

MHT - MHE - MPT - NXE

MODBUS TABLE

SUPPORTED FUNCTION	FUNCTION DESCRIPTION	ACCESSIBLE TABLES
1 (0x01) 2 (0x02)	BIT READING	STATES/ALARMS
3 (0x03) 4 (0x04)	REGISTERS READING	ALL
6 (0x06)	SINGLE REGISTER WRITING	COMMANDS
16 (0x10)	MULTIPLE REGISTERS WRITING	COMMANDS

REGISTER <sup>(1)</sup>		STATES/ALARMS	BIT <sup>(2)</sup>	
Number	Address		Number	Address
1	0	RESERVED	1	0
		Test in progress [0=NO / 1=YES]	2	1
		RESERVED	3	2
		Shutdown active [0=NO / 1=YES]	4	3
		RESERVED	5	4
		Battery charged [0=NO / 1=YES]	6	5
		Battery charging [0=NO / 1=YES]	7	6
		Bypass bad [0=NO / 1=YES]	8	7
		RESERVED	9	8
		Normal operation [0=NO / 1=YES]	10	9
		RESERVED	11	10
		On bypass [0=NO / 1=YES]	12	11
		Battery low [0=NO / 1=YES]	13	12
		Battery working [0=NO / 1=YES]	14	13
		UPS locked [0=NO / 1=YES]	15	14
		Output powered [0=NO / 1=YES]	16	15
2	1	RESERVED	17	16
			...	...
			28	27
		Input Mains present [0=NO / 1=YES]	29	28
		Alarm temperature [0=NO / 1=YES]	30	29
		Alarm overload [0=NO / 1=YES]	31	30
3	2	UPS failure [0=NO / 1=YES]	32	31
		RESERVED	33	32
			...	...
4	3		48	47
		RESERVED	49	48
			...	...
			63	62
		Communication lost with UPS [0=NO / 1=YES]	64	63

<sup>(1)</sup> The register number **n** must be addressed **n-1** in the data packet.

<sup>(2)</sup> The bit number **n** must be addressed **n-1** in the data packet.

REGISTER <sup>(1)</sup>		Bit	Extend Alarms
Number	Address		
5	4	15 (MSB)	Fault 27: Power supply card from bypass line, fault
		14	Fault 26: Switching to bypass error
		13	Fault 25: Ups previous started as parallel
		12	Fault 24: Error on parallel signals transmit. On master
		11	Fault 23: Slave output phases num. not equal to master
		10	Fault 22: Slave Firmware not equal to master
		9	Fault 21: error on parallel power balancing
		8	Fault 20: not used
		7	Fault 19: Error on SWOUT aux. contact
		6	Fault 18: not used
		5	Fault 17: Can Bus expansion card 3 error
		4	Fault 16: Can Bus expansion card 2 error
		3	Fault 15: Can Bus expansion card 1 error
		2	Fault 14: Can Bus rectifier error
		1	Fault 13: Can Bus inverter error
		0 (LSB)	Fault 12: Can Bus transmitting error
6	5	15 (MSB)	System Off or EPO active
		14	Parallel signal cable link fail
		13	Aux. Fuses failure
		12	Fan fault.
		11	Manual Battery test Failed
		10	High battery temperature
		9	Fault 37: High output voltage
		8	Fault 36: Slave ups locked by the rectifier off.
		7	Fault 35: Redundancy lost in parallel system
		6	Aux alarm active.
		5	Fault 33: not used
		4	Fault 32: not used
		3	Fault 31: System card oscillator fail
		2	Fault 30: One temperature sensor not connected
		1	Fault 29: Error on rx signal from DSP card
		0 (LSB)	Fault 28:

REGISTER <sup>(1)</sup>		Bit	Extend Alarms
Number	Address		
7	6	15 (MSB)	Output load > 80%VA or > 80%W
		14	Service Battery
		13	Service UPS
		12	Command to drive ext. battery Contactor
		11	Manual battery test OK
		10	Manual battery test active
		9	External battery switch open
		8	Bypass switching and inverter synchr. Disabled
		7	Battery charging Disabled
		6	Battery under charge, (Ah% < 99%).
		5	Automatic Battery test active
		4	Battery end of discharge (RL3 Remote standard)
		3	Battery discharging (RL2 Remote standard)
		2	Bypass/fault remote (RL1 Remote standard)
		1	General Fault
		0 (LSB)	Normal operation
8	7	15 (MSB)	Overtemperature On Bypass line transf.
		14	Remote input signal active
		13	Received signal "FlyWheel OK"
		12	Input rectifier operating
		11	Bypass enabled and Output voltage present. (used in systems with UGS to disable slave bypass)
		10	Low battery temperature
		9	Alarm from action n.23, external SWBY opt
		8	Command to open ext. battery breaker EPO
		7	Motor gen. parallel mode, (special version)
		6	Alarm "Insulation Loss D.C."
		5	Alarm "Insulation Loss A.C."
		4	Alarm "Input switches OFF"
		3	Aux.2 alarm
		2	Aux.1 alarm
		1	Load on Bypass with SWOUT closed
		0 (LSB)	Load on inverter with SWOUT closed

REGISTER <sup>(1)</sup>		MEASUREMENTS	UNIT
Number	Address		
9	8	RESERVED	
10	9		
11	10		
12	11	Input voltage (Ph-N) V1	V
13	12	Input voltage (Ph-N) V2	V
14	13	Input voltage (Ph-N) V3	V
15	14	Input current phase L1	A/10
16	15	Input current phase L2	A/10
17	16	Input current phase L3	A/10
18	17	Input frequency	Hz/10
19	18	RESERVED	
20	19		
21	20		
22	21	Bypass voltage (Ph-N) V1	V
23	22	Bypass voltage (Ph-N) V2	V
24	23	Bypass voltage (Ph-N) V3	V
25	24	Bypass frequency	Hz/10
26	25	Output voltage (Ph-N) V1	V
27	26	Output voltage (Ph-N) V2	V
28	27	Output voltage (Ph-N) V3	V
29	28	Output signed reactive power phase L1	%
30	29	Output signed reactive power phase L2	%
31	30	Output signed reactive power phase L3	%
32	31	Output current phase L1	A/10
33	32	Output current phase L2	A/10
34	33	Output current phase L3	A/10
35	34	Output peak current phase L1	A/10
36	35	Output peak current phase L2	A/10
37	36	Output peak current phase L3	A/10
38	37	Load phase L1	%
39	38	Load phase L2	%
40	39	Load phase L3	%
41	40	Output active power phase L1	kW/10
42	41	Output active power phase L2	kW/10
43	42	Output active power phase L3	kW/10
44	43	Output frequency	Hz/10
45	44	Output load	%
46	45	Output total active power	kW/10
47	46	RESERVED	
48	47	Battery voltage <sup>(3)</sup>	V/10
49	48	Battery voltage of positive bench	V/10
50	49	Battery voltage of negative bench	V/10
51	50	Battery current	A/10
52	51	Charge%	%
53	52	RESERVED	
54	53	Autonomy	Minutes
55	54	RESERVED	
...	...		
58	57		
59	58	Total output energy (32 bit)	Least Significant Register
60	59		Most Significant Register
61	60	RESERVED	

<sup>(3)</sup> For UPS with two battery benches, the lower of the two voltage is shown.

REGISTER <sup>(1)</sup>		MEASUREMENTS	UNIT
Number	Address		
62	61	System temperature	°C
63	62	Rectifier power module temperature	°C
64	63	Inverter power module temperature	°C
65	64	Bypass Static Switch temperature (signed)	°C
66	65	RESERVED	
67	66	Internal ambient temperature (signed)	°C
68	67	Battery temperature (signed)	°C
69	68	RESERVED	
...	...		
72	71		



Some measures may not be available. In this case you find 0xFFFF value in the relative register..

REGISTER <sup>(1)</sup>		NOMINAL DATA	UNIT
Number	Address		
73	72	RESERVED	
...	...		
77	76		
78	77	Output nominal voltage	V
79	78	Output nominal frequency	Hz/10
80	79	Output nominal power	kVA/10
81	80	Output nominal power	kW/10
82	81	RESERVED	
83	82	RESERVED	
84	83	Battery nominal capacity (battery expansion included)	Ah
85	84	Battery benches	(1 or 2)
86	85	Battery type	Integer
87	86	RESERVED	
...	...		
112	111		

REGISTER <sup>(1)</sup>		COMMANDS	UNIT
Number	Address		
113	112	Command Code: 1   (0x0001)   UPS Shutdown     (see also register 114) 2   (0x0002)   UPS Shutdown & Restore (see also register 114/115) 3   (0x0003)   Delete Command (code 1 – 2 - 12) 12 (0x000C)   UPS on Bypass 20 (0x0014)   Test Battery	Integer
114	113	Shutdown delay time	Seconds
115	114	Restore delay time	Minutes
116	115	RESERVED	
117	116	Command result: = Command code if command is handled from the UPS = Command code + 100 if command is NOT handled from the UPS = 0 if Command code is wrong	Integer
118	117	RESERVED	

REGISTER <sup>(1)</sup>		MultiCOM / NetMan DIAGNOSTIC	UNIT
Number	Address		
119	118	Counter of processed correct messages	Integer
120	119	Counter of processed not correct messages	Integer

REGISTER <sup>(1)</sup>		Bit	Position	SPECIAL FLAGS SENTRY Protocol UPS
Number	Address			
121	120	15 (MSB)	s= 80..-	Output frequency 60Hz
		14	s= 40..-	Remote 'Ups off' input active
		13	s= 20..-	Multi Standard protocol active
		12	s= 10..-	High system temperature
		11	s= 08..-	Output frequency out of range
		10	s= 04..-	System pll unlocked
		9	s= 02..-	Master signals off
		8	s= 01..-	Power fail on system card
		7	s= ..80-	High or Low battery charger voltage
		6	s= ..40-	Battery Test active
		5	s= ..20-	Prealarm low battery voltage
		4	s= ..10-	Low battery voltage
		3	s= ..08-	Active DCD on RS232-2
		2	s= ..04-	s=0004
		1	s= ..02-	Active DCD on RS232-1
		0 (LSB)	s= ..01-	s=0001
122	121	15 (MSB)	c= 80..-	Static switch overtemperature
		14	c= 40..-	Fan failure
		13	c= 20..-	Current overload on output 3
		12	c= 10..-	Current overload on output 2
		11	c= 08..-	Current overload on output 1
		10	c= 04..-	high peak current on output 3
		9	c= 02..-	high peak current on output 2
		8	c= 01..-	high peak current on output 1
		7	c= ..80-	Average Voltage error on output 2
		6	c= ..40-	Average Voltage error on output 1
		5	c= ..20-	Istantaneous Voltage error out 3
		4	c= ..10-	Istantaneous Voltage error out 2
		3	c= ..08-	Istantaneous Voltage error out 1
		2	c= ..04-	Average Voltage error on output 3
		1	c= ..02-	SWOUT OFF, output switch open
		0 (LSB)	c= ..01-	Output voltage in Stby_ON range
123	122	15 (MSB)	b= 80..-	SWMB, maintenace switch closed
		14	b= 40..-	Input line voltage phases fail
		13	b= 20..-	Input line 1 frequency fail
		12	b= 10..-	Input line 3 voltage fail
		11	b= 08..-	Input line 2 voltage fail
		10	b= 04..-	Input line 1 voltage fail
		9	b= 02..-	Transient current on bypass line SCR
		8	b= 01..-	Remote input active
		7	b= ..80-	Stby_OFF command active
		6	b= ..40-	Bypass SCR Fail To Switch ON
		5	b= ..20-	Disabled for line Voltage error
		4	b= ..10-	Switching to bypass fault
		3	b= ..08-	Frequency derivative error
		2	b= ..04-	Standby-ON command active
		1	b= ..02-	Inverter output contactor open
		0 (LSB)	b= ..01-	Inverter output contactor fail



REGISTER <sup>(1)</sup>		Bit	Position	SPECIAL FLAGS SENTRY Protocol UPS
Number	Address			
124	123	15 (MSB)	r= 80..-..	Low current on input line 2
		14	r= 40..-..	Low current on input line 1
		13	r= 20..-..	Low voltage on input line 3
		12	r= 10..-..	Low voltage on input line 2
		11	r= 08..-..	Low voltage on input line 1
		10	r= 04..-..	High voltage on input line 3
		9	r= 02..-..	High voltage on input line 2
		8	r= 01..-..	High voltage on input line 1
		7	r= ..80-..	Rectifier disabled
		6	r= ..40-..	Rectifier card power fail
		5	r= ..20-..	Rectifier, high output voltage
		4	r= ..10-..	Rectifier OVERTEMPERATURE
		3	r= ..08-..	Input line frequency error
		2	r= ..04-..	r=0004-00
		1	r= ..02-..	Input current limiting active
		0 (LSB)	r= ..01-..	Low current on input line 3
125	124	15 (MSB)	r= ....-80	r=0000-80
		14	r= ....-40	High voltage on battery
		13	r= ....-20	Rectifier disabled by high dc voltage
		12	r= ....-10	Slave rectifier input current not present
		11	r= ....-08	Battery SCR or contactor, open
		10	r= ....-04	Parallel cable link fail
		9	r= ....-02	Rectifier Fault
		8	r= ....-01	Rectifier cables link fail
		7	i= 80..-..	Inverter open loop
		6	i= 40..-..	Inverter on standby_on status
		5	i= 20..-..	Inverter card power fail
		4	i= 10..-..	Inverter cables link fail
		3	i= 08..-..	IGBT modules or drivers fail
		2	i= 04..-..	IGBT module 2 or driver fail
		1	i= 02..-..	IGBT module 1 or driver fail
		0 (LSB)	i= 01..-..	Inverter thermal cable fail
126	125	15 (MSB)	i= ..80-..	Inverter overtemperature on module 2
		14	i= ..40-..	Inverter overtemperature on module 1
		13	i= ..20-..	Inverter high input voltage
		12	i= ..10-..	Inverter high output voltage
		11	i= ..08-..	UPS high output voltage
		10	i= ..04-..	Ups Master
		9	i= ..02-..	Inverter synchro not present
		8	i= ..01-..	Inverter Failed or inhibited
		7	i= ....-80	Inverter thermal cables fail
		6	i= ....-40	Inverter takes power from output
		5	i= ....-20	Inverter LOW DC input voltage
		4	i= ....-10	Inverter LOW AC output voltage
		3	i= ....-08	Inverter inhibited
		2	i= ....-04	i=0000-04
		1	i= ....-02	IGBT module 3 or driver fail
		0 (LSB)	i= ....-01	Inverter overtemperature on module 3

REGISTER <sup>(1)</sup>		Bit	Position	SPECIAL FLAGS SENTRY Protocol UPS
Number	Address			
127	126	15 (MSB)	a= 80..-....	OUTPUT CURRENT OVERLOAD
		14	a= 40..-....	LOW BATTERY CHARGE or CLOSE FB
		13	a= 20..-....	LOW INPUT VOLTAGE or OUTPUT OVERLOAD[W]
		12	a= 10..-....	PREALARM, LOW BATTERY VOLTAGE
		11	a= 08..-....	MAIN LINE VOLTAGE FAIL or SWIN OFF
		10	a= 04..-....	BYPASS LINE VOLT. FAIL or SWIN,FSCR OFF
		9	a= 02..-....	MANUAL BYPASS, SWMB ON
		8	a= 01..-....	DISTURBANCES ON BYPASS LINE
		7	a= ..80-....	FAULT 6.
		6	a= ..40-....	FAULT 5: Bypass SCR fail ON or OFF
		5	a= ..20-....	FAULT 4: Rectifier Fault
		4	a= ..10-....	FAULT 3: Inverter contactor Fault
		3	a= ..08-....	FAULT 2: Inverter permanent Fault
		2	a= ..04-....	FAULT 1.
		1	a= ..02-....	BYPASS FOR OUTPUT VA < AUTO-OFF VALUE
		0 (LSB)	a= ..01-....	TEMPORARY BYPASS, WAIT
128	127	15 (MSB)	a= ....-80..	INTERNAL or LOAD INSULATION LOSS
		14	a= ....-40..	REMOTE BYPASS COMMAND ACTIVE
		13	a= ....-20..	BYPASS COMMAND ACTIVE
		12	a= ....-10..	BYPASS FOR OUTPUT OVERLOAD
		11	a= ....-08..	FAULT 10, or fault>11 or parallel signal
		10	a= ....-04..	FAULT 9: Battery SCR fault
		9	a= ....-02..	FAULT 8: one rectifier input current low
		8	a= ....-01..	FAULT 7: Main power supply Fault
		7	a= ....-..80	UPS timer OFF active
		6	a= ....-..40	FAULT 11: Fail to return on inverter
		5	a= ....-..20	MEMORY CHANGED
		4	a= ....-..10	REMOTE SYSTEM OFF COMMAND
		3	a= ....-..08	PANEL SYSTEM OFF COMMAND ACTIVE
		2	a= ....-..04	OUTPUT OFF, CLOSE SWOUT OR SWMB
		1	a= ....-..02	INPUT VOLTAGE SEQUENCE NOT OK
		0 (LSB)	a= ....-..01	OVERTEMPERATURE or FAN FAILURE

REGISTER <sup>(1)</sup>		MultiCOM / NetMan DATA	UNIT
Number	Address		
129	128	Firmware version	Integer*100

REGISTER <sup>(1)</sup>		RESERVED	UNIT
Number	Address		
130÷157	129÷156	RESERVED	

<sup>(1)</sup> The register number **n** must be addressed **n-1** in the data packet.