AMTECH communication box
EN
Spinel

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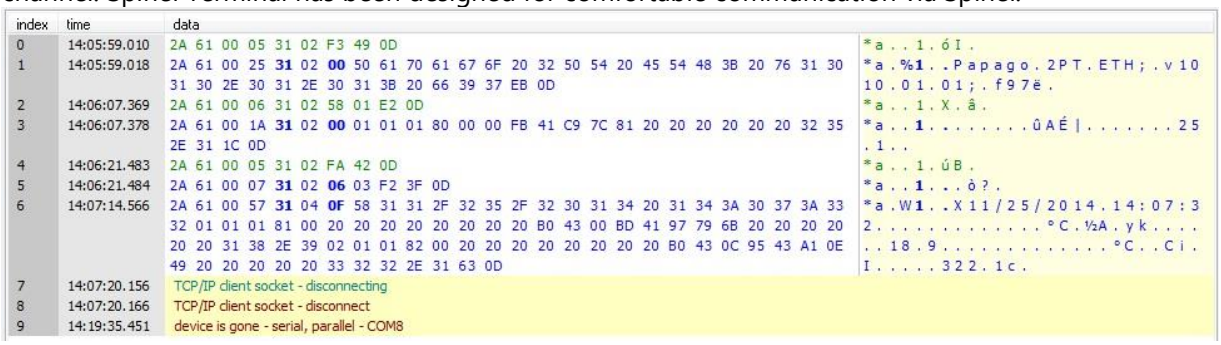
SPINEL

The device contains the standard Spinel protocol (format 97) for communication via the TCP data channel. Spinel Terminal has been designed for comfortable communication via Spinel.



index	time	data	
0	14:05:59.010	2A 61 00 05 31 02 F3 49 0D	*a..1.óI.
1	14:05:59.018	2A 61 00 25 31 02 00 50 61 70 61 67 6F 20 32 50 54 20 45 54 48 3B 20 76 31 30 31 30 2E 30 31 2E 30 31 3B 20 66 39 37 EB 0D	*a.%1..Papago.2PT.ETH;.v1010.01.01;.f97ë.
2	14:06:07.369	2A 61 00 06 31 02 58 01 E2 0D	*a..1.X.â.
3	14:06:07.378	2A 61 00 1A 31 02 00 01 01 01 80 00 00 FB 41 C9 7C 81 20 20 20 20 20 20 32 35 2E 31 1C 0D	*a..1.......ûAÉ|.......25.1..
4	14:06:21.483	2A 61 00 05 31 02 FA 42 0D	*a..1.úB.
5	14:06:21.484	2A 61 00 07 31 02 06 03 F2 3F 0D	*a..1...ò?.
6	14:07:14.566	2A 61 00 57 31 04 0F 58 31 31 2F 32 35 2F 32 30 31 34 20 31 34 3A 30 37 3A 33 32 01 01 01 81 00 20 20 20 20 20 20 20 20 B0 43 00 BD 41 97 79 6B 20 20 20 20 20 20 31 38 2E 39 02 01 01 82 00 20 20 20 20 20 20 20 20 B0 43 0C 95 43 A1 0E 49 20 20 20 20 33 32 32 2E 31 63 0D	*a.W1..X11/25/2014.14:07:32.............°C.½A.yk.....18.9.............°C..Ci.I.....322.1c.
7	14:07:20.156	TCP/IP client socket - disconnecting	
8	14:07:20.166	TCP/IP client socket - disconnect	
9	14:19:35.451	device is gone - serial, parallel - COM8	

Communication with the device using the Spinel Terminal program

Summary of implemented instructions:

Temperature reading

This instruction reads the current measured values. The values are converted to the currently selected temperature unit. The measured values are returned as a sign integer, as a value in the float format and as an ASCII string.

Request:

Instruction code: 58H

Parameters: (sensor)

sensor	Sensor No.	length: 1 byte
Number of the sensor to be read. It is possible to choose 01H (sensor a) or 02H (sensor b).		

Response:

Acknowledgement code: ACK 00H

Parameters: {(sensor$_1$)(variable$_1$)(type$_1$)(status$_1$)(unit$_1$)(unita$_1$)(value$_1$)} {...}

sensor	Sensor No.	length: 1 byte
This bytes indicates the sensor number and applies to all subsequent bytes until the next chn byte. This means that the following bytes belong to the channel with that number. It is numbered from 01H.		

variable	Variable No.	length: 1 byte
The number of the variable from the given sensor. Numbered from 01H.		

type	Variable type	length: 1 byte
Type of the variable can have one of the following values: 00H not defined 01H temperature 02H humidity 03H dew point		

status	Status of the measured value	length: 1 byte
The status of the measured value for the channel with the number given in the previous chn.		
bit 0 (LSb)	0 = lower limit of the monitored range was not exceeded	
	1 = lower limit of the monitored range was exceeded	
bit 1	0 = upper limit of the monitored range was not exceeded	
	1 = upper limit of the monitored range was exceeded	
bit 2	0 = lower limit of the measuring range was not exceeded	
	1 = lower limit of the measuring range was exceeded	
bit 3	0 = upper limit of the measuring range was not exceeded	
	1 = upper limit of the measuring range was exceeded	
bit 7 (MSb)	0 = measured value is invalid	
	1 = measured value is valid	

unit	Unit	length: 1 byte
Unit code: 0 for °C, 1 for °F or 2 Kelvin.		

unita	Unit in ASCII string	length: 10 bytes
Unit Code as a right-aligned ASCII string. For example °C, °F, etc.		

value	Measured value	length: 16 bytes
The measured value from the channel with the number given in the chn byte. The values are sent simultaneously in three different formats. The first is a 16 bit sign value (integer in the form of MSB:LSB), followed by two values converted for the current range based on the current setup: in the 32 bit float format according to IEEE 754[1] and in the ASCII format. The values are given in the aforementioned order. Example: The value of 9215.85 is expressed as follows: 0AH,58H,46H,0FH,FFH,66H,20H,20H,20H,39H,32H,31H,35H,2EH,38H,35H INT part: 0AH,58H (2648) IEEE 754 part: 46H,0FH,FFH,66H ASCII part: 20H,20H,20H,39H,32H,31H,35H,2EH,38H,35H (9215.85)		

[1] The description of the IEEE 754 standard is available here: http://en.wikipedia.org/wiki/IEEE_754

Examples:

Request – read channel 1:
2AH,61H,00H,06H,31H,02H,58H,01H,E2H,0DH
Response:
2AH,61H,00H,1AH,31H,02H,00H,01H,01H,01H,80H,00H,00H,EEH,41H,BEH,D6H,C3H,20H,20H,20H,20H,20H,20H,20H,32H,33H,2EH,38H,93H,0DH
The value measured on channel 1 was 21,74. Channel number: 01H Variable number: 01H Variable type: 01H Value status: 80H Unit: 00H INT part: 00H,EEH (5434) IEEE 754 part: 41H,BEH,D6H,C3H ASCII part: 20H,20H,20H,20H,20H,00H,32H,33H,2EH,38H (21.74)

Reading of name and version

Reads the name of the device, software version and the list of possible communication formats. Set by the manufacturer.

Request:

Instruction code: F3H

Response:

Acknowledgement code: ACK 00H

Parameters: (string)

string	Name and version	length: 1 byte
Papago 2PT ETH; v1010.01.01; f97 In addition to the information described above, the string can also contain other information in sections introduced by a semicolon, space and a small letter to determine which information follows.		

Examples:

Request:
2AH,61H,00H,05H,31H,02H,F3H,49H,0DH
Response:
2AH,61H,00H,25H,31H,02H,00H,50H,61H,70H,61H,67H,6FH,20H,32H,50H,54H,20H,45H,54H,48H,3BH,20H,76H,31H,30H,31H,30H,2EH,30H,31H,2EH,30H,31H,3BH,20H,66H,39H,37H,EBH,0DH,

Reading of manufacturing data

This instruction reads the manufacturing data of the device.

Request:

Instruction code: FAH

Response:

Acknowledgement code: ACK 00H

Parameters: (product_number)(serial_number)(other)

product_number	length: 2 bytes
Product number. For a device number 0227.00.03/0001 this number is 227.	

serial_number	length: 2 bytes
Serial number. For a device number 0227.00.03/0001 this number is 1.	

other	length: 4 bytes
Other manufacturing information.	

Examples:

Request:
2AH,61H,00H,05H,FEH,02H,FAH,75H,0DH

Automatic message

This response is generated when the preset limits are exceeded or when the measured value exceeds the physical range of the sensor. The message may contain information about one or more channels.

Acknowledgement code: ACK 0FH

Parameters: [event][time] {[sensor][variable][type][status][unit][unitA][value]} {...}

event Number of the event source	length: 1 byte
This byte specifies the event source. It can be used to distinguish the automatic message sent when the limits or measuring range are exceeded from other automated messages from the device. The value of this byte is 30H.	

time time of the event	length: 19 bytes
Time of the event as a string in the format mm/dd/yyyy hh:mm:ss	

sensor sensor number	length: 1 byte
The serial number of the sensor the following bytes belong to. Numbering starts from 01H.	

variable variable number	length: 1 byte

The serial number of a variable from one sensor, used to distinguishing between different variables obtained from one sensor, if the sensor provides more than one. Numbering starts from 01H.

type	length: 1 byte
variable type	

The type of the variable can have one of the following values:

00H	not defined
01H	temperature
02H	humidity
03H	dew point

status	length: 1 byte
Status of the measured value	

bits 0 to 3 (lower nibble)	0000 = measured value is within the measuring range
	0001 = lower limit of the monitored range was exceeded
	0010 = upper limit of the monitored range was exceeded
	0100 = lower limit of the physical range of the A/D converter was exceeded
	1000 = upper limit of the physical range of the A/D converter was exceeded
bit 7 (MSb)	0 = measured value is invalid
	1 = measured value is valid

unit	length: 1 byte
unit ID	

The numerical designation of the unit:

00H	°C
01H	°F
02H	K

unitA	length: 10 bytes
unit as a string	

A right-aligned string designating the selected unit. For example "°C"

value	length: 16 bytes
measured value	
The values are sent simultaneously in three different formats. The first is a 16 bit sign value (integer in the form of MSB:LSB), followed by two values converted for the current range based on the current setup: in the 32 bit float format according to IEEE 754[2] and in the ASCII format. The values are given in the aforementioned order. Example: The value of 9215.85 is expressed as follows: 0AH,58H,46H,0FH,FFH,66H,20H,20H,20H,39H,32H,31H,35H,2EH,38H,35H INT part: 0AH,58H (2648) IEEE 754 part: 46H,0FH,FFH,66H ASCII part: 20H,20H,20H,39H,32H,31H,35H,2EH,38H,35H (9215.85)	

Example:

Automatic response:
2AH,61H,00H,57H,31H,04H,0FH,58H,31H,31H,2FH,32H,35H,2FH,32H,30H,31H,34H,20H,31H,34H,3AH,30H,37H,3AH,33H,32H,01H,01H,01H,81H,00H,20H,20H,20H,20H,20H,20H,20H,20H,B0H,43H,00H,BDH,41H,97H,79H,6BH,20H,20H,20H,20H,20H,20H,31H,38H,2EH,39H,02H,01H,01H,82H,00H,20H,20H,20H,20H,20H,20H,20H,20H,B0H,43H,0CH,95H,43H,A1H,0EH,49H,20H,20H,20H,20H,20H,33H,32H,32H,2EH,31H,63H,0DH
Automatic information about exceeding the lower limit on channel 1 and the upper limit on channel 2. The meaning of the values sent for channel 1: Instruction No.: 58H ASCII time: 31H,31H,2FH,32H,35H,2FH,32H,30H,31H,34H,20H,31H,34H,3AH,30H,37H,3AH,33H,32H Channel No.: 01H Variable No.: 01H Variable type: 01H Value status: 81H Units numerically: 00H Units in ASCII: 20H,20H,20H,20H,20H,20H,20H,20H,B0H,43H Current value: In the form of INT: 00H,BDH In the form of float: 41H,97H,79H,6BH In the form of ASCII: 20H,20H,20H,20H,20H,20H,31H,3BH,2EH,39H

[2] The description of the IEEE 754 standard is available here: http://en.wikipedia.org/wiki/IEEE_754