Modbus Register
AMTAX SC

V1.90

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Name	Register	Data Type	Length	Access Mode	Discrete Range	Min / Max	Description
MEASURE VALUE 1	40001	Float	2	R		?	actual measurement value from channel one
CHANNEL1	40005	String	8	R/W			Name of LOCATION 1 (see menu system)
MEAS.UNITS 1	40013	Unsigned Integer	1	R/W	U0 /2		Measurement units for channel one, 0=mg/l, 2=ppm
CUVETTE TEMP.	40014	Float	2	R		-50 /99.99	actual cuvette temperature in C
CALIB.INTERVAL	40016	Unsigned Integer	1	R/W	0 /5 /1 /2 /3 /4		it describes how often the analyzer calibrates, 0=OFF, 1=12h,2=24h, 3=36h, 4=48h
CALIB.START	40017	Unsigned Integer	1	R/W	0 /1 /2 /3 /4 /5 /6 /7 /8 /9 /10 /11 /12 /13 /14 /15 /16 /17 /18 /19 /20 /21 /22 /23		it describes when the analyzer starts the calibration (24 hour format) 0=0 o`clock to23=23oclock
ENCLOSURE TEMP	40020	Float	2	R		-50 /99.9	the temperature inside the analyzer
mV STANDARD1	40022	Float	2	R		-3000 /3000	the voltage in mV for the standard one sample
mV STANDARD2	40024	Float	2	R		-3000 /3000	the voltage in mV for the standard two sample
mV ZERO	40026	Float	2	R		-3000 /3000	the voltage in mV for the citro sample
mV SAMPLE	40028	Float	2	R		-3000 /3000	the voltage in mV for the sample (last measurement)
mV ACTIVE	40030	Float	2	R		-3000 /3000	the voltage in mV for the current sample (actual mV)
AMMONIUM-N 2	40032	Float	2	R		?	measurement value for channel two as NH4-N
AMMONIUM 2	40034	Float	2	R		?	measurement value for channel two as NH4
AMMONIUM-N 1	40036	Float	2	R		?	measurement value for channel one as NH4-N
AMMONIUM 1	40038	Float	2	R		?	measurement value for channel one as NH4-N
PROBE P. MIN	40040	Float	2	R		0 /2.0	integrated value of pressure at filtration probe, if not yet calculated: nan
PROBE PRESSURE	40042	Float	2	R		0 /2.0	actual value of pressure at filtration probe, if not yet calculated: nan
GAIN CORR. 1	40044	Float	2	R/W		0.01 /100.00	Gain correction for channel one
mV SLOPE	40046	Float	2	R		-3000 /3000	SLOPE of electrode
BUSACTION ACTIVE	40048	Unsigned Integer	1	R/W		0 /1	write a one to this register to start a bus action (see Field bus control)
BUS ANALY.START	40049	Unsigned Integer	1	R/W		0 /1	you can start the analyzer about the bus
BUS SERVICE	40050	Unsigned Integer	1	R/W		0 /1	you can start the service mode about the bus
BUS CLEANING	40051	Unsigned Integer	1	R/W		0 /1	you can start the cleaning mode about the bus
BUS CALIBRATION	40052	Unsigned Integer	1	R/W		0 /1	you can start the calibration mode about the bus
BUS CLEAN/CAL.	40053	Unsigned Integer	1	R/W		0 /1	you can start the cleaning/calibration mode about the bus
BUS PREPUMP REA.	40054	Unsigned Integer	1	R/W		0 /1	you can prepump reagent about the bus
BUS PREPUMP CLEA	40055	Unsigned Integer	1	R/W		0 /1	you can prepump cleaning solution about the bus
BUS PREPUMP STA.	40056	Unsigned Integer	1	R/W		0 /1	you can prepump standards about the bus
BUS PREPUMP PRO.	40057	Unsigned Integer	1	R/W		0 /1	you can prepump the probe about the bus
BUS PREPUMP ALL	40058	Unsigned Integer	1	R/W		0 /1	you can prepump all about the bus
DISCHARGE CALIB.	40067	Unsigned Integer	1	R/W		0 /10	discharged values after a calibration
REMAINING TIME	40068	Unsigned Integer	1	R		0 /65535	remaining time of the current process

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Name	Register	Data Type	Length	Access Mode	Discrete Range	Min / Max	Description
APPL.	40069	Float	2	R		0 /3.40282347 E+38	version of application file
HEATING ON	40071	Unsigned Integer	1	R/W	0 /1 /2 /3 /4 /5 /6 /7 /8 /9 /10 /11 /12		sets the month when the sample line heating is switched ON, 0=alway OFF, 1=January, 2=Febraury to 12=December
HEATING OFF	40072	Unsigned Integer	1	R/W	1 /2 /3 /4 /5 /6 /7 /8 /9 /10 /11 /12		sets the month when the sample line heating is switched OFF,1=January, 2=Febraury to 12=December
CLEANING MODULES	40073	Time2	2	R/W			Date of last filter module cleaning
SET PARAMETER 1	40075	Unsigned Integer	1	R/W	P19 /42		Chose the parameter for channel one, 19=NH4-N, 42=NH4
AIR FILTER DISPL	40076	Integer	1	R/W		-32768 /32767	days until next cleaning/exchange of air filter pads. Negative values show a cleaning which is overdue
COOLING	40077	Unsigned Integer	1	R		0 /100	percentage of cooling fan power
ANALYZER HEATING	40078	Unsigned Integer	1	R		0 /100	the heating of the analyzer
INTERVAL	40080	Unsigned Integer	1	R/W	0 /1 /2 /3 /4 /5 /6 /7 /8 /9 /10 /11 /12 /13 /14 /15 /16 /17 /18 /19 /20 /21 /22 /23		0=5 minutes, 1 =10minutes, 2=15 minutes to 23=120 minutes
CLEANING START	40081	Unsigned Integer	1	R/W	0 /1 /2 /3 /4 /5 /6 /7 /8 /9 /10 /11 /12 /13 /14 /15 /16 /17 /18 /19 /20 /21 /22 /23		it describes when the analyzer starts the cleaning (24 hour format) 0=0 o`clock to23=23oclock
STATUS MODULES	40082	Unsigned Integer	1	R		0 /100	the state of the modules as integer in percent
NEW MODULES	40083	Time2	2	R/W			date of the last filter module exchange
CLEAN. INTERVAL	40085	Unsigned Integer	1	R/W	0 /1 /3 /6 /8 /12 /24		cleaning intervall , 0=OFF, 1=1h, 3=3h, 6=6h, 8=8h, 12=12h, 24=24h
SET OUTMODE CAL.	40086	Unsigned Integer	1	R/W	0 /1 /2		Set output mode for calibration, 0=HOLD, 1= TRANSFER VALUE
DISCHARGE CLEAN.	40087	Unsigned Integer	1	R/W		0 /10	discharged values after a cleaning
SET OUTMODE CLE.	40088	Unsigned Integer	1	R/W	0 /1 /2		Set output mode for cleaning, 0=HOLD, 1= TRANSFER VALUE
SET OUTMODE SER.	40089	Unsigned Integer	1	R/W	0 /1 /2		Set output mode for service mode, 0=HOLD, 1= TRANSFER VALUE
CHANNEL2	40090	String	8	R/W			location for the measuring channel two where the sample is coming from
SET PARAMETER 2	40098	Unsigned Integer	1	R/W	P19 /42		Chose the parameter for channel two, 19=NH4-N, 42=NH4
GAIN CORR. 2	40099	Float	2	R/W		0.01 /100.00	Gain correction for channel two
MEAS.UNITS 2	40101	Unsigned Integer	1	R/W	U0 /2		Measurement units for channel two, 0=mg/l, 2=ppm
HUMIDITY ANALY	40102	Unsigned Integer	1	R		0 /100	humitity analyzer in percent
SOFTWARE PROBE	40103	Float	2	R		0 /3.40282347 E+38	the softwareversion of the filtration probe
HUMIDITY PROBE	40105	Unsigned Integer	1	R		0 /100	humitity filtration probe in percent

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Name	Register	Data Type	Length	Access Mode	Discrete Range	Min / Max	Description
PROCESS STATE	40107	Unsigned Integer	1	R	0 /1 /2 /3 /4 /5 /6 /7 /8 /9 /10 /11 /12 /13 /14 /15 /16 /17 /18 /19 /20		process state is coded as enum list, enum value 0=service mode, enum value 1=citrocal in proc, cal1 in proc., cal2 in proc., measuring 1, interval, initialisation, serv.in proc., cleaning, warm up phase, measuring 2, prepump reag., prepump clean.,prepump standard, prepumping probe, flushing, start by bus, warming up, reserved, prepump.sample, enum value 20=validation
LAST CALIBRAT.	40108	Time2	2	R			the date of the last calibration
START BY BUS	40110	Unsigned Integer	1	R/W	0 /1		sets the analyzer to START BY BUS mode (see Start by bus)
FIELDBUS	40111	Unsigned Integer	1	R/W		0 /2	trigers a measurement serie in START BY BUS mode (see Start by bus)
NUMBER OF MEAS.	40112	Unsigned Integer	1	R/W		1 /100	Number of measurements in a START BY BUS measurement series (see Start by bus)
DISCHARGE BUS	40113	Unsigned Integer	1	R/W		0 /10	discharge values at the beginning of a START BY BUS series
AVERAGE	40114	Unsigned Integer	1	R/W		?	The number of measurement values that result in an average value in a START BY BUS measurement series.
NO.OF VALUES CH1	40115	Unsigned Integer	1	R/W		0 /100	2 channel mode: how often is channel 1 measured before switching to channel 2
NO.OF VALUES CH2	40116	Unsigned Integer	1	R/W		0 /100	2 channel mode: how often is channel 2 measured before switching to channel 1
DISCHARGE VAL1	40117	Unsigned Integer	1	R/W		0 /3	number of discharged values when switching from channel 2 to channel 1
DISCHARGE VAL2	40118	Unsigned Integer	1	R/W		0 /3	number of discharged values when switching from channel 1 to channel 2
REAG. WARNING	40119	Unsigned Integer	1	R/W	0 /1		warning if the level of reagent is low, 0=OFF, 1=ON
TYPE	40125	String	6	R			name of the item/analyzer
SENSOR NAME	40131	String	8	R			User-assigned name for a sensor
STATUS MODULES	40140	Float	2	R		0 /100	the state of the modules as float in percent, nan if not yet calculated
WARNING	40142	Unsigned Integer	1	R/W	20 /15 /10 /5		Reagent warning level in percent
REAGENT LEVEL	40143	Unsigned Integer	1	R/W		0 /100	the level of reagent in percent
CLEAN SOLU LEVEL	40144	Unsigned Integer	1	R/W		0 /100	cleaninig solution level in percent
STANDARDS LEVEL	40146	Unsigned Integer	1	R/W		0 /100	level of standards in percent
REPLACE ELECTRO.	40148	Time2	2	R/W			date of last electrode exchange
CHANGE MEMBRANE	40150	Time2	2	R/W			date of last membrane exchange
PUMP DISPLAY	40154	Integer	1	R/W		-32768 /32767	days lest until exchanging piston of pump, negative values show that exchange is overdue
MEASURE VALUE 2	40165	Float	2	R		?	last measurement value of channel 2
STRUCTURE	40167	Unsigned Integer	1	R		0 /65535	the entry is for the device driver file,shows the version
FIRMWARE	40168	Unsigned Integer	1	R		0 /65535	the entry is for the device driver file,shows the version
CONTENT	40169	Unsigned Integer	1	R		0 /65535	the entry is for the device driver file,shows the version
LOADER	40170	Float	2	R		0 /3.40282347 E+38	the entry is for the application file,shows the version of the boot file
HEATING	40172	Unsigned Integer	1	R	0 /1		status off heating for sample tube, 0=OFF, 1=ON
OPERATING HOURS	40173	Unsigned Integer	2	R/W		0 /99999999	operating hours of analyzer

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Name	Register	Data Type	Length	Access Mode	Discrete Range	Min / Max	Description
PUMP MEMBR.DISP.	40177	Integer	1	R/W		-32768 /32767	remaining days for pump membrane in filter probe
COMPRESSOR	40186	Integer	1	R/W		-32768 /32767	remaining days for air compressor
LAST CHA.FACTOR1	40194	Time2	2	R/W			the date of the last correction factor for channel one
LAST CHA.FACTOR2	40196	Time2	2	R/W			the date of the last correction factor for channel two
SAMPLE DETECTION	40218	Unsigned Integer	1	R/W	0 /1 /2		output if sample detection detects low sample amount, 0=Warning, 1=Error 2=OFF
ACTUAL MEAS.TIME	40224	Time2	2	R			time of actual measurement value
LAST TIME	40226	Time2	2	R			time of last measurement value
2.ND LAST TIME	40228	Time2	2	R			2.ND LAST TIME
3.RD LAST TIME	40230	Time2	2	R			3.RD LAST TIME
4.TH LAST TIME	40232	Time2	2	R			4.TH LAST TIME
5.TH LAST TIME	40234	Time2	2	R			5.TH LAST TIME
6.TH LAST TIME	40236	Time2	2	R			6.TH LAST TIME
7.TH LAST TIME	40238	Time2	2	R			7.TH LAST TIME
8.TH LAST TIME	40240	Time2	2	R			8.TH LAST TIME
9.TH LAST TIME	40242	Time2	2	R			9.TH LAST TIME
ACTUAL VALUE	40244	Float	2	R		0 /15000	actual measurement value, not channel dependent
LAST VALUE	40246	Float	2	R		0 /15000	LIST OF VALUES
2.ND LAST VALUE	40248	Float	2	R		0 /15000	LIST OF VALUES
3.RD LAST VALUE	40250	Float	2	R		0 /15000	LIST OF VALUES
4.TH LAST VALUE	40252	Float	2	R		0 /15000	LIST OF VALUES
5.TH LAST VALUE	40254	Float	2	R		0 /15000	LIST OF VALUES
6.TH LAST VALUE	40256	Float	2	R		0 /15000	LIST OF VALUES
7.TH LAST VALUE	40258	Float	2	R		0 /15000	LIST OF VALUES
8.TH LAST VALUE	40260	Float	2	R		0 /15000	LIST OF VALUES
9.TH LAST VALUE	40262	Float	2	R		0 /15000	LIST OF VALUES
STAT. MODUL.WAR.	40266	Unsigned Integer	1	R/W	40 /30 /15		configure the level of warning for the state of the modules
STATUS MODUL.ERR	40267	Unsigned Integer	1	R/W	14 /10 /8 /0		configure the level of error for the state of the modules
ENCLOSU.TEMP.MAX	40268	Float	2	R		-50 /200	the maximum temperature inside the analyzer during the last 24 hours, intervall starts with power on
ENCLOSU.TEMP.MIN	40270	Float	2	R		-50 /200	the minimum temperature inside the analyzer during the last 24 hours, intervall starts with power on
EXHAUST CONTROL	40272	Unsigned Integer	1	R/W	0 /1		the analyzer is checking the exhaust whether it is blocked, 0=OFF, 1=ON
ELECTROLYTE	40277	Integer	1	R/W		-32768 /32767	days left until next electrolyte change, neg. values show overdue
ELECTROLYTE	40278	Unsigned Integer	1	R/W	0 /1		Sets if there is a warning when electrolyte has to be exchanged, 0=OFF, 1=WARNING
FALSE ELEC DATA	40279	Unsigned Integer	1	R/W	0 /1		Sets if there is an error if the ZERO value is out of range, 0=OFF, 1=ERROR
ERROR LIST	40280	Unsigned Integer	2	R		0 /4294967295	Errors are coded bit wise. bit 0=TEMP. < 0 C/ 32F?,bit 1=ANALYZ. TO COLD, COOLING FAILED,HUMIDITY ANALY, HUMIDITY PROBE, PROBE MISSING, NO HEAT UP, CUVSENSOR DEFECT, TEMPSENS DEFECT, CUVHEAT DEFECT, CUV TOO HOT,ELECTRODE SLOPE, FALSE ELEC DATA, MODULES CONTAM., DRAIN BLOCKED, SAMPLE1, bit 16= SAMPLE2

Name	Register	Data Type	Length	Access Mode	Discrete Range	Min / Max	Description
WARNING LIST	40282	Unsigned Integer	2	R		0 /4294967295	Warnings are coded bit wise, bit 0= WARMUP PHASE,bit 1 =COOLING DOWN, SERVICE MODE, REAGENT LEVEL,CLEAN SOLU LEVEL, ANALYZER TO COLD, ANALYZER TO WARM, CUV TOO COOL,MODULES CONTAM., STANDARDS LEVEL, ELECTRODE SLOPE, reserved,SAMPLE1, ELEKTROLYTE, bit 14=SAMPLE2
EDIT NAME	40285	String	8	R/W			Name of LOCATION (see menu system)
ELECTROLYTE	40293	Float	2	R			electrode drift per 24h in mV
Offset1	40302	Float	2	R/W		?	offset correction for channel one
Offset2	40304	Float	2	R/W		?	offset correction for channel two

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