

## Instruction Manual

**BL 983321-0**  
**BL 983321-1**

## Panel-Mounted TDS Indicators & Controllers



### WARRANTY

These instruments are warranted for two years against defects in workmanship and materials when used for their intended purpose and maintained according to instructions. Probes are warranted for six months. This warranty is limited to repair or replacement free of charge. Damages due to accident, misuse, tampering or lack of prescribed maintenance are not covered. If service is required, contact the dealer from whom you purchased the instrument. If under warranty, report the model number, date of purchase, serial number and the nature of the failure. If the repair is not covered by the warranty, you will be notified of the charges incurred. If the instrument is to be returned to Hanna Instruments, first obtain a Returned Goods Authorization Number from the Customer Service department and then send it with shipment costs prepaid. When shipping any instrument, make sure it is properly packaged for complete protection.

#### Recommendations for Users

Before using these products, make sure that they are entirely suitable for the environment in which they are used. Operation of these instruments in residential areas could cause unacceptable interferences to radio and TV equipment. Any variation introduced by the user to the supplied equipment may degrade the instrument's EMC performance. To avoid electrical shock, do not use these instruments when voltages at the measurement surface exceed 24 Vac or 60 Vdc. To avoid damages or burns, do not perform any measurement in microwave ovens.

Dear Customer,

Thank you for choosing a Hanna product.

This manual will provide you with the necessary information for the correct operation of the meter. Please read it carefully before using the instrument.

If you need additional technical information, do not hesitate to e-mail us at [tech@hannainst.com](mailto:tech@hannainst.com).

These instruments are in compliance with the **CE** directives.

### PRELIMINARY EXAMINATION

Remove the instrument from the packing material and examine it carefully. If any damage has occurred during shipment, immediately notify your Dealer or the nearest Hanna Customer Service Center.

Each meter is supplied with:

- Mounting brackets
- Instruction manual

Note: Conserve all packing material until the instrument has been observed to function correctly. Any defective item must be returned in its original packing.

### GENERAL DESCRIPTION

**BL983321-0** and **BL983321-1** are TDS indicators and controllers with a relay output designed for simplicity of use in a wide range of applications.

Connections and wiring to probe, power supply and contacts are made via the terminal blocks on the rear panel.

The probe is easy to clean and requires little maintenance. Other features include: automatic temperature compensation of readings, single point calibration, overtime control system, multi-colour LED for indicating if the meter is in measurement/dosing/alarm condition, possibility to set (Off-Auto-On switch) dosing action mode.

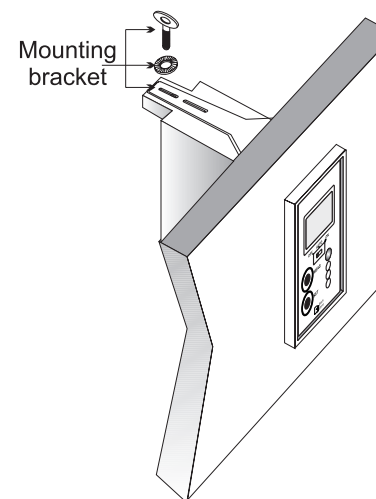
Two models are available:

- **BL 983321-0** powered at 12 Vdc
- **BL 983321-1** powered at 115 or 230 Vac

### SPECIFICATIONS

Range	0.00 to 19.99 ppm
Resolution	0.01 ppm
Accuracy (@ 20°C/68°F)	±2% f.s.
Typical EMC Deviation	±2% f.s.
TDS conversion factor	0.5
Probe	HI 7634-00 EC/TDS probe (not included)
Temp. Compensation	Automatic from 5 to 50°C (41 to 122°F); $\beta = 2\%/^{\circ}\text{C}$
Calibration	Manual, through CAL trimmer
Dosing Contact	Maximum 2A (fuse protected), 250 Vac, 30 Vdc Contact close when measure > setpoint
Setpoint	Adjustable, from 0 to 19.99 ppm
Overtime	Adjustable, typically from 5 to approx. 30 minutes
Power Consumption	10 VA
Installation Category	II
Power supply:	External (fuse protected)
BL983321-0	12 Vdc
BL983321-1	115/230 Vac ; 50/60Hz
Dimensions	83 x 53 x 99 mm (3.3x2.1x3.9")

### ASSEMBLING VIEW



### CE DECLARATION OF CONFORMITY



DECLARATION OF CONFORMITY

We

Hanna Instruments Italia Srl  
viale delle Industrie, 12/A  
35010 Ronchi di Villafranca - PD  
ITALY

herewith certify that the EC and TDS controllers:

**BL983313, BL983315, BL983317, BL983318, BL983319, BL983320, BL983321, BL983322, BL983324, BL983327, BL983329**

have been tested and found to be in compliance with EMC Directive 89/336/EEC and Low Voltage Directive 73/23/EEC according to the following applicable normatives:

**EN 50082-1:** Electromagnetic Compatibility - Generic Immunity Standard  
**IEC 61000-4-2:** Electrostatic Discharge  
**IEC 61000-4-3:** RF Radiated  
**IEC 61000-4-4:** Fast Transient

**EN 50081-1:** Electromagnetic Compatibility - Generic Emission Standard  
**EN 55022:** Radiated, Class B

**EN61010-1:** Safety requirements for electrical equipment for measurement, control and laboratory use

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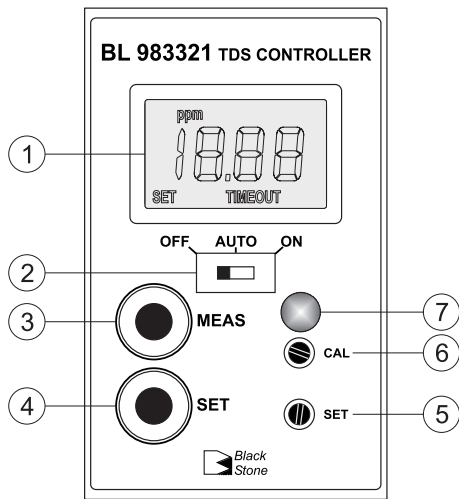
*A. Marsilio*  
A. Marsilio - Technical Director  
On behalf of  
Hanna Instruments S.r.l.

### ACCESSORIES

HI 7634-00	EC/TDS probe
HI 7061M	Probe cleaning solution, 230 mL bottle
HI 7061L	Probe cleaning solution, 500 mL bottle
HI 710005	12 Vdc power adapter, US plug
HI 710006	12 Vdc power adapter, European plug
HI 710012	12 Vdc power adapter, Australian plug
HI 710013	12 Vdc power adapter, South African plug
HI 710014	12 Vdc power adapter, UK plug
HI 731326	Calibration screwdriver (20 pcs)
HI 740146	Mounting brackets

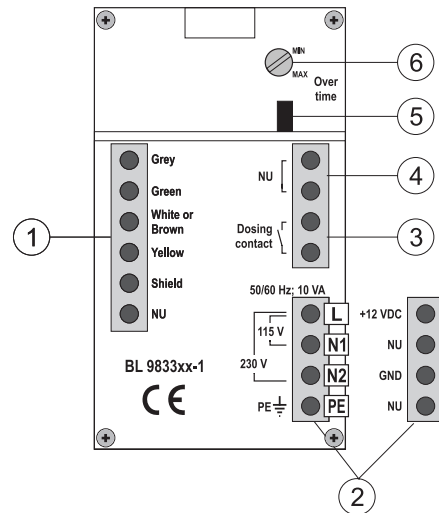
## FUNCTIONAL DESCRIPTION

Front panel



1. Liquid Crystal Display
2. Switch for selecting dosing mode:
  - OFF = dosing disabled
  - Auto = automatic dosage, depending on setpoint value
  - ON = dosing always active
3. "MEAS" key to set the instrument to measurement mode
4. "SET" key to display and set the setpoint value
5. "SET" trimmer to adjust the setpoint value
6. "CAL" trimmer
7. 3-colour LED indicator:
  - Green = meter in measurement mode
  - Orange/Yellow = dosing in progress
  - Red, blinking = indicates an alarm condition

Rear panel



1. Connections for EC probe
2. Power supply terminal:
  - for BL983321-0 model: 12 Vdc adapter
  - for BL983321-1 model: 115 Vac or 230 Vac option
3. This contact acts as a switch for driving the dosing system (e.g. dosing pump)
4. Not used contact
5. Jumper for enabling (jumper in) or disabling (jumper removed) the overtime control
6. Trimmer for overtime setting (typically from 5 to 30 minutes)



All external cables connected to the rear panel should end with cable lugs.



A circuit breaker (rated 6A max.) must be connected in close proximity to the equipment, and in a position easy to reach by the operator, for disconnection of the instrument and of all the devices connected to the relays.

## OPERATIONS

### REAR PANEL CONNECTIONS

#### Terminals #1: Probe

Connect the HI 7634-00 probe by following the wires colour indications.

#### Terminals #2: Power Supply

- Model BL983321-0: connect the 2 wires of a 12 Vdc power adapter to the terminals +12 Vdc and GND.
- Model BL983321-1: connect a 3-wire power cable to the terminals while paying attention to the correct earth (PE), line (L) and neutral (N1 for 115 V or N2 for 230 V) contacts.

#### Terminals #3: Dosing Contact

This contact drives the dosing system, accordingly to the selected setpoint.

**Note:** The setpoint has a typical hysteresis value comparable to the meter accuracy.

#### Terminals #4: Not Used Contact

#### Overtime system: jumper (#5) and trimmer (#6)

- This system allows the user to set a maximum dosing period, by adjusting the rear trimmer from 5 (min) to approx. 30 (max) minutes.
- When the set time is exceeded, any dosing action stops, the LED indicator on the front panel will blink Red and the LCD will show the "TIMEOUT" warning message. To exit the overtime condition, set the OFF/Auto/ON switch to "OFF" position, and then to "Auto" again.
- For disabling the overtime feature, simply remove the jumper on the rear panel.

**Note:** The overtime system works only if the OFF/Auto/ON switch is in "Auto" position.

### OPERATING THE METER

Before proceeding make sure that:

- the meter has been calibrated;
- the setpoint value has been properly adjusted;
- all rear panel wiring and selections are correct;
- the Auto/OFF/ON switch is in the desired position.

Install or immerse the probe in the solution to be monitored, then press the "MEAS" key (if necessary).

The LCD will show the TDS (ppm) value. The LED indicator will light up Green when the meter is in measurement mode and dosing is not active, while will light up Orange/Yellow for signaling that a dosing action is in progress.

### CALIBRATION

To calibrate the meter, proceed as follows:

- ensure the meter is in measurement mode;
- use a solution with a TDS value higher than 13 ppm and immerse the probe;
- shake briefly and wait for reading to stabilize;
- adjust the "CAL" trimmer to read the solution TDS value on the LCD.

### SETPOINT

Press the "SET" key: the display will show the default or previously adjusted value, together with the "SET" indication. Using a small screwdriver adjust the "SET" trimmer until the desired setpoint value is displayed.

After 1 minute the meter automatically returns to the normal mode; or press the "MEAS" key.

### PROBE MAINTENANCE

To improve the probe performance and prolong its life, it is recommended to clean it regularly.

- Immerse the tip of the probe in HI 7061 Cleaning Solution at least for one hour.
- If a more thorough cleaning is required, brush the metal pins with very fine sandpaper.
- After cleaning, rinse the probe with tap water and recalibrate the meter.
- When not in use, clean the probe before storing it.