
IoT UPS MODBUS TCP Protocol

➤ GENERAL TABLE DATA AREA DEFINITION

Data	Based address index	Length in Word	Format	Information	MODBUS/JBUS Functions
IDENTIFIERS	0x0000	80(24)	BYTE	See related chapter	3 (read)
WARNINGS	0x0060	6(11)	BIT	Warnings	3 (read)
STATUS	0x0070	10(11)	BYTE	items	3 (read)
MEASUREMENTS	0x0080	80(34)	WORD	Measurements	3 (read)
CONFIGURATIONS	0x00E0	16(4)	WORD	Configurations	3 (read)
Setting	0x00F0	16(2)	WORD	Set Parameters	3(read), 6(write), 0x10(write)

⊗ IDENTIFIERS FRAME

Base address index = 0x0000, length in word 80.

Item No	Address index(Hex)	Unit	Data representation	Explanation
1	0x0000 – 0x000F	*char	Manufacturer	ASCII maximum 31 characters
2	0x0010 – 0x002F	*char	UPS Model	ASCII maximum 63 characters
3	0x0030 – 0x0037	*char	UPS FirmwareVersion	ASCII maximum 15 characters
4	0x0038 – 0x003F	*char	UPS SerialNumber	ASCII maximum 15 characters
	0x0048-0x004F		Reserved	

Note : * All these string are represented by character. A character with an ASCII code less than

ASCII 32(space) or greater than ASCII 123 (“z”), is not valid.

If string is not exist, or string can’t fill all register, the remains bytes of registers will fill with 0.

⊗ WARNING CODE AREA

Base address index = 0x0060, length in word 6.

Warning No.	warning	Description	The value while warning is occurred(Hex)
Address index(Hex): 0x0060			
1	upsEPowerFail	WARNING: Utility power not available.	0x8000

2	upsELowBattery	SEVERE: The UPS batteries are low and will soon be exhausted.	0x4000
3	upsEFailed	SEVERE: The UPS is not working fine.	0x2000
4	upsEOnBattery	WARNING: The UPS has switched to battery backup power.	0x1000
5	upsETestInProgress	INFORMATION: The testing is going on ups.	0x0800
6	upsEBypassOn	INFORMATION: The UPS has enabled bypass.	0x0400
7	upsECommunicationLost	SEVERE: Communication to the UPS has been lost.	0x0200
8	upsEGoingShutdown	WARNING: The UPS is going to shutdown output.	0x0100
9~11	Reserved		
12	upsEOverTemperature	WARNING: The UPS temperature is over the setting limit.	0x0010
13	upsEOverLoad	WARNING: The UPS load is over the setting limit.	0x0008
14~16	Reserved		
Address index(Hex): 0x0061			
17~22	Reserved		
22	upsEEPOActive	WARNING: EPO Active.	0x0400
23	Reserved		
24	upsEMain1Neutralloss	WARNING: Main 1 Neutral loss.	0x0100
25	upsEMain1phaseerror	WARNING: Main 1 phase error.	0x0080
26	upsESitefault	WARNING: Site fault.	0x0040
27	upsEBypassAbnormal	WARNING: Bypass Abnormal.	0x0020
28	upsEBypassPhaseError	WARNING: Bypass Phase Error.	0x0010
29	upsEBatteryOpen	WARNING: Battery Open.	0x0008
30	upsEBatteryOverCharge	WARNING: Battery Over Charge	0x0004
31~32	Reserved		
Address index(Hex): 0x0062			
33	upsEOverloadWarning	WARNING: Overload Warning.	0x8000
34	upsEFanLock	WARNING: Fan Lock.	0x4000
35	upsEMaintaincoverisopen	WARNING: Maintain cover is open.	0x2000
36	upsEChargerfault	WARNING: Charger fault.	0x1000

37~48	Reserved		
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⊠ STATUS DATA AREA

Base address index = 0x0070, length in word 10.

Address Index(Hex)	Byte	UPS status / System mode	Explanation
0x0070	High	UPS Type	1- SYS_OFFLINE, 0-SYS_ONLINE
	Low	The indication of UPS system status	power-on (1) , stand-by(2) , by-pass (3) ,line(4) , battery (5) , battery-test (6) , reserve (7) ,converter (8) , eco (9) , shutdown (10) , on-booster (11) , on-reducer (12) , other(13)
0x0071	High	The number of input phase utilized is this device	1..3
	Low	The number of metered output phases	1..3
0x0072	High	The status of UPS battery, a value of batteryLow indicates that the battery-low status bit has been set from device. A value of batteryDepleted indicates that the UPS will be unable to sustain the present load when and if the utility power is lost (including the possibility that the utility power is mandatorily absent and the UPS is unable to sustain the output	reserve (1) , batteryNormal (2) , batteryLow (3) , batteryDepleted (4) , batteryDischarging (5) , batteryFailure (6)
	Low	the test result of battery.	idle (1) , processing (2) , noFailure (3) , failureOrWarning (4) , reserve(5) , testCancel (6)
0x0073	High	The present external source of input power.	Valid value is from 1 to 2
	Low	The number of bypass phases	Valid value is from 1 to 3
0x0074	High	This object indicate the cell number of each set.	
	Low	The status of ABM.	charge (1) , float (2) , rest (3) , discharge (4) ,

			disable (5)
0x0075-0x007F		Reserved	

⊠ MEASUREMENT DATA AREA

Base address index = 0x0080, length in word 80.

Item No.	Address Index(Hex)	Data Name	Unit	Description
1	0x0080	The temperature of UPS	0.1C	
2	0x0081	The measured phase R input frequency from the UPS meters	0.1Hz	
3-4	0x0082-0x0083	Reserved		
5	0x0084	The measured phase R input voltage from the UPS meters	0.1V	
6	0x0085	The measured phase S input voltage from the UPS meters	0.1V	
7	0x0086	The measured phase T input voltage from the UPS meters	0.1V	
8-19	0x0087-0x0092	Reserved		
20	0x0093	The measured phase R output voltage from the UPS meters	0.1V	
21	0x0094	The measured phase S output voltage from the UPS meters	0.1V	
22	0x0095	The measured phase T output voltage from the UPS meters	0.1V	
23-25	0x0096-0x0098	Reserved		
26	0x0099	The measured phase R output current from the UPS meters	0.1A	
27	0x009A	The measured phase S output current from the UPS meters	0.1A	
28	0x009B	The measured phase T output current from the UPS meters	0.1A	
29	0x009C	The measured phase R output real power in watts	100W	
30	0x009D	The measured phase S output real power in watts	100W	
31	0x009E	The measured phase T output real	100W	

		power in watts		
32	0x009F	The measured phase R output real complex power in VA	100VA	
33	0x00A0	The measured phase S output real complex power in VA	100VA	
34	0x00A1	The measured phase T output real complex power in VA	100VA	
35	0x00A2	The UPS phase R output load in percent of rated capacity	%	
36	0x00A3	The UPS phase S output load in percent of rated capacity	%	
37	0x00A4	The UPS phase T output load in percent of rated capacity	%	
38	0x00A5	An estimate of the time to battery charge depletion under the present load conditions if the utility power is off and remains off, or if it were to be lost and remain off.	Minute	
	0x00A6		second	
39	0x00A7 -0x00A8	Reserved		
40	0x00A9	An estimate of the battery charge remaining expressed as a percent of full charge	%	
41	0x00AA	The magnitude of the present positive battery voltage	0.1V	
42	0x00AB	The magnitude of the present negative battery voltage	0.1V	
43	0x00AC	Reserved		
44	0x00AD	The measured bypass phase R frequency from the UPS meters	0.1Hz	
45-46	0x00AE-0x00AF	Reserved		
47	0x00B0	The measured bypass phase R voltage from the UPS meters	0.1V	
48-80	0x00B1-0x00CF	Reserved		

⊠ CONFIGURATION DATA AREA

Base address index = 0x00E0, length in word: 16.

Item No.	Address Index(Hex)	Data item	Unit	Description
1	0x00E0	Reserved		
2	0x00E1	Config Apparent power(VA)	100VA	
3	0x00E2	The nominal Battery voltage	0.1V	
4	0x00E3	Reserved		
5	0x00E4	the nominal output voltage	0.1V	
6	0x00E5	The nominal output frequency	0.1Hz	
7	0x00E6	The magnitude of the nominal true power rating	100W	
8~11	0x00E7~0x00EA	Reserved		
12	0x00EB	Support load segment		1-support, 0-not support
13	0x00EC	Supported load segment count		0 – do not support load segment 1 – support 1 controlled segment 2 – support 2 controlled segment
13-16	0x00EC-0x00EF	Reserved		

⊗ Setting Parameters

Base address index = 0x00F0, length in word: 40.

Item No.	Address Index(Hex)	Byte	Data item	Unit	Description
1	0x00F0		Battery test general command		1: Standard test 2: reserve 3: Abort test
2~16	0x00F1~0X00FF		Reserved		
17	0x0100	high	Delay before shutdown, UPS will shutdown after configured time	sec	
18	0x0101	low			
19	0x0102	high	Delay before startup, UPS will startup after configured time	sec	
20	0x0103	low			