Measuring and Controlling Unit
Multronic OC

- **One channel measuring and controlling unit for pH / conductivity / Chlorine measuring**
- **Automatic temperature compensation**
- **Measuring and control behaviour simultaneously represented on illuminated display**
- **Excellent interference immunity through galvanic separation of measurement module and outputs**
- **Optimal process adaptation due to free-adjustable 2-/3- point P-, PI-, PID-, Fuzzy or adaptive Fuzzy control course for each measurement module**
- **Two switch outputs and one standard signal output**
- **Free selection of control behaviour**
- **Bidirectional data transfer with MCT technology**
- **ProfibusDP technology**

The MULTRONIC OC measurement and control range comprises a comprehensive selection of measurement and control units appropriated to all types of applications in industrial and chemical process technology.

Each measurement and control task has its own individual equipment requirement.
To meet this requirement, the modern modular system of the MULTRONIC OC measurement and control range is designed to provide the ideal module for each individual situation.

MULTRONIC OC can operate as an independent measurement and control unit or can be integrated into a complete system. With MCT technology a software supported PC data transfer is possible.

Technical data:

Power supply optional	230 V 50/60 Hz, 115 V 50/60 Hz
Safety type	IP 65
Inputs	according to measurement module equipment
Outputs	max. 3 digital and 1 analogue RS232 interface
Power consumption	25 W
Accuracy of measurement	1 % of final value of measurement range
Permissible ambient temperature	0° C to + 45° C
Resistance	chemically resistant plastic housing (Noryl)
Display	illuminated graphic display
Accuracy of display	+/- 0.5 %
Languages on display	English, German, French (optional)
ProfibusDP	up to 12 Mbit/sec (autodetect)
Dimensions (h ∗ w ∗ d)	290 x 224 x 96 mm
Weight	2.5 kg

Notice: To guarantee the newest state of our products, we reserve the rights for single technical changes.

pH measurement

Measuring ranges:	0 - 14 pH
	2 - 12 pH
	3 - 8 pH

Inductivity measurement

Measuring ranges:	0 - 2 mS/cm
	0 - 20 mS/cm
	0 - 200 mS/cm
	0 - 2000 mS/cm

Conductive conductivity measurement (contact conductivity)

Measuring ranges:	0-2 µS/cm
	0-20 µS/cm
	0-200 µS/cm

Chlorine measurement

Measuring range:	0-2 mg/l
	0-20 mg/l

Outputs per measurement module

Switch outputs:	2 auxiliary contacts
	230 V AC / 3 V
Analogue outputs:	0-20mA
	4-20mA

Settings

Signal unit

Nominal value (W):	Measuring range of measurement module
Switch difference (XSD):	0 ... 30.0 %
Start delay:	0 ... 240 seconds
Switch-off delay:	0 ... 240 seconds
Switching point interval (LW):	± measurement range
Switch difference (X2SD):	0 ... 30.0 %

Two-position controller

Nominal value (W):	Measuring range of measurement module
Proportioning band (XP1):	0 ... 999.9 %
Rate time (TV):	0 ... 1.200 seconds
Reset time (TN):	0 ... 3.600 seconds
Starting time (T_{min}):	0 ... 60 seconds
Switch. point interval (LW):	± measurement range
Switch difference (X2SD):	0 ... 30.0 %

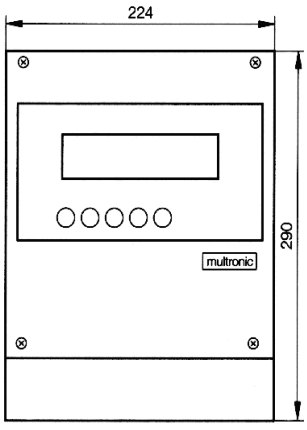
Three-level controller

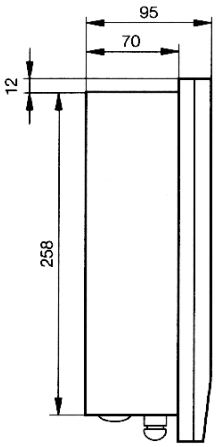
Nominal value (W):	Measuring range of measurement module
Proportioning band (XP1):	0 ... 999.9 %
Proportioning band (XP2):	0 ... 999.9 %
Rate time (TV):	0 ... 1.200 seconds
Reset time (TN):	0 ... 3.600 seconds
Switching point interval (XSH):	0 ... 20.0 %
Starting time (T_{min}):	0 ... 60 seconds

Limit contact

Limit contact (L-):	Measuring range of measurement module
Limit contact (L+):	Measuring range of measurement module
Switch difference (X2SD):	0 ... 30 %

Dimensions:





Ordering Data:

Article	Material No.
Multronic OC pH	155108
Multronic OC Conductivity (inductive)	155109
Multronic OC Conductivity (conductive)	155110
Multronic OC Chlorine	155111

Inductive conductivity measurement probes with integrated temperature sensor

Construction:	Oval spherical cap, streamline-shaped with 8 mm meter flume diameter
Material:	PP (polypropylene)
Dimensions:	39 x 50 (Ø ∗ h)
Pressure resistance:	PN = 10 bar at 20° C
Temperature resistance:	max. 90° C
Temperature sensor:	NTC resistor (R25 = 10 kΩ)
Time of response of temperature sensor in measurement cell:	approx. 30 s (90 %-value) with stainless steel sensor
Material sensor's protecting tube:	Stainless steel, 1.4571
Sealing element:	O-ring, EPDM 281
Length connection cable:	10 m, possible extension with terminal box 288101
Type of lead:	6-pin special measurement lead
Measuring lead connection:	- sensor side: permanent connection - unit side: plug-in screw-type terminals

Inductive conductivity measurement probes for measuring ranges 0 – 2, 0 – 20, 0 – 200, 0 – 2.000 mS/cm

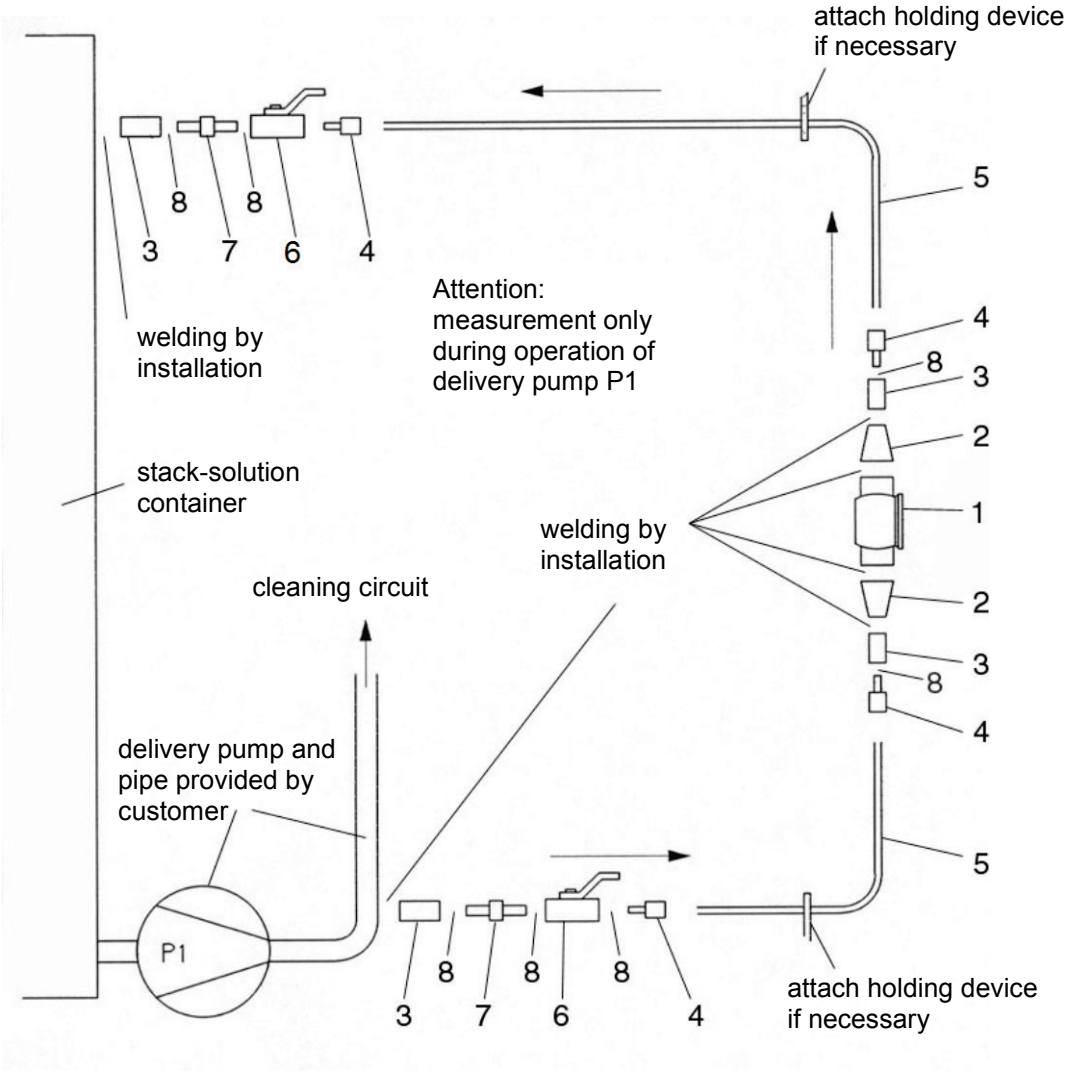
	Article	Material No.
	**Conductivity measuring probe as above, with adapter** for PP flow fitting or PVC flow fitting Measuring probe material: PP Adapter material: PP	287422
	**Conductivity measuring probe as described, with adapter** for VA tank welding fitting and VA flow fitting, DN 50 Measuring probe material: PP Adapter material: PP	287423
	**Conductivity measuring probe as described, with bulkhead screw connection** for tank wall installation, 21 mm bore-diameter required Housing material measuring probe: PP	287428

Article	Material No.
Conductivity measuring probe as described, but in immersion probe version Immersion depth as desired adjustable up to 1000 mm Housing material measuring probe: PP Material immersion tube: PP Immersion tube Ø: 32 mm	287424

Calibration box for conductivity measurement (inductive) with simulation resistances for the measurement ranges 0 ... 2 mS/cm (shielded probe) 0 ...2, 0 ... 20, 0 ... 200 mS/cm (not shielded probe)	255195
Calibration resistance for conductivity measurement for the measurement range 0 - 2000 mS/cm	on request
Calibration resistance for inductive bleeding for the measurement range 0 - 5000 µS/cm	255198

	Article	Material No.
	**Tank welding fitting** Material: stainless steel 304 (1.4301) To be used with probe 287503	287505
	**Flow fitting** Material: PP Temperature resistance: up to 80° C Connections: G 1/2"i To be used with probe 287502 or 287521	287506
	**Flow fitting** Material: PVC Temperature resistance: up to 50° C Connections: d50 adhesive muffs To be used with probe 287502 or 287521	287514
	**Flow fitting with weld-on end** Nominal diameter: DN 50 (int. Ø/ext. Ø = 49/52 mm) Material: Stainless steel 304 (1.4301) To be used with probe 287503	287507
	**Terminal box** for interference-free extension of the sensor cable	288101
	Measurement lead extension LIYY - LIYCY, 4 x 0.5 (please indicate the desired length)	418437041
	Note: **With a measuring range of 0-2 mS/cm, an extension of the measuring cable to more than 10 m is not recommended.**	

Suggested solution: **Measurement system configuration in by-pass to a circulation pump with short return to tank.**



Article		Material No.	Pc.
Pos. 1	Flow fitting DN 50	287507	1
Pos. 2	Concentric d 50 - 25 reducer seamless stainless steel 304	415508873	2
Pos. 3	Weld-on sleeve G 1/2", stainless steel 304	415203424	4
Pos. 4	Cutting-ring screw connection G 1/2“ for 12 x 1.5 mm tube	415101885	4
Pos. 5	12 x 1.5 mm tube, stainless steel 304	415031164	4 m
Pos. 6	Ball stop cock G 1/2", stainless steel 304	415502024	2
Pos. 7	Double nipple, G 1/2", stainless steel 304	415203604	2
Pos. 8	Teflon sealing tape (roll)	417100813	1

Conductivity measurement probes with integrated temperature sensor PT 100

Material probe:	PVC / 1.4571
Material temperature sensor:	1.4571
Pressure resistance:	10 bar (at 20° C)
Temperature resistance:	50° C
Cell constant:	K = 0.1
Cable length:	10 m

Ready-made complete unit with housing:

Article — **Material No.**

Conductive conductivity measurement probe as described above — 255143
installed in PVC-flow fitting seat
Temperature: max. 55° C
Connections: d 32 adhesive muffs

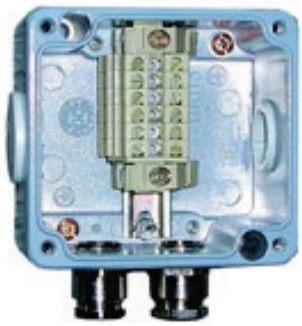
Conductive conductivity measurement probe as described above — 255144
installed in PVC immersion fitting
Temperature: max. 50° C
Tube diameter: ext. 32 mm
Length: 1000 mm

Conductive conductivity measurement probe as described above — 255145
with PVC bulkhead screw connection for tank wall installation
G = ext. ¾"
L = 16 mm
Flat seal: EPDM
Cable length: 10 m

Conductive conductivity measurement probe — on request
Hot water version up to 120° C, stainless steel/PVDF
G = ext. ¾"
Flat seal: EPDM
Cable length: 10 m

Article	Material No.
Conductivity measurement probe **without** PVC flow fitting and **without** connection cable	418811358
Conductivity measurement probe **without** PVC immersion fitting and **without** connection cable	35514403
Conductivity measurement probe **without** bulkhead screw connection and **without** connection cable	418811357

Calibration box for conductivity measurement (conductive) with simulation resistances for the measurement ranges 0 ... 2, 0 ... 20, 0 ... 200 µS/cm	255196
Calibration box for bleeding (conductive) with simulation resistances for the measurement ranges 0 ... 5, 0 ... 50, 0 ... 500 µS/cm	255199
Calibration box for conductivity measurement (conductive) **Pharmacos** with simulation resistances for the measurement ranges 0 ... 2, 0 ... 20, 0 ... 200 µS/cm	255188



Terminal box for interference-free extension of the sensor cable	288101
Measurement lead extension LIYY - LIYCY, 4 x 0.5 (please indicate the desired length)	418437041

Note:
With a measuring range of 0-2 mS/cm, an extension of the measuring cable to more than 10 m is not recommended.

Accessories:

	Article	Material No.
	pH-Combination Electrodes with screw-in thread PG 13.5 and plug-in screw connection, glass shaft = 120 mm, Ø = 12 mm, collector Ag/AgCl, sintered	
	**pH-Combination Electrodes** with dirt-repelling PTFE-circular diaphragm pH range: 0..12 Temperature range: -5° C ...+80° C Pressure: up to 6 bar Minimum conductivity: 100 µS/cm	418853008
	pH-Combination Electrode with integrated temperature sensor Pt 100 with dirt-repelling PTFE-circular diaphragm pH range: 0..12 Temperature range: -5° C ...+80° C Pressure: up to 10 bar Minimum conductivity: 100 µS/cm **Note:** 5-wired connection cable is required	on request
	pH-Combination Electrode with 3 ceramic diaphragms pH range: 0..12 Temperature range: -5° C ...+80° C Pressure: up to 3 bar Minimum conductivity: 100 µS/cm	418853011
	pH-Combination Electrode with ceramic diaphragm pH range: 1..14 Temperature range: +10° C ...+130° C Pressure: up to 3 bar Minimum conductivity: 100 µS/cm	418853016
	**Temperature sensor Pt 100** with PG 13.5 screw-in thread and screw connection glass shaft Ø = 12 mm, L = 120 mm Temperature up to 100° C	418853004

	Article	Material No.
	**Impedance converter** We recommend the installation of the impedance converter in order to prevent negative influences to the measurement signal of pH-measurement due to electrical fields of near live wires, dirt or moistures. The impedance converter is also used to short-out higher distances (more than 10 m) between measurement chain and measurement unit. The impedance converter is screwed onto the measurement chain directly. The delivery performance includes also an battery (live approx. 5 years). Internal resistance: $R_i \leq 5\ \Omega$ Permitted surrounding temp.: -10...+50° C Permitted storing temp..: -10...+60° C Housing: PVC Length: 108 mm Weight: 0.09 kg	418853005
	**Connection cable (doubly shielded) with rotating matching plug for pH-measurement**	
	Length 5 m	418853106
	Length 10 m	418853107
	Length 15 m	418853108
	Length 20 m	418853109
	Connection cable (3-conductor connection) with rotating matching plug for temperature-measurement	
	Length 10 m	255197
	Connection cable (doubly shielded) with rotating matching plug for pH electrode with integrated temperature sensor Pt 100	
	Length 10 m	on request

	Article		Material No.
	Buffer solutions		
	pH 4.01	20 ml	418853125
	pH 7.00	20 ml	418853126
	pH 9.21	20 ml	418853127
	pH 4.01	1 l	418853121
	pH 7.00	1 l	418853122
	pH 9.21	1 l	418853123
	**Detergent** for Combination pH and ORP/Redox Electrodes Pepsin-hydrochloric acid solution 250 ml		418853128
	**Angle seat flow fitting** for Combination pH or ORP/Redox Electrodes		418853202
	Material:	transparent PVC	
	Operational temp.:	max. 60° C	
	Pressure resistance:	10 bar (at 20° C) 5 bar (at 40° C) 1 bar (at 60° C)	
	Nominal diameter:	DN 25, 1" (d = 32)	
	Connections:	d32 adhesive muffs	
	**Flow Fitting** for 3 measuring probes		418853213
	Material:	PP	
	Angle support:	stainless steel	
	Operational temperature:	max. 80° C	
	Pressure resistance:	10 bar (at 20° C)	
	Connection thread:	G1/2	
	Hose connection:	6/12 mm (int. Ø/ext. Ø)	

Article	Material No.

(shorten immersion depth)

Immersion fitting including fixing flange — 287430

for combination pH or ORP/Redox electrodes

Immersion depth can be shortened by taking out pipe section.

Material:	PP
Operational temperature:	max 80° C
Pipe diameter:	32 mm
Usable immersion depth max.:	980 mm*
Usable shortened immersion depth:	525 mm
Fixing flange Ø:	70 mm

* optional elongation (accessories on request)

Keep-wet-tray — 287523

for pH-immersion fitting
The electrode is automatically kept damp when the tank fluid level drops

Material:	PP
Operational temperature:	max. 60° C
Suitable for pipe diameter:	32 mm

Manual armature for Combination pH ORP/Redox Electrodes (alternative) — on request

The armature enables the sensor installation and removal as the check or calibration without interruption of the process-control.

Material:	stainless steel 1.4571/PP
Connection thread:	3/4"
Mounting:	tank or container wall or in pipes
Installation:	as shown (do not install electrode head over) 90° off-axis angle (pipe axis) at least 10° slopping

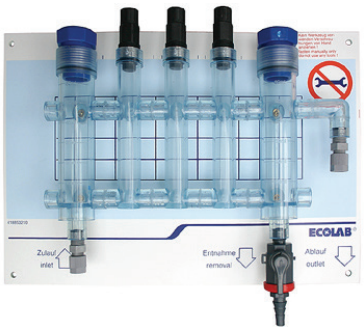
Article	Material No.

Screw-in fitting for pH electrodes — on request

The screw-in fitting enables a simple and low priced installation of combination pH or ORP/Redox electrodes with a length of 120 mm in pipes or container walls.
Condition: bushing with ¾“ inside thread

Material:	stainless steel 1.4571/PP
Connection thread:	¾“
Mounting:	tank or container wall or in pipes
Installation:	as shown (do not install electrode head over) 90° off-axis angle (pipe axis) at least 10° slopping

	Article	Material No.
	**PVC Chlorine measurement cell** **CL4.1Up (previous name CL6.0)** for the measurement of inorganic Chlorine up to 20 mg/l, Chlorine Dioxide, ozone with 4-pin screw and plug connection Ø: 25 mm L: 175 mm Power supply: 12 V DC Output signal: 100 mV per mg/l chlorine Operational temperature: 0 - 40° C Measuring range: 0 - 20 mg/l	418853012
	4-pin measurement cable unbalanced with screw-type locking connector Length: 2 m	418853014
	**P3 photometer for Cl and ClO_2** in plastic case complete with 1 set of reagent chemicals	415711161

	Article	Material No.
	**Flow fitting 2 x PG 13.5** Material: ABS Operating pressure: 3 bar Max. operating temperature: 50° C 2 pressure-resistant sealing plugs for Pg 13.5 probes, 2 hose connections ¼“ for 6/8 mm hose, 1 test portion cock ¼“, 3 Viton flat seals	418853207
	**Flow fitting 1 x G 1“, 2 x PG 13.5** Material: ABS Operating pressure: 3 bar Max. operating temperature: 50° C 2 pressure-resistant sealing plugs for Pg 13.5 probes, 1 pressure-resistant sealing plug for 1“, installation of a preliminary filter is possible, 1 safety assembly set for chlorine measurement cell, 2 hose connections ¼“ for 6/8 mm hose, 1 test portion cock ¼“, 3 Viton flat seals	418853208
	**Flow fitting 1 x G 1“, 3 x PG 13.5** Material: ABS Operating pressure: 3 bar Max. operating temperature: 50° C 3 pressure-resistant sealing plugs for Pg 13.5 probes, 1 pressure-resistant sealing plug for 1“, installation of a preliminary filter is possible, 1 safety assembly set for chlorine measurement cell, 2 hose connections ¼“ for 6/8 mm hose, 1 test portion cock ¼“, 3 Viton flat seals	418853209
	**Flow fitting 2 x G 1“, 3 x PG 13.5** Material: ABS Operating pressure: 3 bar Max. operating temperature: 50° C 3 pressure-resistant sealing plugs for Pg 13.5 probes, 2 pressure-resistant sealing plugs for 1“, installation of a preliminary filter is possible, 2 safety assembly sets for chlorine measurement cell, 2 hose connections ¼“ for 6/8 mm hose, 1 test portion cock ¼“, 3 Viton flat seals	on request

Article **Material No.**

Electronic flow control 418853211

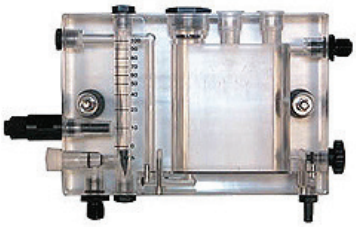
Electronic scanning with „open collector“ output for processing of the signal.
Probe incl. 2 m connection cable with 4-pin plug, optical flow indication

Power supply: 6 - 24 V DC

Preliminary filter 1“ 418853212

For screwing into the 1“ flow fittings

housing material: ABS
filter material: PE
mesh size: 120 filaments per inch



Acrylic flow fitting 283120

with integrated flow control, test portion cock, and adjusting cock for flow.
Flow fitting can be opened for cleaning.
Dimensions (h ∗ w ∗ d) : 200 x 300 x 50 mm
for the connection of one:
- pH probe with PG 13.5
- Redox probe with PG 13.5
- Chlorine dioxide or PAA or Chlorine measurement cell with 1"
- Connector cable flow control, length: 1m

Accessories
Spare Parts Chlorine Measurement

Spare parts:

	Article	Material No.
	**Diaphragm cap - Type MK2.0** for chlorine measurement cell, incl. special emery for sensor head cleaning	418853013
	**Electrolyte Type ECL1** for chlorine measurement cell **(CL4.1Up/CL6.0)**, 100 ml	418853027

General accessories:

	**MCT CD** Software for configuration and data transfer via RS232 interface	255152
	Connection cable 5 m for data exchange of Multronic and PC	255157