

Baud rate: default: 9600, can be set to 4800 or 19200

Default meter ID: 1

CRC-16 (Modbus)

## Master instructions

1. ID, 1 byte: 01H ~ C7H (ID: 1~199)
2. Function\_code\_1, 1 byte (03H or 06H)
3. Function\_code\_2, 1 byte (00H)
4. Function\_code\_3, 1 byte
5. Data\_code\_1, 1 byte
6. Data\_code\_2, 1 byte
7. CRC\_L, 1 byte
8. CRC\_H, 1 byte

## Reading instructions:

ID 03H 00H 00H 00H 03H CRC\_L CRC\_H: Master asks for the current reading and temperature on LCD.

ID 03H 00H 02H 00H 03H CRC\_L CRC\_H: Master asks for other setting values.

ID 03H 00H 03H 00H 03H CRC\_L CRC\_H: Master asks for pH calibration slope and mV value of pH 7.

## Setting instructions:

ID 06H 00H 00H 00H 00H CRC\_L CRC\_H: Master asks for switching to next measurement mode.

ID 06H 00H 01H 00H 00H CRC\_L CRC\_H: Master asks for calibration.

ID 06H 00H 02H 00H Data\_code\_2 CRC\_L CRC\_H : Master sets ID for Slave.

Data\_code\_2: 01 ~ C7H (new ID are 1~199)

EX:

To set ID 01 to 02, Master sends: 01H 06H 00H 02H 00H 02H CRC\_L CRC\_H

ID 06H 00H 03H 00H Data\_code\_2 CRC\_L CRC\_H: Mater sets conductivity K value of Slave.

Data\_code\_2:

00H: K=0.1

01H: K=1

05H: K=5

10H: K=10

ID 06H 00H 04H 00H Data\_code\_2 CRC\_L CRC\_H: Master sets DO Salt compensation value.

Data\_code\_2:

00H ~ 50H: 0~50 ppt

ID 06H 00H 05H 00H Data\_code\_2 CRC\_L CRC\_H: Master sets DO altitude compensation value.

Data\_code\_2:

00H~20H: 0~20 K feet

ID 06H 00H 06H Data\_code\_1 Data\_code\_2 CRC\_L CRC\_H: Master set TDS converting ratio.

Data\_code\_1 Data\_code\_2:

00H 50H ~ 01H 00H: 0.50~1.00

ID 06H 00H 07H 00H Data\_code\_2 CRC\_L CRC\_H : Mater set pH calibration mode.

Data\_code\_2:

00H: USA

01H: NIST

Ex:

Set Slave (ID: 01) pH calibration mode to NIST, Master sends:

01H 06H 00H 07H 00H 01H CRC\_L CRC\_H

ID 06H 00H 08H 00H 00H CRC\_L CRC\_H: set Slave to sleep mode.

ID 06H 00H 09H 00H 00H CRC\_L CRC\_H: wake up Slave.

ID 06H 00H 0AH 00H 00H CRC\_L CRC\_H: set temperature unit to C

ID 06H 00H 0BH 00H 00H CRC\_L CRC\_H: set temperature unit to F

ID 06H 00H 0CH 00H 00H CRC\_L CRC\_H: switch to pH mode.

ID 06H 00H 0DH 00H 00H CRC\_L CRC\_H: switch to ORP mode.

ID 06H 00H 0FH 00H 00H CRC\_L CRC\_H: switch to Conductivity mode.

ID 06H 00H 10H 00H 00H CRC\_L CRC\_H: switch to TDS mode.

ID 06H 00H 11H 00H 00H CRC\_L CRC\_H: switch to Salt mode.

ID 06H 00H 12H 00H 00H CRC\_L CRC\_H: switch to DO mode.

ID 06H 00H 13H 00H 00H CRC\_L CRC\_H: switch to O2 mode.

ID 06H 00H 14H 00H 00H CRC\_L CRC\_H: change baud rate to 4800

ID 06H 00H 15H 00H 00H CRC\_L CRC\_H: change baud rate to 9600

ID 06H 00H 16H 00H 00H CRC\_L CRC\_H: change baud rate to 19200

ID 06H 00H 17H 00H 00H CRC\_L CRC\_H: set backlight is ON

ID 06H 00H 18H 00H 00H CRC\_L CRC\_H: set backlight is OFF

ID 06H 00H 19H 00H 00H CRC\_L CRC\_H: set backlight is AUTO

## Slave response data

1. ID, 1 byte: 01H ~ C7H (ID: 1~199)
2. Function\_code, 1 byte (03H or 06H)
3. Data\_number, 1 byte (Data byte quantity)
4. Data (see more details below)
5. CRC\_L, 1 byte
6. CRC\_H, 1 byte

**Respond Master's ID 03H 00H 00H 00H 03H CRC\_L CRC\_H reading instruction.**  
**Slave replies current main reading and temp. reading on LCD (Data are 6 bytes)**  
**ID 03H 06H byte\_4 byte\_5 byte\_6 byte\_7 byte\_8 byte\_9 CRC\_L CRC\_H**

byte\_4 byte\_5: 00H 00H ~ 19H 99H, main reading, 0~1999

byte\_6 byte\_7: 00H 00H ~ 19H 99H, temperature reading, 0~1999

byte\_8:

If bit7 is 1, temperature reading is xxx, if 0, temperature reading is xxx.x

If bit6 is 1, temperature unit is F, if 0, temperature unit is C

If bit5 is 1, main reading is negative (-XXXX), or the main reading is positive (XXXX)

bit0~bit4: 00001b~10100b (1~20), corresponding to the following 20 kinds of data:

bit0~bit4	Decimal point location	unit	Parameter
1	xxx.x	uS	Conductivity
2	xxxx	uS	Conductivity
3	xx.xx	mS	Conductivity
4	xxx.x	mS	Conductivity
5	xxx.x	ppm	TDS
6	xxxx	ppm	TDS
7	xx.xx	ppt	TDS
8	xxx.x	ppt	TDS
9	xxx.x	ppm	Salt
10	xxxx	ppm	Salt
11	xx.xx	ppt	Salt
12	xxx.x	ppt	Salt
13	xx.xx	pH	pH
14	xxx.x	mV	pH

15	xxxx	mV	pH
16	xxx.x	mV	ORP
17	xxxx	mV	ORP
18	xx.xx	mg/L	DO
19	xx.xx	ppm	DO
20	xxx.x	%	O2

byte\_9:00000xxxb

If bit0 is 1, main reading is below measure range.

If bit1 is 1, main reading is over measure range.

If bit2 is 1, temperature range is over range.

**Response Master's ID 03H 00H 02H 00H 03H CRC\_L CRC\_H reading instruction.**

**Slave replies other setting values (Data are 6 bytes)**

**ID 03H 06H byte\_4 byte\_5 byte\_6 byte\_7 byte\_8 byte\_9 CRC\_L CRC\_H**

byte\_4 Conductivity K value:

00H: K=0.1

01H: K=1

05H: K=5

10H: K=10

byte\_5 DO Slat compensation value: 00H ~ 50H: 0~50 ppt

byte\_6 DO Altitude compensation value: 00H~20H: 0~20 K feet

byte\_7 byte\_8 TDS converting ratio: 00H 50H ~ 01H 00H: 0.50~1.00

byte\_9:

00H: USA

01H: NIST

**Response Master's ID 03H 00H 03H 00H 03H CRC\_L CRC\_H reading instruction.**

**Slave will reply the slope and mV value of pH 7 after calibration (Data are 6 bytes)**

**ID 03H 06H byte\_4 byte\_5 byte\_6 byte\_7 byte\_8 byte\_9 CRC\_L CRC\_H**

byte\_4 byte\_5: 00H 00H ~ 01H 00H: 0~100% (slope)

byte\_6 byte\_7: 00H 00H ~ 19H 99H: 0~1999 (mV value of pH 7)

**byte\_8: 00H**

byte\_9:

If bit7 is 1, mV value is negative (-XXXX), or mV reading is positive (XXXX)

If bit6 is 1, mV value is xxx.x mV

If bit5 is 1, mV value is xxxx mV

**Response Master's setting instructions**

**After receiving Master's 06H setting instructions and set new value successfully.**

**Slave will reply: ID 06H 01H FFH CRC\_L CRC\_H**