

Modbus Register sc200 pH ORP Module

V2.02



Be Right™

sc200 pH ORP Module V2.02

| Name | Register | Data Type | Length | Access Mode | Discrete Range | Min / Max | Description |
|------------------------|----------|------------------|--------|-------------|----------------|-----------------|--|
| SENSOR | 40001 | Unsigned Integer | 1 | R | | 0 /65535 | Measurement tag selection |
| ORP | 40002 | Float | 2 | R | | -2100 /2100 | ORP measurement |
| pH | 40004 | Float | 2 | R | | -2 /14 | pH measurement |
| TEMPERATURE | 40006 | Unsigned Integer | 1 | R | | 0 /65535 | Temperature tag selection |
| TEMP C | 40007 | Float | 2 | R | | -5.0 /105.0 | temp in C ntc300 |
| TEMP F | 40009 | Float | 2 | R | | 23.0 /221.0 | temp in F ntc300 |
| TEMP C | 40011 | Float | 2 | R | | -20.0 /200.0 | temp in C platinum |
| TEMP F | 40013 | Float | 2 | R | | -4.0 /392.0 | temp in F platinum |
| ORP diff cal value | 40015 | Float | 2 | R/W | | -1500 /1500 | ORP diff cal edit value |
| SERIAL NUMBER | 40017 | String | 8 | R/W | | | Sensor serial number |
| FUNCTION CODE | 40025 | Unsigned Integer | 1 | R/W | | 0 /65535 | menu function code |
| NEXT STATE | 40026 | Unsigned Integer | 1 | R | | 0 /65535 | menu next state |
| TEMP UNITS | 40027 | Unsigned Integer | 1 | R/W | U25 /26 | | Temp unit selection tag (C=25, F=26) |
| HISTORY T UNITS | 40028 | Unsigned Integer | 1 | R | U25 /26 | | Cal history - Temperature unit used (C=25, F=26) |
| DISPLAY FORMAT | 40029 | Unsigned Integer | 1 | R/W | 0 /1 | | Display format of the main measurement (xx.xx=0, xx.x=1) |
| FILTER | 40030 | Unsigned Integer | 1 | R/W | | 0 /60 | Measurement filter (0-60 sec) |
| TEMP ELEMENT | 40031 | Unsigned Integer | 1 | R/W | 0 /1 /2 /4 /5 | | Temperature element type selection(PT100=0, PT1000=1, NTC300=2, Manuula=4, None=5) |
| USER TEMP | 40032 | Unsigned Integer | 1 | R | | 0 /65535 | User temperature tag (unit) selection |
| USER TEMP C | 40033 | Float | 2 | R/W | | ? | User temperature in C |
| USER TEMP F | 40035 | Float | 2 | R/W | | ? | User temperature in F |
| SELECT BUFFER | 40037 | Unsigned Integer | 1 | R/W | 0 /1 /2 | | Selected buffer set for pH calibration(4_7_10=0, DIN19267=1) |
| PURE H2O COMP | 40038 | Unsigned Integer | 1 | R/W | 0 /1 /2 /8 | | Compensation type selection(None=0, Ammonia=1, Morpholine=2, User defined=8) |
| PURE H2O USER | 40039 | Float | 2 | R/W | | -0.1 /0.1 | User selected slope |
| OUTPUT MODE | 40041 | Unsigned Integer | 1 | R/W | 0 /1 /2 | | Output mode selection during calibration(Active=0, Hold=1, Transfer=2) |
| MODULE SERIAL NO | 40042 | String | 6 | R | | | Card/module serial number |
| LEAVE | 40048 | Unsigned Integer | 1 | R/W | 0 /1 /2 | | Cal exit flag(Quit=0, Back to cal=1, Leave=2) |
| EDIT VALUE | 40049 | Unsigned Integer | 1 | R | | 0 /65535 | Measurement type selector tag for user cal value |
| EDIT pH VALUE | 40050 | Float | 2 | R/W | | -2 /14 | pH user value for calibration |
| EDIT ORP VALUE | 40052 | Float | 2 | R/W | | -2100.0 /2100.0 | ORP user value for calibration |
| SLOPE | 40054 | Unsigned Integer | 1 | R | | 0 /0 | Measurement slope tag selector |
| SampleCalPtAUser pHORP | 40059 | Float | 2 | R | | -5.0 /17.0 | Pt A sample value |
| SampleCalPtBUser pHORP | 40061 | Float | 2 | R | | -5.0 /17.0 | Pt B sample value |
| BufferCalPtA pHORP | 40063 | Float | 2 | R | | -5.0 /17.0 | Pt A buffer value |
| BufferCalPtB pHORP | 40065 | Float | 2 | R | | -5.0 /17.0 | Pt B buffer value |
| BufferCalSB pHORP | 40067 | Float | 2 | R | | -5 /15 | Same buffer (error) value |

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|------------------|----------|------------------|--------|-------------|---------------------------------|-----------------------------|---|
| SOFTWARE VERS | 40069 | Float | 2 | R | | 0 /3.402823466 38529E+38 | Version number |
| BOOTLOADER VER | 40071 | Float | 2 | R | | 0 /9.99 | Boot code version |
| OFFSET | 40073 | Unsigned Integer | 1 | R | | 0 /16777216 | Measurement Offset tag selector |
| pH OFFSET | 40074 | Float | 2 | R | | -20 /20 | pH Offset |
| ORP OFFSET | 40076 | Float | 2 | R | | -2600.0 /2600.0 | ORP offset |
| LOG INTERVAL | 40078 | Unsigned Integer | 1 | R/W | 0 /1 /2 /3 /4 /5 /6 /7 /8 | | Datalog interval selector(5s=0,30s=1,1m=2,2m=3,5m=4,10m=5,15m=6,30m=7,60m=8) |
| SIGNAL | 40079 | Float | 2 | R | | -2200 /2200 | raw sensor signal value |
| ACTIVE ELECT | 40081 | Float | 2 | R | | 0 /10000 | Calculated Active electrode |
| REF. ELECTRODE | 40083 | Float | 2 | R | | 0 /10000 | Calculated Ref electrode |
| SENSOR DAYS | 40085 | Unsigned Integer | 1 | R | | 0 /32000 | Sensor age in days |
| DRIVER VERS | 40086 | Unsigned Integer | 1 | R | | 0 /65535 | Device driver version |
| PT A USER | 40087 | Float | 2 | R | | -200 /400 | Cal history - pt A user entered temperature |
| PT B USER | 40089 | Float | 2 | R | | -200 /400 | Cal history - pt B user entered temperature |
| PT A ACTUAL | 40091 | Float | 2 | R | | -200 /400 | Cal history - pt A actual temperature |
| PT B ACTUAL | 40093 | Float | 2 | R | | -200 /400 | Cal history - pt B actual temperature |
| PT A mV | 40095 | Float | 2 | R | | 0 /2500 | Cal history - pt A mV |
| PT B mV | 40097 | Float | 2 | R | | 0 /2500 | Cal history - pt B mV |
| TEMP OFFSET | 40099 | Float | 2 | R | | -100 /200 | Temperature offset |
| HTRY TEMP OFFSET | 40101 | Float | 2 | R | | | Cal history - Temperature offset |
| TEMP SLOPE | 40103 | Float | 2 | R | | -10.0 /10.0 | Temperature slope |
| HTRY TEMP SLOPE | 40105 | Float | 2 | R | | -10.0 /10.0 | Cal history - temperature slope |
| IMPED STATUS | 40107 | Unsigned Integer | 1 | R/W | 0 /1 | | Impedance meas on/off selector(Disable=0, Enable=1) |
| MEAS UNITS | 40108 | Unsigned Integer | 1 | R | U27 /19 | | Units for use with meas limit(mV=19, pH=27) |
| MINIMUM | 40109 | Float | 2 | R | | -2500 /0 | Lower limit tag |
| Meas ORP Diff | 40111 | Float | 2 | R | | -1500 /1500 | ORP diff measurement |
| USER TEMP MIN | 40113 | Float | 2 | R | | -25 /5 | min limit of user temp |
| OFFSET MIN | 40115 | Float | 2 | R | | -500 /500 | Minimum offset limit |
| MAXIMUM | 40117 | Float | 2 | R | | -500 /500 | Max offset limit |
| TEMP MAX | 40119 | Float | 2 | R | | 0 /400 | Max temp limit tag |
| USER TEMP MAX | 40121 | Float | 2 | R | | 0 /400 | Max temp limit |
| MEAS MAX | 40123 | Float | 2 | R | | 0 /2500 | Max measurement limit |
| OFFSET UNITS | 40125 | Unsigned Integer | 1 | R | U27 /19 | | Unit for offset limit(mV=19, pH=27) |
| SLOPE UNITS | 40126 | Unsigned Integer | 1 | R | U28 /19 | | Slope unit selector(mV=19, mV/pH=28) |
| PREDICT ENABLE | 40127 | Unsigned Integer | 1 | R/W | 0 /1 | | Enable/disable predicted life (disable=0, enable=1) |
| PRED LIFE | 40128 | Time2 | 2 | R | | | Predicted end of life |
| CAL REMINDER | 40130 | Unsigned Integer | 1 | R/W | 0 /1 /2 /3 /4 /5 /6 /7 /8 /9 | | Calibration reminder (OFF=0, 1_DAY=1, 7_DAYS=2, 30_DAYS=3, 60_DAYS=4, 90_DAYS=5, 6_MONTHS=6, 9_MONTHS=7, 1_YEAR=8, 2_YEARS=9) |
| OP ID REQD | 40131 | Unsigned Integer | 1 | R/W | 0 /1 | | Operator ID required for cal (no=0, yes=1) |

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|------------------|----------|------------------|--------|-------------|--|--------------------------|--|
| READING. | 40132 | Unsigned Integer | 1 | R/W | 0 /1 /2 /3 /4 /5 /6 /7 /8 /9 /10 | | Resume delay after cal (no=0, 1_min=1,2_min=2, 3_min=3, 4_min=4, 5_min=5, 6_min=6, 7_min=7,8_min=8, 9_min=9,10_min=10) |
| TIME | 40135 | Time2 | 2 | R | | | Calibration time |
| CAL STATUS | 40137 | Unsigned Integer | 1 | R | 0 /1 | | Calibration status(Fail=0, Pass=1) |
| CAL TYPE | 40138 | Unsigned Integer | 1 | R | 0 /1 /2 /3 /4 /15 /16 | | Calibration type(Default=0, 1pt sample=1, 1pt buffer=2, 2pt sample=3, 2pt buffer= 4, 1 pt temp sample=15, 2 pt temp sample=16) |
| OP ID | 40139 | String | 2 | R/W | | | Operator ID for calibration |
| FORMAT TAG | 40141 | Unsigned Integer | 2 | R | | 0 /2000000000 | Cal history - pH display format |
| DISP PH FORMAT | 40143 | Unsigned Integer | 2 | R | | 0 /2000000000 | pH display format |
| PT A USER VAL | 40145 | Unsigned Integer | 1 | R | | 0 /0 | Cal history - tag for pt A user entered value |
| PT A USER VAL pH | 40146 | Float | 2 | R/W | | -2 /14 | Cal history - pt A user entered pH value |
| PT A ORP VALUE | 40148 | Float | 2 | R | | -2100 /2100 | Cal history - pt A user entered ORP value |
| PT A ACTUAL mV | 40150 | Float | 2 | R/W | | -2100 /2100 | Cal history - pt A actual mV value |
| TEMPERATURE A | 40152 | Float | 2 | R/W | | -20 /200 | Cal history - pt A temp value |
| PT B USER VAL | 40154 | Unsigned Integer | 1 | R | | -2100 /2100 | Cal history - tag for pt B user entered value |
| PT B pH VALUE | 40155 | Float | 2 | R/W | | -2 /14 | Cal history - pt B user entered pH value |
| PT B ORP VALUE | 40157 | Float | 2 | R | | -2100 /2100 | Cal history - pt B user entered ORP value |
| PT B ACTUAL mV | 40159 | Float | 2 | R/W | | -2100 /2100 | Cal history - pt B actual mV value |
| TEMPERATURE B | 40161 | Float | 2 | R/W | | -20 /200 | Cal history - pt B temp value |
| CAL DAYS | 40163 | Unsigned Integer | 1 | R | | 0 /10000 | Days since last calibration |
| SET ISO POINT | 40164 | Float | 2 | R/W | | 0.00 /14.00 | Iso point setting |
| CAL MESSAGE | 40166 | Unsigned Integer | 1 | R | 0 /1 /2 /3 /4 /5 /6 /7 /8 /9 /10 /11 /12 /13 /14 | | Cal result (fail) message for display |
| CAL WARN MSG1 | 40167 | Unsigned Integer | 1 | R | 0 /1 /2 /3 /4 /5 /6 /7 /8 /9 /10 /11 /12 /13 /14 | | Cal warning message |
| CAL WARN MSG2 | 40168 | Unsigned Integer | 1 | R | 0 /1 /2 /3 /4 /5 /6 /7 /8 /9 /10 /11 /12 /13 /14 | | Cal warning message |
| TEMP COMP IMPED | 40169 | Float | 2 | R | | 0 /3.402823466 38529E+38 | Temp corrected active impedance |
| T-COMP REF IMPED | 40171 | Float | 2 | R | | 0 /3.402823466 38529E+38 | Temp corrected ref impedance |
| LOG FLOAT | 40173 | Float | 2 | R | | | Tag for event log involving float |
| LOG TEXT | 40175 | String | 8 | R | | | Tag for event log involving text |
| LOG INT | 40183 | Integer | 1 | R | | -32768 /32767 | Tag for event log involving integers |
| LOG PARAM | 40184 | String | 8 | R | | | Tag for event log involving passed parameter |
| DATE 1 | 40192 | Time2 | 2 | R | | | Cal history date 1 |
| DATE 2 | 40194 | Time2 | 2 | R | | | Cal history date 2 |
| DATE 3 | 40196 | Time2 | 2 | R | | | Cal history date 3 |
| DATE 4 | 40198 | Time2 | 2 | R | | | Cal history date 4 |
| DATE 5 | 40200 | Time2 | 2 | R | | | Cal history date 5 |
| DATE 6 | 40202 | Time2 | 2 | R | | | Cal history date 6 |
| TIME 1 | 40204 | Time2 | 2 | R | | | Cal history time 1 |

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|---------------------|----------|------------------|--------|-------------|----------------|-------------------------|--|
| TIME 2 | 40206 | Time2 | 2 | R | | | Cal history time 2 |
| TIME 3 | 40208 | Time2 | 2 | R | | | Cal history time 3 |
| TIME 4 | 40210 | Time2 | 2 | R | | | Cal history time 4 |
| TIME 5 | 40212 | Time2 | 2 | R | | | Cal history time 5 |
| TIME 6 | 40214 | Time2 | 2 | R | | | Cal history time 6 |
| PAGE NO: | 40216 | Unsigned Integer | 1 | R | | 0 /65535 | Cal history page number |
| HIDDEN LINE | 40217 | Unsigned Integer | 1 | R | | 0 /65535 | Cal history page hidden item |
| HIGHLIGHT LINE | 40218 | Unsigned Integer | 1 | R | | 0 /65535 | Cal history page highlighted item |
| SensorType pHORP | 40219 | Unsigned Integer | 1 | R | | 0 /5 | Test register for sensor type |
| ImpedanceUnits | 40220 | Unsigned Integer | 1 | R | U37 /36 | | Unit of act/ref impedance unit(kOhm=36, MOhm=37) |
| CalFailLimitOffset | 40221 | Float | 2 | R | | -14.00 /14.0 | Offset fail limit pH |
| CalFailLimitSlope | 40223 | Float | 2 | R | | -1000.00 /1000.0 | Slope fail limit pH |
| CalFailLimitORP | 40225 | Float | 2 | R | | -2300.00 /2300.0 | Offset val fail limit for ORP |
| TempElemLeakage | 40227 | Float | 2 | R/W | | | Temp element leakage - factory test |
| TestSwitch | 40229 | Unsigned Integer | 1 | R/W | | 0 /65535 | Factory cal test switch setting |
| TestDutyCycle | 40230 | Unsigned Integer | 1 | R/W | | 1 /99 | Factory cal test PWM duty cycle |
| TestFrequency | 40231 | Unsigned Integer | 1 | R/W | | 10 /10000 | Factory cal test PWM duty cycle |
| TestADC24Counts | 40232 | Float | 2 | R | | 0 /3.40282346638529E+38 | Factory cal test raw ADC count |
| Test1c | 40234 | Float | 2 | R | | 0 /3.40282346638529E+38 | Factory test tag |
| Test2c | 40236 | Float | 2 | R | | 0 /3.40282346638529E+38 | Factory test tag |
| Test3c | 40238 | Float | 2 | R | | 0 /3.40282346638529E+38 | Factory test tag |
| Test4c | 40240 | Unsigned Integer | 1 | R | | 0 /65535 | Factory test tag |
| CurrentMonSlopeCal | 40241 | Float | 2 | R/W | | 0 /3.40282346638529E+38 | Current monitor slope factory cal |
| CurrentMonOffsetCal | 40243 | Float | 2 | R/W | | | Current monitor offset factory cal |
| NewSensor | 40245 | Unsigned Integer | 1 | R/W | 1 /0 | | New sensor flag(No=0, Yes=1) |
| ORP Int | 40246 | Integer | 1 | R | | -2100 /2100 | ORP (integer) value |
| pH Int | 40247 | Integer | 1 | R | | -2 /14 | pH (integer) value |
| TEMP C Int | 40248 | Integer | 1 | R | | -20 /200 | Temp in C (integer) value |
| TEMP F Int | 40249 | Integer | 1 | R | | -4 /392 | Temp in F (integer) value |
| TEMP CAL RAW | 40250 | Float | 2 | R | | -999.9 /999.9 | Raw temperature value |
| TEMP CAL OFFSET | 40252 | Float | 2 | R | | -999.9 /999.9 | Temperature offset value |
| TEMP CAL USER | 40254 | Float | 2 | R/W | | -999.9 /999.9 | Calibrated temperature value |
| FactCalpHSlope | 40256 | Float | 2 | R/W | | 0 /120. | Fact cal slope pH |

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|-----------------------|----------|------------------|--------|-------------|----------------|-------------------------|---------------------------------|
| FactCalpHOffset pHORP | 40258 | Float | 2 | R/W | | | Fact cal offset pH |
| FactCalPtA | 40260 | Float | 2 | R/W | | 0 /15 | Fact cal pt A |
| PtBCounts | 40262 | Float | 2 | R/W | | 0 /15 | Fact cal pt B |
| CalpHRawValue pHORP | 40264 | Float | 2 | R | | -14000.0 /14000.0 | Raw pH Value for cal |
| FactCalPtACts pHORP | 40266 | Float | 2 | R/W | | 0 /3.40282346638529E+38 | Fact cal pt a counts |
| FactCalPtBCts pHORP | 40268 | Float | 2 | R/W | | 0 /3.40282346638529E+38 | Fact cal pt b counts |
| TempCalCounts pHORP | 40270 | Float | 2 | R | | 0 /16777216 | Fact cal counts for temperature |
| TempR1Value pHORO | 40272 | Float | 2 | R/W | | | Factory temp cal R1 |
| TempR2Value pHORP | 40274 | Float | 2 | R/W | | | Factory temp cal R2 |
| ADC10Count | 40276 | Float | 2 | R | | 0 /1030 | Raw 10bit ADC count |
| DD CONTENT | 40278 | Unsigned Integer | 1 | R | | 0 /1000 | Content version |
| SENSOR NAME | 40279 | String | 8 | R/W | | | Sensor name |
| SwitchSetting pHORP | 40287 | Unsigned Integer | 1 | R | | 0 /65535 | The switch setting |

ALL Sensors and Analyzer: Classified ERROR Word - Register 49930

Table 2 Error register

| Bit | Error | Description |
|-----|----------------------------------|---|
| 0 | Calibration error | Faulty calibration detected |
| 1 | Electronic settings error | Faulty electronic calibration/settings |
| 2 | Cleaning error | Error in cleaning cycle detected |
| 3 | Measuring module error | Error in measuring module detected |
| 4 | System initialization | Inconsistent settings detected, reset to factory settings |
| 5 | Hardware error | Faulty hardware detected |
| 6 | Internal communication error | Internal communication error detected |
| 7 | Humidity error | Excessive humidity detected |
| 8 | Excessive temperature | Excessive temperature detected |
| 9 | | |
| 10 | Sample feed warning | Error in sample feed detected |
| 11 | Questionable calibration warning | Accuracy of previous calibration inadequate |
| 12 | Questionable measurement warning | Accuracy of previous measurement inadequate/out of range |
| 13 | Safety warning | Safety equipment error detected |
| 14 | Reagent warning | Reagent warning, e.g. fill level < min detected |
| 15 | Service request warning | Service request detected |

ALL Sensors and Analyzer: Classified STATUS Word - Register 49931

Table 3 Status register

| Bit | Status 1 | Description |
|-----|---|--|
| 0 | Calibration activated | Calibration in progress, measurement value not up to date |
| 1 | Cleaning activated | Cleaning in progress, measurement value not up to date |
| 2 | Service mode activated | Device in "Service" mode, measurement value not up to date |
| 3 | General error message | General error detected, refer to error text for details |
| 4 | Measurement value channel 0, poor quality | Measurement accuracy is not within specified limits |
| 5 | Measurement value channel 0, range short-fall | Measurement value falls short of the specified range |
| 6 | Measurement value channel 0, range exceeded | Measurement value exceeds the specified range |
| 7 | Measurement value channel 1, poor quality | Measurement accuracy is not within specified limits |
| 8 | Measurement value channel 1, range short-fall | Measurement value falls short of the specified range |
| 9 | Measurement value channel 1, range exceeded | Measurement value exceeds the specified range |
| 10 | Measurement value channel 2, poor quality | Measurement accuracy is not within specified limits |
| 11 | Measurement value channel 2, range short-fall | Measurement value falls short of the specified range |
| 12 | Measurement value channel 2, range exceeded | Measurement value exceeds the specified range |
| 13 | Measurement value channel 3, poor quality | Measurement accuracy is not within specified limits |
| 14 | Measurement value channel 3, range short-fall | Measurement value falls short of the specified range |
| 15 | Measurement value channel 3, range exceeded | Measurement value exceeds the specified range |