Master ModBus® Register Map

This document describes the format of the data contained in the Modbus messages.

Read Input Status

Modbus Function Code 02

Inputs start at 10000. *Note: Registers 1-16 are mutually exclusive.*

UPS Status		
Register	**Name**	**Definition/Comments**
0	Unused	Reserved for Jbus compatibility.
1	On Battery	TRUE if UPS is on battery.
2	Output Overload	TRUE if UPS power limit has been exceeded.
3	Rectifier Overload	TRUE if input current limit has been exceeded.
4	Inverter Ramping Up	TRUE if UPS inverter is being started up.
5	Syncing to Bypass	TRUE if UPS is syncing to bypass.
6	Rectifier Ramping	TRUE if UPS rectifier is being started up.
7	On Buck	TRUE if the input voltage is too high. (This applies to a line-interactive UPS.)
8	On Boost	TRUE if the input voltage is too low. (This applies to a line-interactive UPS.)
9	On Double Boost	TRUE if the input voltage is extremely low. (This applies to a line-interactive UPS.)
10	On Bypass	TRUE if the UPS is on bypass.
11	System Normal	TRUE if the UPS is operating normally.
12	Load On Inverter	TRUE if the inverter is supplying power to the load.
13	UPS On	TRUE if the UPS in currently on.
14	Outlet Switch Open	TRUE if no power is being supplied to the load.
15	Outlet Breaker Open	TRUE if the output breaker is open.
16	UPS Off	TRUE if the UPS is no longer supplying power to the load.
17	Unused	--
18	Unused	--
19	Unused	--
20	Unused	--
21	Unused	--
22	Unused	--
23	Unused	--
24	Unused	--
25	Unused	--
26	Unused	--
27	Unused	--
28	Unused	--
29	Unused	--
30	Unused	--

UPS Status		
Register	**Name**	**Definition/Comments**
31	Unused	--
32	Static Position Switch	TRUE if static switch is on.
33	Critical Buss Breaker	TRUE if critical bus breaker is closed.
34	Bypass Breaker	TRUE if bypass breaker is closed.
35	Backfeed Breaker	TRUE if backfeed breaker is closed.
36	Bypass Input Power	TRUE if bypass input power is available.
37	Maintenance Isolation Breaker (MIB)	TRUE if MIB is closed.
38	Maintenance Bypass Breaker (MBB)	TRUE if MBB is closed.
39	Maintenance Bypass Input (MBP)	TRUE if MBP has input power.
40	SBM Normal	TRUE if system normal.
41	SBM On Battery	TRUE if modules on battery.
42	SBM On Bypass	TRUE if critical load on bypass.
43	SBM Notice	TRUE if minor alarm advisory.
44	SBM Alarm	TRUE if major alarm, shutdown imminent.
45	SBM On Standby	TRUE if on standby.
46	Unused	--
47	Unused	--
48	UPM #1 Normal LED	TRUE if system normal and inverter on line.
49	UPM #1 Battery LED	TRUE if modules on battery in single mode.
50	UPM #1 Bypass LED	TRUE if critical load is on bypass (single).
51	UPM #1 Notice LED	TRUE if minor alarm (single mode).
52	UPM #1 Alarm LED	TRUE if major alarm, shutdown imminent.
53	UPM #1 Standby LED	TRUE if on standby.
54	UPM #1 Present	TRUE if present.
55	Reserved	--
56	UPM #2 Normal LED	TRUE if system normal and inverter on line.
57	UPM #2 Battery LED	TRUE if modules on battery in single mode.
58	UPM #2 Bypass LED	TRUE if critical load is on bypass (single).
59	UPM #2 Notice LED	TRUE if minor alarm (single mode).
60	UPM #2 Alarm LED	TRUE if major alarm, shutdown imminent.
61	UPM #2 Standby LED	TRUE if on standby.
62	UPM #2 Present	TRUE if present.
63	Reserved	--

UPS Status		
Register	**Name**	**Definition/Comments**
64	UPM #3 Normal LED	TRUE if system normal and inverter on line.
65	UPM #3 Battery LED	TRUE if modules on battery in single mode.
66	UPM #3 Bypass LED	TRUE if critical load is on bypass (single).
67	UPM #3 Notice LED	TRUE if minor alarm (single mode).
68	UPM #3 Alarm LED	TRUE if major alarm, shutdown imminent.
69	UPM #3 Standby LED	TRUE if on standby.
70	UPM #3 Present	TRUE if present.
71	Reserved	--
72	UPM #4 Normal LED	TRUE if system normal and inverter on line.
73	UPM #4 Battery LED	TRUE if modules on battery in single mode.
74	UPM #4 Bypass LED	TRUE if critical load is on bypass (single).
75	UPM #4 Notice LED	TRUE if minor alarm (single mode).
76	UPM #4 Alarm LED	TRUE if major alarm, shutdown imminent.
77	UPM #4 Standby LED	TRUE if on standby.
78	UPM #4 Present	TRUE if present.
79	Reserved	--
80	UPM #5 Normal LED	TRUE if system normal and inverter on line.
81	UPM #5 Battery LED	TRUE if modules on battery in single mode.
82	UPM #5 Bypass LED	TRUE if critical load is on bypass (single).
83	UPM #5 Notice LED	TRUE if minor alarm (single mode).
84	UPM #5 Alarm LED	TRUE if major alarm, shutdown imminent.
85	UPM #5 Standby LED	TRUE if on standby.
86	UPM #5 Present	TRUE if present.
87	Reserved	--
88	UPM #6 Normal LED	TRUE if system normal and inverter on line.
89	UPM #6 Battery LED	TRUE if modules on battery in single mode.
90	UPM #6 Bypass LED	TRUE if critical load is on bypass (single).
91	UPM #6 Notice LED	TRUE if minor alarm (single mode).
92	UPM #6 Alarm LED	TRUE if major alarm, shutdown imminent.
93	UPM #6 Standby LED	TRUE if on standby.
94	UPM #6 Present	TRUE if present.
95	Reserved	--

UPS Status		
Register	**Name**	**Definition/Comments**
96	UPM #7 Normal LED	TRUE if system normal and inverter on line.
97	UPM #7 Battery LED	TRUE if modules on battery in single mode.
98	UPM #7 Bypass LED	TRUE if critical load is on bypass (single).
99	UPM #7 Notice LED	TRUE if minor alarm (single mode).
100	UPM #7 Alarm LED	TRUE if major alarm, shutdown imminent.
101	UPM #7 Standby LED	TRUE if on standby.
102	UPM #7 Present	TRUE if present.
103	Reserved	--
104	UPM #8 Normal LED	TRUE if system normal and inverter on line.
105	UPM #8 Battery LED	TRUE if modules on battery in single mode.
106	UPM #8 Bypass LED	TRUE if critical load is on bypass (single).
107	UPM #8 Notice LED	TRUE if minor alarm (single mode).
108	UPM #8 Alarm LED	TRUE if major alarm, shutdown imminent.
109	UPM #8 Standby LED	TRUE if on standby.
110	UPM #8 Present	TRUE if present.
111	Reserved	--
112	Rectifier Status	TRUE if rectifier is on.
113	Rectifier Input Status	TRUE if rectifier input is present.
114	Bypass Status	TRUE if bypass is on.
115	Bypass Input Status	TRUE if bypass voltage is present.
116	Input Circuit Breaker Status (CB1)	TRUE if CB1is closed.
117	Battery Contactor Status (K2)	TRUE if battery contactor is closed.
118	Inverter Contactor Status (K3)	TRUE if UPS is on line and inverter is supplying power.
119	Inverter Status	TRUE if inverter failure.
120	UPM Normal	TRUE if UPM normal.
121	UPM On Battery	TRUE if UPS On Battery.
122	UPM Off Line	TRUE if UPM is Off line.
123	UPM Notice	TRUE if UPM warning advisory.
124	UPM Alarm	TRUE if UPM major alarm.
125	UPM Standby	TRUE if UPM on standby.
126	Reserved	--
127	Reserved	--

UPS Status		
Register	**Name**	**Definition/Comments**
128	MOB Closed	TRUE if MOB closed , Open = 0
129	System Redundant	Redundant = 1 , Not Redundant = 0
130	Unused	--
131	Unused	--
132	Setup as Parallel for Redundant System	TRUE if system set for redundant operation.
133	Setup as Parallel for Capacity System	TRUE if system set for capacity operation.
134	Setup as SBM Front Panel	TRUE if configured as front panel.
135	Unused	--
136	Unused	--
137	Unused	--
138	Unused	--
139	Unused	--
140	Unused	--
141	Unused	--
142	Unused	--
143	Unused	--
144	Inverter AC over voltage	TRUE if the inverter output voltage has exceeded the upper voltage limit.
145	Inverter AC under voltage	TRUE if the inverter output voltage is less than the lower voltage limit.
146	Inverter under or over frequency	TRUE if inverter output frequency is outside the upper or lower frequency limit.
147	Bypass AC over voltage	TRUE if bypass input voltage has exceeded the upper voltage limit.
148	Bypass AC under voltage	TRUE if bypass input voltage is less than the lower voltage limit.
149	Bypass under or over frequency	TRUE if bypass input frequency is outside of either the upper or lower frequency limit.
150	Input AC over voltage	TRUE if input (Utility) voltage has exceeded the upper voltage limit.
151	Input AC under voltage	TRUE if input (Utility) voltage is less than the lower voltage limit.
152	Input under or over frequency	TRUE if the Input (Utility) frequency is outside of either the upper or lower limit.
153	Output AC over voltage	TRUE if the output voltage has exceeded the upper voltage limit.
154	Output AC under voltage	TRUE if output voltage is less than the lower voltage limit.
155	Output under or over frequency	TRUE if output frequency is outside of either the upper or lower frequency limit.
156	Remote emergency power off	TRUE if UPS has shutdown due to the activation of the remote EPO signal.
157	Remote go to Bypass	TRUE if the UPS has transferred to bypass.
158	Building Alarm 6	TRUE if a dry contact closure has been detected on the building alarm 6 input.
159	Building Alarm 5	TRUE if a dry contact closure has been detected on the building alarm 5 input.
160	Building Alarm 4	TRUE if a dry contact closure has been detected on the building alarm 4 input.
161	Building Alarm 3	TRUE if a dry contact closure has been detected on the building alarm 3 input.
162	Building Alarm 2	TRUE if a dry contact closure has been detected on the building alarm 2 input.
163	Building Alarm 1	TRUE if a dry contact closure has been detected on the building alarm 1 input.

UPS Status		
Register	**Name**	**Definition/Comments**
164	Static switch over temperature	TRUE if the static switch operating temperature has been exceeded.
165	Charger over temperature	TRUE if the battery charger operating temperature has been exceeded.
166	Charger logic power fail	TRUE if the battery charger power supply to its digital logic circuitry has failed.
167	Charger over voltage or current	TRUE if the battery charger output has exceeded its voltage or current limit.
168	Inverter over temperature	TRUE if inverter temperature has exceeded the upper temperature limit.
169	Output overload	TRUE if output current limit has been exceeded.
170	Rectifier input over current	TRUE if rectifier input current has exceeded the upper current limit.
171	Inverter output over current	TRUE if the inverter output current has exceeded the upper current limit.
172	DC link over voltage	TRUE if the DC link voltage has exceeded the upper voltage limit.
173	DC link under voltage	TRUE if the DC link voltage is less than the lower voltage limit.
174	Rectifier failed	TRUE if the rectifier has failed.
175	Inverter fault	TRUE if the inverter has failed.
176	Battery contactor fail	TRUE if the battery contactor has failed.
177	Bypass breaker fail	TRUE if the bypass breaker has failed.
178	Charger failure	TRUE if the battery charger has failed.
179	Ramp up failed	TRUE if the inverter fails to ramp up.
180	Static switch failure	TRUE if the static switch has failed.
181	Analog board A/D reference fail	TRUE if the analog voltage reference is out of tolerance.
182	Bypass uncalibrated	TRUE if the bypass input voltage sensor has not been calibrated.
183	Rectifier uncalibrated	TRUE if the rectifier input voltage sensor has not been calibrated.
184	Output uncalibrated	TRUE if the output voltage sensor has not been calibrated.
185	Inverter uncalibrated	TRUE if the inverter output voltage sensor has not been calibrated.
186	DC voltage uncalibrated	TRUE if the DC link voltage sensor has not been calibrated.
187	Output current uncalibrated	TRUE if output current sensor has not been calibrated.
188	Rectifier current uncalibrated	TRUE if input current sensor has not been calibrated.
189	Battery current uncalibrated	TRUE if the battery current sensor has not been calibrated.
190	Inverter On/Off stat failure	TRUE if inverter has failed to turn On/Off.
191	Battery current limit	TRUE if the battery is operating at maximum current capability.
192	Inverter failure (3 attempts)	TRUE if the inverter fails to turn on.
193	Analog board A/D stat failure	TRUE if the analog-to-digital converter has failed.
194	Output current over 100%	TRUE if system critical bus has exceeded 100% of its current output rating.
195	Battery ground fault	TRUE if a leakage path exists between a battery connection and ground.
196	Waiting for charger sync	TRUE if the charger/rectifier is not phase locked.
197	Non-Volatile RAM failure	TRUE if non-volatile memory has failed.
198	Analog board A/D time out	TRUE if the analog-to-digital converter has failed to complete a conversion within the expected time frame.
199	Shutdown imminent	TRUE if the UPS has entered a state where it may abruptly stop operating without further notice.

UPS Status		
Register	**Name**	**Definition/Comments**
200	Battery low	TRUE if the battery voltage is low.
201	Utility fail	TRUE if the utility input power is not within predetermined limits.
202	Output short circuit	TRUE if the UPS has detected an abnormally low impedance on its output.
203	Utility not present	TRUE if the utility input is not present.
204	Full time charging	TRUE if the battery charger is on.
205	Fast Bypass command	TRUE if the "fast bypass" command was issued to the bypass control logic.
206	A/D error	TRUE if the A/D converter has performed incorrectly.
207	SPI communications error	TRUE if an error has occurred on the Serial Peripheral Interface (SPI) port.
208	Rectifier failed self-test	TRUE if the rectifier/charger has failed self-test.
209	Rectifier EEPROM failure	TRUE if an EEPROM within the rectifier module has failed.
210	Rectifier EPROM failure	TRUE if an EPROM within the rectifier module has failed.
211	Input line voltage loss	TRUE if the input voltage is out of range.
212	Battery DC over voltage	TRUE if the battery voltage has exceeded a predetermined limit.
213	Power supply over temperature	TRUE if the power supplies temperature has exceeded its rated temperature.
214	Power supply failure	TRUE if the logic power supply has failed.
215	Power supply 5 volt fault	TRUE if primary logic supply has failed.
216	Power supply +/-12 volt fault	TRUE if secondary logic supply has failed.
217	Heatsink over temperature	TRUE if heatsink temperature has exceeded its limit.
218	Heatsink temperature sensor failed	TRUE if a heatsink temperature sensor has failed.
219	Rectifier current over 125%	TRUE if the rectifier/charger has exceeded 125% of its rating.
220	Rectifier fault interrupt failed	TRUE if the rectifier fault interrupt has failed to generate a fault response.
221	Rectifier power capacitor fault	TRUE if the rectifier power capacitor has failed.
222	Inverter program stack error	TRUE if the internal program stack has failed.
223	Inverter control board failed self-test	TRUE if the inverter module has failed.
224	Inverter A/D converter self-test failed	TRUE if the A/D converter self-test has failed.
225	Inverter ram self-test failure	TRUE if the RAM self-test has failed.
226	Inverter EEPROM checksum fail	TRUE if the inverter EEPROM checksum has failed.
227	Inverter EPROM checksum fail	TRUE if the EPROM checksum has failed.
228	Inverter CPU self-test failed	TRUE if the inverter CPUs self test has failed.
229	Network not responding	TRUE if the network communications has failed.
230	Front panel self-test failure	TRUE if the front panel or communications board has failed self-test.
231	Node EEPROM verification error	TRUE if the EEPROM data in this module does not match the data read from other modules.
232	Output AC over voltage test failed	TRUE if the output AC over voltage test has failed.
233	Output DC over voltage	TRUE if output DC has exceeded the over voltage limit.
234	Input phase rotation error	TRUE if the input phases are not switched.
235	Inverter ramp up test failed	TRUE if the inverter failed to start-up.

UPS Status		
Register	**Name**	**Definition/Comments**
236	Inverter off command	TRUE if inverter off command was issued.
237	Inverter on command	TRUE if inverter on command was issued.
238	To bypass command	TRUE if bypass command was issued.
239	From bypass command	TRUE if from bypass command was issued.
240	Auto mode command	TRUE if auto command was issued.
241	Emergency shutdown command	TRUE if An Emergency Power Off (EPO) command was issued.
242	Setup switch open	TRUE if the setup switch is open.
243	Inverter AC over voltage (interrupt)	TRUE if AC overvoltage has exceeded its over voltage limit.
244	Inverter AC under voltage (interrupt)	TRUE if AC undervoltage is less than the under voltage limit.
245	Absolute DCOV/ACOV (interrupt)	TRUE if the DC link voltage or the UPS AC output voltage has exceeded its high over voltage limit.
246	Phase A current limit	TRUE if Phase A output is in current limit.
247	Phase B current limit	TRUE if Phase B output is in current limit.
248	Phase C current limit	TRUE if Phase C output is in current limit.
249	Bypass not available	TRUE if bypass input voltage is not available for transfer.
250	Rectifier breaker open	TRUE if the rectifier/charger breaker is open.
251	Battery contactor open	TRUE if the battery contactor/breaker is open.
252	Inverter contactor open	TRUE if the inverter output contactor/ breaker is open.
253	Bypass breaker open	TRUE if the bypass breaker is open.
254	Inverter board ACOV interrupt test failed	TRUE if the inverter AC over voltage detector self-test failed.
255	Inverter over temperature trip	TRUE if the inverter temperature has exceeded its operating temperature limit.
256	Inverter board ACUV interrupt test fail	TRUE if the inverter AC under voltage detector self-test failed.
257	Inverter voltage feedback error	TRUE if error has occurred in the inverter feedback voltage.
258	DC under voltage timeout	TRUE if the DC link has been in an under voltage state for an extended time.
259	AC under voltage timeout	TRUE if the AC output has been in an under voltage state for an extended time.
260	DC under voltage while charger is full on	TRUE if the charger is unable to supply enough energy to raise the DC link to its minimum operating level.
261	Inverter voltage bias error	TRUE if the DC component of the inverter output waveform is too high.
262	Rectifier phase rotation	TRUE if the rectifier input phases are out of sequence.
263	Bypass phase rotation	TRUE if on a multi-phase system, the bypass input phases are out of sequence.
264	System interface board failure	TRUE if the system interface board has failed.
265	Parallel board failure	TRUE if the parallel board has failed.
266	Loss of load sharing phase A	TRUE if the power module can no longer perform load sharing on phase A.
267	Loss of load sharing phase B	TRUE if the power module can no longer perform load sharing on phase B.
268	Loss of load sharing phase C	TRUE if the power module can no longer perform load sharing on phase C.
269	DC over voltage timeout	TRUE if the DC link has been in an over voltage state for an extended time period.
270	Battery totally discharged	TRUE if the battery has been discharged to its maximum discharged state.

UPS Status		
Register	**Name**	**Definition/Comments**
271	Inverter phase bias error	TRUE if the phase offset is out of range.
272	Inverter voltage bias error	TRUE if the inverter voltage is too high.
273	DC link bleed complete	TRUE if the link bleed-down is complete.
274	Large charger input current	TRUE if the current to the charger is high.
275	Inverter voltage too low for ramp level	TRUE if the inverter output voltage has exceeded the lower limit.
276	Loss of redundancy	TRUE if a power modules has failed.
277	Loss of sync bus	TRUE if sync bus not active is detected.
278	Rectifier breaker shunt tripped	TRUE if the breaker has been tripped.
279	Loss of charger sync	TRUE if the charger is not synchronized to its input voltage.
280	Inverter low level test timeout	TRUE if the inverter failed its low level self test.
281	Output breaker open	TRUE if the UPS output breaker is open.
282	Control power on	TRUE if the Control power has been applied.
283	Inverter on	TRUE if the inverter is on.
284	Charger on	TRUE if the charger is on.
285	Bypass on	TRUE if the bypass is available.
286	Bypass power loss	TRUE if the bypass input has insufficient power available to supply the current load.
287	Bypass manual turn on	TRUE if the bypass has been issued a manual turn-on command.
288	Bypass manual turn off	TRUE if the bypass has been issued a manual turn-off command.
289	Inverter bleeding dc link voltage	TRUE if the inverter is used to bleed the DC link voltage down to a safe level.
290	CPU ISR Error	TRUE if the CPU has received a spurious interrupt.
291	System ISR restart	TRUE if the system has gone through a firmware self-restart.
292	Parallel dc	TRUE if the DC busses are operating in parallel.
293	Check battery flag	TRUE if the battery has failed.
294	Battery charging	TRUE if the battery is being charged.
295	Battery not charged	TRUE if the battery is not fully charged.
296	Disabled Battery time	TRUE if the battery time remaining has been disabled.
297	Series 7000 enable	TRUE if Series 7000 (Powerware 375 family member).
298	Other ups on	TRUE if one of the other UPSs is currently on (parallel system).
299	Parallel inv	TRUE if two or more inverters are currently operating in parallel.
300	UPS in parallel	TRUE if parallel operation with at least one other UPS.
301	Output Breaker/Relay Failure	TRUE if Output Breaker or Relay has failed.
302	Control power off	TRUE if control power has been removed.
303	Greater than 106% overload on phase A	TRUE if output phase A has exceeded 106% of its rated current or power.
304	Greater than 106% overload on phase B	TRUE if output phase B has exceeded 106% of its rated current or power.
305	Greater than 106% overload on phase C	TRUE if output phase C has exceeded 106% of its rated current or power.
306	Greater than 125% overload on phase A	TRUE if output phase A has exceeded 125% of its rated current or power.

UPS Status		
Register	**Name**	**Definition/Comments**
307	Greater than 125% overload on phase B	TRUE if output phase A has exceeded 125% of its rated current or power.
308	Greater than 125% overload on phase C	TRUE if output phase A has exceeded 125% of its rated current or power.
309	Greater than 150% overload on phase A	TRUE if output phase A has exceeded 150% of its rated current or power.
310	Greater than 150% overload on phase B	TRUE if output phase A has exceeded 150% of its rated current or power.
311	Greater than 150% overload on phase C	TRUE if output phase A has exceeded 150% of its rated current or power.
312	UPS On Battery	TRUE if the UPS is on battery.
313	UPS On Bypass	TRUE if the UPS is on bypass.
314	Load Dumped (Load Power Off)	TRUE if the load power is off.
315	Load On Inverter	TRUE if the inverter is supplying power to the load.
316	UPS On Command	TRUE if a "UPS ON" command has been issued to the UPS.
317	UPS Off Command	TRUE if a "UPS OFF" command has been issued to the UPS.
318	Low Battery Shutdown	TRUE if the battery low limit is reached.
319	Auto On Enabled	TRUE if auto-on is enabled.
320	Software Incompatibility Detected	TRUE if multiple controllers are not compatible with each other.
321	Inverter Temperature Sensor Failed	TRUE if the inverter temperature sensor has failed.
322	DC Start Occurred	TRUE if the UPS has been started on battery when AC input power is not present.
323	In Parallel Operation	TRUE if the UPS is operating in normal parallel mode.
324	Syncing to Bypass	TRUE if the inverter output is synchronized to the bypass source.
325	Ramping UPS Up	TRUE if the UPS is being started up.
326	Inverter On Delay	TRUE if the built-in delay before starting the inverter is running.
327	Charger On Delay	TRUE if the built-in delay before starting the charger up is running.
328	Waiting for Util Input	TRUE if the auto mode is enabled.
329	Close Bypass Breaker	TRUE if the UPS is ready for the user to close the output breaker.
330	Temporary Bypass Operation	TRUE if the UPS transferred to bypass temporarily.
331	Syncing to Output	TRUE if the local inverter is being phase locked to the critical bus waveform.
332	Bypass Failure	TRUE if a bypass breaker failure.
333	Auto OFF Command Executed	TRUE if an "Auto mode Off" command has been issued.
334	Auto ON Command Executed	TRUE if an "Auto mode On" command has been issued.
335	Battery Test failed	TRUE if a battery test the battery has failed and needs to be replaced.
336	Fuse Failure	TRUE if at least one fuse in the UPS has failed and needs to be replaced.
337	Fan Failure	TRUE if at least one fan in the UPS has failed.
338	Site Wiring Fault	TRUE if a fault in the input wiring, other than Phase Rotation; e.g., Ground/Neutral reversed.
339	Backfeed Contactor Failure	TRUE if the Backfeed contactor has failed.
340	On Buck/Voltage Reducer	TRUE if the input voltage is too high for the desired output range (line-interactive UPS).
341	On Boost/Voltage Step Up	TRUE if the input voltage is too low for the desired output (line-interactive UPS).
342	On Double Boost/Voltage Step Up	TRUE if the input voltage of is extremely low (line-interactive UPS).

UPS Status		
Register	**Name**	**Definition/Comments**
343	Batteries Disconnected	TRUE if the Batteries are not connected.
344	UPS Cabinet OverTemperature	TRUE if the temperature inside the UPS has exceeded its upper limit.
345	Transformer OverTemperature	TRUE if the Output Transformer has exceeded its upper temperature limit.
346	Ambient UnderTemperature	TRUE if the ambient temperature is below its lower limit.
347	Ambient OverTemperature	TRUE if the ambient temperature is above its upper limit.
348	Cabinet Door Open	TRUE if the door or cover of the UPS has been opened.
349	Cabinet Door Open with Voltage Present	TRUE if the door or cover of the UPS has been opened exposing dangerous voltages.
350	Automatic Shutdown Pending	TRUE if the UPS is about to remove power to the load.
351	Tap-switching Relay Failure	TRUE if a fault has been detected in the relays which switch transformer taps.
352	Unable to Charge Batteries	TRUE if the charger circuit has determined bad batteries or an open circuit in the connections to the batteries.
353	Startup Failed – Check EPO Reset	TRUE if a UPS has been started, but the system was unable to comply.
354	Automatic Startup Pending	TRUE if a scheduled automatic startup condition is pending.
355	Modem failed	TRUE if the UPS has detected that a modem failed to communicate.
356	Incoming Modem Call Started	TRUE if a modem received an incoming call and has begun to negotiate a connection.
357	Outgoing Modem Call Started	TRUE if a modem has gone off hook and dialed a number or negotiate a connection.
358	Modem Connection Established	TRUE if a modem established a connection with a remote modem or paging service.
359	Modem Call Completed Successfully	TRUE if a modem has successfully completed a transaction as expected.
360	Modem Call Completion Failed	TRUE if a modem has failed to successfully complete a transaction sequence as expected.
361	Input Breaker Failed	TRUE if an input or utility breaker has failed.
362	System Initialization In Progress	TRUE if the UPS is undergoing a startup delay caused by the necessity to initialize various internal values, load code modules, etc. (a.k.a. “Inverter EEP Loading”).

Read Input Registers

Modbus Function Code 04

Input registers start at 30000.

The Modbus card converts the data format of the UPS meters to integer format. Apply the appropriate scale value as listed.

Meters				
Register	**Meter Name**	**Units**	**Scale**	**Description**
0	Unused			Reserved for Jbus compatibility.
1	OUTPUT VOLTS AB	Volts	/10	RMS Voltage measured at the Output of the UPS (i.e. that applied to the load), measured phase to phase. 'AB' is phase A to B.
2	OUTPUT VOLTS BC	Volts	/10	
3	OUTPUT VOLTS CA	Volts	/10	
4	INPUT VOLTS AB	Volts	/10	RMS Voltage measured at the Utility Input of the UPS, measured phase to phase. 'AB' is phase A to B.
5	INPUT VOLTS BC	Volts	/10	
6	INPUT VOLTS CA	Volts	/10	
7	INVERTER VOLTS AB	Volts	/10	RMS Voltage measured at the output of the Inverter, measured phase to phase. 'AB' is phase A to B.
8	INVERTER VOLTS BC	Volts	/10	
9	INVERTER VOLTS CA	Volts	/10	
10	BYPASS VOLTS AB	Volts	/10	RMS Voltage measured at the input of the Bypass feed, if the UPS has a separate Bypass feed, measured phase to phase. 'AB' is phase A to B.
11	BYPASS VOLTS BC	Volts	/10	
12	BYPASS VOLTS CA	Volts	/10	
13	MAIN LOGIC POWER	Volts	/10	Measure of the power supply for the UPS's logic, normally the unregulated supply, measured in DC Volts. Service Measure.
14	SECONDARY V+ POWER	Volts	/10	Measures of a bipolar supply for UPS control or analog circuits, measured in DC Volts. Service Measures.
15	SECONDARY V- POWER	Volts	/10	
16	INVERTER AVG CURRENT PHASE A	Amps	/10	A measure of the current output from the Inverter phases, but not an RMS measure. Service Measures.
17	INVERTER AVG CURRENT PHASE B	Amps	/10	
18	INVERTER AVG CURRENT PHASE C	Amps	/10	
19	INPUT CURRENT PHASE A	Amps	/10	A measure of the Input phase currents for the UPS, in RMS Amps.
20	INPUT CURRENT PHASE B	Amps	/10	
21	INPUT CURRENT PHASE C	Amps	/10	
22	OUTPUT WATTS	KW	/10	Output and input power measurements (Units: kW or kVA as appropriate).
23	INPUT WATTS	KW	/10	
24	OUTPUT VA	KVA	/10	
25	INPUT VA	KVA	/10	
26	OUTPUT POWER FACTOR		/10	(Dimensionless value, 0.00 to 1.00; values outside this range mean "unknown").
27	INPUT POWER FACTOR		/10	

Meters				
Register	**Meter Name**	**Units**	**Scale**	**Description**
28	OUTPUT FREQUENCY	Hz	/10	Frequency measurements (Hz).
29	INPUT FREQUENCY	Hz	/10	
30	INVERTER FREQUENCY	Hz	/10	
31	BYPASS FREQUENCY	Hz	/10	
32	DC LINK VOLTS	Volts	/10	DC voltage rectifier to inverter. Service Measure.
33	BATTERY CURRENT	Amps	/10	Battery measurements; discharge current is a negative current reading. DC Amps.
34	BATTERY VOLTAGE	Volts	/10	
35	% BATTERY LEFT	%	/10	% of useful stored energy remaining (0% is fully discharged).
36	BATTERY TIME REMAINING	Min	/10	Estimated minutes until DCUV for the current load and state of charge of the battery (even if not "On Battery").
37	BATTERY CHARGE TIME	Min	/10	Estimated minutes required to fully charge (Float) the battery.
38	PEAK INVERTER CURRENT PHASE A	Amps	/10	A measure of the Inverter output peak phase current values. Service Measures.
39	PEAK INVERTER CURRENT PHASE B	Amps	/10	
40	PEAK INVERTER CURRENT PHASE C	Amps	/10	
41	AVG INPUT I 3 PHASE SUM	Amps	/10	Average sum of the 3 phase input currents. Service Measure.
42	Unused			--
43	INPUT CURRENT BAR CHART	Amps	/10	To compare against Input Phase Currents. RMS Amps.
44	Unused			--
45	DC VOLTS BAR CHART	Volts	/10	To compare against DC Link Volts. DC Volts. Service Measure.
46	Unused			--
47	BATTERY I BAR CHART	Amps	/10	Value is for 100% rated Battery Discharge current. DC Amps.
48	Unused			--
49	Unused			--
50	Unused			--
51	Unused			--
52	Unused			--
53	Unused			--
54	BYPASS VOLTS PHASE A	Volts	/10	RMS Voltage measured at the input of the Bypass feed, if the UPS has a separate Bypass feed, measured line to neutral.
55	BYPASS VOLTS PHASE B	Volts	/10	
56	BYPASS VOLTS PHASE C	Volts	/10	
57	INPUT VOLTS PHASE A	Volts	/10	RMS Voltage measured at the Utility Input of the UPS, measured phase to neutral.
58	INPUT VOLTS PHASE B	Volts	/10	
59	INPUT VOLTS PHASE C	Volts	/10	

Meters				
Register	**Meter Name**	**Units**	**Scale**	**Description**
60	INVERTER VOLTS PHASE A	Volts	/10	Apparent Inverter output phase voltages, measured phase to neutral (may be scaled by transformer to nearly match output volts while On Inverter). Though these should be just Service Measures, some older UPSs report these instead of Output Volts per phase; note in this case that there may be differences between these readings and the actual Output voltage seen by the Load (e.g., when the Output Breaker is Open).
61	INVERTER VOLTS PHASE B	Volts	/10	
62	INVERTER VOLTS PHASE C	Volts	/10	
63	AMBIENT TEMPERATURE	°C	/10	Temperature measurements, in degrees Centigrade.
64	HEATSINK TEMPERATURE	°C	/10	At main power unit in the module; normally, the Inverter.
65	POWER SUPPLY TEMPERATURE	°C	/10	Could be rectifier, charger, boost converter, or control power supply.
66	LOAD CURRENT PHASE A	Amps	/10	Output RMS phase currents, in RMS Amps (which may be estimated from Inverter output, and not fully account for output filter losses, transformers, or while On Bypass).
67	LOAD CURRENT PHASE B	Amps	/10	
68	LOAD CURRENT PHASE C	Amps	/10	
69	LOAD CURRENT PHASE A BAR CHART	Amps	/10	100% rated values for the Output Phase Currents bar charts. RMS Amps.
70	LOAD CURRENT PHASE B BAR CHART	Amps	/10	
71	LOAD CURRENT PHASE C BAR CHART	Amps	/10	
72	OUTPUT VA BAR CHART	KVA	/10	Rated kVA of the UPS (Units: kVA).
73	DATE	0	0	Always 0
74	TIME	0	0	Always 0
75	POSITIVE DC LINK RAIL VOLTAGE	Volts	/10	Voltages for bipolar DC links. Service Measures.
76	NEGATIVE DC LINK RAIL VOLTAGE	Volts	/10	
77	AUTO-BALANCE VOLTAGE	Volts	/10	DC Voltage content of Output. Service Measure.
78	BATTERY TEMPERATURE	°C	/10	In degrees Centigrade.
79	OUTPUT VOLTS A	Volts	/10	Output voltages to the load measured (or determined) for phase to neutral.
80	OUTPUT VOLTS B	Volts	/10	
81	OUTPUT VOLTS C	Volts	/10	
82	NEUTRAL CURRENT	Amps	/10	RMS current in the output neutral line. RMS Amps.
83	OUTPUT WATTS PHASE A	KW	/10	Output watts, measured line to neutral.
84	OUTPUT WATTS PHASE B	KW	/10	Output watts, measured line to neutral.
85	OUTPUT WATTS PHASE C	KW	/10	Output watts, measured line to neutral.
86	OUTPUT WATTS PHASE A, B, C	KW	/10	100% rated value for the output watts per phase bar charts.
87	RECTIFIER DC CURRENT	Amps	/10	DC current rectifier to DC link. Service measure.
88	POSITIVE BATTERY VOLTAGE	Volts	/10	Voltages for bipolar battery.
89	NEGATIVE BATTERY VOLTAGE	Volts	/10	Voltages for bipolar battery.
90	POSITIVE BATTERY CURRENT	Amps	/10	Currents for bipolar battery, DC Amps; discharge current is a negative reading.
91	NEGATIVE BATTERY CURRENT	Amps	/10	Currents for bipolar battery, DC Amps; discharge current is a negative reading.