

APPA 503/505 Uart Transfer Format

Basic Uart Transfer Format

Start 0	Start 1	Control	Data Length	Data	Checksum
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Start 0/1 : These bytes are both 0x55.

Control : This byte is controlling meter.

Data Length : The byte is the length of data.

Data : These bytes are meter transfer to PC.

Checksum : This byte is sum of all data array.

Command Format List

Control	Content	PC to Meter Data Length	Meter to PC Data Length
0x00	Read all data of meter	0 byte	52 bytes
0x11	Read Datalog Amount & Type	0 byte	3 bytes
0x12	Read Pause & Period Data Amount	0 byte	2 bytes
0x13	Read Store Data Amount	0 byte	2 bytes
0x18	Command meter to Enter Download mode	0 byte	0 byte
0x19	Command meter to Exit Download mode	0 byte	0 byte
0x1A	Read Data of EEPROM	4 byte	1~64 byte

Command Format Illustrate

● 0x00 : Read all data of meter

PC to Meter

Start 0	Start 1	Control	Data Length	Checksum
0x55	0x55	0x00	0x00	0xAA

Meter to PC

Start 0	Start 1	Control	Data Length	Data	Checksum
0x55	0x55	0x00	0x34	See Below	0x??

Data Byte[0], [1], ..., [9] :

Model Name Data[0], [1], ..., [9], total 10 bytes, ASCII code format

Data Byte[10], [11], ..., [17] :

Serial Number Data[0], [1], ..., [7], total 8 bytes, ASCII code format

Data Byte[18], [19] : Software Version[0], [1]

Data Byte[20] : Rotary Code

Data Byte[21] : Blue Code

Rotary \ Blue	0x00	0x01	0x02	0x03
0x00	℃	°F		
0x01	AC V	DC V	AC+DC V	
0x02	AC mV	DC mV	AC+DC mV	
0x03	Ohm	Beeper	Cap	Diode
0x04	AC mA	DC mA	AC+DC mA	
0x05	AC A	DC A	AC+DC A	
0x06	Hz / %	Hz / DF		

Data Byte[22] : Key Code

Data Byte[23] : Range Code

Data Byte[24] : Meter Status Code

Bit	Hi	Lo
0	Manual Range	Auto Range
1	Manual Test	Auto Test
2	Display : 10,000D	Display : 100,000D
3	X	
4	LPF AC	AC
5	Auto Test (Rotary in Ohm)	Manual Test (Rotary in Ohm)
6, 7	X	

Data Byte[25], [26], ..., [37] : Calibration Data, total 13 bytes

Data Byte[38], [39], [40] : Main Display Data[0], [1], [2]; 24 bits signed number

Data Byte[41], [42] : Main Display Status Data[0], [1]

Data Byte[43], [44], [45] : Sub Display Data[0], [1], [2] ; 24 bits signed number

Data Byte[46], [47] : Sub Display Status Data[0], [1]

The display status format refer to table 1/2/3

Data Byte[48], [49], ..., [52] : Calibration Data, total 5 bytes

● 0x11 : Read Datalog Amount & Type

PC to Meter

Start 0	Start 1	Control	Data Length	Checksum
0x55	0x55	0x11	0x00	0xBB

Meter to PC

Start 0	Start 1	Control	Data Length	Data	Checksum
0x55	0x55	0x11	0x03	See Below	0x??

Data Byte[0], [1] : Datalog amount

Data Byte[2] : Datalog type

● **0x12 : Read Pause & Period Data Amount**

PC to Meter

Start 0	Start 1	Control	Data Length	Checksum
0x55	0x55	0x12	0x00	0xBC

Meter to PC

Start 0	Start 1	Control	Data Length	Data	Checksum
0x55	0x55	0x12	0x02	See Below	0x??

Data Byte[0], [1] : Pause & Period data amount

● **0x13 : Read Store Data Amount**

PC to Meter

Start 0	Start 1	Control	Data Length	Checksum
0x55	0x55	0x13	0x00	0xBD

Meter to PC

Start 0	Start 1	Control	Data Length	Data	Checksum
0x55	0x55	0x13	0x02	See Below	0x??

Data Byte[0], [1] : Store data amount

● **0x18 : Command meter to Enter Download mode**

PC to Meter

Start 0	Start 1	Control	Data Length	Checksum
0x55	0x55	0x18	0x00	0xC2

Meter to PC

Start 0	Start 1	Control	Data Length	Checksum
0x55	0x55	0x20	0x00	0xCA

● **0x19 : Command meter to Exit Download mode**

PC to Meter

Start 0	Start 1	Control	Data Length	Checksum
0x55	0x55	0x19	0x00	0xC3

Meter to PC

Start 0	Start 1	Control	Data Length	Checksum
0x55	0x55	0x20	0x00	0xCA

● **0x1A : Read Data of EEPROM**

PC to Meter

Start 0	Start 1	Control	Data Length	Data Address	Checksum
0x55	0x55	0x1A	0x04	See Below	0x??

Meter to PC

Start 0	Start 1	Control	Data Length	Data	Checksum
0x55	0x55	0x1A	1 ~ 64	Data of EEPROM	0x??

Data Address[0] : EEPROM No. (0 or 1)

Data Address[1], [2] : Data Address of EEPROM (0x0000 ~ 0xFFFF)

Data Address[3] : Readed Data Length of EEPROM

Data Format

● Store Data

Max Stored Amounts : 1,000

Start Address : 400H at EEPROM No.0

End Address : 1788H at EEPROM No.0

Data Length : 5 bytes

Data Format :

Data MSB	Data 2SB	Data LSB	Display Status [0]	Display Status [2]
24 bits signed number			Refer Table 1	Refer Table 4

● Pause & Period Data

Max Stored Amounts : 1,000

Start Address : 1800H at EEPROM No.0

End Address : 27A0H at EEPROM No.0

Data Length : 4 bytes

Data Format :

Pause Amount MSB	Pause Amount LSB	Bit 7~4 Period Code	Bit 3~0 Pause Time MSB	Pause Time LSB
16 bits unsigned number The datalog pause occurred after the datalog no.		Refer Table 5	12 bits unsigned number Unit : sec, max 4095 sec	

● Datalog Data

Max Stored Amounts : 20,000

Start Address : 2800H at EEPROM No.0

End Address : AEA0H at EEPROM No.1

Data Length : 5 bytes

Data Format :

Data MSB	Data 2SB	Data LSB	Display Status [0]	Display Status [1]
24 bits signed number			Refer Table 1	Refer Table 2, 3

Table

Table 1 : Display Status [0]

Bit	Content
7, 6, 5, 4, 3	Display Unit : 00000 : None 00001 : V 00010 : mV 00011 : A 00100 : mA 00101 : dB 00110 : dBm 00111 : mF 01000 : uF 01001 : nF 01010 : $G\Omega$ 01011 : $M\Omega$ 01100 : $K\Omega$ 01101 : Ω 01110 : % 01111 : MHz 10000 : KHz 10001 : Hz 10010 : $^{\circ}C$ 10011 : $^{\circ}F$ 10100 : sec 10101 : ms 10110 : us 10111 : ns Others : None
2, 1, 0	Dot Point : 000 : 99999 001 : 9999.9 010 : 999.99 011 : 99.999 100 : 9.9999 Others : None

Table 2 : Display Status [1]

Bit	Content
7	Display Enable (0) / Display (1)
6	Data Content : Number (0); Word (1)
5	Data Overload : Within Limit (0); OL (1)
4, 3, 2, 1, 0	Data Function : 00000 : None 00001 : Function of Rotary 00010 : Frequency 00011 : Cycle 00100 : Duty 00101 : Stamp (Store / Recall / Logout / Log Rate) 00110 : Store 00111 : Recall 01000 : Login Stamp 01001 : Logout 01010 : Log Rate 01011 : Δ (Rel.) 01100 : Δ % 01101 : Reference 01110 : Maximun 01111 : Minimum 10000 : Average 10001 : Peak Hold Max 10010 : Peak Hold Min 10011 : dBm 10100 : dB 10101 : Auto Hold 10110 : Setup 10111 : Data Log Word 11000 : Log Max 11001 : Log Min 11010 : Log TP Others : None

Table 3 : Display Data (Display Status [1].6 = Word)

Display Data	Content
0x000000	Er
0x000001	FULL
0x000002	Beep
0x000003	A.P.O.
0x000004	b.LITE
0x000005	HAZ.
0x000006	ON
0x000007	OFF
0x000008	RESET
0x000009	START
0x00000A	VIEW
0x00000B	PAUSE
0x00000C	FUSE
0x00000D	Probe
0x00000E	dEF
0x00000F	Clr
0x000010	00-00 (S/W Version)
0x000011	Er1
0x000012	Er2
0x000013	Er3
0x000014	-----
0x000015	---
0x000016	TEST

Table 4 : Display Data [2]

Bit	Content
7	Display Enable (0) / Display (1)
6	Data Content : Number (0); Word (1)
5	Data Overload : Within Limit (0); OL (1)
4, 3, 2, 1, 0	Data Function : 00000 : None 00001 : AC V 00010 : DC V 00011 : AC+DC V 00100 : AC mV 00101 : DC mV 00110 : AC+DC mV 00111 : Ohm 01000 : Beeper 01001 : Cap 01010 : Diode 01011 : AC A 01100 : DC A 01101 : AC+DC A 01110 : Hz 01111 : DF 10000 : Temp. °C 10001 : Temp. °F 10010 : AC mA 10011 : DC mA 10100 : AC+ DC mA Others : None

Table 5 : Period Code

Period Code	Period Time
0x00	0.5 sec
0x01	1 sec
0x02	10 sec
0x03	30 sec
0x04	60 sec
0x05	120 sec
0x06	180 sec
0x07	240 sec
0x08	300 sec
0x09	360 sec
0x0A	480 sec
0x0B	600 sec