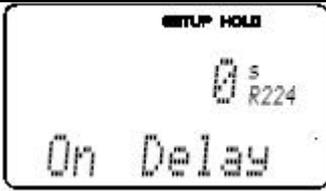
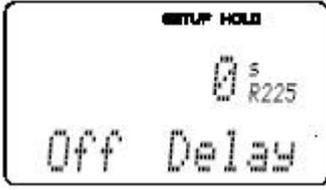
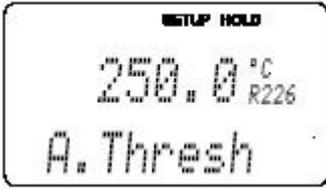
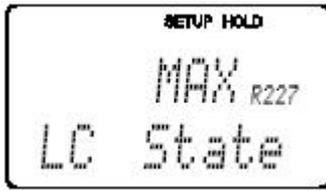
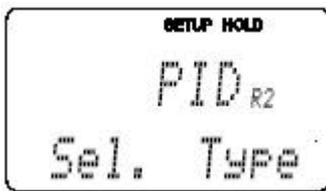
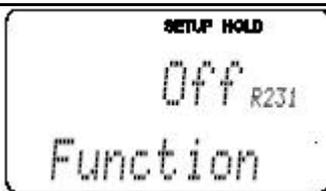
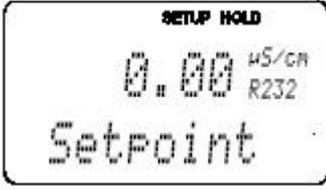
Min. Function:

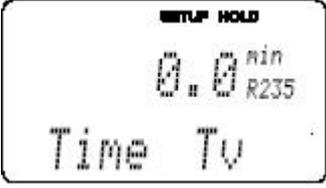
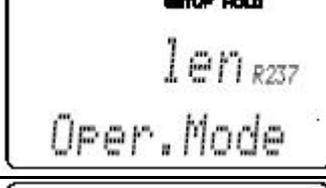
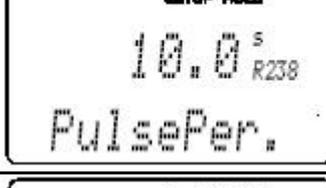
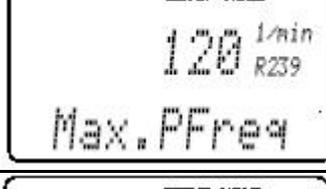
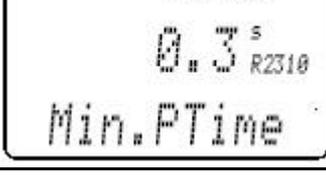
Minimum Maximum



	Field	or (Bold:)			
R	RELAY				
R1		Rel 1 Rel 2 Rel 3 Rel 4			*Rel3 Rel4 3 & 4가 가 *ChemoClean , Rel 4 가.
R 2(1)		LC PV=limit contactor cond. (1) LC =Limit contactor T2(2) PID = PID Controller (3) Timer(4) Clean=ChemoClean(5) USP(6)			* PV=Process value * R1 Rel4 , ChemoClean 가. * ENTER , ON OFF가
R 211	R2(1) ON/OFF	Off On			
R 212	Switch-on Point	Cond/ind: 9999 ms/cm Mohm : 200 MΩcm Conc : 9999%			Switch-on point Switch-off point 가.
R 213	Switch-off Point	Cond/ind: 9999 ms/cm Mohm : 200 MΩcm Conc : 9999%			*Switch-off point * (Switch-off < switch-on) * (Switch-off > Switch-on)
R 214	Pickup Delay	0 s 0 ~ 2000 s			

	R 215	Dropout Delay	0 s 0 ~ 2000 s		
	R 216	Alarm Threshold ()	Cond/ind: 9999 ms/cm Mohm : 200 MΩcm Conc : 9999%		* Alarm threshold가 / , (Field3 Alarm delay) * (min contact) , Alarm threshold Switch-off point
	R 217		Max Min		가(only display)
	R 2(2)		LC PV=limit contactor cond.(1) LC =Limit contactor T2(2) PID = PID Controller (3) Timer(4) Clean=ChemoClean(5) USP(6)		switch-on switch-off ,
	R 221	R2(2) ON/OFF	Off On		
	R 222	switch-on	250.0 -35.0 ~ 250.0		Switch-on point Switch-off point
	R 223	switch-off	60.0 10.0 ~ 60.0		*Switch-off point * (Switch-off < switch-on) * (Switch-off > Switch-on)

	R 224	Pickup delay	0 s 0 ~ 2000 s		
	R 225	Dropout delay	0 s 0 ~ 2000 s		
	R 226	Alarm threshold	250.0 -35.0 ~ 250.0		=>Alarm threshold가 / (Field3 Alarm delay) => (min contact) , Alarm threshold Switch-off point
	R 227		Max Min		가(only display)
	R 2(3)	P(ID) controller	LC PV=limit contactor cond.(1) LC =Limit contactor T2(2) PID = PID Controller (3) Timer(4) Clean=ChemoClean(5) USP(6)		switch-on switch-off ,
	R 231	R2(3) ON/OFF	Off On Basic PID+B		*On = PID control *Basic = only basic load dosage *PID+B = PID control with basic load dosage.
	R 232	Set point	Cond/ind: 0.00 μ S/cm Mohm : 0.00 k Ω cm Conc : 0.00%		(Deviation) Up Down ,
	R 233	Control gain K _P	1.00 0.01 ~ 20.00		5.5.2 ()

	R 234	Integral action time T_N (0.0=no I component)	0.0 min 0.0 ~ 999.9 min		*5.5.2 () * component” 0(zero) * S2 (not for ChemoClena and Timer.)
	R 235	Derivative action time T_V (0.0=no D component)	0.0 min 0.0 ~ 999.9 min		5.5.2 ()
	R 236		Dir = direct inv = inverted		(Control deviation) 5.5.2
	R 237	Pulse length or frequency	Len = pulse length freq = pulse frequency curr = current output2		* Pluse length, Pluse frequency. *=> O2 = Contr current output 2 가
	R 238		10.0 s 0.5 ~ 999.9 s		R237=pulse length 가 . R237=pulse frequency
	R 239		120 min ⁻¹ 60 ~ 180 min ⁻¹		R237=pulse frequency 가 R237=pulse length
	R 231 0	ON T_{ON}	0.3 s 0.1 ~ 5.0 s		R2310 R237 pulse length 가
	R 231 1		0% 0 ~ 40%		(Dosage quantity) 100% R237=on Fmax at R237=freq 20mA at R237=curr

	R 2(4)		LC PV=limit contactor cond.(1) LC =Limit contactor T2(2) PID = PID Controller (3) Timer(4) Clean=ChemoClean(5) USP(6)		Water => switch-on switch-off
	R 241	R2(4) ON/OFF	Off On		
	R 242		30s 0 ... 999 s		
	R 243		360 min 1 7200 min		=
	R 244		120 min 1 3600 min		, Cleaing trigger가
	R 2(5)	ChemoClean	LC PV=limit contactor cond.(1) LC =Limit contactor T2(2) PID = PID Controller (3) Timer(4) Clean=ChemoClean(5) USP(6)		5.5.5 Contact 3=water Contact 4=cleaner => switch-on switch-off
	R 251	R2(5) ON/OFF	Off On		
	R 252		Int = internal (timer-contr) ext = external (digital input2) I + ext = intern. + extern. I + stp = internal, suppressed by external		"int" (R257)

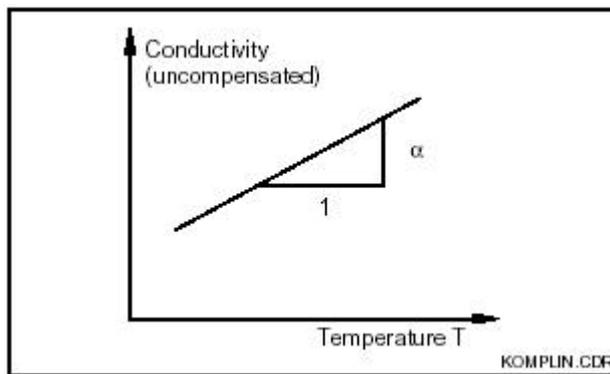
	R 253	Pre-rinse	20 s 0 ~ 999 s	<p>SETUP HOLD 20^s R253 PreRinse</p>	Rinsing
	R 254		10 s 0 ~ 999 s	<p>SETUP HOLD 10^s R254 CleanTime</p>	
	R 255	Post-rinse	20 s 0 ~ 999 s	<p>SETUP HOLD 20^s R255 PostRinse</p>	Rinsing
	R 256		0 0 ~ 5	<p>SETUP HOLD 0 R256 Rep. Rate</p>	R253 ~ R255
	R 257		360 min 1 ~ 7200min	<p>SETUP HOLD 360^{min} R257 PauseTime</p>	2
	R 258		120 min 1 3600 min	<p>SETUP HOLD 120^{min} R258 Min.Pause</p>	(External cleaning trigger)가
	R 259		0 0 ~ 9	<p>SETUP HOLD 0 R259 EconomyCl</p>	9
R 2(6)	USP	LC PV=limit contactor cond.(1) LC =Limit contactor T2(2) PID = PID Controller (3) Timer(4) Clean=ChemoClean(5) USP(6)	<p>SETUP HOLD USP R2 Sel. Type</p>	USP Pre-alarm (Pre-alarm : => switch-on switch-off)	

	R 261	R2(6) ON/OFF	Off On	<p>SETUP HOLD Off R261 Function</p>	
	R 262	Alarm threshold: switch-on point	80.0 % 0.0 ~ 100.0%	<p>SETUP HOLD 80.0% R262 On Value</p>	The pre-alarm effects a contact query.) 15 , 1.0μs/cm, 80.0%, , Pre-alarm 0.8 μs/cm
	R 263	Alarm threshold: switch-off point	75.0 % 0.0 ~ 100.0%	<p>SETUP HOLD 75.0% R263 Off Value</p>	R262 > R263 Pre-Alarm
	R 264	Alarm threshold: Pick-up delay	0s 0 ~ 200s	<p>SETUP HOLD 0s R264 On Delay</p>	
	R 265	Alarm threshold: Dropout delay	0s 0 ~ 200s	<p>SETUP HOLD 0s R265 Off Delay</p>	

5.7

가

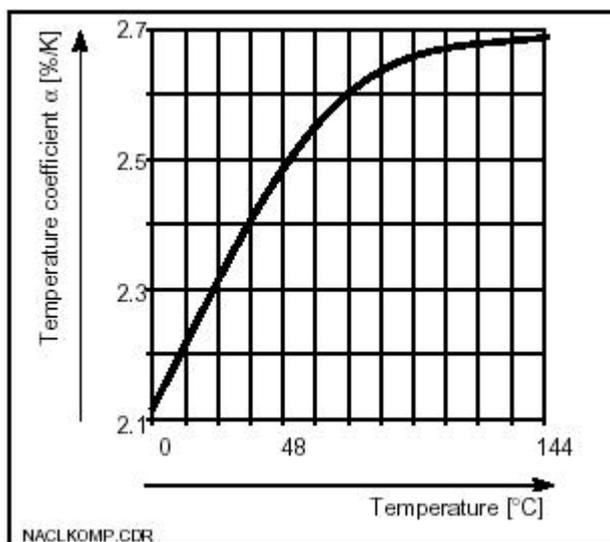
(Linear Compensation)



2

가

(NaCl Compensation)



가

(Ultra-pure water compensation)

(with Table)

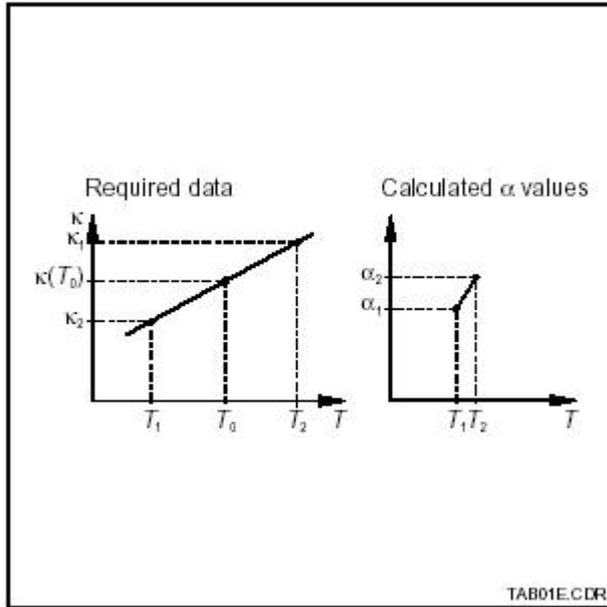
Alpha Table function

가 . . . , 가

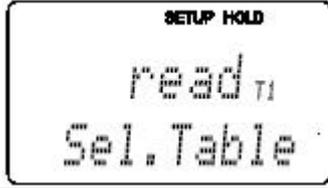
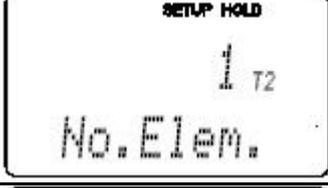
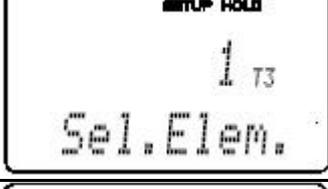
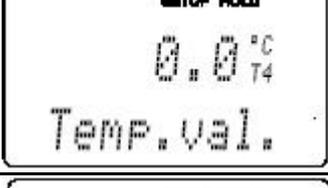
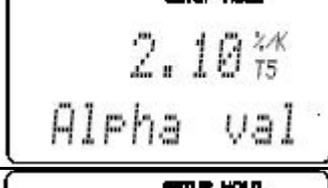
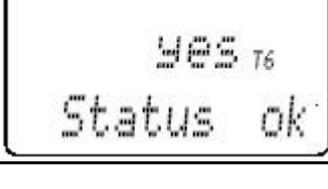
T

K at $T_0 = 25$

K at



$$\alpha = \frac{100}{\kappa(T_0)} \cdot \frac{\kappa(T) - \kappa(T_0)}{T - T_0}; T \neq T_0.$$

	Field	or (Bold :)		
T	Function Group ALPHA TABLE			
T1	Table Option	Read edit		
T2	Table value pairs	1 1 ~ 10		Table 10 Value pairs
T3	Table value pair	1 1 ~ Quantity of table value pairs Assign		T3 ~ T5 T2 "Assign" 가 T6
T4	(X value)	0.0 -35.0 ~ 250.0		1K : 0.0 , 10.0 , 20.0 , 30.0
T5	(Y value)	2.10 %/K 0.00 ~ 20.00 %/K		
T6		Yes no		가. "no"가 ,

5.8

Concentration Plus Packet Transmitter 가 .

(Field 1) .

가 K=1 .

가 ,

, 가

가

Value entry

K6 ~ K8 , , .

Process temperature changeable:

2가 가 가 . 2가

(minimum distance 0.5 °C). , 가

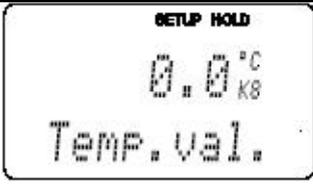
(isothermic characteristics).

Process temperature constant:

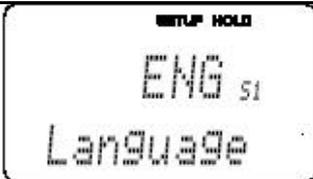
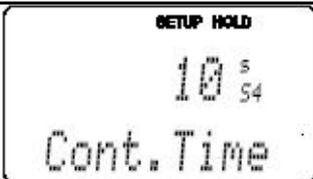
2 . ,

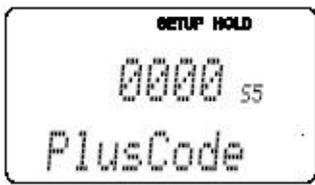
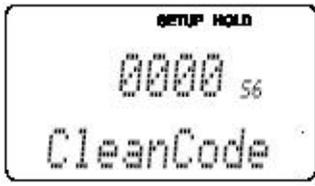
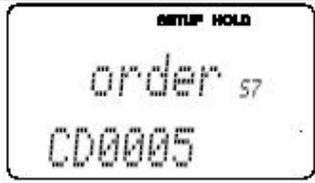
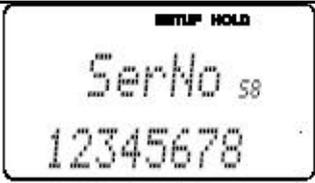
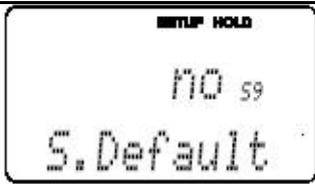
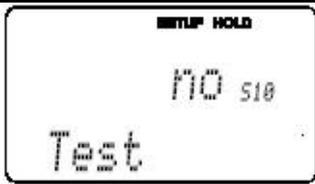
Note:

	Field	or (Bold :)		
K	Function Group Concentration			4
K1	()	1 1 ~ 4		
K2	Table	1 1 ~ 4		(see K1)
K3	Table option	Read Edit		
K4	Triplet	1 1 ~ 10		Triplet 3 가
K5	Triplet	1 1 ~ Number of triplets in K4		Triplet 가
K6		0.0 μ s / cm 0.0 ~ 999 μ s /cm		K5 ~ k8 K4 Triplet K9
K7	K6	0.00% 0.00 ~ 99.99%		A2

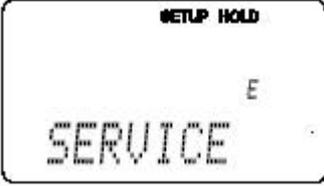
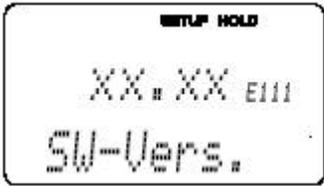
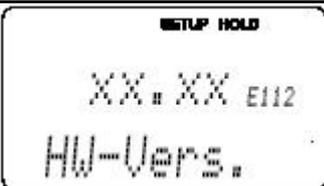
K8	K6	0.0 -35.0 ~ 250.0		
K9		Yes no		No가

5.9 Service

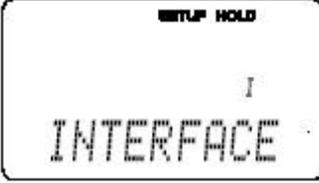
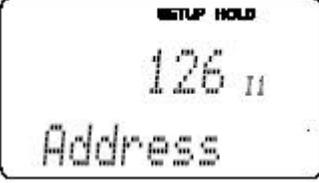
	Field	or (Bold :)		
S	Function Group SERVICE 1			
S1		ENG=english GER=german FRA=French ITA=Italian NEL=dutch ESP=spanish		ENTER S1 가
S2		S+C = during setup and calibration CAL = during calibration Setup = during setup No = no hold		S = setup C = calibration
S3		Off On		OFF
S4		10s 0 ~ 999s		

S5	SW upgrade: Plus packet	0000 0000 ~ 9999		* *PLUS & MINUS , ENTER *
S6	SW upgrade: Chemoclean	0000 0000 ~ 9999		* *PLUS & MINUS , ENTER *
S7	Order code			
S8	Serial Number			
S9	Reset	No Sens = Sensor data Facy = factory settings		*Facy = _____ _____ *Sens = _____
S 10		No Displ = display test		

5.10 Service 2

	Field	or (Bold :)		
E	Function Group SERVICE 2			
E1	Module	Contr = controller(1) Trans = transmitter(2) Main = power unit(3) Rel = relay(4)		
E111 E121 E131 E141				* 가. *E1=Contr: firmware software. *E1=Trans, Main, Rel: Module firmware
E112 E122 E132 E142				가
E113 E123 E133 E143				가
E114 E124 E134 E144				가

5.11

	Field	or (Bold :)		
I	Function Group INTERFACE			
I1	Entry of address	Address HART : 0 ~ 15 or PROFIBUS : 1 ~ 125		For communication only
I2	Tag			Only for communication

5.12



C121 & C126

PLUS & MINUS

가

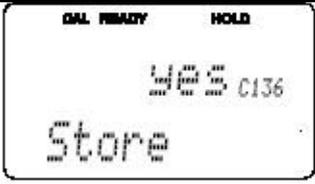
가

“22”

	Field	or (Bold :)		
C	Function Group CALIBRATION			Conductive Airs & InstF 가.
C 1(1)	Inductive Cell	-Airs= Airset(1) -Cellc= Cell constant(2) -InstF= Installation factor(3)		
C 111	Residual coupling start calibration (Airset)			CAL

C 112	Residual coupling is displayed (Airset)	-80.0 ~ 80.0s		Residual coupling measuring system (sensor and transmitter)
C 113		o.k. E xxx		가 o.k.가 E xxx가
C 114		yes no new		C113 가 E xxx no & new가 New , C Yes/no
C 1(2)		-Airs=Airset(1) -Cellc=Cell constant(2) -InstF=Installation factor(3)		
C 121	(MTC)	25.0 -35.0 ~ 250.0		B1 = Fixed ()
C 122		2.10% / K 0.00 ~ 20.00% / K		
C 123		0.0 μS / cm ~ 999 μS / cm		가 .9
C 124		0.0025 ~ 99.99 cm ^l		A5

C 125		o.k. E xxx		가 o.k.가 E xxx가
C 126		yes no new		C113 가 E xxx no & new가 New , C Yes/no
C 1(3)	Inductive sensor (only with Plus package)	-Airs=Airset(1) -Cellc=Cell constant(2) -InstF=Installation factor(3)		
C 131		25.0 -35.0 ~ 250.0		B1 = Fixed ()
C 132		2.10%/K 0.00 ~ 20.00%/K		
C 133		0.0 μs/cm ~ 999 μs/cm		가 .9
C 134	(Installation factor)	1 0.10 ~ 5.00		
C 135		o.k. E xxx		가 o.k.가 E xxx가

	C 136		yes no new		C113 , New Yes/no	가 E xxx no & new가 , C ,
--	-------	--	------------------	--	----------------------------	----------------------------------

6. Interface

7.

- ⇨
- ⇨
- ⇨

7.1 (common problems)

Error			
エラー 9999		CAL & MINUS	4.3
	1- 2- 3- 4- 5- 6- 7- (A6)	1- 2- 3- 4- (no/ATC/MTC) (linear/material own table) 5- 6- 7- : , SUS	* , 8.8.1 * * * 3.5
	1- short 2- short 3- 4- 5- 6- 7- 8- 9- 10-	1,2,3- , , 4- 5- 6- 7- 8- 9- 10- Off On .	EMV :
	1- 2- 3-	1- 2- 3- B1	
	1- 2- 3- 4- (conductive sensor) 5- 6-	1,2- , , 3- : , etc. 4- : 5-	

	(Conductive sensor) 7- 8- (A6)	6- 7- 8-	
	1- 2- 3-	1- 2-Line Routine	
Time	- No	LSR1-2 or LSR1-4	8.2 and 8.3
/ 가	-Controller switched off OFF (manual/off) -Pickup -	-Controller switched On ON -Pickup	5.5 R 2xx S2 ~ S4
/	- ON -Drop out -Control loop	- Off -Drop out - actuators, chemical supply	R 2xx
	-Line open or short-circuited -	- -8.1	
	- -Processor system out of sync	- off - off and on	02 EMV:
	- -Current Loop (500)	- (0 ~ 20mA or 4 ~ 20mA) -	0 211
	-	-	
	- 1	LSCH-	8.2.4 8.3.4
Chemoclean	(LSR1-x) LSR1-2 Chemoclean (handling as with Plus packet, see next line)	LSR1-4 Chemoclean Chemoclean	Module LSR1-4, 8.2.4 and 8.3.4
Plus Package	- Plus package ()	- Plus package LSCH/LSCP	8.3.5

7.2 (using the error messages)

MINUS

Error no.	Cause	Remedial Measures	Contact		Error current		Automatic cleaning trigger	
			Fact	User	Fact	User	Fact	User
E001	EEPROM	-	Yes		No		--	--*
E002	가	-	Yes		No		--	--*
E003			Yes		No		--	--*
E004		-	Yes		No		--	--*
E007			Yes		No		--	--*
E008			Yes		No		No	
E010	short-circuited.		Yes		No		No	
E025	Airset offset	Airset	Yes		No		No	
E036			Yes		No		No	
E037			Yes		No		No	
E045			Yes		No		--	--*
E049	Installation factor		Yes		No		--	--*
E050	Installation factor		Yes		No		--	--*
E055		Conductive medium . Airset	Yes		No		No	
E057			Yes		No		No	
E059			Yes		No		No	
E061			Yes		No		No	
E063	(Current Output 1)	(Configuration)	Yes		No		No	
E064	(Current Output 1)		Yes		No		No	
E065	(Current Output 2)		Yes		No		No	
E066	(Current Output 2)		Yes		No		No	
E067	Alarm threshold limit contactor 1	(Configuration)	Yes		No		No	
E068	Alarm threshold limit contactor 2		Yes		No		No	
E069	Alarm threshold limit contactor 3		Yes		No		No	

E070	Alarm threshold limit contactor 4		Yes		No		No	
E071	/	, table	Yes		No		No	
E077	Temperature outside value table range	, table	Yes		No		No	
E078	Temperature outside concentration table		Yes		No		No	
E079	Conductivity outside concentration table		Yes		No		No	
E080	Current output 1 parameter range too small	Spread current output	No		No		--	--*
E081	Current output 2 parameter range too small	Spread current output	No		No		--	--*
E100	Current simulation active		No		No		--	--*
E101	Service function yes	service OFF OFF and ON	No		No		--	--*
E102			No		No		--	--*
E106	Download yes		No		No		--	--*
E116	Download error		No		No		--	--*
E150	value table 가	value table	No		No		No	
E151	USP		No		No		No	
E152	PCS		No		No		No	
E153	USP		No		No		No	
E154	lower alarm threshold	, manual reference measurement	Yes		No		No	
E155	lower alarm threshold		Yes		No		No	
E156	monitoring point		Yes		No		No	
E157	monitoring point		Yes		No		No	
E162	Dosage stop	CURRENT INPUT , CHECK	Yes		No		No	
E171			Yes		No		No	
E172	Switch-off limit		Yes		No		No	
E173	Current input < 4mA		Yes		No		No	
E174	Current input > 20mA		Yes		No		No	

8. 2

8.1

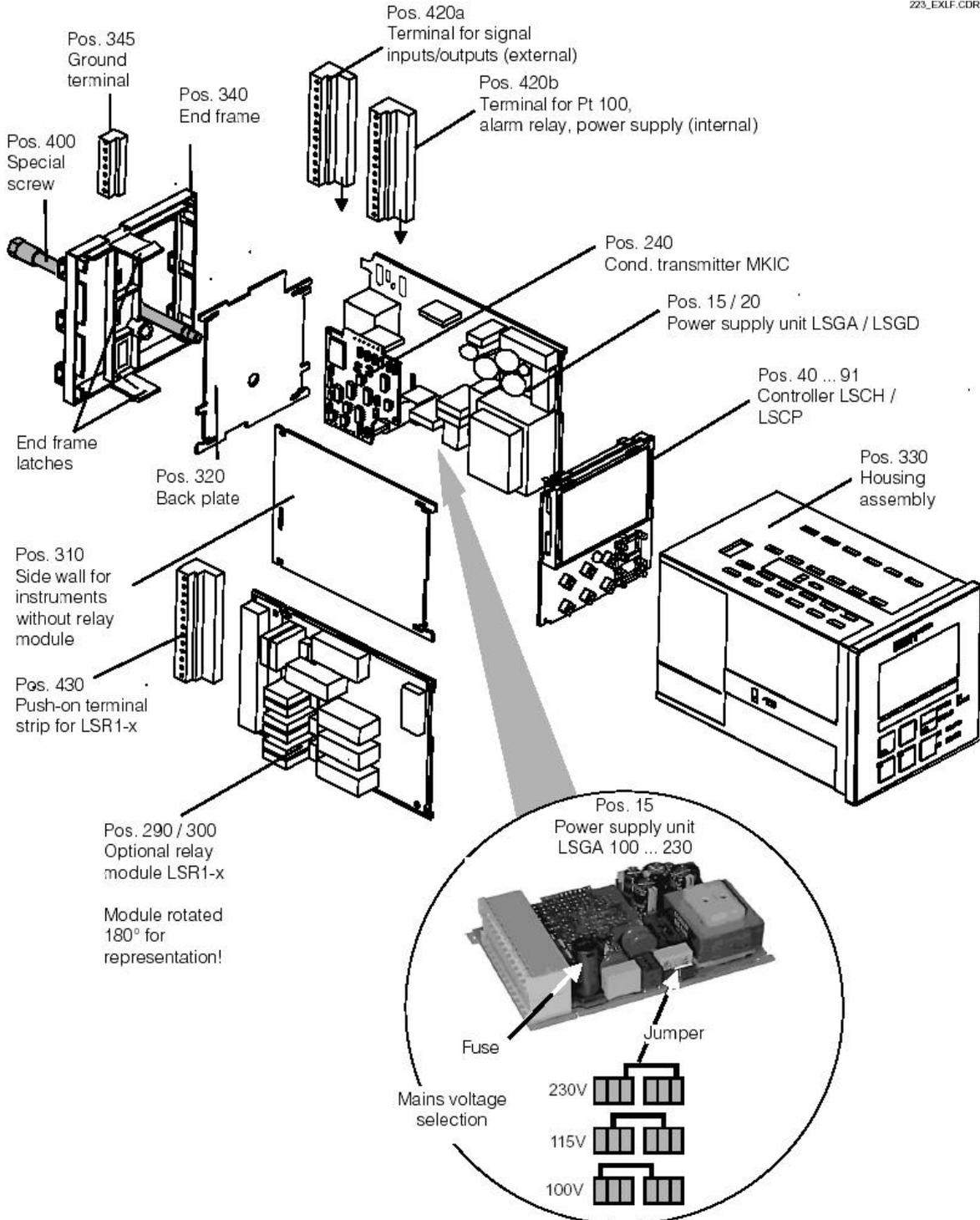
Error			
가 , LED 가	- Off	- 가	(8.2.1 , 8.3.1)
LED	-Controller defective (Module: LSCH/LSCP)	-Controller	
-	-	OLM223 – plug-in	8.2.1 , 8.3.1
-	-	OLM253 –	
	- unit	- unit	
	- (module: MKIC) 7.1	- 가 , 8.8.1 - 11/12 + 13 100 0	8.2.1 , 8.3.1
(current output)	- (Load excessive) - Loop - Shunt/short-circuit	- 0 ~ 20mA or 4 20mA	, LSCxx , Load & shunts current loop
(current output)	- : LSCH/LSCP		가
(Additional relay)가	-OLM 253: Ribbon	ribbon	
가 2	- LSR1-2	LSR1-4	
가 (Plus	-	-	

package)	-LSCH- /LSCP	Plus package Order - SNR LSCH/LSCP (field S8).	
가 (Plus package & Chemoclean) LSCH/LSCP	- (Plus package or Chemoclean)	LSCH / LSCP (E115 to E117.) (Plus packet and / or Chemoclean).	
No HART or PROFIBUS interface function	-Central software -Bus problem	-HART: LSCH-H1 or -H2 PROFIBUS-PA/-DP: LSCP-PA/-DP module, E112 -Device software E111 -	Central Module

8.2 OLM 223

2

223_EXLF.CDR



OLM 223

Pos.	Designation	Name	Function	Order number
15	Power supply unit	LSGA	100/115/230 V AC	51500317
20	Power supply unit	LSGD	24 V AC + DC	51500318
290	Relay module	LSR1-2	2 relays	51500320
300	Relay module	LSR1-4	4 relays	51500321
40	Controller conductive	LSCH-S1	1 current output	51501210
50	Controller conductive	LSCH-S2	2 current outputs	51501212
41	Controller inductive	LSCH-S1	1 current output	51501216
51	Controller inductive	LSCH-S2	2 current outputs	51501218
240	Cond. transmitter	MKIC	Cond. + temperature input	51501206
310	Side panel		Kit with 10 side panels	51502124
330, 340	Housing module		With front membrane, plunger-operated probes, seal, special screw, clamping tappets, all signs	51501075
310, 320, 340, 400	Mechanical parts Housing		Backplate, side wall, end frame, special screw	51501076
420a, 420b	Complete terminal strip set		Terminal strip set inputs/outputs, power supply, alarm relay	51501203
430	Terminal strip		Terminal strip for relay module	51501078
345	Grounding terminal strip		PE and screening connections	51501086

8.4 Spare parts Order

Instrument order code (order code)

Serial number(ser-no)

Software version where available

8.6

8.6.1

Cleaning agents (nach Testmethode DN 42 115)

<Isopropanol, Thinned acids(3%), Thinned alkalis(5%), Ester, Hydrocarbons, Ketone, Household cleaners.>

Mineral acids or alkalis, Benzyl-alcohol, Methylene chloride,

6.6.2

- Oil Grease “Grease Remover”, “Alcohol”, “Washing-up liquid”
- , Metal hydroxide Hydrochloric 3%
가
- REA, Sewage treatment , (Sulphurous) Hydrochloric acid
0.5% Thiocarbamide 8% 가
- , Hydrochloric acid 0.5% Pepsin 1%

8.6.3 (Conductive) (for device test)

Resister

Conductivity Test

Adapter

$$\text{Display Cond(mS/cm)} = K * 1 / R(\text{resistor resistance})(k\Omega)$$

Pt 100 replacement resistances:

Temperature	Resistance value
-20 °C	92,13 Ω
-10 °C	96,07 Ω
0 °C	100,00 Ω
10 °C	103,90 Ω
20 °C	107,79 Ω
25 °C	109,73 Ω
50 °C	119,40 Ω
80 °C	130,89 Ω
100 °C	138,50 Ω
200 °C	175,84 Ω

Replacement resistances:

Resistance R	Cell constant k	Display for conductivity	Display for MΩ
10 Ω	1 cm ⁻¹	100 mS/cm	
	10 cm ⁻¹	1000 mS/cm	
100 Ω	0.1 cm ⁻¹	1 mS/cm	1 kΩ · cm
	1 cm ⁻¹	10 mS/cm	
	10 cm ⁻¹	100 mS/cm	
1000 Ω	0.1 cm ⁻¹	0.1 mS/cm	10 kΩ · cm
	1 cm ⁻¹	1 mS/cm	
	10 cm ⁻¹	10 mS/cm	
10 kΩ	0.01 cm ⁻¹	1 μS/cm	1 MΩ · cm
	0.1 cm ⁻¹	10 μS/cm	100 kΩ · cm
	1 cm ⁻¹	100 μS/cm	
	10 cm ⁻¹	1 mS/cm	
100 kΩ	0.01 cm ⁻¹	0.1 mS/cm	10 MΩ · cm
	0.1 cm ⁻¹	1 μS/cm	1MΩ · cm
	1 cm ⁻¹	10 μS/cm	
1 MΩ	0.01 cm ⁻¹	0.01 μS/cm	100 MΩ · cm
	0.1 cm ⁻¹	0.1 μS/cm	10 MΩ · cm
	1 cm ⁻¹	1 μS/cm	
10 MΩ	0.01 cm ⁻¹	0.001 μS/cm	
	0.1 cm ⁻¹	0.01 μS/cm	100 MΩ · cm

MΩ (pure)

(ultra pure)

K=0.01

K=0.1

8.6.4 (Inductive) (for device test)

Inductive

가

OLM-2x3-ID

가

K

) CLS 50 : K=2, CLS52: K=5.9.

$$\text{Display Cond(ms/cm)} = K * 1 / R(\text{resistor resistance})(k\Omega)$$

Guide values for the simulation CLS 50 at 25 °C:

Simulation resistance R	Cell constant k	Display cond.
2 Ω	2.00 cm ⁻¹	1000 mS/cm
10 Ω	2.00 cm ⁻¹	200 mS/cm
100 Ω	2.00 cm ⁻¹	20 mS/cm
1 kΩ	2.0 cm ⁻¹	2 mS/cm

8.6.5 (Conductive)

- Measuring surface connection:

The measuring surfaces are directly connected to the connections of the sensor connector.

Check with ohmmeter at < 1

- Measuring surface shunt:

There may not be any shunt between the measuring surfaces.

Check with ohmmeter at > 20 M

- Temperature sensor shunt:

There may not be any shunt between the measuring surfaces and the temperature sensor.

Check with ohmmeter at > 20 M

- Temperature sensor:

You can discover the type of the temperature sensor being used by consulting the sensor nameplate. The sensor can be checked at the sensor connector with an ohmmeter:

- Pt 100 at 25 °C = 109.79Ω

- Pt 1000 at 25 °C = 1097.9Ω

- NTC 10 k at 25 °C = 10 kΩ

- Connection:

For sensors with a terminal connection (CLS 12/13) check the assignment of the terminals for

reversals and the tightness of the terminal screws.

8.6.6 (Inductive)

The following data is valid for the sensors CLS 50 and CLS 52.

- Test send coil and receive coil (Red and white coaxial cable, measure each between the inner connector and screen):

- Ohmic resistance approx. 0.5 ... 2

- Inductivity approx. 260 ... 450 mH (at 2 kHz).

- Test coil shunt:

There may be not shunt between the coils (from coax red to coax white). Check with ohmmeter at > 20 M

- Temperature sensor test:

To test the Pt 100, use the table in chap. 8.6.4.

The resistance values between the green and white wires and the green and yellow wires must be identical.

- Test temperature sensor shunt:

There may be no shunts between the temperature sensor (green, white or yellow lines) and the coils (red coaxial cable and white coaxial cable).

Check with ohmmeter at > 20 M

8.6.7

8.6.3 8.6.4

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가

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9.

Mounting accessories

- Weather protection cover OYY 101

For mounting on field housing, for outdoor installation.

Dimensions (H × W × D): 320 × 300 × 270 mm

Material: Stainless steel SS 304, Order no.: OYY 101-A

- Universal upright post OYY 102

Square tube for mounting of field housing.

Dimensions (H × W × D): 1495 × 60 × 60 mm

Material: Stainless steel SS 304, Order no.: OYY 102-A

Sensors

- ConduMax W OLS 12

Conductive conductivity sensor

Technical Information TI 082e00

- OLS 15

Conductive conductivity sensor

Technical Information TI 109e00

- OLS 16

Conductive conductivity sensor

Technical Information TI 227e00

- OLS 19

Conductive conductivity sensor

Technical Information TI 110e00

- OLS 20

Conductive conductivity sensor

Technical Information TI 084e00

- OLS 21

Conductive conductivity sensor

Technical Information TI 085e00

- OLS 30

Conductive conductivity sensor

Technical Information TI 086e00

- OLS 50

Inductive conductivity sensor

Technical Information TI 182e00

- OLS 52

Inductive conductivity sensor

Technical Information TI 167e00

Connection accessories

- Extension cable OLK 5

non-terminated measuring cable for inductive sensors (by the meter)

Order no.: 50085473

- Extension cable OYK 71

Non-terminated measuring cable for conductivity sensors (by the meter)

Order no.: 50085333

- Junction box VBM

Junction box for measuring cable extension between sensors and instrument. Pg 13.5 cable entries.

Material: cast aluminium;

Ingress protection: IP 65

Order no.: 50003987

Assemblies

OLA 111

Immersion assembly for G1 and G $\frac{3}{4}$
conductivity sensors.

Technical Information TI 135e00

Instrument upgrade

(Order only possible with serial number of relevant device)

- Plus package

Order no.: 51500385

- ChemoClean

Order no.: 51500963

- Two-relay card (standard version)

Order no.: 51500320

- Two-relay card (CSA version)

Order no.: 51511446

- Four-relay card (standard version)

Order no.: 51500321

- Four-relay card (CSA version)

Order no.: 51511447

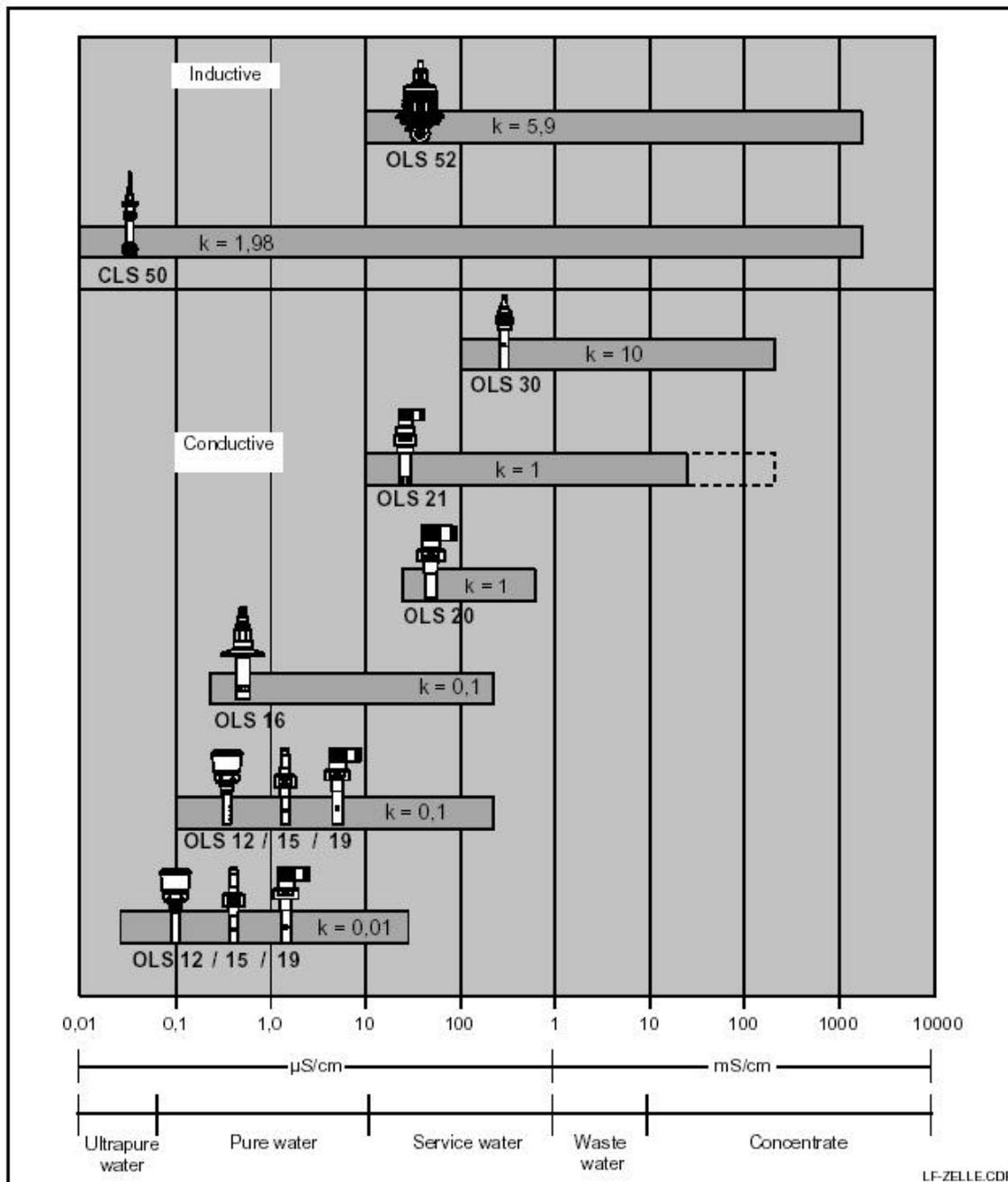
- Two-relay card with current input (standard version / CSA version)

Order no.: 51504304

- Four-relay card with current input (standard version / CSA version)

Order no.: 51504305

Conductivity sensors



10. Technical data

Device name	OLM 223
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Measuring parameters	Conductivity, resistance, concentration, temperature
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Min. spacing for 0 / 4 ... 20 mA signal

Conductivity measurement	Measured value 0 ... 19.99 $\mu\text{S/cm}$: 2 $\mu\text{S/cm}$ Measured value 20 ... 199.9 $\mu\text{S/cm}$: 20 $\mu\text{S/cm}$ Measured value 200 ... 1999 $\mu\text{S/cm}$: 200 $\mu\text{S/cm}$ Measured value 2 ... 19.99 mS/cm : 2 mS/cm Measured value 20 ... 2000 mS/cm : 20 mS/cm
Resistance measurement	Measured value 0 ... 199.9 $\text{k}\Omega \cdot \text{cm}$: 20 $\text{k}\Omega \cdot \text{cm}$ Measured value 200 ... 1999 $\text{k}\Omega \cdot \text{cm}$: 200 $\text{k}\Omega \cdot \text{cm}$ Measured value 2 ... 19.99 $\text{M}\Omega \cdot \text{cm}$: 2.0 $\text{M}\Omega \cdot \text{cm}$ Measured value 20 ... 200 $\text{M}\Omega \cdot \text{cm}$: 20 $\text{M}\Omega \cdot \text{cm}$
Concentration measurement	no minimum spacing

Conductive conductivity / resistance measurement

Measuring range	Conductivity: 0 ... 600 mS/cm (uncompensated) Resistance: 0 ... 200 $\text{M}\Omega \cdot \text{cm}$ Concentration: 0 ... 9999 %
Usable cell constant	$k = 0.0025 \dots 99.99 \text{ cm}^{-1}$
Maximum cable length to sensors	Conductivity: 100 m Resistance: 15 m
Line resistance of measuring cable CYK 71	$60 \Omega \cdot \text{km}^{-1}$
Required conductor cross-section OLM 223	$0.75 \text{ mm}^2 / \text{AWG } 18$
Terminal cross-section	2.5 mm^2
Measuring frequency	Conductivity: 170 ... 2000 Hz Resistance: 170 ... 2000 Hz

Inductive conductivity measurement

Measuring range	0 ... 2000 mS/cm (uncompensated)
Usable cell constant	$k = 0.0025 \dots 99.99 \text{ cm}^{-1}$
Maximum cable length to sensor	55 m (CLK 5)
Required conductor cross-section OLM 223	$0.75 \text{ mm}^2 / \text{AWG } 18$
Terminal cross-section	2.5 mm^2
Measuring frequency	2 kHz

Temperature measurement

Temperature sensor	Pt 100, Pt 1000, NTC
Measuring range	-35 ... +250 °C
Temperature offset range	$\pm 5.0 \text{ }^\circ\text{C}$

Temperature compensation

Compensation types	linear, NaCl, table; only conductive: ultrapure water
Range	-35 ... +250 °C
Reference temperature	25 °C

Digital inputs 1 and 2

Voltage	10 ... 50 V
Current consumption	max. 10 mA

Current input

Current range	4 ... 20 mA, galvanically separated
Load	260 Ω at 20 mA (voltage drop 5.2 V)

Conductivity / resistance signal output

Current range	0 / 4 ... 20 mA, galvanically isolated; error current 2.4 / 22 mA
Load	max. 500 Ω
Maximum resolution	700 digits/mA
Output range	adjustable
Separation voltage	max. 350 V _{rms} / 500 V DC
Overvoltage (lightning) protection	acc. to EN 61000-4-5:1995

Temperature signal output (optional)

Current range	0 / 4 ... 20 mA, galvanically isolated
Load	max. 500 Ω
Maximum resolution	700 digits/mA
Output range	adjustable, Δ 10 ... Δ 100 % from measuring range end
Separation voltage	max. 350 V _{rms} / 500 V DC
Overvoltage (lightning) protection	acc. to EN 61000-4-5:1995

Auxiliary voltage output

Output voltage	15 V \pm 0.6 V
Output current	max. 10 mA

Contact outputs (floating changeover contacts)

Switching current with ohmic load ($\cos \varphi = 1$)	max. 2 A
Switching current with inductive load ($\cos \varphi = 0.4$)	max. 2 A
Switching voltage	max. 250 V AC, 30 V DC
Switching power with ohmic load ($\cos \varphi = 1$)	max. 500 VA AC, 60 W DC
Switching power with inductive load ($\cos \varphi = 0.4$)	max. 500 VA AC, 60 W DC

Limit contactor

Pickup / dropout delay	0 ... 2000 s
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Controller

Function (adjustable)	Pulse length / pulse frequency controller
Controller response	P, PI, PD, PID
Controller gain K_p	0.01 ... 20.00
Integral action time T_i	0.0 ... 999.9 min
Derivative action time T_d	0.0 ... 999.9 min
Period for pulse length controller	0.5 ... 999.9 s
Frequency for pulse frequency controller	60 ... 180 min ⁻¹

Alarm

Function (switchable)	Steady / fleeting contact
Alarm threshold adjustment range	Conductivity / resistance / concentration / temperature / USP: total measuring range
Alarm delay	0 ... 2000 s (min)

Conductivity measurement

Measuring error ¹ Display	max. 0.5 % of measured value \pm 4 digits
Repeatability	max. 0.2 % of measured value \pm 2 digits
Measuring error ¹ conductivity of signal output	0.75 % of current output range

Resistance measurement

Measuring error ¹ display	max. 0.5 % of measured value \pm 4 digits
Repeatability	max. 0.2 % of measured value \pm 2 digits
Measuring error ¹ resistance of signal output	0.75 % of current output range

Temperature measurement

Measured value resolution	0.1 °C
Measured error ¹ display	max. 1.0 % of measuring range
Measured error ¹ temperature signal output	max. 1.25 % of current output range

Ambient temperature (nominal operating conditions)	-10 ... +55 °C
Ambient temperature (limit operating conditions)	-20 ... +60 °C
Storage and transportation temperature	-25 ... +65 °C
Relative humidity (nominal operating conditions)	10 ... 95 %, non-condensing
Ingress protection of panel-mounted instrument	IP 54 (front panel), IP 30 (enclosure)
Ingress protection of field instrument	IP 65
Pollution degree	2 acc. to IEC 61010-1
Installation category	II
Maximum altitude	2000 m above sea level
Electromagnetic compatibility	Interference emission and immunity to EN 61326: 1997/ A1: 1998

Dimensions of panel-mounted unit (H x W x D)	96 x 96 x 145 mm
Installation depth	approx. 165 mm
Dimensions of field instrument (H x W x D)	247 x 170 x 115 mm
Weight of panel-mounted unit	max. 0.7 kg
Weight of field instrument	max. 2.3 kg
Measured value display	LC display, 2-line, 5- and 9-digit with status indicators

Materials

Housing of panel-mounted unit	Polycarbonate
Front membrane	Polyester, UV-resistant
Field housing standard versions CSA GP version	ABS PC Fr Polycarbonate

Supply voltage	100 / 115 / 230 V AC +10 / -15 %, 48 ... 62 Hz 24 V AC/DC +20 / -15 %
Power consumption	max. 7.5 VA
Mains fuse	Fine-wire fuse, medium time-lag 250 V / 3.15 A

11. Appendix

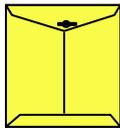
**Transmitter for Conductivity
OLM223**



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