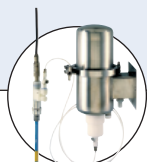# Multichannel, multifunction Transmitter/Controller

- Compatible with most common flow, pH/O.R.P. and conductivity sensors, directly connected
- Analogue and digital input signals
- Easy, intuitive user interface supported by a large adjustable backlit display (4 user defined views)
- Basic transmitter/controller with hardware extension (up to 6 free slots), selectable software extensions
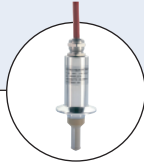- Data logging

Type 8619 can be combined with...
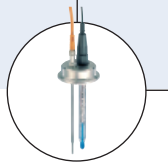
Type 8200+8203
pH/O.R.P. sensor

Type 8201
pH system

Type 8221
Conductivity sensors
4-pole technology

Type 8220
2-pole technology

Type 8030
INLINE flowmeter

Type 8802
Process control valve

The 8619 multichannel multifunction is a transmitter/controller for connection of sensors which deliver raw signals for pH, O.R.P. and conductivity and flow via pulses or sensors which delivers analogue signals: 0… 20 mA, 4… 20 mA, 0 - 5 V, 0 - 10 V.

Type 8619 is the ideal device for measurement and control and as well dosing processes e.g. in applications of water treatment plants (like boiler, cooling tower or reverse osmosis systems) and food and pharma plants.

Modularity in hardware and software offer high flexibility for adjusting it to the applications resulting in having a very good price to functionality relation.
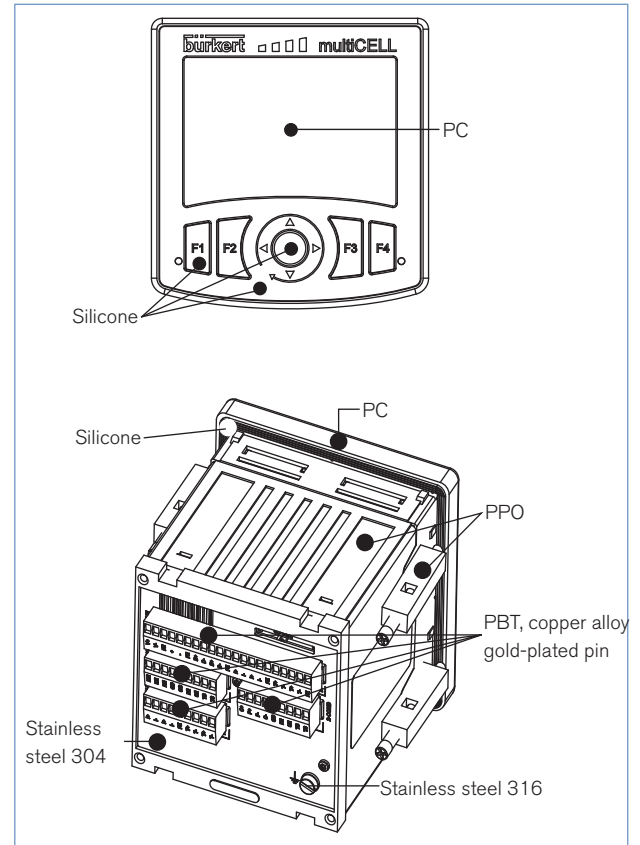
Sophisticated electronics and state of the art control algorithms ensure that optimum process control is maintained at all times with minimal operator intervention and achieving highest quality.

Technical data	
General data	
Mounting	panel mount unit for 92 x 92 mm cutout
Materials	
Housing*, fastening element / Seal	PPO / Silicone
Cover, vision panel / Overlay	PC / Silicone rubber
Backplate / Screws	Stainless steel 304 / Stainless steel 316
Plug-in connector / Pin	PBT / Copper alloy gold-plated
Display	LC graphic display, light blue backlighted; 128 x 168 pixels resolution; German, English, French languages
Keypad	4 soft keys [F1] [F2] [F3] [F4] for dynamic functions 1 central navigation key with [↑] [↓] [→] [←] assignments
Data logger	up to 16 values
Sensor monitor	Direct display and verification of measured sensor values
Clock	Real-time clock with date
Module slots	6
Electrical connection	Plug-in connectors
Recommended cable	Shielded cable
Solid H05(07) V-U	0.2 to 1.5 mm^2
Flexible H05(07) V-K	0.2 to 1.5 mm^2
With wire end ferrule	0.2 to 1.5 mm^2
With plastic collar ferrule	0.2 to 1.5 mm^2

* on request: plastic and stainless steel wall mount enclosure

Technical data - Mainboard

Electrical data	
Operating voltage ("SUPPLY")	12 - 36 V DC, filtered and regulated
Power consumption (of multiCELL device - without additional modules and outputs not connected)	Max. 1.5 VA
Power charges ("PWR OUT")	12 - 36 V DC, max 1.8 A
Digital inputs DI1, DI2	Voltage: 0 - 36 V DC, input impedance 3 kΩ Switching threshold : V_{on} = 5 - 36 V DC, V_{off} < 2 V DC; Frequency: 0.5 to 2500 Hz Galvanic insulation, protected against reversed polarity of DC and voltage spikes
Digital outputs DO1, DO2	Transistor: can be wired as PNP or NPN, galvanic insulation, protected against short circuit, max. 36 V DC, max. 700 mA if only one transistor output is used, 1 A max. in total if both transistor outputs are used; Operating modes: On/Off, Hysteresis, Window, PWM, PFM, Pulse; Frequency: max. 2000 Hz
Analogue output AO1, AO2	4... 20 mA, can be wired as sourcing or sinking, galvanic insulation, protected against reversed polarity of DC, max. loop impedance: 1100 Ω at 36 V DC, 610 Ω at 24 V DC, 100 Ω at 12 V DC
Memory card Type	SD (Secure Digital) or SDHC (Secure Digital High Capacity)
Capacity	max. 8 GB

Materials view

Silicone — PC

Silicone — PC — PPO — PBT, copper alloy gold-plated pin — Stainless steel 304 — Stainless steel 316

Additional modules

4 different types of modules are available and can be inserted into any of the 6 slots (preconfigured at the factory)
- input module: 2 analogue inputs (4... 20 mA or 0... 20 mA or 0 - 5 V or 0 - 10 V) and 2 digital inputs (static or frequency/puls).
- output module: 2 transistor outputs and 2 analogue 4... 20 mA outputs
- input pH/ORP and Pt100/Pt1000 modules
- input conductivity and Pt100/Pt1000 modules

Technical data - input module

Power consumption	0.1 VA
Analogue inputs AI1, AI2	can be wired as sourcing or sinking, galvanic insulation
Current	range: 0/3.5 - 22 mA max. voltage: 36 V DC impedance: 50 Ω resolution: 1.5 µA
Voltage	range: 0 - 5/10 V DC max. voltage: 36 V DC impedance: 110 kΩ resolution: 1 mV
Error	±0,25% of measured value
Digital inputs DI1, DI2	Voltage: 0 - 36 V DC, input impedance 3 kΩ Switching threshold : V_{on} = 5 - 36 V DC, V_{off} < 2 V DC; Frequency: 0.5 to 2500 Hz Galvanic insulation, protected against reversed polarity of DC and voltage spikes

Technical data - output module

Power consumption	Max. 0.1 VA
Digital outputs DO1, DO2	Transistor: can be wired as PNP or NPN, galvanic insulation, protected against short circuit, max. 36 V DC, max. 700 mA if only one transistor output is used, 1 A max. in total if both transistor outputs are used; Operating modes: On/Off, Hysteresis, Window, PWM, PFM; Frequency: max. 2000 Hz
Analogue output AO1, AO2	4... 20 mA, can be wired as sourcing or sinking, galvanic insulation, protected against reversed polarity of DC, max. loop impedance: 1100 Ω at 36 V DC, 610 Ω at 24 V DC, 100 Ω at 12 V DC

Technical data - pH/ORP module	
Power consumption	0.1 VA
pH/ORP input	simultaneous pH and ORP measurement with input for electrochemical pH/ORP
Temperature input	Pt100/Pt1000, 2 or 3 wires
pH measurement Measuring range Resolution Accuracy	 -2.0... 16 pH or -600... +600 mV 0.01 pH or 0.1 mV ±0.02 pH or 1 mV
ORP measurement Measuring range Resolution Accuracy	 -2000... +2000 mV 0.1 mV ±1 mV
Temperature measurement Measuring range Resolution Accuracy	 -25°C to +130°C (-20°F to 266°F) 0.1°C (0.18°F) ±1°C (1.8°F)

Technical data - conductivity module	
Power consumption	0.25 VA
Conductivity input	Operation with 2- or 4-pole-technology sensors
Temperature input	Pt100/Pt1000, 2 or 3 wires

Conductivity/Resistivity measurement
Conductivity
  Measuring range
  Resolution
  Error (without sensor)
Resistivity
  Measuring range
 	
  Resolution
  Error (without sensor)
	
	0 µS/cm... 2 S/cm (function of the conductivity cell)
	1 nS/cm
	< 0.5% of measured value
	
	0.5 Ω.cm... 100 MΩ.cm (function of the conductivity cell) - 5.0 Ω... 1 MΩ (conductivity module alone)
	0.1 Ω.cm
	< 0.5% of measured value

Temperature measurement Measuring range Resolution Accuracy	 -40°C to +200°C (-40°F to 392°F) 0.1°C (0.18°F) ±1°C (1.8°F)

Environment conditions and standards - Mainboard, pH/ORP, conductivity, input and output modules			

Ambient temperature
Operation
  Only Mainboard
 	
  Min. 1 additionnal module
 	
  Storage
	
	-10°C to +70°C (14°F to 158°F) - limited to 0°C to +70°C (32°F to 158°F) if memory card is used
	-10°C to +60°C (14°F to 140°F) - limited to 0°C to +60°C (32°F to 140°F) if memory card is used
	-20°C to +70°C (-4°F to 140°F)
		Protection class	IP65 (panel-mounted, cabinet closed)
			IP20 (panel-mounted, inside the cabinet)
			NEMA 4X (panel-mounted, in front of the closed cabinet)

Relative humidity	< 85%, without condensation	**Standard and directives** CE
		  EMC
		  Vibration / Shock
		Approvals
		  UL-Recognized for
		  US and Canada
			
			EN 61000-6-2, EN 61000-6-3
			EN 60068-2-6 / EN 60068-2-27
			
			61010-1 + CAN/CSA-C22 No.61010-1

Height above sea level	max. 2000 m		

Dimensions [mm]

max. 4 mm (thickness wall)

Cut-off panel
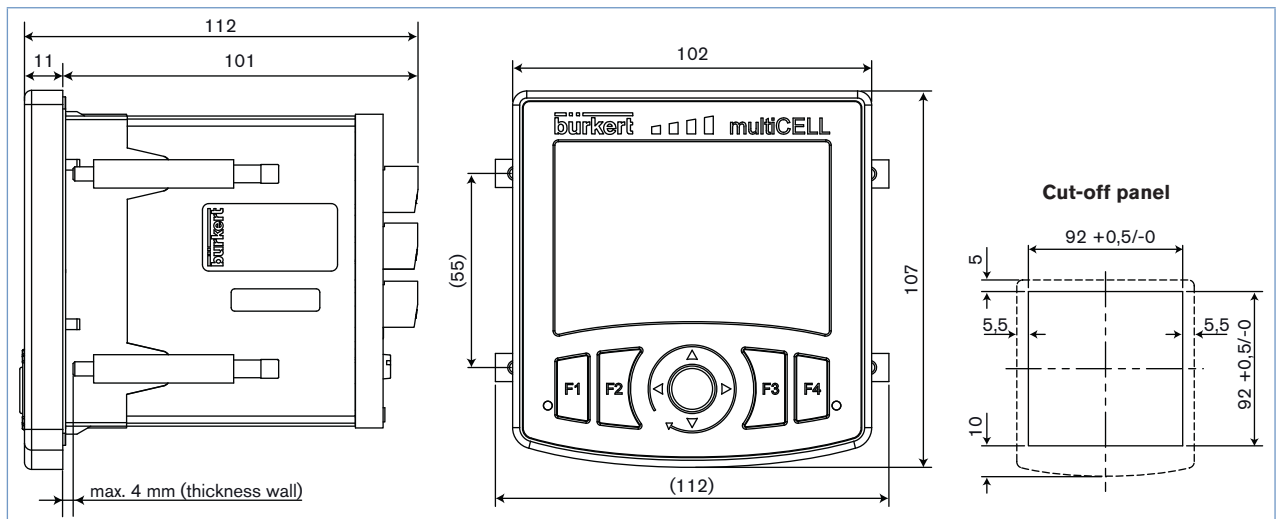
Principle of operation

The transmitter/controller is given by the internal module based structure capable to handle different types of sensors and selectively execute operations on the measurement values. From simple measurement and standard signal output and assignment of integrated mathematical formulas for selectable values up to control and dosing tasks all that can run in parallel.
The modules for signals and functions can be easily connected to eachother by configuration and with setting individual parameters all the functionality can be adapted to the actual process conditions. A 12 - 36 V DC power supply is sufficient to have the device running.

The base unit is a panel mount version and handles analogue and digital signal outputs, digital inputs and the front is supplied by a backlit graphical display. Up to six slots are available, which depending on the applications, can be occupied with modules for pH/O.R.P., conductivity, a module with additional analogue and digital outputs as well as a module with analogue and additional digital inputs. There is no need for a separate 4… 20 mA transmitter: the pH, conductivity modules accept raw signals from sensors.
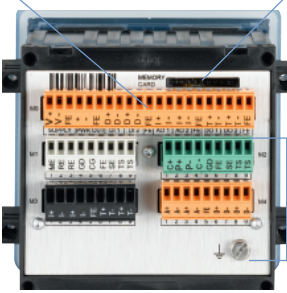
Though highly functional the multiCELL can be operated easily and intuitively. The base for this is the large graphical display and the dynamically assigned function keys. Clearly arranged menu and module structures allow easy configuration and setting of parameters and offer a high transparency for the functions in use. Four user views can be configured by the operator. This allows the user to design a view himself displaying a value arrangement which he likes to see simultaneously and this can be available 4 times and independent from eachother.

For data collection and storage e.g. of measurement values there is an optional data logger available which uses the memory card if inserted in the card slot. Uploading and restoring the complete database including the application special parameter settings of the complete 8619 and updating firmware via the memory card is available as standard.

Construction

The mainboard enables:
▪ connection to the transmitter/controller power
  supply
▪ to power another device
▪ to dispose of 2 digital inputs (DI),
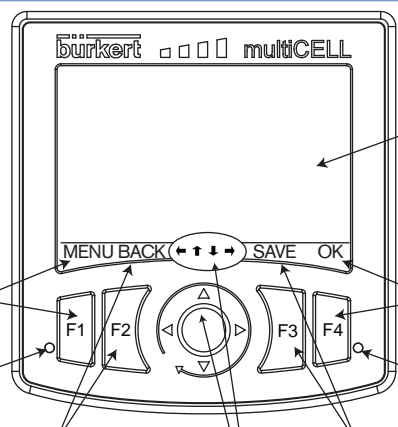 2 analogue (AO) and 2 digital (DO) outputs

Memory card slot :
▪ For upload and download of parameter settings
▪ Software updates
  Simple operation: insert the memory card into the
  small slot on the rear of the device.

Additional module slots (up to 6) to choose among:
▪ module for 2 analogue and 2 digital inputs
  (small orange connector)
▪ module for 2 analogue and 2 digital outputs
  (black connector)
▪ module for pH/O.R.P. sensor and/or temperature sensor
  (light grey connector)
▪ module for conductivity sensor and/or temperature sensor
  (green connector)

Display and dynamic soft keys

bürkert multiCELL

MENU BACK SAVE OK

F1 F2 F3 F4

Light blue backlighted LC graphic display

To activate the first dynamic function on the very left side, press F1

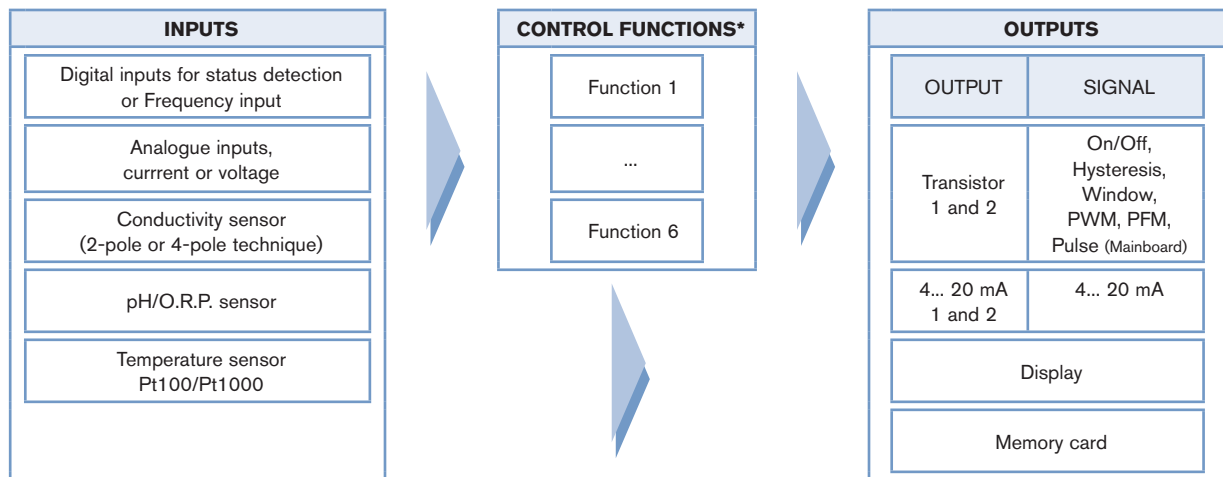To activate the dynamic function on the very right side, press F4

LED

LED

To activate the second dynamic function, press F2

To activate the third dynamic function, press F3

The navigation keys allows to move the cursor in vertical and horizontal directions
The pointer above the navigation key indicates the directions which are usable related to the current display
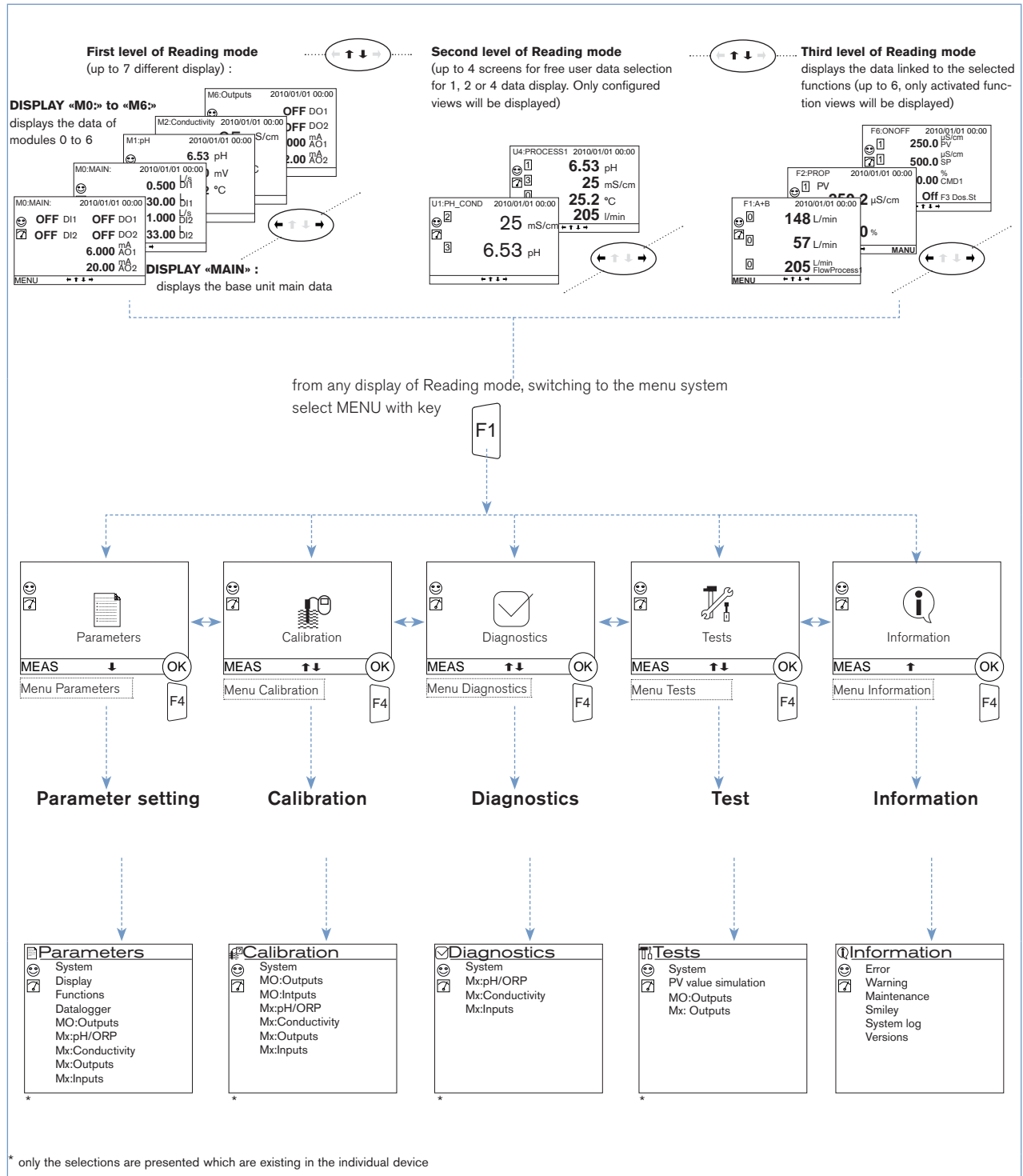
Process diagram

INPUTS
Digital inputs for status detection or Frequency input
Analogue inputs, currrent or voltage
Conductivity sensor (2-pole or 4-pole technique)
pH/O.R.P. sensor
Temperature sensor Pt100/Pt1000

CONTROL FUNCTIONS*
Function 1
...
Function 6

OUTPUTS	
OUTPUT	SIGNAL
Transistor 1 and 2	On/Off, Hysteresis, Window, PWM, PFM, Pulse (Mainboard)
4... 20 mA 1 and 2	4... 20 mA
Display	
Memory card	

* simultaneously and independently operating

List of available functions

The transmitter/controller allows to allocate each sensor signal to a function (such as dosage, for example) fully configurable by the user. According to the model the following functions are offered as standard or as option

| Functions	Availability	Formula	Example for usage
Arithmetic	Basic for all models	**A+B, A-B, A/B**	arithmetic operation between 2 values with same units. A or B can be a result of another function
PASS	Basic for all models	$\frac{A}{B}$ x 100%	calculates a flow ratio between 2 values. e.g: reverse osmosis
REJECT	Basic for all models	$\left(1 - \frac{A}{B}\right)$ x 100%	calculates a reject ratio between 2 values. e.g: reverse osmosis
DEVIAT	Basic for all models	$\left(\frac{A}{B} - 1\right)$ x 100%	calculates a deviation ratio between 2 values.
PROP	Basic for all models		calculates an output in proportion to a scaled input
ON/OFF	Basic for all models	**On/Off control loop**	for any type of input
Flow rate measurement	As base for model item no. 560205, 560213, for others as option		allows both digital inputs to be used as frequency inputs for flow measurement (in standard for base unit) or coexistent with analytical modules (in option for others devices)
PID	As option	**Continuous control loop**	for any type of input and with internal or external setpoint
Time dosing	As option		e.g. for cooling tower application. Dosing of 1 or 2 biocides in the circuits, at fixed time intervals or by defining dosing during one week, with 2 dosings per day. Can be connected to an ON/OFF conductivity function for prebleed.
Special Chemical batch (Volume dosing)	As option		specifically for cooling tower application. A defined volume of water is counted, then an actuator is energized during a defined time to add a chemical and the water volume being counted is resetted.
Concentration	As option		the concentration curves of NaCl, H_2SO_4, HNO_3, NaOH, HCl are implemented for use in complete concentration range and not only in low concentration.
Data logging on memory card	As option		up to 16 values can be stored at a defined time interval.

Menu structure

First level of Reading mode
(up to 7 different display) :

DISPLAY «M0:» to «M6:»
displays the data of
modules 0 to 6

M6:Outputs 2010/01/01 00:00
OFF DO1
OFF DO2
000 mA AO1
2.00 mA AO2

M2:Conductivity 2010/01/01 00:00
S/cm

M1:pH 2010/01/01 00:00
6.53 pH
mV
°C

M0:MAIN: 2010/01/01 00:00
0.500 l/s DI1
30.00 DI1
1.000 l/s DI2
33.00 DI2

M0:MAIN: 2010/01/01 00:00
OFF DI1   OFF DO1
OFF DI2   OFF DO2
6.000 mA AO1
20.00 mA AO2
MENU

DISPLAY «MAIN» :
displays the base unit main data

Second level of Reading mode
(up to 4 screens for free user data selection
for 1, 2 or 4 data display. Only configured
views will be displayed)

U4:PROCESS1 2010/01/01 00:00
6.53 pH
25 mS/cm
25.2 °C
205 l/min

U1:PH_COND 2010/01/01 00:00
25 mS/cm
6.53 pH

Third level of Reading mode
displays the data linked to the selected
functions (up to 6, only activated func-
tion views will be displayed)

F6:ONOFF 2010/01/01 00:00
250.0 µS/cm PV
500.0 µS/cm SP
0.00 % CMD1
Off F3 Dos.St

F2:PROP 2010/01/01 00:00
PV
250.2 µS/cm

F1:A+B 2010/01/01 00:00
148 L/min
57 L/min
205 L/min FlowProcess
0 %
MANU
MENU

from any display of Reading mode, switching to the menu system
select MENU with key

F1

Parameters
MEAS   OK
Menu Parameters
F4

Calibration
MEAS   OK
Menu Calibration
F4

Diagnostics
MEAS   OK
Menu Diagnostics
F4

Tests
MEAS   OK
Menu Tests
F4

Information
MEAS   OK
Menu Information
F4

Parameter setting   **Calibration**   **Diagnostics**   **Test**   **Information**

Parameters
System
Display
Functions
Datalogger
MO:Outputs
Mx:pH/ORP
Mx:Conductivity
Mx:Outputs
Mx:Inputs
*

Calibration
System
MO:Outputs
MO:Intputs
Mx:pH/ORP
Mx:Conductivity
Mx:Outputs
Mx:Inputs
*

Diagnostics
System
Mx:pH/ORP
Mx:Conductivity
Mx:Inputs
*

Tests
System
PV value simulation
MO:Outputs
Mx: Outputs
*

Information
Error
Warning
Maintenance
Smiley
System log
Versions

* only the selections are presented which are existing in the individual device

DTS 1000130448 EN Version: I Status: RL (released | freigegeben | validé) printed: 29.08.2013

Ordering chart for multiCELL transmitter/controller Type 8619

Description	Operating voltage	Inputs					Outputs		UL Approvals	Item no.
		Digital (DI) (On/Off or frequency)	Analogue (AI) 0/4... 20 mA	number and type of sensor raw signals	Pt100/ Pt1000	Transistor (DO) (PWM or PFM or On/Off or pulse)	Analogue (AO) 4... 20 mA			
BASE unit with flow measurement (Mainboard)	12-36 V DC	2	-	-	-	2	2	No	560 205
								UL-Recognized	560 213
pH/ORP (Mainboard + 1 pH/ORP module)	12-36 V DC	2	-	1 (pH/ORP)	1	2	2	No	560 200
								UL-Recognized	560 208
pH/ORP (Mainboard + 2 pH/ORP modules + 1 output module)	12-36 V DC	2	-	2 (pH/ORP)	2	4	4	No	560 202
								UL-Recognized	560 210
CONDUCTIVITY (Mainboard + 1 conductivity module)	12-36 V DC	2	-	1 (Cond.)	1	2	2	No	560 201
								UL-Recognized	560 209
CONDUCTIVITY (Mainboard + 2 conductivity modules + 1 output module)	12-36 V DC	2	-	2 (Cond.)	2	4	4	No	560 203
								UL-Recognized	560 211
pH/ORP and CONDUCTIVITY (Mainboard + 1 pH/ORP module + 1 conductivity module + 1 output module)	12-36 V DC	2	-	1 (pH/ORP) + 1 (Cond.)	2	4	4	No	560 204
								UL-Recognized	560 212
INPUT (Mainboard + 1 input module)	12-36 V DC	4	2	-	-	2	2	No	563 960
								UL-Recognized	563 961
pH/ORP + INPUT (Mainboard + 1 pH/ORP module + 1 input module + 1 output module)	12-36 V DC	4	2	1 (pH/ORP)	1	4	4	No	563 962
								UL-Recognized	563 963
CONDUCTIVITY + INPUT (Mainboard + 1 conductivity module + 1 input module + 1 output module)	12-36 V DC	4	2	1 (Cond.)	1	4	4	No	563 964
								UL-Recognized	563 912

Notes regarding the ordering of above mentioned multiCELL transmitter/controller:

▪ The above items are equipped of arithmetic, PASS, REJECT, DEVIAT, PROP, ON/OFF functions in standard (see p. 9, List of available functions).
   In the BASE unit the Flow measurement function is also a standard function, the other functions are available as option.
   Please also use the "request for quotation" form on page 9 go to page for ordering a device with additional options.

▪ If a totalizer function is required then a Flowmeter has to be connected via a digital input (mainboard or input board)

Ordering chart for additional software functions for Type 8619

Use the following order codes only in case you already own a 8619 and you like to add one or more of the given functions to your device.

⚠ **Please don't forget to note down the Item no. and serial number (see the device label) of your multiCELL on your order.**
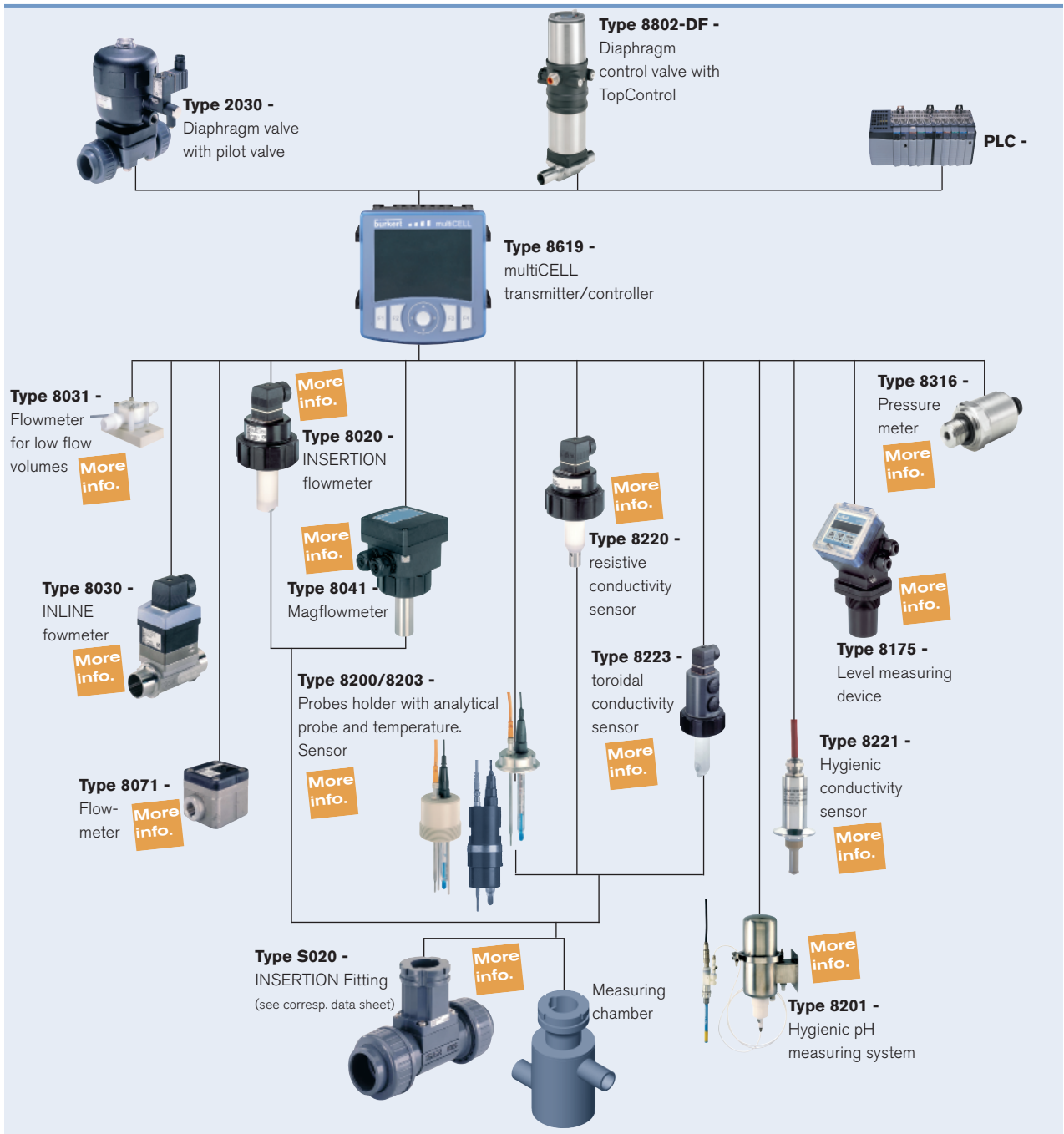
Software option	Remark	Item no.
PID control	-	561 836
Data Logger	SD card is not included.	561 837
Chemical dosing (e.g. cooling tower)	The "Dosing" option also activates the "Flow" option if it does not exist by default in the device.	561 838
Flow measurement	Already be contained in the base unit device (560 205 and 560 213)	561 839
Concentration measurement of selected fluids	Requires at least one conductivity hardware board	561 840

Remark: the function upload and download of the complete data set of the 8619 is available as standard and does not need the data logger option

Ordering chart for accessories for Type 8619

Description	Item no.
SDHC Memory Card - Class 10 - 8 GB	564 072

Examples for interconnection possibilities with other Bürkert devices

Type 2030 - Diaphragm valve with pilot valve

Type 8802-DF - Diaphragm control valve with TopControl

PLC -

Type 8619 - multiCELL transmitter/controller

Type 8031 - Flowmeter for low flow volumes

Type 8020 - INSERTION flowmeter

Type 8316 - Pressure meter

Type 8030 - INLINE fowmeter

Type 8041 - Magflowmeter

Type 8220 - resistive conductivity sensor

Type 8175 - Level measuring device

Type 8200/8203 - Probes holder with analytical probe and temperature. Sensor

Type 8223 - toroidal conductivity sensor

Type 8221 - Hygienic conductivity sensor

Type 8071 - Flow-meter

Type S020 - INSERTION Fitting (see corresp. data sheet)

Measuring chamber

Type 8201 - Hygienic pH measuring system

When you click on the orange box "More info." below, you will come to our website for the resp. product where you can download the data sheet.

⚠️ **You will find more info about sensor-multiCELL connection cable in the data sheet of the selected sensor type. Please consult the corresponding data sheet.**

multiCELL Transmitter/controller Type 8619 - request for quotation

Please fill in and send to your local Bürkert Sales Centre* with your inquiry or order.

Note
You can fill out the fields directly in the PDF file before printing out the form.

Company:	Contact person:
Customer No.:	Department:
Address:	Tel. / Fax.:
Postcode / Town:	E-mail:

---

multiCELL Transmitter/controller 8619

Quantity: ☐ **Desired delivery date:** ☐

■ **Hardware:** ☐ Mainboard[1] (without flow function; if needed please order the flow measurement software option)

Slot M1	☐ pH/ORP + temperature module	☐ conductivity + temperature module	☐ output module[2]	☐ input module[3]
Slot M2	☐ pH/ORP + temperature module	☐ conductivity + temperature module	☐ output module[2]	☐ input module[3]
Slot M3	☐ pH/ORP + temperature module	☐ conductivity + temperature module	☐ output module[2]	☐ input module[3]
Slot M4	☐ pH/ORP + temperature module	☐ conductivity + temperature module	☐ output module[2]	☐ input module[3]
Slot M5	☐ pH/ORP + temperature module	☐ conductivity + temperature module	☐ output module[2]	☐ input module[3]
Slot M6	☐ pH/ORP + temperature module	☐ conductivity + temperature module	☐ output module[2]	☐ input module[3]

■ **Software:**

☐ PID

☐ Data logger

☐ Chemical dosing (e.g. Cooling Tower) + special batch (The "Dosing" option also activates the "Flow" option if it does not exist by default in the device)

☐ Flow measurement

☐ Concentration Measurement for selected fluids (only if one of the slot is equipped with a conductivity module)

[1] 2 digital inputs + 2 analogue outputs + 2 transistor outputs
[2] 2 analogue outputs + 2 transistor outputs
[3] 2 analogue inputs + 2 digital inputs

NOTE: If a totalizer function is required then a flowmeter has to be connected via a digital input (mainboard or input board)

DTS 1000130448 EN Version: I Status: RL (released | freigegeben | validé) printed: 29.08.2013

To find your nearest Bürkert office, click on the orange box → **www.burkert.com**