

## Modbus Object List **CTU4501 P2 H3 SUPER ST1 19200** (ID=22190501)

Applied microcontroller PIC18F46K22.

Modbus RTU Mode, Address Slave 1-247, Maximum Time Out for reply 200ms,

Baud rate 9600, 19200, 38400. Default = 9600. No parity, 8 bits, 1 stop.

CTU supports only one type of data - Holding registers, signed Integer 16 bit word.

Supported commands: 0x03 = Read Holding Registers

0x06 = Write Single Register

0x10 = Write Multiple Registers

0x2B = Read Device Identification (Basic = 0x01, Regular = 0x02)

### Function 0x2B (Encapsulated Interface Transport)

#### MEI Type 0x0E (Read Device Identification)

#### Read Dev ID code 0x01 (request to get the Basic Device Identification)

ObjectId	Object Name / Description	Type	M/O	Category
0x00	VendorName	ASCII String	Mandatory	Basic
0x01	ProductCode	ASCII String	Mandatory	Basic
0x02	MajorMinorRevision	ASCII String	Mandatory	Basic

VendorName = " Meitav-Tec Ltd "

ProductCode = "CTU4501 P2 H3 SUPER ST 1 19200 "

MajorMinorRevision = "V0.1"

## Function 0x2B (Encapsulated Interface Transport)

### MEI Type 0x0E (Read Device Identification)

#### Read Dev ID code 0x02 (request to get the Regular Device Identification)

ObjectId	Object Name / Description	Type	M/O	Category
0x03	VendorUrl	ASCII String	Optional	Regular
0x04	ProductName	ASCII String	Optional	Regular
0x05	ModelName	ASCII String	Optional	Regular
0x06	UserApplicationName	ASCII String	Optional	Regular

VendorUrl = "www.meitavtec.com"

ProductName = "CTU4501 P2 H3 SUPER ST1 19200"

ModelName = "22190501"

UserApplicationName = "PIC18F46K22"

Reg	Address	Name	Range, Value, Units	Default
1	0x000	T1_RoomTemperature	7...32°C	(R)***
2	0x001	T2_ChangeOverSensorTemperature	-40...89°C	(R)***
3	0x002	T3_IndoorCoilTemperature	-40...89°C	(R)***
4	0x003	AI1_Input	0...10000 mV	(R)***
5	0x004	AI2_Input	0...10000 mV	(R)***
6	0x005	AO_Cool	0...10000 mV	0 mV ***
7	0x006	AO_Heat	0...10000 mV	0 mV ***
8	0x007	SW2_1_TestOccupancySensor	0 - Off, 1 - On	(R)
9	0x008	SW2_2	0 - Off, 1 - On	(R)
10	0x009	SW2_3	0 - Off, 1 - On	(R)
11	0x00A	DI8_OccupancySensor 0-Close, 1-Open (if polarity=0).	0, 1	(R)
12	0x00B	DI1: 0-Close, 1-Open (if polarity=0)	0, 1	(R)
13	0x00C	DI2: 0-Close, 1-Open (if polarity=0)	0, 1	(R)
14	0x00D	DI3: 0-Close, 1-Open (if polarity=0)	0, 1	(R)
15	0x00E	DI4: 0-Close, 1-Open (if polarity=0)	0, 1	(R)
16	0x00F	DI5: 0-Close, 1-Open (if polarity=0)	0, 1	(R)
17	0x010	DI6: 0-Close, 1-Open (if polarity=0)	0, 1	(R)
18	0x011	DI7: 0-Close, 1-Open (if polarity=0)	0, 1	(R)
19	0x012	Fan_low	0 - Off, 1 - On	0-Off (R)
20	0x013	Fan_medium	0 - Off, 1 - On	0-Off (R)
21	0x014	Fan_high	0 - Off, 1 - On	0-Off (R)

Reg	Address	Name	Range, Value, Units	Default
22	0x015	Cool1	0 - Off, 1 - On	0-Off (R)
23	0x016	Heat1	0 - Off, 1 - On	0-Off (R)
24	0x017	Heat2	0 - Off, 1 - On	0-Off (R)
25	0x018	Heat3	0 - Off, 1 - On	0-Off (R)
26	0x019	G1_Light_Off	0 - Off, 1 - On	0 (R)
27	0x01A	OnOff	0 - Off, 1 - On	0-Off (RW)
28	0x01B	UnOccupancy	0 - Off, 1 - Unoccupied	0-Off (R)
29	0x01C	AutoFan	0 - Off, 1 - On	0-Off (RW)
30	0x01D	Celsius	0 - Fahren, 1 – Celsius	1-Celsius (R)
31	0x01E	RestoreDefault	0 - Off, 1 - Restore	0-Off (RW)
32	0x01F	PanelTemperatureDisplay	0 - Off, 1 - On	1-On (RW)
33	0x020	EnableOverrideInputOutput	0 - Disable, 1 - Enable	0-Disable (RW)
34	0x021	ViewFloatValue	0 - Off, 1 - View	0 (RW)
35	0x022	DisableOccupancySensor	0 - Off, 1 - Disable	0-Off (RW)
36	0x023	DI8_OccupancySensor_Polarity if "0" – N. Open polarity of DI8, then DI8 open = 1 (5 VDC); DI8 short = 0 (0 VDC). If "1" – N. Close polarity of DI8, then DI8 open = 0 (5 VDC); DI8 short = 1 (0 VDC).	0 - N.Open, 1 - N.Close	0 (RW)
37	0x024	DI1_Polarity: if "1" – N. Open polarity of DI1, then DI1 open = 1 (5 VDC); DI1 short = 0 (0 VDC). If "0" – N. Close polarity of DI1, then DI1 open = 0 (5 VDC); DI1 short = 1 (0 VDC).	0 - N.Close, 1- N.Open	0 (RW)
38	0x025	DI2_Polarity	0 - N.Open, 1 - N.Close	0 (RW)
39	0x026	DI3_Polarity	0 - N.Open, 1 - N.Close	0 (RW)
40	0x027	DI4_Polarity	0 - N.Open, 1 - N.Close	0 (RW)
41	0x028	DI5_Polarity	0 - N.Open, 1 - N.Close	0 (RW)
42	0x029	DI6_Polarity	0 - N.Open, 1 - N.Close	0 (RW)
43	0x02A	DI7_Polarity	0 - N.Open, 1 - N.Close	0 (RW)
44	0x02B	LockRoomModule	0 - Unlock, 1 - Lock	0-Unlock (RW)
45	0x02C	LockRoomModuleMode	0 - Unlock, 1 – Lock	0-Unlock (RW)
46	0x02D	LockRoomModuleSetPoint	0 - Unlock, 1 – Lock	0-Unlock (RW)
47	0x02E	LockRoomModuleFanSpeed	0 - Unlock, 1 – Lock	0-Unlock (RW)
48	0x02F	LockRoomModuleOnOff	0 - Unlock, 1 – Lock	0-Unlock (RW)
49	0x030	LockRoomModuleBeeper	0 - Unlock, 1 – Lock	0-Unlock (RW)
50	0x031	Mode 0–Fan Only; 1–Cool; 2–Heat; 3–Auto Change	0...3	1-Cool (RW)
51	0x032	FanSpeed 0 – AutoSpeed; 1 – Low; 2 – Medium; 3 – High	0...3	1-Low (RW)
52	0x033	SetPoint	10...30°C	22°C (RW)
53	0x034	SetPointLimitCool	10...30°C	10°C (RW)
54	0x035	SetPointLimitHeat	10...30°C	30°C (RW)

Reg	Address	Name	Range, Value, Units	Default
55	0x036	SetPointEffective	10...30°C	22°C (R)
56	0x037	DeadZoneForCool Actual value = 0.5 * DeadZoneForCool	(0...5) * 0.5°C	1 = 0.5°C (RW)
57	0x038	DeadZoneForHeat Actual value = 0.5 * DeadZoneForHeat	(0...5) * 0.5°C	1 = 0.5°C (RW)
58	0x039	HeatRelayTimeDelayOnNext	0...60 sec	1 sec (RW)
59	0x03A	HeatRelayTimeDelayOffNext	0, 1 sec	1 sec (RW)
60	0x03B	ReturnAirSensorCalibration	-6...6°C	0°C (RW)
61	0x03C	CoolProportionalLimitOn	0...50%	40% (RW)
62	0x03D	CoolProportionalLimitOff	0...20%	10% (RW)
63 ***	0x03E	CoolDemand	0...100%	0% (RW) ***
64	0x03F	CoolProportionalBand	1...10°C	2°C (RW)
65	0x040	CoolProportionalHighLimit	0...100%	100% (RW)
66	0x041	CoolProportionalLowLimit	0...100%	0% (RW)
67 ***	0x042	HeatDemand	0...300%	0% (RW) ***
68	0x043	HeatProportionalBand	1...10°C	2°C (RW)
69	0x044	HeatProportionalHighLimit	0...100%	100% (RW)
70	0x045	HeatProportionalLowLimit	0...100%	0% (RW)
71	0x046	CoolFanOnDelay	0...300 seconds	0 sec (RW)
72	0x047	CoolFanOffDelay	0...300 seconds	0 sec (RW)
73	0x048	Not in use	0...0 seconds	0 sec (R)
74	0x049	HeatFanOffDelay	0...300 seconds	30 sec (RW)
75	0x04A	TimeSwitchingToUnOccupiedMode	0...3600 seconds	1200 sec (RW)
76	0x04B	UnOccupancyModeSelect 0 – On/Off Light and HVAC; 1 – Start/Stop Light and HVAC; 2 – On/Off Light Only; 3 – Economy	0...3	0 (RW)
77	0x04C	StartStop	0-On/Off, 1-Start/Stop	0-On/Off (RW)
78	0x04D	CO2_FromPanel	0...5000 ppm	0 ppm (R)
79	0x04E	CO2_MinimumValue	0...5000 ppm	0 ppm (RW)
80	0x04F	CO2_MaximumValue	0...5000 ppm	2500 ppm (RW)
81	0x050	CO2_EffectiveValue	0...5000 ppm	0 ppm (R)
82	0x051	CO2_Alarm	0-NoAlarm, 1-Alarm	0-NoAlarm (R)
83	0x052	HumidityMinimumValue	0...100%	20% (RW)
84	0x053	HumidityMaximumValue	0...100%	90% (RW)
85	0x054	HumidityFromPanel	0...100%	0% (R)
86	0x055	HumidityEffectiveValue	0...100%	0% (R)
87	0x056	HumidityAlarm 1 – sensor is not connected, or Humidity is lower, then “HumidityMinimumValue”	0-No Alarm, 1-Alarm	(R)

Reg	Address	Name	Range, Value, Units	Default
88	0x057	PanelTimeChangeDisplay: 0 – temperature indication only, 5 – 5 sec. humidity, 5 sec. temperature, 10 – humidity indication only.	0...10 seconds	0 sec (RW)
89	0x058	CoolOutputsThresholdTime	0...100 seconds	60 sec (RW)
90	0x059	Not in use	0	0 (R)
91	0x05A	CoolIntegralTime	0...600 seconds	240 sec (RW)
92	0x05B	CoolIntegralValue	0...100%	10% (RW)
93	0x05C	Not in use	0	0 (R)
94	0x05D	Not in use	0	0 (R)
95	0x05E	Not in use	0	0 (R)
96	0x05F	HeatOutputsThresholdTime	0...100 seconds	60 sec (RW)
97	0x060	Not in use	0	0 (R)
98	0x061	HeatIntegralTime	0...600 seconds	240 sec (RW)
99	0x062	HeatIntegralValue	0...100%	10% (RW)
100	0x063	Not in use	0	0 (R)
101	0x064	Not in use	0	0 (R)
102	0x065	Not in use	0	0 (R)
103	0x066	PI_Enable	0 - Disable, 1 - Enable	0-Disable (RW)
104	0x067	Heater1_CutIn (% of HeatDemand)	0...200%	40% (RW)
105	0x068	Heater1_CutOut (% of HeatDemand)	0...200%	10% (RW)
106	0x069	Heater2_CutIn (% of HeatDemand)	0...200%	80% (RW)
107	0x06A	Heater2_CutOut (% of HeatDemand)	0...200%	40% (RW)
108	0x06B	Heater3_CutIn (% of HeatDemand)	0...200%	120% (RW)
109	0x06C	Heater3_CutOut (% of HeatDemand)	0...200%	80% (RW)
110	0x06D	HeatProportionalLimitOn	0...50%	40% (RW)
111	0x06E	HeatProportionalLimitOff	0...20%	10% (RW)
112	0x06F	BaudRate: 0 – 9600; 1 - 19200; 2 - 38400	0...2	1 (RW)
113	0x070	LightOff If On – binary output “G1_Light_Off” = 1 If Off – binary output “G1_Light_Off” = 0.	0 - Off, 1 - On	0-Off (RW)
114	0x071	FanEffectiveValue 0 – Off, 1-Low, 2- Medium, 3 - High	0...3	1-Low (R)

\*\*\*-writable only if a value of the Register 33 (“EnableOverrideInputOutput”) is 1.

Attention!

Commissioning purposes. When the technician writes into registers 63\*\*\* (“CoolDemand”) and 67\*\*\* (“HeatDemand”), the OnOff outputs (registers 22...25) and proportional outputs (registers 6, 7) response.

After commissioning the technician must make Restore Default operation – write “1” to register 31 (“RestoreDefault”).

**Registers 1...5\*\*\* have range -32655...32655 during override. After the break of power all overridden registers return to values, measured by analog inputs.**

**While register 36 (“ViewFloatValue”) is “1”, all the registers of units °C (temperature) are presented in format**

**Integer (Real value \* 10, Meitav-tec OEM “floating point” format).**

**Read value examples:**

Register 1 “T1\_RoomTemperature = 221” represents a real value = 22.1°C.

Register 52 “SetPoint = 150” represents a real value = 15.0°C.

Register 56 “DeadZoneForCool = 10” represents a value =  $1 * 0.5 \text{ °C} = 0.5 \text{ °C}$

**Write value examples:**

To write 20°C to the “SetPoint”, send “200” to the Register 52.

To write 25°C to the “SetPointLimitHeat”, send “250” to the Register 54.

To write 1.5 °C to the “DeadZoneForCool”, send  $3 * 10 = “30”$  to the Register 56.

Attention! When PI is enabled, writing to any register causes clearing of the Integral correction Value (used to compensate the static error) of HeatDemand and CoolDemand.