RADIONODE

Technical Note

AT Commands Description for UA Sensors

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Overview

Radionode USB Sensor transmitter series has simple text commands to read or set parameters of sensor. The commands are very similar to AT commands of old fashioned telephone modem. UA series device has USB CDC (Communication Device Class) that make it connected to many operating system such as Windows,Linux,MacOS and Android via USB port.

Simply with the command "**ATCD**" user can read digital value of sensor. All the UA series are using a same command to read the sensors.

1.UA Sensor Types

Model Group	Model Description	Type
UA1X Series Temperature	UA10 : Temp/ RH UA11 : ThermoCouple Temp 2CH (T,K) UA12 : ThermoCouple Temp 2CH (K,J,T,N,S,E,B,R) UA13 : PT100 Temp. 1CH	Temperature
UA5X Series Gas Sensor	MEMS Type ● UA50 : tVOC sensor Optical Type ● UA52-O2 : O2 Sensor ● UA52-CO2 : CO2 Sensor ElectroChemical Film ● UA53-CO : CO Sensor ● UA53-SO2 : SO2 Sensor ● UA53-NO2 ● UA53-H2S ElectroChemical Cell ● UA54-NH3 ● UA54-H2S ● UA54-EO ● UA54-HCL ● UA54-C2H4 ● UA58-KFG (CO, O2, H2S, CO2) ● UA58-LEL (flammable gas) ● UA58-Methane ● UA59-CO2	Gas
UA2X Series Converter	UA20-A: 4-20mA Input 2CH UA20-B: 4-20mA Input 1 CH with 12V output 1CH UA20-C: 0~1V Input 2CH UA20-D: Pulse Input	Converter

2.UA1X, UA20 Series AT Commands

the calibration parameters are not listed here. If you need the professional calibration commands, please contact the Radionode Manufacturer DEKIST Co., Ltd.

** CR(\r), LF(\n)

ATCD

to request the value of sensor data. (two channels)

Example	Description
IN ATCD<CR><LF> OUT ATCD 20.11, 23.44<CR><LF>	to request the value of sensor data. ATCD <channel1>,<channel2> <channel1>=Temperature <channel2>= RH or Temperature UA10 : <ch1=Temperature><ch2=Humidity> UA11 : <ch1=Temperature><ch2=Temperature> UA20 : <ch1= user defined><ch2=user defined>

ATCSM

to set stream mode. In stream mode UA1X send sensor value every 1 sec without any receiving user command. all the channel will be output. Currently supported for UA10.

Example	Description
IN ATCSM 1<CR><LF> OUT ATCSM OK<CR><LF> OUT STREAM 12.33, 34.56<CR><LF>	to enable stream mode. (1:Enable , 0:Disable) the below string will be output automatically every 1 sec STREAM <channel1>,<channel2>

ATCZ

It check USB connection and device status.

Example	Description
IN ATCZ<CR><LF> OUT ATCZ OK<CR><LF>	It check USB Connection.

ATCC

to set Celsius temperature

Example	Description
IN ATCC<CR><LF> OUT ATCC OK<CR><LF>	to set Celsius temperature scale.

ATCF

to set Fahrenheit temperature

Example	Description
IN ATCF<CR><LF> OUT ATCF OK<CR><LF>	to set Fahrenheit temperature scale.

ATCVER

to request the version of this device.

Example	Description
IN ATCVER<CR><LF> OUT ATCVER UA10H_1V0<CR><LF>	to request the version of this device.

ATCMODEL

to request the serial number of this model

Example	Description
IN ATCMODEL<CR><LF> OUT ATCMODEL 17091345<CR><LF>	to request the serial number of this model.

ATCOFF1

to set the offset value of channel 1 output

Example	Description
IN ATCOFF1 -0.5<CR><LF> OUT ATCOFF1 -0.5<CR><LF>	to set the offset value of channel 1 output.

ATCOFF2

to set the offset value of channel 2 output

Example	Description
IN ATCOFF2 -0.5<CR><LF> OUT ATCOFF2 -0.5<CR><LF>	to set the offset value of channel 2 output.

ATTQOFF1

to set Temperature Offset in AREA1 ** Only For UA10H Ver1.0 or later

Example	Description
IN ATTQOFF1 30,1.54,-0.004<CR><LF> OUT ATTQOFF1 30,1.54,-0.004<CR><LF>	to set Temperature Offset in AREA1 it is quadratic equation offset algorithm.

ATTQOFF2

to set Temperature Offset in AREA2 ** Only For UA10H Ver1.0 or later

Example	Description
IN ATTQOFF2 30,1.54,-0.004<CR><LF> OUT ATTQOFF2 30,1.54,-0.004<CR><LF>	to set Temperature Offset in AREA1 it is quadratic equation offset algorithm.

ATHQOFF1

to set Humidity Offset in AREA1 ** Only For UA10H Ver1.0 or later

Example	Description
IN ATTQOFF1 30,1.54,-0.004<CR><LF> OUT ATTQOFF1 30,1.54,-0.004<CR><LF>	to set Humidity Offset in AREA1 it is quadratic equation offset algorithm.

ATHQOFF2

to set Humidity Offset in AREA2 ** Only For UA10H Ver1.0 or laterfua

ATCCTS1

Sensor type (thermocouple) setting for Channel 1 ** Only For UA12

Example	Description
IN ATCCTS1 4<CR><LF> OUT ATCCTS1 4<CR><LF>	To Set or To Get sensor type -1 ~ 7 -1: Type None 0: K Type 1: J Type 2: T Type 3: N Type 4: S Type 5: E Type 6: B Type 7: R Type

ATCCTS2

Sensor type (thermocouple) setting for Channel 2 ** For Only For UA12

Example	Description
IN ATCCTS2 7<CR><LF> OUT ATCCTS2 7<CR><LF>	To Set or To Get sensor type -1 ~ 7 -1: Type None 0: K Type 1: J Type 2: T Type 3: N Type 4: S Type 5: E Type 6: B Type 7: R Type

3. UA50 (VoC Gas) AT Commands

ATCZ

It checks USB connection and device status.

Example	Description
IN ATCZ<CR><LF> OUT ATCZ OK<CR><LF>	It checks USB Connection.

ATCD

to request the value of sensor data. (two channels)

Example	Description
IN ATCD<CR><LF> OUT ATCD 20.11, 23.44<CR><LF>	to request the value of sensor data. ATCD <channel1>,<channel2>

ATCQ

to request the value of sensor data. (four channels)

Example	Description
IN ATCQ<CR><LF> OUT ATCQ 1.11,5.11,1113----<CR><LF>	to request the value of sensor data. ATCQ <channel1>,<channel2><channel3>,<----> - channel1 : TVOC[ppm or ppb] - channel2 : Absolute humidity[g/m^3] - channel3 : CO2-equivalent[ppm or %]

ATCC

to set Celsius temperature

Example	Description
IN ATCC<CR><LF> OUT ATCC OK<CR><LF>	to set Celsius temperature scale.

ATCF

to set Fahrenheit temperature

Example	Description
IN ATCF<CR><LF> OUT ATCF OK<CR><LF>	to set Fahrenheit temperature scale.

ATCVER

to request the version of this device.

Example	Description
IN ATCVER<CR><LF> OUT ATCVER UA50_5V0<CR><LF>	to request the version of this device.

ATCMODEL

to request the serial number of this model

Example	Description
IN ATCMODEL<CR><LF> OUT ATCMODEL 17091345<CR><LF>	to request the serial number of this model.

ATCVOCU

to change the CO2 output unit of ATCD command

Example	Description
IN ATCVOCU 0<CR><LF> OUT ATCVOCU 0<CR><LF> IN ATCVOCU 1<CR><LF> OUT ATCVOCU 1<CR><LF>	TVOC ppm output TVOC ppb output

ATCCU

to change the CO2-equivalent output unit of ATCD command

Example	Description
IN ATCCU 0<CR><LF> OUT ATCCU 0<CR><LF> IN ATCCU 1<CR><LF> OUT ATCCU 1<CR><LF>	CO2-equivalent % output CO2-equivalent ppm output

ATCOFF1

to set the offset value of channel 1 output

Example	Description
IN ATCOFF1 -0.5<CR><LF> OUT ATCOFF1 -0.5<CR><LF>	to set the offset value of channel 1 output.

ATCOFF2

to set the offset value of channel 2 output

Example	Descriptionpp
IN ATCOFF2 -0.5<CR><LF> OUT ATCOFF2 -0.5<CR><LF>	to set the offset value of channel 2 output.

4. UA52-O2 (Gas Oxygen) AT Commands

ATCZ

It checks USB connection and device status.

Example	Description
IN ATCZ<CR><LF> OUT ATCZ OK<CR><LF>	It checks USB Connection.

ATCD

to request the value of sensor data. (two channels)

Example	Description
IN ATCD<CR><LF> OUT ATCD 20.11, 23.44<CR><LF>	to request the value of sensor data. ATCD <channel1>,<channel2>

ATCH

to request the value of sensor data. (six channels)

Example	Description
IN ATCH<CR><LF> OUT ATCH 205.11,20.37,203728.56,1001.44, 10309.17,23.44 <CR><LF>	to request the value of sensor data. ATCD <channel1>,<channel2>,<channel3>, <channel4>,<channel5>,<channel6> - channel1: Oxegen [mBar], - channel2: Oxegen [%] - channel3: Oxegen [ppm], - channel4: Barometer[mBar], - channel5: Barometer[mmH2O] - channel6: Temperature[°C/°F]

ATCMODE

to change the sensor output mode of ATCD command.

Example	Description
IN ATCMODE 1<CR><LF> OUT ATCMODE 1<CR><LF>	MODE1 : Oxegen [%] , Temperature[°C/°F]

IN ATCMODE 3<CR><LF> OUT ATCMODE 3<CR><LF>	MODE2 : Oxegen [mBar] , Barometer[mBar] MODE3 : Oxegen [ppm] , Barometer[mmH2O] MODE4 : Oxegen [%] , Barometer[mBar] MODE5 : Oxegen [%]]

ATCC

to set Celsius temperature

Example	Description
IN ATCC<CR><LF> OUT ATCC OK<CR><LF>	to set Celsius temperature scale.

ATCF

to set Fahrenheit temperature

Example	Description
IN ATCF<CR><LF> OUT ATCF OK<CR><LF>	to set Fahrenheit temperature scale.

ATCVER

to request the version of this device.

Example	Description
IN ATCVER<CR><LF> OUT ATCVER UA52-O2_0V1<CR><LF>	to request the version of this device.

ATCMODEL

to request the serial number of this model

Example	Description
IN ATCMODEL<CR><LF> OUT ATCMODEL 17091345<CR><LF>	to request the serial number of this model.

ATCOFF1

to set the offset value of channel 1 output

Example	Description
IN ATCOFF1 -0.5<CR><LF> OUT ATCOFF1 -0.5<CR><LF>	to set the offset value of channel 1 output.

ATCOFF2

to set the offset value of channel 2 output

Example	Description
IN ATCOFF2 -0.5<CR><LF> OUT ATCOFF2 -0.5<CR><LF>	to set the offset value of channel 2 output.

5. UA52-CO2/ UA59 (High density CO2 Gas) AT Commands

ATCZ

It checks USB connection and device status.

Example	Description
IN ATCZ<CR><LF> OUT ATCZ OK<CR><LF>	It checks USB Connection.

ATCD

to request the value of sensor data. (two channels)

Example	Description
IN ATCD<CR><LF> OUT ATCD 0.23, 19.85<CR><LF>	to request the value of sensor data. ATCD <channel1>,<channel2> - channel1 : CO2 [% or ppm] - channel2 : Temperature [°C/°F]

ATCC

to set Celsius temperature

Example	Description
IN ATCC<CR><LF> OUT ATCC OK<CR><LF>	to set Celsius temperature scale.

ATCF

to set Fahrenheit temperature

Example	Description
IN ATCF<CR><LF> OUT ATCF OK<CR><LF>	to set Fahrenheit temperature scale.

ATCVER

to request the version of this device.

Example	Description
IN ATCVER<CR><LF> OUT ATCVER UA52-CO2_2V8<CR><LF>	to request the version of this device. ex) UA52-CO2_2V8

ATCMODEL

to request the serial number of this model

Example	Description
IN ATCMODEL<CR><LF> OUT ATCMODEL 20110011<CR><LF>	to request the serial number of this model.

ATCCU

to change the CO2 output unit of ATCD command

Example	Description
IN ATCCU 0<CR><LF> OUT ATCCU 0<CR><LF> IN ATCCU 1<CR><LF> OUT ATCCU 1<CR><LF>	CO2 % output CO2 ppm output

ATCCAL

Set to CO2 ppm calibration gas concentration

Example	Description
IN ATCCAL 50000<CR><LF> OUT ATCCAL 50000<CR><LF>	Calibrate the sensor to 50000ppm =5% unit : ppm

ATCSPAN

Set the barometric pressure

Example	Description
IN ATCSPAN air pressure<CR><LF> OUT ATCSPAN 1013<CR><LF>	CO2 output according to the barometric pressure unit : mbar

ATCOFF1

to set the offset value of channel 1 output

Example	Description
IN ATCOFF1 -0.5<CR><LF> OUT ATCOFF1 -0.5<CR><LF>	to set the offset value of channel 1 output.

ATCOFF2

to set the offset value of channel 2 output

Example	Description
IN ATCOFF2 -0.5<CR><LF> OUT ATCOFF2 -0.5<CR><LF>	to set the offset value of channel 2 output.

6. UA53-Series (Electrochemical Film Gas) AT Commands

ATCZ

It checks USB connection and device status.

Example	Description
IN ATCZ<CR><LF> OUT ATCZ OK<CR><LF>	It checks USB Connection.

ATCD

to request the value of sensor data. (two channels)

Example	Description
IN ATCD<CR><LF> OUT ATCD 5.23, 19.85<CR><LF>	to request the value of sensor data. ATCD <channel1>,<channel2> - channel1 : Gas concentration [ppm] - channel2 : Temperature [°C/°F]

ATCQ

to request the value of sensor data. (four channels)

Example of UA53-CO	Description
IN ATCQ<CR><LF> OUT ATCQ 3.00,26.00,36.00,----<CR><LF>	to request the value of sensor data. ATCQ <channel1>,<channel2><channel3>,<----> - channel1 :CO [ppm] - channel2 : Temperature [C or F] - channel3 : Humidity[%]

ATCC

to set Celsius temperature

Example	Description
IN ATCC<CR><LF> OUT ATCC OK<CR><LF>	to set Celsius temperature scale.

ATCF

to set Fahrenheit temperature

Example	Description
IN ATCF<CR><LF> OUT ATCF OK<CR><LF>	to set Fahrenheit temperature scale.

ATCVER

to request the version of this device.

Example	Description
IN ATCVER<CR><LF> OUT ATCVER UA53-Gas_5V3<CR><LF>	to request the version of this device. ex) UA53-CO_5V3

ATCMODEL

to request the serial number of this model

Example	Description
IN ATCMODEL<CR><LF> OUT ATCMODEL 20120015<CR><LF>	to request the serial number of this model.

ATCCZR

Set the zero (baseline) value

Example	Description
IN ATCCZR<CR><LF> OUT ATCCZR 1510.02<CR><LF>	Set the baseline value [Micro voltage]

ATCCSP

Set sensor-specific sensitivity (nA/ppm)

Example	Description
IN ATCCSP sensitivity<CR><LF> OUT ATCCSP 3055.12,2.56,24.17<CR><LF>	Set sensor-specific sensitivity. ATCSP baseline,sensitivity,calibration temperature <CR><LF> Unit - baseline[zero] : [uV], sensitivity : [nA/ppm] - calibration temperature : [°C]

ATCCAL

Set the calibration parameter (calibration)

Example	Description
IN ATCCAL baseline,sensitivity<CR><LF> OUT ATCCAL 3055.12,2.56<CR><LF>	Set the calibration parameter. ATCCAL baseline,sensitivity<CR><LF> Unit - baseline[zero] : [uV], sensitivity : [nA/ppm]

ATCOFF1

to set the offset value of channel 1 output

Example	Description
IN ATCOFF1 -0.5<CR><LF> OUT ATCOFF1 -0.5<CR><LF>	to set the offset value of channel 1 output.

ATCOFF2

to set the offset value of channel 2 output

Example	Description
IN ATCOFF2 -0.5<CR><LF> OUT ATCOFF2 -0.5<CR><LF>	to set the offset value of channel 2 output.

7. UA54-Series (Electrochemical Gas) AT Commands

ATCZ

It checks USB connection and device status.

Example	Description
IN ATCZ<CR><LF> OUT ATCZ OK<CR><LF>	It checks USB Connection.

ATCD

to request the value of sensor data. (two channels)

Example	Description
IN ATCD<CR><LF> OUT ATCD 5.23, 19.85<CR><LF>	to request the value of sensor data. ATCD <channel1>,<channel2> - channel1 : Gas concentration [ppm] ● O2 model : Gas concentration [%] ● H2 model: Gas concentration [%] or LEL (Lower explosive level) - channel2 : Temperature [°C/°F]

ATCC

to set Celsius temperature

Example	Description
IN ATCC<CR><LF> OUT ATCC OK<CR><LF>	to set Celsius temperature scale.

ATCF

to set Fahrenheit temperature

Example	Description
IN ATCF<CR><LF> OUT ATCF OK<CR><LF>	to set Fahrenheit temperature scale.

ATCHLEL

to request H2 % concentration or H2 LEL

Example	Description
IN ATCHLEL 0<CR><LF> OUT ATCHLEL 0<CR><LF> IN ATCHLEL 1<CR><LF> OUT ATCHLEL 1<CR><LF>	to request H2 % concentration (default value) to request H2 LEL

ATCVER

to request the version of this device.

Example	Description
IN ATCVER<CR><LF> OUT ATCVER UA54-Gas_5V3<CR><LF>	to request the version of this device. ex) UA54-NH3-100_5V3

ATCMODEL

to request the serial number of this model

Example	Description
IN ATCMODEL<CR><LF> OUT ATCMODEL 17091345<CR><LF>	to request the serial number of this model.

ATCCZR

Set the zero (baseline) value

Example	Description
IN ATCCZR<CR><LF> OUT ATCCZR 7510.02<CR><LF>	Set the baseline value [Micro voltage]

ATCCSP

Set the span value for gas concentration

Example	Description
IN ATCCSP Gas concentration<CR><LF> OUT ATCCSP 5.00,0.000036,23055.12,162526.09, 24.17<CR><LF>	Set the calibration gas concentration. ATCSP calibration gas,calibration slope, baseline, span, calibration temperature <CR><LF> Unit - calibration gas : [ppm], calibration slope: [ppm/uV] - baseline[zero] : [uV], span : [uV] - calibration temperature : [°C]

ATCCAL (calibration)

Set the calibration parameter

Example	Description
IN ATCCAL baseline,span,calibration gas<CR><LF> OUT ATCCAL 23055.12,162526.09,5.00<CR><LF>	Set the calibration parameter. ATCCAL baseline,span,calibration gas<CR><LF> Unit - baseline[zero] : [uV], span : [uV], - calibration gas : [ppm]

ATCOFF1

to set the offset value of channel 1 output

Example	Description
IN ATCOFF1 -0.5<CR><LF> OUT ATCOFF1 -0.5<CR><LF>	to set the offset value of channel 1 output.

ATCOFF2

to set the offset value of channel 2 output

Example	Description
IN ATCOFF2 -0.5<CR><LF> OUT ATCOFF2 -0.5<CR><LF>	to set the offset value of channel 2 output.

8. UA58-KFG (Multi Purpose Gas Sensor) AT Commands

ATCZ

It checks USB connection and device status.

Example	Description
IN ATCZ<CR><LF> OUT ATCZ OK<CR><LF>	It checks USB Connection.

ATCD

to request the value of sensor data (two channels)

Example	Description
IN ATCD<CR><LF> OUT ATCD 5.23,20.8 <CR><LF>	to request the value of sensor data. ATCD <channel1>,<channel2> - ch1: Carbon monoxide gas concentration [ppm] - ch2: Oxygen gas concentration [%]

*this command is supported since Ver 5.6

ATCQ

to request the value of sensor data (four channels)

Example	Description
IN ATCQ<CR><LF> OUT ATCQ 5.23,20.8,10.2,989<CR><LF>	to request the value of sensor data. ATCQ <channel1>,<channel2>,<channel3>,<channel4> - ch1: Carbon monoxide gas concentration [ppm] - ch2: Oxygen gas concentration [%] - ch3: Hydrogen sulfide gas concentration [ppm] - ch4: Carbon dioxide gas concentration [ppm]

ATCH

to request the value of sensor data (six channels)

Example	Description
IN ATCH<CR><LF> OUT ATCH 5.23,20.8,10.2,989,25.1, 50.5<CR><LF>	to request the value of sensor data. ATCH <channel1>,<channel2>,<channel3>,<channel4>, <channel5>,<channel6> - ch1: Carbon monoxide gas concentration [ppm] - ch2: Oxygen gas concentration [%] - ch3: Hydrogen sulfide gas concentration [ppm] - ch4: Carbon dioxide gas concentration [ppm] - ch5: Temperature [°C/°F] - ch6: Relative humidity [%]

ATCC

to set Celsius temperature

Example	Description
IN ATCC<CR><LF> OUT ATCC OK<CR><LF>	to set Celsius temperature scale.

ATCF

to set Fahrenheit temperature

Example	Description

IN ATCF<CR><LF> OUT ATCF OK<CR><LF>	to set Fahrenheit temperature scale.

ATCVER

to request the version of this device.

Example	Description
IN ATCVER<CR><LF> OUT ATCVER UA58-Gas_5v3<CR><LF>	to request the version of this device. ex) UA58-KFG-_5v3 - UA58: Device model - KFG: Gas model - 5v3: FW Version

ATCMODEL

to request the serial number of this model

Example	Description
IN ATCMODEL<CR><LF> OUT ATCMODEL 17091345<CR><LF>	to request the serial number of this model.

ATCCZRA

Set the zero (baseline) value from channel 1 to channel 3

Example	Description
IN ATCCZRA<CR><LF> OUT ATCCZRA 7510.02,1020.22,98763.12<CR><LF>	Set the zero (baseline) value from channel 1 to channel 3 [Micro voltage]

ATCCZRn (n= 1~3)

Set the zero (baseline) value for n channel

Example	Description
IN ATCCZR1<CR><LF> OUT ATCCZR1 7510.02<CR><LF>	Set the zero (baseline) value for 1 channel [Micro voltage] * An error is returned for channels other than 1 to 3

ATCCSPn (n= 1~3)

Set the span value for n channel gas concentration

Example	Description
IN ATCCSP2 Calibration gas<CR><LF> OUT ATCCSP2 5.00,0.000036,23055.12,162526.09, 24.17<CR><LF>	Set the span value for 2 channel gas concentration ATCCSP2 Calibration gas,Calibration slope, Baseline, Span, Calibration temperature <CR><LF>

	[Unit] - Calibration gas : [ppm], - Calibration slope: [ppm(%)/uV] - Baseline[zero] : [uV], Span : [uV] - Calibration temperature : [℃] * An error is returned for channels other than 1 to 3

ATCCALn (n= 1~3)

Set the calibration parameter for n channel (Gas calibration)

Example	Description
IN ATCCAL3 Baseline,Span,Calibration gas<CR><LF> OUT ATCCAL3 3055.12,162526.09,50.00<CR><LF>	Set the calibration parameter for 3 channels ATCCAL3 Baseline,Span,Calibration gas<CR><LF> [Unit] - Baseline[zero] : [uV], Span : [uV] - Calibration gas : [ppm] * An error is returned for channels other than 1 to 3

ATCZCAL

Set the zero (baseline) value for 4 channel (Carbon dioxide)

Example	Description
IN ATCZCAL<CR><LF> OUT ATCZCAL OK<CR><LF>	Set the zero (400ppm) value for 4 channel (Carbon dioxide)

ATCOFFn (n= 1~6)

to set the offset value of channel n output

Example	Description
IN ATCOFF6 -0.5<CR><LF> OUT ATCOFF6 -0.5<CR><LF>	to set the offset value of channel 6 output. ch1: ppm offset value (Carbon monoxide) ch2: % offset value (Oxygen) ch3: ppm offset value (Hydrogen sulfide) ch4: ppm offset value (Carbon dioxide) ch5: °C/°F offset value (Temperature) ch6: % offset value (Relative humidity) * An error is returned for channels other than 1 to 6

9. UA58-LEL (Flammable gas) AT Commands

ATCZ

It checks USB connection and device status.

Example	Description
IN ATCZ<CR><LF> OUT ATCZ OK<CR><LF>	It checks USB Connection.

ATCD

to request the value of sensor data. (two channels)

Example	Description
IN ATCD<CR><LF> OUT ATCD 0.01, 25.00 <CR><LF>	to request the value of sensor data. ATCD <channel1>,<channel2> - channel1 : Flammable gas concentration [%LEL] - channel2 : Temperature [°C/°F]

ATCQ

to request the value of sensor data. (four channels)

Example of UA53-CO	Description
IN ATCQ<CR><LF> OUT ATCQ 48.7,26.00,36.00,3<CR><LF>	to request the value of sensor data. ATCQ <channel1>,<channel2><channel3>,<----> - channel1 : Flammable gas concentration [%LEL] - channel2 : Temperature [C or F] - channel3 : Humidity[%] - channel4 : Gas ID *Gas ID is 0 : No gas 1 : Hydrogen 2 : Hydrogen Mixture

	3 : Methane 4 : Light Gas 5 : Medium Gas 6 : Heavy Gas 253 : Unknown Gas 254 : Under Range - Concentration less than -5%LEL 255 : Over Range - Concentration greater than 100%LEL

ATCC

to set Celsius temperature

Example	Description
IN ATCC<CR><LF> OUT ATCC OK<CR><LF>	to set the Celsius temperature scale.

ATCF

to set Fahrenheit temperature

Example	Description
IN ATCF<CR><LF> OUT ATCF OK<CR><LF>	to set Fahrenheit temperature scale.

ATCMODE

to change the sensor output mode of ATCD command to the international standard output mode.

Example	Description
IN ATCMODE 0<CR><LF> OUT ATCMODE 0<CR><LF> IN ATCMODE 1<CR><LF> OUT ATCMODE 1<CR><LF>	MODE0 : ISO (%LEL) MODE1 : IEC (%LEL)] * Concentration reported as %LEL in accordance with ISO 10156 and IEC 60079-20-1 An information security management framework based on the cloud security standards published by the International Organization for Standardization (ISO) and the International Electrotechnical Commission (IEC).

ATCID

flammable gas ID as determined by sensor

Example	Description
IN ATCID <CR><LF> OUT ATCID 1 <CR><LF>	ATCID 1 : Hydrogen ATCID 2 : Hydrogen Mixture ATCID 3 : Methane / Natural Gas ATCID 4 : Light Gas (or Light Gas Mixture) ATCID 5 : Medium Gas(or Medium Gas Mixture) ATCID 6 : Heavy Gas (or Heavy Gas Mixture)

ATCVER

to request the version of this device.

Example	Description
IN ATCVER <CR><LF> OUT ATCVER UA58-LEL_0v1<CR><LF>	to request the version of this device. ex) UA58-LEL_0V1

ATCMODEL

to request the serial number of this model

Example	Description
IN ATCMODEL<CR><LF> OUT ATCMODEL 20240901<CR><LF>	to request the serial number of this model.

ATCOFFn (n= 1~3)

to set the offset value of channel n output

Example	Description
IN ATCOFF2 -0.5<CR><LF> OUT ATCOFF2 -0.5<CR><LF>	to set the offset value of channel 6 output. ch1: %LEL offset value (Methane) ch2: °C/°F offset value (Temperature) ch3: % offset value (Relative humidity) * An error is returned for channels other than 1 to 3

10. UA58-CH4 (Methane Sensor) AT Commands

ATCZ

It checks USB connection and device status.

Example	Description
IN ATCZ<CR><LF> OUT ATCZ OK<CR><LF>	It checks USB Connection.

ATCD

to request the value of sensor data. (two channels)

Example	Description
IN ATCD<CR><LF> OUT ATCD 5.23, 19.85<CR><LF>	to request the value of sensor data. ATCD <channel1>,<channel2> - channel1 : methane concentration [ppm] - channel2 : Temperature [°C/°F]

ATCQ

to request the value of sensor data. (four channels)

Example of UA53-CO	Description
IN ATCQ<CR><LF> OUT ATCQ 3.00,26.00,36.00,----<CR><LF>	to request the value of sensor data. ATCQ <channel1>,<channel2><channel3>,<----> - channel1 : CH_4 [ppm] - channel2 : Temperature [C or F] - channel3 : Humidity[%]

ATCC

to set Celsius temperature

Example	Description
IN ATCC<CR><LF> OUT ATCC OK<CR><LF>	to set Celsius temperature scale.

ATCF

to set Fahrenheit temperature

Example	Description
IN ATCF<CR><LF> OUT ATCF OK<CR><LF>	to set Fahrenheit temperature scale.

ATCVER

to request the version of this device.

Example	Description
IN ATCVER<CR><LF> OUT ATCVER UA58-CH4_0v1<CR><LF>	to request the version of this device. ex) UA58-CH4_0V1

ATCMODEL

to request the serial number of this model

Example	Description
IN ATCMODEL<CR><LF> OUT ATCMODEL 20240130<CR><LF>	to request the serial number of this model.

ATCOFF1

to set the offset value of channel 1 output

Example	Description
IN ATCOFF1 -0.5<CR><LF> OUT ATCOFF1 -0.5<CR><LF>	to set the offset value of channel 1 output.

ATCOFF2

to set the offset value of channel 2 output

Example	Description
IN ATCOFF2 -0.5<CR><LF> OUT ATCOFF2 -0.5<CR><LF>	to set the offset value of channel 2 output.

11. UA60-PMVT (Air Indoor Sensor) AT Commands

ATCZ

It checks USB connection and device status.

Example	Description
IN ATCZ<CR><LF> OUT ATCZ OK<CR><LF>	It checks USB Connection.

ATCD

to request the value of sensor data. (two channels)

Example	Description
IN ATCD<CR><LF> OUT ATCD 19.88,19.72<CR><LF>	to request the value of sensor data. ATCD <channel1>,<channel2> - channel1 : PM 2.5 [#/cm³] - channel2 : PM 1.0 [#/cm³]

ATCQ

to request the value of sensor data. (four channels)

Example of UA53-CO	Description
IN ATCQ<CR><LF> OUT ATCQ 19.88,19.72,442.57,27.72-<CR><LF>	to request the value of sensor data. ATCQ <channel1>,<channel2><channel3>,<channel4> - channel1 : PM 2.5[#/cm³] - channel2 : PM 1.0 [#/cm³] - channel3 VOC [ppm] - channel4 : temp[°C/°F]

ATCH

to request the value of sensor data. (six channels)

Example	Description
IN ATCH<CR><LF> OUT ATCH 2.23,3.1,12.5,1.25,24.5,34<CR><LF>	to request the value of sensor data. ATCD <channel1>,<channel2>,<channel3>, <channel4>,<channel5>,<channel6> - channel1: PM2.5 [#/cm³], - channel2: PM1.0 [#/cm³], - channel3: PM0.5 [#/cm³], - channel4: VOC [ppm] , - channel5: Temperature[°C/°F] - channel6: Humidity[°C/°F]

ATCMODE

to change the sensor output mode of ATCD command.

Example	Description
IN ATCMODE 0<CR><LF> OUT ATCMODE 0<CR><LF> IN ATCMODE 1<CR><LF> OUT ATCMODE 1<CR><LF>	MODE0 : PM 2.5 [ug/m³], PM1.0 [ug/m³] MODE1 : PM 2.5 [#/cm³], PM 1.0 [#/cm³]

ATCVOCU

to change the sensor output mode of ATCD command.

Example	Description
IN ATCVOCU 0<CR><LF> OUT ATCVOCU 0<CR><LF> IN ATCVOCU 1<CR><LF> OUT ATCVOCU 1<CR><LF>	MODE0 : TVOC [ppm] MODE1 : TVOC [ppb]

ATCC

to set Celsius temperature

Example	Description
IN ATCC<CR><LF> OUT ATCC OK<CR><LF>	to set Celsius temperature scale.

ATCF

to set Fahrenheit temperature

Example	Description
IN ATCF<CR><LF> OUT ATCF OK<CR><LF>	to set Fahrenheit temperature scale.

ATCVER

to request the version of this device.

Example	Description
IN ATCVER<CR><LF> OUT ATCVER UA60-PMVT_0v7<CR><LF>	to request the version of this device. ex) UA60-PMVT_0V7

ATCMODEL

to request the serial number of this model

Example	Description
IN ATCMODEL<CR><LF> OUT ATCMODEL 2024050001<CR><LF>	to request the serial number of this model.

ATCOFFn (n= 1~6)

to set the offset value of channel n output

Example	Description
IN ATCOFF6 -0.5<CR><LF> OUT ATCOFF6 -0.5<CR><LF>	to set the offset value of channel 6 output. ch1: ug/cm³ offset value (Particulate Matter mass concentration) ch2: ug/cm³ offset value (Particulate Matter mass concentration) ch3: #/cm³ offset value (Particulate Matter number concentration) ch4: ppm offset value (Volatile Organic Compounds) ch5: °C/°F offset value (Temperature) ch6: % offset value (Relative humidity) * An error is returned for channels other than 1 to 6

12. UA20D (Pulse Counter) AT Commands

ATCZ

It checks USB connection and device status.

Example	Description
IN ATCZ<CR><LF> OUT ATCZ OK<CR><LF>	It checks USB Connection.

ATCSM

to set stream mode. In stream mode UA2X send sensor value every 1 sec without any receiving user command. all the channel will be output. Currently supported for UA20.

Example	Description
IN ATCSM 1<CR><LF> , ATCSM 0<CR><LF> , OUT ATCSM OK<CR><LF> ATCSM OFF<CR><LF> OUT STREAM 1<CR><LF> 2 :	to enable stream mode. (1:Enable , 0:Disable) the below string will be output automatically every 1 sec STREAM <channel1>

ATCD

to request pulse count value (count max value is 99999999)

Example	Description
IN ATCD<CR><LF> OUT ATCD 0 <CR><LF> ATCD 1 <CR><LF> :	to request the value of pulse count data.

*this command is supported since Ver 5.6

ATCVER

to request the version of this device.

Example	Description
IN ATCVER<CR><LF> OUT ATCVER UA20D_1v7 <CR><LF>	to request the version of this device. ex) UA20D_1v7 - UA20D: Device model - 1v7: FW Version

ATCFTRST

to request default start count

Example	Description
IN ATCFTRST 0<CR><LF> OUT ATCFTRST OK<CR><LF> OUT ATCD 0 ATCD 1 :	to request default start count ATCFTRST <default count >, - default count : 0 & set desired number

*this command is supported since Ver 5.6

13. UA20E (RS-485) AT Commands

ATCZ

It checks USB connection and device status.

Example	Description
IN ATCZ<CR><LF> OUT ATCZ OK<CR><LF>	It checks USB Connection.

ATCD

to request the value of sensor data. (two channels)

Example	Description
IN ATCD<CR><LF> OUT ATCD 47,23.44 <CR><LF>	to request the value of channel data. ATCD <channel1>,<channel2>

*this command is supported since Ver 5.6

ATCQ

to request the value of sensor data. (four channels)

Example	Description
IN ATCQ<CR><LF> OUT ATCQ 47,23.44,17,55.78 <CR><LF>	to request the value of sensor data. ATCQ <channel1>,<channel2>,<channel3>,<channel4>

ATCH

to request the value of sensor data. (six channels)

Example	Description
IN ATCH<CR><LF> OUT ATCH 47,23.44,17,55.78 12456,56.22 <CR><LF>	to request the value of sensor data. ATCH <channel1>,<channel2>,<channel3>, <channel4>,<channel5>,<channel6>

ATCMODID

to set the Slave ID

Example	Description
IN ATCMODID 54<CR><LF> OUT ATCMODID 54 <CR><LF>	to set MODBUS RTU of Slave ID [User Define]

ATCMODFC

to set function code.

Example	Description
IN ATCMODFC 3<CR><LF> OUT ATCMODFC 3<CR><LF>	to set function code. ※ Function Code 3 = Read Holding Register (only this function is supported) 4 = Read Input Register

ATCMODST

to set the start address

Example	Description

IN ATCMODST 1 <CR><LF> OUT ATCMODST 1 <CR><LF>	to set start address [User Define]

ATCMODCHN

to set channel number

Example	Description
IN ATCMODCHN 2 <CR><LF> OUT ATCMODCHN 2 <CR><LF>	to set channel number [User Define]

ATCMODBRn (n= 0~5)

to set RS485 network speed.

Example	Description
IN ATCMODBR 1 <CR><LF> OUT ATCMODBR 9600<CR><LF>	to set RS485 network speed. ATCMODBRn (n = 0 ~ 5) : 4800,9600,14400, 19200,38400,57600

ATCMODSW

to set the Memory value of channel n output

Example	Description
IN ATCMODSW 0 <CR><LF> ATCMODSW 1 <CR><LF> OUT ATCMODSW 0 <CR><LF> ATCMODSW 1 <CR><LF>	to active modbus float byte swap (IEEE 754 floating point)

ATCOFFn (n= 1~6)

to set the offset value of channel n output

Example	Description
IN ATCOFF6 -0.5<CR><LF> OUT ATCOFF6 -0.5<CR><LF>	to set the offset value of channel 6 output.

	ch1: ch1 offset value ch2: ch2 offset value ch3: ch2 offset value ch4: ch2 offset value ch5: ch2 offset value ch6: ch2 offset value * An error is returned for channels other than 1 to 6

ATCVER

to request the version of this device.

Example	Description
IN ATCVER<CR><LF> OUT ATCVER UA20E_0v1 <CR><LF>	to request the version of this device. ex) UA20E_0v1 - UA20E: Device model - 0v1: FW Version