TDS-220 Total Dissolve Solids Meter

Product Specification

Version	Issue date	Changes	Remark
0.1	2017/10/16	Initial Version	

IMPORTANT

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TDS-220 Total Dissolve Solids Meter

1 Introduction

TDS-220 is an industrial grade dual displays and dual probes "Total Dissolve Solids" meter for monitoring the input and output water quality. This device is ideal for Reverse Osmosis (RO), Deionized water (DI) filtration systems that work well in variety of application such as drinking or potable water, Aquariums, Hydroponics and many more.

There is RS-485 interface for online monitoring application. Besides, TDS-220 monitor conduct temperature compensation on each probe continuously.

2 Features

- Dual line TDS displays feed and product (before/after) water.
- Real-time water temperature compensation for two TDS probes.
- Accurate and stable measurement result.
- RS-485 communication output for online monitoring system.
- Factory calibrated.
- Install quickly and easily.

3 Specification

- Range: 0-999 ppm. Two displays.
- Resolution:
  - 0-9.9 : 0.1ppm
  - 10-999 : 1ppm
- Accuracy : +- 2%
- ATC (Automatic Temperature Compensation) : Yes (1 – 65˚C)
- Display : two 3 digits 0.4" LED Display
- Probes : fitting 3/8", cable length = 550 mm
- Power source : +5V dc input
- Communication protocol : RS485 slave, 9600 bps, odd parity, 8 bit data, 1 stop bit
- Size: 80 x 43 x 25 mm.

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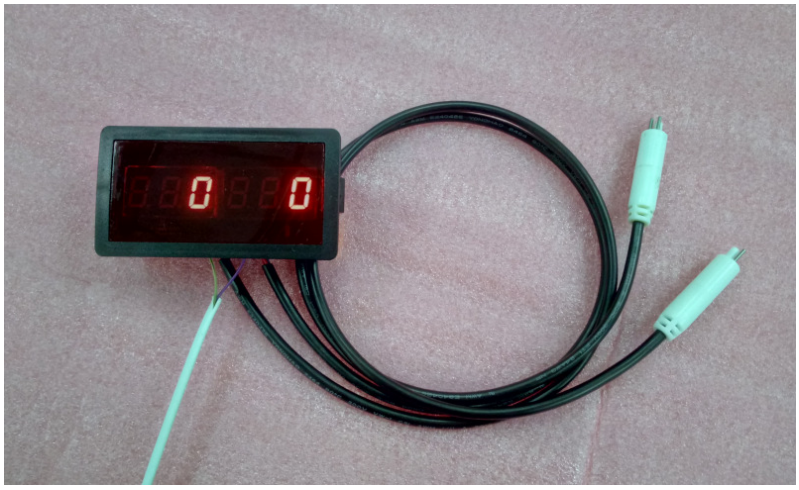
4 Product outlook



5 Application Notes

5.1 The TDS-220 has calibrated in factory before shipment.

5.2 It is not allowed to measure liquid in the same chamber with two probes simultaneously. Two probes will interference with each other and result in incorrect TDS readings.

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6 RS485 protocol

6.1 The RS485 serial port setting as: slave, 9600 Baud rate, Odd parity, 8 bit data, 1 stop bit.

6.2 Commands :

6.2.1 Read TDS value command

ID	Cmd.	TDS_B1 Low byte	TDS_B2 High byte	TDS_A1 Low byte	TDS_A2 High byte	CHKSUM	EOF
0x02	0xAA	0x00	0x00	0x00	0x00	0xAC	0x03
1 Byte	1Byte	1Byte	1Byte	1Byte	1Byte	1Byte	1Byte

Offset	Item	Size	Description
0	ID	1Byte	ID address for start frame. Fixed: 0x02
1	Cmd.	1Byte	Command code.
2-3	TDS_B	2Byte	TDS (before) data
4-5	TDS_A	2Byte	TDS (after) data
6	CHKSUM	1Byte	Check SUM = ID+Cmd.+….+TDS_A2
7	EOF	1Byte	End of frame. Fixed = 0x03

6.2.2 TDS value Response

ID	Cmd.	TDS_B1 Low byte	TDS_B2 High byte	TDS_A1 Low byte	TDS_A2 High	CHKSUM	EOF
0x02	0xAA	0xXX	0xXX	0xXX	0xXX	0xYY	0x03
1 Byte	1Byte	1Byte	1Byte	1Byte	1Byte	1Byte	1Byte

- TDS_B(before) = TDS_B2 * 256 + TDS_B1.
- TDS_A(after) = TDS_A2 * 256 + TDS_A1.

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6.2.3 Read NTC degree command

ID	Cmd.	NTC_B1 Low byte	NTC_B2 High byte	NTC_A1 Low byte	NTC_A2 High byte	CHKSUM	EOF
0x02	0x01	0x00	0x00	0x00	0x00	0x03	0x03
1 Byte	1Byte	1Byte	1Byte	1Byte	1Byte	1Byte	1Byte

6.2.4 Read NTC degree Response

ID	Cmd.	NTC_B1 Low byte	NTC_B2 High byte	NTC_A1 Low byte	NTC_A2 High byte	CHKSUM	EOF
0x02	0x01	0xXX	0xXX	0xXX	0xXX	0xYY	0x03
1 Byte	1Byte	1Byte	1Byte	1Byte	1Byte	1Byte	1Byte

- NTC_B(before) degree = (NTC_B2 * 256 + NTC_B1) / 10.
- NTC_A(after) degree = (NTC_A2 * 256 + NTC_A1) / 10.

6.2.5 NTC_B(before) calibration command

ID	Cmd.	NTC_B1 Low byte	NTC_B2 High byte	CHKSUM	EOF
0x02	0x02	0xXX	0xXX	0xYY	0x03
1 Byte	1Byte	1Byte	1Byte	1Byte	1Byte

- Calibration value NTC_B(before) degree = (NTC_B2 * 256 + NTC_B1) / 10.

6.2.6 NTC_B(before) calibration response

ID	Cmd.	CHKSUM	EOF
0x02	0x02	0x04	0x03
1 Byte	1Byte	1Byte	1Byte

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6.2.7 NTC_A(after) calibration command

ID	Cmd.	NTC_A1 Low	NTC_A2 High byte	CHKSUM	EOF
0x02	0x03	0xXX	0xXX	0xYY	0x03
1 Byte	1Byte	1Byte	1Byte	1Byte	1Byte

- Calibration value NTC_A(after) degree = (NTC_A2 * 256 + NTC_A1) / 10.

6.2.8 NTC_A(after) calibration response

ID	Cmd.	CHKSUM	EOF
0x02	0x03	0x05	0x03
1 Byte	1Byte	1Byte	1Byte

6.2.9 DO Compensate NTC command

ID	Cmd.	CMD Value	CHKSUM	EOF
0x02	0x0A	0x01	0xYY	0x03
1 Byte	1Byte	1Byte	1Byte	1Byte

- CMD value = 1, activate temperature compensation. COM value = 0, ignore temperature compensation

6.2.10 DO Compensate NTC response

ID	Cmd.	CHKSUM	EOF
0x02	0x0A	0x0C	0x03
1 Byte	1Byte	1Byte	1Byte

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6.2.11 Save Parameters command

ID	Cmd.	CMD Value	CHKSUM	EOF
0x02	0x0B	0x01	0x0E	0x03
1 Byte	1Byte	1Byte	1Byte	1Byte

CMD value = 1, activate. COM value = 0, ignore command.

6.2.12 Save Parameters response

ID	Cmd.	CHKSUM	EOF
0x02	0x0B	0x0D	0x03
1 Byte	1Byte	1Byte	1Byte

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