

Technical Note

AT Commands Description for UA Sensors

Last Update: 12 Nov 2020 , master@dekist.com

Overview

Radionode USB Sensor transmitter series have 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 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	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	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>

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

ATCOFF1

to set the offset value of channel 1 output

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

ATCOFF2

to set the offset value of channel 2 output

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

ATCCH1WIN

Digital Filter Weight Value for Channel 1 ** Only For UA11, UA13

Example		Description
IN	ATCCH1WIN 4<CR><LF>	To Set or To Get filter parameters 1~ 15 1: the highest sensitivity (fast) 15: insensitivity (slow)
OUT	ATCCH1WIN 4<CR><LF>	

ATCCH2WIN

Digital Filter Weight Value for Channel 2 ** For Only For UA11, UA13

Example		Description
IN	ATCCH1WIN<CR><LF>	To Set or To Get filter parameters 1~ 15 1: the highest sensitivity (fast) 15: insensitivity (slow)
OUT	ATCCH1WIN 14<CR><LF>	

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 %]

ATCMODE

to change the sensor output mode of ATCD command.

Example	Description
IN ATCMODE 1<CR><LF> OUT ATCMODE 1<CR><LF> IN ATCMODE 2<CR><LF> OUT ATCMODE 2<CR><LF>	MODE1 : TVOC [ppm or ppb],absolute humidity [g/m ³] MODE2 : TVOC [ppm or ppb],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	Description
IN ATCOFF2 -0.5<CR><LF> OUT ATCOFF2 -0.5<CR><LF>	to set the offset value of channel 2 output.

2. 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> IN ATCMODE 3<CR><LF> OUT ATCMODE 3<CR><LF>	MODE1 : Oxegen [%] , Temperature[°C/°F] 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 UA52-02_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.

3. 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 ATCCAL 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.

4. 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]

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. ATCCSP 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.

5. 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] - 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 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. ATCCSP 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.