

# Modbus Register TU5300 sc

V1.37

## TU5300 sc V1.37

| Name                            | Register | Data Type        | Length | Access Mode | Discrete Range | Min / Max   | Description                                                                                            |
|---------------------------------|----------|------------------|--------|-------------|----------------|-------------|--------------------------------------------------------------------------------------------------------|
| TURBIDITY FNU / FTU / NTU / TEF | 40001    | Float            | 2      | R           |                | 0.0 /1000.0 | Turbidity [FNU]                                                                                        |
| TURBIDITY EBC                   | 40005    | Float            | 2      | R           |                | 0.0 /250.0  | Turbidity [EBC]                                                                                        |
| FLOW RATE                       | 40009    | Float            | 2      | R           |                | 0.0 /5.0    | Flowrate [l/min]                                                                                       |
| TURBIDITY MIN                   | 40012    | Float            | 2      | R           |                | 0.0 /1000.0 | minimum measurement range [NTU]                                                                        |
| TURBIDITY MAX                   | 40014    | Float            | 2      | R           |                | 0.0 /1000.0 | maximum measurement range depends on calibration type [NTU]                                            |
| EDITED NAME                     | 40021    | String           | 8      | R/W         |                |             | location of sensor                                                                                     |
| RESPONSE TIME                   | 40029    | Unsigned Integer | 1      | R/W         |                | Min 90      | setting measurement response time                                                                      |
| MEAS UNIT                       | 40030    | Unsigned Integer | 1      | R/W         |                | Jul 42      | set unit of measurement for controller screen [6=FNU / 7=NTU / 8=TEF / 9=EBC / 42=FTU]                 |
| SET RESOLUTION                  | 40031    | Unsigned Integer | 1      | R/W         |                | 0 /1        | display resolution selection (normal = 0 / high = 1)                                                   |
| BUBBLE REJECT                   | 40032    | Unsigned Integer | 1      | R/W         |                | 0 /1        | set bubble rejection On /Off [OFF = 0 / On = 1]                                                        |
| LOGGER INTERVAL                 | 40033    | Unsigned Integer | 1      | R/W         |                | 0 /7        | set logger interval [0=5s / 1=30s / 2=1min / 3=2min / 4= 5min / 5=10min / 6=15min / 7=30min]           |
| BUTTON FUNCTION                 | 40034    | Unsigned Integer | 1      | R/W         |                | 0 /4        | set function for device button [0=SERVICE / 1=LINK2SC / 2=START WIPE / 3=WIPER REPLACE / 4=BUTTON OFF] |
| FLOW SENSOR                     | 40037    | Unsigned Integer | 1      | R/W         |                | 0 /1        | flow unit installed On / Off [OFF = 0 / On = 1]                                                        |
| CLEANING UNIT                   | 40038    | Unsigned Integer | 1      | R/W         |                | 0 /1        | cleaning unit installed On / Off [OFF = 0 / On = 1]                                                    |
| CHECK INTERVAL                  | 40039    | Unsigned Integer | 1      | R/W         |                | 0 /6        | interval autoverification of cuvette [0=]OFF / 1=1h / 2=2h / 3=3h / 4=6h / 5=12h / 6=24h]              |
| SENSITIVITY                     | 40040    | Unsigned Integer | 1      | R/W         |                | 0 /1        | sets level of identification of vial clarity error [0=HIGH / 1=LOW]                                    |
| CLEANING INTERVAL               | 40041    | Unsigned Integer | 1      | R/W         |                | 0 /4        | set cleaning interval [0=2h / 1=6h / 2=12h / 3=24h / 4=7days / 9=trigger immediate]                    |
| CLEANING REMINDER               | 40042    | Unsigned Integer | 1      | R/W         |                | 0 /1        | reminder for changing wiper On / Off [OFF = 0 / On = 1]                                                |
| CLEANING LEVEL                  | 40043    | Unsigned Integer | 1      | R/W         |                | 0 /1        | Measurement level for cleaning On / Off [OFF = 0 / On = 1]                                             |
| THRESHOLD FNU / FTU / NTU / TEF | 40044    | Float            | 2      | R/W         |                | 0.0 /1000.0 | Measurement threshold for cleaning                                                                     |
| OUTPUT DELAY                    | 40051    | Unsigned Integer | 1      | R/W         |                | 0 /120      | measurement delay after cleaning cycle                                                                 |
| ACM SOFT VERSION                | 40052    | Unsigned Integer | 1      | R           |                | 0 /65535    | software version of cleaning unit                                                                      |
| CALIBRATION CURVE               | 40053    | Unsigned Integer | 1      | R/W         |                | 0 /2        | type of calibration [0=STABLCAL / 1=FORMAZIN / 2=CUSTOM]                                               |
| CALIBRATION RANGE               | 40054    | Unsigned Integer | 1      | R/W         |                | 0 /1        | calibration STABLCAL or FORMAZIN [0=1POINT / 1=2POINTS]                                                |
| COUNT OF CALIBRATION POINTS     | 40055    | Unsigned Integer | 1      | R/W         |                | 0 /6        | calibration CUSTOM: count of user points                                                               |
| VERIFY AFTER CAL                | 40056    | Unsigned Integer | 1      | R/W         |                | 0 /1        | set verify after cal On /Off [OFF = 0 / On = 1]                                                        |
| CALIBRATION MENU GUIDED         | 40057    | Unsigned Integer | 1      | R/W         |                | 0 /2        | set menu guide calibration On / Off [0=OFF / 1=SEALED VIAL / 2=SYRINGE]                                |
| SET OUTMODE CALIBRATION         | 40058    | Unsigned Integer | 1      | R/W         |                | 0 /2        | output mode during calibration [0=HOLD / 1=ACTIVE / 2=SET TRANSFER]                                    |
| CALIBRATION REMINDER            | 40059    | Unsigned Integer | 1      | R/W         |                | 0 /4        | Reminder interval to calibrate [0=OFF / 1=1day / 2=7days / 3=30days / 4=90 days]                       |
| VERIFICATION MENU GUIDED        | 40095    | Unsigned Integer | 1      | R/W         |                | 0 /2        | setting of type of guide to verify [0=OFF / 1=SEALED VIAL / 2=SYRINGE]                                 |

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| Name                     | Register | Data Type        | Length | Access Mode | Discrete Range | Min / Max      | Description                                                                          |
|--------------------------|----------|------------------|--------|-------------|----------------|----------------|--------------------------------------------------------------------------------------|
| SET OUTMODE VERIFICATION | 40096    | Unsigned Integer | 1      | R/W         |                | 0 / 2          | output mode while verification is active [0=HOLD / 1=ACTIVE / 2=SET TRANSFER]        |
| VERIFICATION INTERVALL   | 40097    | Unsigned Integer | 1      | R/W         |                | 0 / 4          | reminder interval for verification [0=OFF / 1=1day / 2=7days / 3=30days / 4=90 days] |
| VERIFICATION STANDARD    | 40098    | Float            | 2      | R/W         |                | 0.0 / 1000.0   | value of verification standard                                                       |
| ACCEPT RANGE NTU         | 40100    | Float            | 2      | R/W         |                | 0.015 / 500    | allowed range for passed verifications in NTU                                        |
| ACCEPT RANGE %           | 40102    | Unsigned Integer | 1      | R/W         |                | 0 / 50         | allowed range for passed verifications in %                                          |
| ACCEPT RANGE UNIT        | 40103    | Unsigned Integer | 1      | R/W         |                | 07. Okt        | Unit of verification NTU or % [7=NTU / 10=%]                                         |
| SET OUTMODE MNT/TEST     | 40115    | Unsigned Integer | 1      | R/W         |                | 0 / 2          | otuput mode during service [0=HOLD / 1=ACTIVE / 2=SET TRANSFER]                      |
| SERIAL NUMBER            | 40116    | String           | 6      | R           |                |                | Serialnumber of device                                                               |
| PROGRAM                  | 40122    | Float            | 2      | R           |                | 0.0 / 999.99   | Version of application code                                                          |
| BOOTPROGRAM              | 40124    | Float            | 2      | R           |                | 0.0 / 999.99   | Version of bootcode                                                                  |
| STRUCTURE                | 40126    | String           | 3      | R/W         |                |                | version of device driver structure                                                   |
| PROGRAM AU               | 40131    | Unsigned Integer | 1      | R           |                | 0 / 65535      | Version of application code Analytical Unit                                          |
| SERIAL NUMBER AU         | 40132    | Unsigned Integer | 2      | R           |                | 0 / 9999999    | Serialnumber of Analytical Unit                                                      |
| SER NO PCB AU            | 40134    | Unsigned Integer | 2      | R           |                | 0 / 9999999    | Serialnumber of mainboard of Analytical Unit                                         |
| SER NO LASER             | 40136    | Unsigned Integer | 2      | R           |                | 0 / 9999999    | Serialnumber of Laser                                                                |
| VIAL STATE               | 40140    | Unsigned Integer | 1      | R           |                | 0 / 2          | autoverification result of VIAL (state) [0=OK / 1=ALERT / 2=ERROR]                   |
| VIAL CONDENSATION        | 40141    | Integer          | 1      | R           |                | 0 / 100        | autoverification result of VIAL condensation                                         |
| VIAL CONDITION           | 40142    | Integer          | 1      | R           |                | 0 / 100        | autoverification result of VIAL condition                                            |
| TOTAL TIME SENSOR        | 40177    | Unsigned Integer | 1      | R           |                | 0 / 65535      | time of sensor in use in days                                                        |
| WIPER REPLACE            | 40178    | Unsigned Integer | 1      | R           |                | 0 / 65535      | Down counter of available wiper cycles                                               |
| VIAL DATE                | 40179    | Time2            | 2      | R           |                | 0 / 4294967295 | date of installed VIAL                                                               |
| VIAL CLEANING DATE       | 40181    | Time2            | 2      | R           |                | 0 / 4294967295 | date of last manual cleaning of VIAL                                                 |
| CALIBRATION              | 40183    | Time2            | 2      | R           |                | 0 / 4294967295 | date of latest calibration                                                           |
| VERIFICATION             | 40185    | Time2            | 2      | R           |                | 0 / 4294967295 | date of latest verification                                                          |
| FACTORY SERVICE          | 40187    | Time2            | 2      | R           |                | 0 / 4294967295 | Date of latest factory service                                                       |
| DESICCANT TIME           | 40189    | Unsigned Integer | 1      | R           |                | 0 / 65535      | days since latest desiccant install                                                  |
| LOAD                     | 40190    | Unsigned Integer | 1      | R           |                | 0 / 65535      | status of desiccant                                                                  |
| PUMP TIME                | 40191    | Unsigned Integer | 2      | R           |                | 0 / 999999     | used pump time                                                                       |
| VIAL PRESENT             | 40193    | Unsigned Integer | 1      | R           |                | 0 / 1          | VIAL detected [YES = 1 / NO = 0]                                                     |
| LID TYPE                 | 40194    | Unsigned Integer | 1      | R           |                | 0 / 2          | type of istalled Lid [0=NONE / 1=MEASURE / 2=CALIBRATE]                              |
| MEAS RAW                 | 40195    | Float            | 2      | R           |                | -200.0 / 5000  | signal of measurement channel                                                        |
| REF RAW                  | 40197    | Float            | 2      | R           |                | -200.0 / 5000  | signal of reference channel                                                          |
| HEATER                   | 40199    | Float            | 2      | R           |                | 0.0 / 100.0    | Temperature Laser system                                                             |
| RATIO P/L                | 40209    | Unsigned Integer | 1      | R           |                | 0 / 100        | Pump ratio                                                                           |
| HUMIDITY                 | 40210    | Float            | 2      | R           |                | 0 / 100        | humidity condens system                                                              |
| TEMP CONDENS             | 40212    | Float            | 2      | R           |                | 0.0 / 100.0    | temperature condens system                                                           |

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| Name           | Register | Data Type        | Length | Access Mode | Discrete Range | Min / Max | Description                   |
|----------------|----------|------------------|--------|-------------|----------------|-----------|-------------------------------|
| SET POINT      | 40214    | Unsigned Integer | 1      | R           |                | 0 /100    | threshold condensation system |
| RATIO P/L WEEK | 40219    | Unsigned Integer | 1      | R           |                | 0 /100    | Pump ratio (week)             |

**Classified ERROR - Register 49930**

| <b>Register (R/O)</b> | <b>Classified Error # Bit</b> | <b>Error</b>                     | <b>Description</b>                                                                                                |
|-----------------------|-------------------------------|----------------------------------|-------------------------------------------------------------------------------------------------------------------|
| 49930                 | 0                             | Measurement Calibration Error    | not supported                                                                                                     |
| 49930                 | 1                             | Electronic Adjustment Error      | not supported                                                                                                     |
| 49930                 | 2                             | Cleaning Error                   | The last cleaning cycle failed.                                                                                   |
| 49930                 | 3                             | Measuring Module Error           | One or more of the errors TURB TOO HIGH, MEAS ELECTRONIC, PROC HEAD OPEN, VIAL CLARITY or VIAL PRESENT is active. |
| 49930                 | 4                             | System Re-initialization Error   | not supported                                                                                                     |
| 49930                 | 5                             | Hardware Error                   | One or more of the errors FLASH FAIL, EE RSRVD ERR, LASER TOO LOW, AUTOCHK. NO FUNC is active.                    |
| 49930                 | 6                             | Internal Communication Error     | One or more of the error/warning AU COMM or RFID is active.                                                       |
| 49930                 | 7                             | Humidity Error                   | Humidity in the drying cycle exceeds limit.                                                                       |
| 49930                 | 8                             | Temperature Error                | Temperature in the drying cycle exceeds limit.                                                                    |
| 49930                 | 9                             | Reserved for Future Use          |                                                                                                                   |
| 49930                 | 10                            | Sample Warning                   | not supported                                                                                                     |
| 49930                 | 11                            | Questionable Calibration Warning | not supported                                                                                                     |
| 49930                 | 12                            | Questionable Measurement Warning | One or more of the measurements of the device are of questionable accuracy (Quality bad or out of range).         |
| 49930                 | 13                            | Safety Warning                   | not supported                                                                                                     |
| 49930                 | 14                            | Reagent Warning                  | not supported                                                                                                     |
| 49930                 | 15                            | Maintenance Required Warning     | One or more of the reminder is active. DRYER RANGE, PERFORM CAL, PERFORM VER, WIPER REPLACE                       |

**Classified STATUS - Register 49931**

| Register (R/O) | Classified Status #Bit | Status                    | Description                                                                                             |
|----------------|------------------------|---------------------------|---------------------------------------------------------------------------------------------------------|
| 49931          | 0                      | Calibration in progress   | The device has been placed in a calibration mode. The measurements may not be valid.                    |
| 49931          | 1                      | Cleaning in progress      | The device has been placed in a cleaning mode. The measurements may not be valid.                       |
| 49931          | 2                      | Service/Maintenance menu  | The device has been placed in a service or maintenance mode in which the measurements may not be valid. |
| 49931          | 3                      | Common Error              | Device recognizes an error, see Error Registers for Error Class.                                        |
| 49931          | 4                      | Measurement 0 Quality Bad | One or more of the errors.                                                                              |
| 49931          | 5                      | Measurement 0 Low Limit   | not supported                                                                                           |
| 49931          | 6                      | Measurement 0 High Limit  | Measurement is above measurement range                                                                  |
| 49931          |                        |                           | Warning or Error: TURB TOO HIGH                                                                         |
| 49931          | 7                      | Measurement 1 Quality Bad | Precision of measurement is out of specified limits.                                                    |
| 49931          |                        |                           | Flow is set to ON and error CLEANING MODULE is active                                                   |
| 49931          | 8                      | Measurement 1 Low Limit   | Measurement is below measurement range.                                                                 |
| 49931          |                        |                           | Warning LOW FLOW or Error NO FLOW                                                                       |
| 49931          | 9                      | Measurement 1 High Limit  | Measurement is above measurement range.                                                                 |
| 49931          |                        |                           | Warning HIGH FLOW                                                                                       |
| 49931          | 10                     | Measurement 2 Quality Bad | not supported                                                                                           |
| 49931          | 11                     | Measurement 2 Low Limit   | not supported                                                                                           |
| 49931          | 12                     | Measurement 2 High Limit  | not supported                                                                                           |
| 49931          | 13                     | Measurement 3 Quality Bad | not supported                                                                                           |
| 49931          | 14                     | Measurement 3 Low Limit   | not supported                                                                                           |
| 49931          | 15                     | Measurement 3 High Limit  | not supported                                                                                           |

**ERROR List Information – Register 49985 - 86**

| <b>Register (R/O)</b> | <b>Error #Bit</b> | <b>Error Description</b> | <b>Comment</b> |
|-----------------------|-------------------|--------------------------|----------------|
| 49985                 | 0                 | EE RSRVD ERR             |                |
| 49985                 | 1                 | AU COMM                  |                |
| 49985                 | 2                 | FLASH FAIL               |                |
| 49985                 | 3                 | MEAS ELECTRONIC          |                |
| 49985                 | 4                 | PROC HEAD OPEN           |                |
| 49985                 | 5                 | CLEANING MODULE          |                |
| 49985                 | 6                 | VIAL CLARITY             |                |
| 49985                 | 7                 | TURB TOO HIGH            |                |
| 49985                 | 8                 | VIAL PRESENT             |                |
| 49985                 | 9                 | TYPE MISMATCH            |                |
| 49985                 | 10                | LASER TOO LOW            |                |
| 49985                 | 11                | HUMIDITY PCB             |                |
| 49985                 | 12                | AUTOCHK. NO FUNC         |                |
| 49985                 | 13                | Water Ingress            |                |
| 49985                 | 14                | CAL. CURVE               |                |
| 49985                 | 15                | NOT USED                 |                |
| 49986                 | 0                 | NOT USED                 |                |
| 49986                 | 1                 | NOT USED                 |                |
| 49986                 | 2                 | NOT USED                 |                |
| 49986                 | 3                 | NOT USED                 |                |
| 49986                 | 4                 | NOT USED                 |                |
| 49986                 | 5                 | NOT USED                 |                |
| 49986                 | 6                 | NOT USED                 |                |
| 49986                 | 7                 | NOT USED                 |                |
| 49986                 | 8                 | NOT USED                 |                |
| 49986                 | 9                 | NOT USED                 |                |
| 49986                 | 10                | NOT USED                 |                |
| 49986                 | 11                | NOT USED                 |                |
| 49986                 | 12                | NOT USED                 |                |
| 49986                 | 13                | NOT USED                 |                |
| 49986                 | 14                | NOT USED                 |                |
| 49986                 | 15                | NOT USED                 |                |

**WARNING List Information – Register 49983 - 84**

| <b>Register (R/O)</b> | <b>Warning # Bit</b> | <b>Warning Description</b> | <b>Comment</b> |
|-----------------------|----------------------|----------------------------|----------------|
| 49983                 | 0                    | HUM PCB SC                 |                |
| 49983                 | 1                    | VIAL CLARITY               |                |
| 49983                 | 2                    | TURB TOO HIGH              |                |
| 49983                 | 3                    | CLEANING MODULE            |                |
| 49983                 | 4                    | NO FLOW                    |                |
| 49983                 | 5                    | LOW FLOW                   |                |
| 49983                 | 6                    | HIGH FLOW                  |                |
| 49983                 | 7                    | WIPER REPLACE.             |                |
| 49983                 | 8                    | DRYER EXHAUS'D             |                |
| 49983                 | 9                    | SENS.DRY: FUNC             |                |
| 49983                 | 10                   | DRYER                      |                |
| 49983                 | 11                   | PUMP                       |                |
| 49983                 | 12                   | SENS.DRY: TEMP             |                |
| 49983                 | 13                   | SENS.DRY: HUM              |                |
| 49983                 | 14                   | NOT DRYING                 |                |
| 49983                 | 15                   | DESICCANT OLD              |                |
| 49984                 | 16                   | LASER-TEMP HIGH            |                |
| 49984                 | 17                   | LASER-TEMP SENS.           |                |
| 49984                 | 18                   | RFID                       |                |
| 49984                 | 3                    | NOT USED                   |                |
| 49984                 | 4                    | NOT USED                   |                |
| 49984                 | 5                    | NOT USED                   |                |
| 49984                 | 6                    | NOT USED                   |                |
| 49984                 | 7                    | NOT USED                   |                |
| 49984                 | 8                    | NOT USED                   |                |
| 49984                 | 9                    | NOT USED                   |                |
| 49984                 | 10                   | NOT USED                   |                |
| 49984                 | 11                   | NOT USED                   |                |
| 49984                 | 12                   | NOT USED                   |                |
| 49984                 | 13                   | NOT USED                   |                |
| 49984                 | 14                   | NOT USED                   |                |
| 49984                 | 15                   | NOT USED                   |                |

### Process Event List Information – Register 49987 - 88

| Register | Process Event #Bit | Process Event Description     | Comment |
|----------|--------------------|-------------------------------|---------|
| 49987    | 0                  | CALIBRATION                   |         |
| 49987    | 1                  | VERIFICATION                  |         |
| 49987    | 2                  | CALIBRATION *                 | * RFID  |
| 49987    | 3                  | VERIFICATION *                | * RFID  |
| 49987    | 4                  | CLEANING                      |         |
| 49987    | 5                  | SERVICE                       |         |
| 49987    | 6                  | WIPER REPLACE.                |         |
| 49987    | 7                  | VIAL REPLACEMENT              |         |
| 49987    | 8                  | VIAL CLEANING                 |         |
| 49987    | 9                  | DESICCANT REPL                |         |
| 49987    | 10                 | NOT USED                      |         |
| 49987    | 11                 | NOT USED                      |         |
| 49987    | 12                 | NOT USED                      |         |
| 49987    | 13                 | NOT USED                      |         |
| 49987    | 14                 | NOT USED                      |         |
| 49987    | 15                 | NOT USED                      |         |
| 49988    | 0                  | NOT USED                      |         |
| 49988    | 1                  | NOT USED                      |         |
| 49988    | 2                  | NOT USED                      |         |
| 49988    | 3                  | NOT USED                      |         |
| 49988    | 4                  | NOT USED                      |         |
| 49988    | 5                  | NOT USED                      |         |
| 49988    | 6                  | NOT USED                      |         |
| 49988    | 7                  | NOT USED                      |         |
| 49988    | 8                  | NOT USED                      |         |
| 49988    | 9                  | NOT USED                      |         |
| 49988    | 10                 | NOT USED                      |         |
| 49988    | 11                 | NOT USED                      |         |
| 49988    | 12                 | NOT USED                      |         |
| 49988    | 13                 | NOT USED                      |         |
| 49988    | 14                 | Prohibited, internal use only |         |
| 49988    | 15                 | Prohibited, internal use only |         |

### Reminder List Information – Register

| Register (R/O) | Reminder #Bit | Process Event Description | Comment |
|----------------|---------------|---------------------------|---------|
| 49919          | 0             | PERFORM CAL               |         |
| 49919          | 1             | PERFORM VER               |         |
| 49919          | 2             | WIPER REPLACE.            |         |
| 49919          | 3             | DRYER RANGE               |         |
| 49919          | 4             | SENSOR SETUP              |         |
| 49919          | 5             | NOT USED                  |         |
| 49919          | 6             | NOT USED                  |         |
| 49919          | 7             | NOT USED                  |         |
| 49919          | 8             | NOT USED                  |         |
| 49919          | 9             | NOT USED                  |         |
| 49919          | 10            | NOT USED                  |         |
| 49919          | 11            | NOT USED                  |         |
| 49919          | 12            | NOT USED                  |         |
| 49919          | 13            | NOT USED                  |         |
| 49919          | 14            | NOT USED                  |         |
| 49919          | 15            | NOT USED                  |         |
| 49920          | 0             | NOT USED                  |         |
| 49920          | 1             | NOT USED                  |         |
| 49920          | 2             | NOT USED                  |         |
| 49920          | 3             | NOT USED                  |         |
| 49920          | 4             | NOT USED                  |         |
| 49920          | 5             | NOT USED                  |         |
| 49920          | 6             | NOT USED                  |         |
| 49920          | 7             | NOT USED                  |         |
| 49920          | 8             | NOT USED                  |         |
| 49920          | 9             | NOT USED                  |         |
| 49920          | 10            | NOT USED                  |         |
| 49920          | 11            | NOT USED                  |         |
| 49920          | 12            | NOT USED                  |         |
| 49920          | 13            | NOT USED                  |         |
| 49920          | 14            | NOT USED                  |         |
| 49920          | 15            | NOT USED                  |         |