



Powering Business Worldwide

Eaton® Master Modbus®

Register Map

164201391 Rev F

This document describes the format of the data contained in the Modbus messages. Not all registers apply to all UPS modules. Consult the individual UPS register profiles for specific lists.

Read Input Status

Modbus Function Code 02

Input registers start at 10000. **NOTE** Registers 1–16 are mutually exclusive.

UPS Status		
Register	Name	Description
0	Unused	Reserved for Jbus compatibility.
1	On Battery	TRUE if the UPS is on battery.
2	Reserved	Reserved
3	Reserved	Reserved
4	ESS/High Efficiency	TRUE if a supported UPS model is in ESS/High Efficiency mode (refer to your UPS documentation for supported models).
5	Reserved	Reserved
6	Reserved	Reserved
7	Reserved	Reserved
8	Reserved	Reserved
9	Reserved	Reserved
10	On Bypass	TRUE if the UPS is on bypass.
11	System Normal	TRUE if the UPS is operating normally.
12	Reserved	Reserved
13	Reserved	Reserved
14	Reserved	Reserved
15	Reserved	Reserved
16	UPS Off	TRUE if the UPS is no longer supplying power to the load.
17	Unused	—
18	Unused	—
19	Unused	—

UPS Status

Register	Name	Description
20	Unused	—
21	Unused	—
22	Unused	—
23	Unused	—
24	Unused	—
25	Unused	—
26	Unused	—
27	Unused	—
28	Unused	—
29	Unused	—
30	Unused	—
31	Unused	—
32	Static Position Switch	TRUE if the static switch is on.
33	Critical Buss Breaker	TRUE if the critical bus breaker is closed.
34	Bypass Breaker	TRUE if the bypass breaker is closed.
35	Backfeed Breaker	TRUE if the backfeed breaker is closed.
36	Bypass Input Power	TRUE if the bypass input power is available.
37	Maintenance Isolation Breaker (MIB)	TRUE if the MIB is closed.
38	Maintenance Bypass Breaker (MBB)	TRUE if the MBB is closed.
39	Maintenance Bypass Input (MBP)	TRUE if the MBP has input power.
40	SBM Normal	TRUE if the system is normal.
41	SBM On Battery	TRUE if the modules are on battery.
42	SBM On Bypass	TRUE if the critical load is 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 the modules are on battery in single mode.
50	UPM #1 Bypass LED	TRUE if the 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.

UPS Status		
Register	Name	Description
55	Unused	—
56	UPM #2 Normal LED	TRUE if system normal and inverter on line.
57	UPM #2 Battery LED	TRUE if the modules are on battery in single mode.
58	UPM #2 Bypass LED	TRUE if the 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	Unused	—
64	UPM #3 Normal LED	TRUE if system normal and inverter on line.
65	UPM #3 Battery LED	TRUE if the modules are on battery in single mode.
66	UPM #3 Bypass LED	TRUE if the 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	Unused	—
72	UPM #4 Normal LED	TRUE if system normal and inverter on line.
73	UPM #4 Battery LED	TRUE if the modules are on battery in single mode.
74	UPM #4 Bypass LED	TRUE if the 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	Unused	—
80	UPM #5 Normal LED	TRUE if system normal and inverter on line.
81	UPM #5 Battery LED	TRUE if the modules are on battery in single mode.
82	UPM #5 Bypass LED	TRUE if the 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	Unused	—
88	UPM #6 Normal LED	TRUE if system normal and inverter on line.
89	UPM #6 Battery LED	TRUE if the modules are on battery in single mode.

UPS Status

Register	Name	Description
90	UPM #6 Bypass LED	TRUE if the 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	Unused	—
96	UPM #7 Normal LED	TRUE if system normal and inverter on line.
97	UPM #7 Battery LED	TRUE if the modules are on battery in single mode.
98	UPM #7 Bypass LED	TRUE if the 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	Unused	—
104	UPM #8 Normal LED	TRUE if system normal and inverter on line.
105	UPM #8 Battery LED	TRUE if the modules are on battery in single mode.
106	UPM #8 Bypass LED	TRUE if the 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	Unused	—
112	Rectifier Status	TRUE if the 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 out of limits.
116	Input Circuit Breaker Status (CB1)	TRUE if CB1 is closed.
117	Battery Disconnect Status	TRUE if the battery disconnect is closed.
118	Inverter Disconnect Status	TRUE if the UPS is on line and inverter is supplying power.
119	Inverter Status	TRUE if the inverter is on.
120	UPM Normal	TRUE if UPM normal.
121	UPM On Battery	TRUE if UPM on battery.
122	UPM Bypass (Off Line)	TRUE if UPM is offline.
123	UPM Notice	TRUE if UPM warning advisory.
124	UPM Alarm	TRUE if UPM major alarm.

UPS Status		
Register	Name	Description
125	UPM Standby	TRUE if UPM on standby.
126	Unused	—
127	Unused	—
128	MOB Closed	TRUE if MOB closed , Open = 0
129	System Redundant	Redundant = 1 , Not Redundant = 0
130	Unused	—
131	Unused	—
132	Reserved	Reserved
133	Reserved	Reserved
134	Reserved	Reserved
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 the inverter output frequency is outside the upper or lower frequency limit.
147	Bypass AC over voltage	TRUE if the bypass input voltage has exceeded the upper voltage limit.
148	Bypass AC under voltage	TRUE if the bypass input voltage is less than the lower voltage limit.
149	Bypass under or over frequency	TRUE if the bypass input frequency is outside the upper or lower frequency limit.
150	Input AC over voltage	TRUE if the input (Utility) voltage has exceeded the upper voltage limit.
151	Input AC under voltage	TRUE if the input (Utility) voltage is less than the lower voltage limit.
152	Input under or over frequency	TRUE if the input (Utility) frequency is outside the upper or lower frequency limit.
153	Output AC over voltage	TRUE if the output voltage has exceeded the upper voltage limit.
154	Output AC under voltage	TRUE if the output voltage is less than the lower voltage limit.
155	Output under or over frequency	TRUE if the output frequency is outside the upper or lower frequency limit.
156	Remote emergency power off	TRUE if the UPS has shut down 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.

UPS Status

Register	Name	Description
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.
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 the inverter temperature has exceeded the upper temperature limit.
169	Output overload	TRUE if the output current limit has been exceeded.
170	Rectifier input over current	TRUE if the 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	Reserved	Reserved
180	Static switch failure	TRUE if the static switch has failed.
181	Reserved	Reserved
182	Reserved	Reserved
183	Reserved	Reserved
184	Reserved	Reserved
185	Reserved	Reserved
186	Reserved	Reserved
187	Reserved	Reserved
188	Reserved	Reserved
189	Reserved	Reserved
190	Reserved	Reserved
191	Battery current limit	TRUE if the battery is operating at maximum current capability.
192	Reserved	Reserved
193	Reserved	Reserved
194	Output current over 100%	TRUE if the system critical bus has exceeded 100% of its current output rating.

UPS Status		
Register	Name	Description
195	Battery ground fault	TRUE if a leakage path exists between a battery connection and ground.
196	Reserved	Reserved
197	Reserved	Reserved
198	Reserved	Reserved
199	Shutdown imminent	TRUE if the UPS has entered a state where it may abruptly stop operating without further notice.
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	Reserved	Reserved
206	Reserved	Reserved
207	Reserved	Reserved
208	Reserved	Reserved
209	Reserved	Reserved
210	Reserved	Reserved
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	Reserved	Reserved
214	Power supply failure	TRUE if the logic power supply has failed.
215	Reserved	Reserved
216	Reserved	Reserved
217	Reserved	Reserved
218	Reserved	Reserved
219	Rectifier current over 125%	TRUE if the rectifier/charger has exceeded 125% of its rating.
220	Reserved	Reserved
221	Reserved	Reserved
222	Reserved	Reserved
223	Reserved	Reserved
224	Reserved	Reserved
225	Reserved	Reserved
226	Reserved	Reserved
227	Reserved	Reserved
228	Reserved	Reserved
229	Network not responding	TRUE if the network communications has failed.

UPS Status

Register	Name	Description
230	Reserved	Reserved
231	Reserved	Reserved
232	Reserved	Reserved
233	Output DC over voltage	TRUE if the output DC has exceeded the over voltage limit.
234	Reserved	Reserved
235	Reserved	Reserved
236	Reserved	Reserved
237	Reserved	Reserved
238	Reserved	Reserved
239	Reserved	Reserved
240	Reserved	Reserved
241	Emergency shutdown command	TRUE if an emergency power-off (EPO) command was issued.
242	Reserved	Reserved
243	Reserved	Reserved
244	Reserved	Reserved
245	Reserved	Reserved
246	Reserved	Reserved
247	Reserved	Reserved
248	Reserved	Reserved
249	Bypass not available	TRUE if the 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	Reserved	Reserved
255	Reserved	Reserved
256	Reserved	Reserved
257	Reserved	Reserved
258	Reserved	Reserved
259	Reserved	Reserved
260	Reserved	Reserved
261	Reserved	Reserved
262	Reserved	Reserved
263	Reserved	Reserved
264	Reserved	Reserved

UPS Status		
Register	Name	Description
265	Reserved	Reserved
266	Reserved	Reserved
267	Reserved	Reserved
268	Reserved	Reserved
269	Reserved	Reserved
270	Battery totally discharged	TRUE if the battery has been discharged to its maximum discharged state.
271	Reserved	Reserved
272	Reserved	Reserved
273	Reserved	Reserved
274	Reserved	Reserved
275	Reserved	Reserved
276	Loss of redundancy	TRUE if a power module has failed.
277	Loss of sync bus	TRUE if sync bus not active is detected.
278	Rectifier breaker shunt tripped	TRUE if the rectifier breaker has been tripped.
279	Loss of charger sync	TRUE if the charger is not synchronized to its input voltage.
280	Reserved	Reserved
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	Reserved	Reserved
288	Reserved	Reserved
289	Reserved	Reserved
290	Reserved	Reserved
291	Reserved	Reserved
292	Reserved	Reserved
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	Reserved	Reserved
297	Reserved	Reserved
298	Other UPS on	TRUE if one of the other UPSs is currently on (parallel system).
299	Parallel inverter	TRUE if two or more inverters are currently operating in parallel.

UPS Status

Register	Name	Description
300	UPS in parallel	TRUE if parallel operation with at least one other UPS.
301	Output Breaker/Relay Failure	TRUE if the output breaker or relay has failed.
302	Control power off	TRUE if the 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.
307	Greater than 125% overload on phase B	TRUE if output phase B has exceeded 125% of its rated current or power.
308	Greater than 125% overload on phase C	TRUE if output phase C 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 B has exceeded 150% of its rated current or power.
311	Greater than 150% overload on phase C	TRUE if output phase C 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	Reserved	Reserved
317	Reserved	Reserved
318	Low Battery Shutdown	TRUE if the battery low limit is reached.
319	Reserved	Reserved
320	Reserved	Reserved
321	Reserved	Reserved
322	Reserved	Reserved
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	Reserved	Reserved
326	Reserved	Reserved
327	Reserved	Reserved
328	Reserved	Reserved
329	Reserved	Reserved
330	Reserved	Reserved
331	Reserved	Reserved
332	Bypass Failure	TRUE if a bypass breaker failure.
333	Reserved	Reserved
334	Reserved	Reserved

UPS Status		
Register	Name	Description
335	Battery Test failed	TRUE if 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	Reserved	Reserved
341	Reserved	Reserved
342	Reserved	Reserved
343	Batteries Disconnected	TRUE if the batteries are not connected.
344	UPS Cabinet Over Temperature	TRUE if the temperature inside the UPS has exceeded its upper limit.
345	Transformer Over Temperature	TRUE if the output transformer has exceeded its upper temperature limit.
346	Ambient Under Temperature	TRUE if the ambient temperature is below its lower limit.
347	Ambient Over Temperature	TRUE if the ambient temperature is above its upper limit.
348	Reserved	Reserved
349	Reserved	Reserved
350	Reserved	Reserved
351	Reserved	Reserved
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	Reserved	Reserved
354	Reserved	Reserved
355	Reserved	Reserved
356	Reserved	Reserved
357	Reserved	Reserved
358	Reserved	Reserved
359	Reserved	Reserved
360	Reserved	Reserved
361	Input Breaker Failed	TRUE if an input or utility breaker has failed.
362	Reserved	Reserved
363	Selective Trip Of Module	TRUE if a selected power module has failed.
364	Inverter Output Failure	TRUE if the inverter output has failed.
365	Abnormal Output Voltage At Startup	TRUE if output voltage is abnormal at startup.
366	Rectifier OverTemperature	TRUE if the rectifier temperature is above its upper limit.
367	Configuration Error	TRUE if there is a configuration error.
368	Redundancy Loss Due To Overload	TRUE if there is a redundancy loss due to overload.
369	On Alternate AC Source	TRUE if on alternate AC source.

UPS Status		
Register	Name	Description
370	In High Efficiency Mode	TRUE if in High Efficiency mode.
371	System Notice Active	TRUE if system notice is active.
372	System Alarm Active	TRUE if system alarm is active.
373	Alternate Power Source Not Available	TRUE if an alternate power source is not available.
374	Current Balance Failure	TRUE if the output is not within specified range.
375	Check Air Filter	TRUE if check air filter command was issued.
376	Subsystem Notice Active	TRUE if subsystem notice is activated.
377	Subsystem Alarm Active	TRUE if subsystem alarm has exceeded its upper limit.
378	Charger On Command	TRUE if the charger on command was issued.
379	Charger Off Command	TRUE if the charger off command was issued.
380	UPS Normal	TRUE if the UPS is operating normally.
381	Inverter Phase Rotation	TRUE if the inverter phase rotation is activated.
382	UPS Module Off	TRUE if the UPS module is off.
383	External Communication Failure	TRUE if external communication has failed.
384	Invalid Board ID	TRUE if board ID is invalid.
385	Check Inverter Switchgear	TRUE if check inverter switchgear command was issued.
386	Output Watts Overload	TRUE if output watts has exceeded its upper limit.
387	Check Precharge	TRUE if check precharge command was issued.
388	Rectifier Status	TRUE if rectifier status command was issued.
389	Neutral Current Limit	TRUE if UPS is operating at maximum neutral current capability.
390	Close Battery Switchgear	TRUE if close battery switchgear command was issued.
391	UPS On Generator	TRUE if UPS is on generator power.
392	Rectifier Over-Temperature Trip	TRUE if rectifier is over-temperature.
393	Check Rectifier Temperature Sensor	TRUE if check rectifier temperature sensor command was issued.
394	Inverter Switchgear Status	TRUE if inverter switchgear status command was issued.
395	Rectifier Switchgear Status	TRUE if rectifier switchgear status command was issued.
396	Bypass Switchgear Status	TRUE if bypass switchgear status command was issued.
397	Battery Switchgear Status	TRUE if battery switchgear status command was issued.
398	Backfeed Switchgear Status	TRUE if backfeed switchgear status command was issued.
399	Battery Test in Progress	TRUE if battery test is in progress.
400	System Test in Progress	TRUE if system test is in progress.
401	Test Aborted	TRUE if test is aborted.
402	Rectifier L1 Current Limit	TRUE if rectifier L1 reaches its current limit.
403	Rectifier L2 Current Limit	TRUE if rectifier L2 reaches its current limit.
404	Rectifier L3 Current Limit	TRUE if rectifier L3 reaches its current limit.

UPS Status		
Register	Name	Description
405	Not Enough UPMs Ready	TRUE if not enough UPMs are ready.
406	Modem Call Aborted	TRUE if modem call is aborted.
407	Transformer OverTemperature Warning	TRUE if transformer over temperature warning notice.
408	Output Line Voltage Loss	TRUE if output line has a voltage loss.
409	Input L1 High THD	TRUE if THD is high for input L1.
410	Input L2 High THD	TRUE if THD is high for input L2.
411	Input L3 High THD	TRUE if THD is high for input L3.
412	Output L1 High THD	TRUE if THD is high for output L1.
413	Output L2 High THD	TRUE if THD is high for output L2.
414	Output L3 High THD	TRUE if THD is high for output L3.
415	Neutral Overload Warning	TRUE if neutral overload warning notice.
416	Neutral Overload	TRUE if neutral has exceeded its upper limit.
417	Ground Current Warning	TRUE if ground current warning notice.
418	Ground Current Overload	TRUE if ground current has exceeded its upper limit.
419	Input Voltage L1 THD Warning	TRUE if input voltage L1 THD warning notice.
420	Input Voltage L2 THD Warning	TRUE if input voltage L2 THD warning notice.
421	Input Voltage L3 THD Warning	TRUE if input voltage L3 THD warning notice.
422	Input Current L1 THD Warning	TRUE if input current L1 THD warning notice.
423	Input Current L2 THD Warning	TRUE if input current L2 THD warning notice.
424	Input Current L3 THD Warning	TRUE if input current L3 THD warning notice.
425	Output Voltage L1 THD Warning	TRUE if output voltage L1 THD warning notice.
426	Output Voltage L2 THD Warning	TRUE if output voltage L2 THD warning notice.
427	Output Voltage L3 THD Warning	TRUE if output voltage L3 THD warning notice.
428	Output Current L1 THD Warning	TRUE if output current L1 THD warning notice.
429	Output Current L2 THD Warning	TRUE if output current L2 THD warning notice.
430	Output Current L3 THD Warning	TRUE if output current L3 THD warning notice.
431	L1 Voltage Phase Loss	TRUE if L1 has a voltage phase loss.
432	L2 Voltage Phase Loss	TRUE if L2 has a voltage phase loss.
433	L3 Voltage Phase Loss	TRUE if L3 has a voltage phase loss.
434	L1 Under Voltage	TRUE if L1 voltage is less than the lower voltage limit.
435	L2 Under Voltage	TRUE if L2 voltage is less than the lower voltage limit.
436	L3 Under Voltage	TRUE if L3 voltage is less than the lower voltage limit.
437	L1 Over Voltage	TRUE if L1 voltage has exceeded the upper voltage limit.
438	L2 Over Voltage	TRUE if L2 voltage has exceeded the upper voltage limit.
439	L3 Over Voltage	TRUE if L3 voltage has exceeded the upper voltage limit.

UPS Status

Register	Name	Description
440	Under Frequency Warning	TRUE if under frequency warning notice.
441	Over Frequency Warning	TRUE if over frequency warning notice.
442	Branch Circuit Overload Warning	TRUE if a branch circuit overload warning notice
443	Branch Circuit Overload	TRUE if branch circuit has exceeded its upper limit.
444	Branch Circuit CT Disconnected	TRUE if the branch circuit CT is disconnected.
445	Main Circuit Breaker Overload Warning	TRUE if a main circuit breaker overload warning notice.
446	Main Circuit Breaker Overload	TRUE if the main circuit breaker has exceeded its upper limit.
447	Primary Breaker Open	TRUE if the primary breaker is open.
448	Primary Breaker Tripped	TRUE if the primary breaker is tripped.
449	Secondary Breaker Open	TRUE if the secondary breaker is open.
450	Secondary Breaker Tripped	TRUE if the secondary breaker is tripped.
451	Neutral Fault	TRUE if a neutral fault.
452	Output Phase Rotation	TRUE if output phase rotation is activated.
453	Maintenance Isolation Switch Failure	TRUE if a maintenance isolation switch failure.
454	Maintenance Bypass Breaker Failure	TRUE if a maintenance bypass breaker failure.
455	Manual Bypass Switch On	TRUE if manual bypass is active.
456	Panel 1 Breaker Open	TRUE if the Panel 1 breaker is open.
457	Panel 2 Breaker Open	TRUE if the Panel 2 breaker is open.
458	Panel 3 Breaker Open	TRUE if the Panel 3 breaker is open.
459	Panel 4 Breaker Open	TRUE if the Panel 4 breaker is open.
460	Panel 5 Breaker Open	TRUE if the Panel 5 breaker is open.
461	Panel 6 Breaker Open	TRUE if the Panel 6 breaker is open.
462	Panel 7 Breaker Open	TRUE if the Panel 7 breaker is open.
463	Panel 8 Breaker Open	TRUE if the Panel 8 breaker is open.
464	Multiple Inputs Tied Together	TRUE if multiple inputs are tied together.
465	Battery Over Temperature	TRUE if the battery operating temperature has been exceeded.
466	Inverter Overload	TRUE if the inverter has exceeded its upper limit.
467	Inverter Short Circuit	TRUE if the inverter has detected an abnormally low impedance on its output.
468	Bypass Overload	TRUE if the bypass voltage has exceeded the upper voltage limit.
469	Bypass Phase Out of Range	TRUE if the bypass phase is out of range.
470	Bypass Voltage Out of Range	TRUE if the bypass voltage is out of range.
471	Bypass Thermal Overload	TRUE if the bypass thermal temperature has exceeded the temperature limit.
472	Ambient Humidity Low	TRUE if the ambient humidity level is low.
473	Ambient Humidity High	TRUE if ambient humidity level has been exceeded.
474	Under Voltage Warning	TRUE if the voltage is less than the lower voltage limit.

UPS Status		
Register	Name	Description
475	Over Voltage Warning	TRUE if the voltage has exceeded the upper voltage limit.
476	Output Breaker Overload Warning	TRUE if output breaker overload warning notice.
477	Output Breaker Overload	TRUE if output breaker overload major alarm.
478	L1 Low Current Warning	TRUE if L1 current is less than the lower current limit.
479	L2 Low Current Warning	TRUE if L2 current is less than the lower current limit.
480	L3 Low Current Warning	TRUE if L3 current is less than the lower current limit.
481	L1 Overcurrent Warning	TRUE if L1 current has exceeded the upper current limit.
482	L2 Overcurrent Warning	TRUE if L2 current has exceeded the upper current limit.
483	L3 Overcurrent Warning	TRUE if L3 current has exceeded the upper current limit.
484	Low Load Warning	TRUE if the load is less than the lower load limit.
485	Overload Warning	TRUE if the load limit has been exceeded.
486	Outlet Overcurrent Warning	TRUE if outlet overcurrent warning notice.
487	Outlet Overcurrent Alarm	TRUE if outlet overcurrent major alarm.
488	Outlet Under Voltage Warning	TRUE if the outlet power is less than the lower voltage limit.
489	Outlet Over Voltage Warning	TRUE if the outlet power has exceeded the upper voltage limit.
490	Ambient OverTemperature Warning	TRUE if the ambient operating temperature has been exceeded.
491	Ambient Over Humidity Warning	TRUE if the ambient operating humidity level has been exceeded.
492	Internal OverTemperature Warning	TRUE if the internal temperature has been exceeded.
493	Ambient Humidity Low Warning	TRUE if the ambient humidity level is low.
494	L1 Over Energy Warning	TRUE if L1 over energy warning notice.
495	L2 Over Energy Warning	TRUE if L2 over energy warning notice.
496	L3 Over Energy Warning	TRUE if L3 over energy warning notice.
497	L1 Over Voltage Warning	TRUE if L1 voltage has exceeded the upper voltage limit.
498	L2 Over Voltage Warning	TRUE if L2 voltage has exceeded the upper voltage limit.
499	L3 Over Voltage Warning	TRUE if L3 voltage has exceeded the upper voltage limit.
500	Breaker Over Energy Warning	TRUE if breaker over energy warning notice.
501	Outlet Over Energy Warning	TRUE if outlet over energy warning notice.
502	Outlet Over Voltage Alarm	TRUE if outlet over voltage major alarm.
503	Over Energy Warning	TRUE if over energy warning notice.
504	Group Under Current Warning	TRUE if group under current warning notice.
505	Group Over Current Warning	TRUE if group over current warning notice.
506	Group Over Current Alarm	TRUE if group over current major alarm.
507	Internal Failure Alarm	TRUE if internal failure major alarm.
508	Ground Fault Alarm	TRUE if ground fault major alarm.

Read Input Registers

Modbus Function Code 04

Input registers start at 30000.

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

Meters				
Register	Meter Name	Scale	Unit	Description
0	Unused			Reserved for Jbus compatibility.
1	OUTPUT VOLTS AB	/10	Volts	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	/10	Volts	
3	OUTPUT VOLTS CA	/10	Volts	
4	INPUT VOLTS AB	/10	Volts	RMS voltage measured at the utility input of the UPS, measured phase to phase. 'AB' is phase A to B.
5	INPUT VOLTS BC	/10	Volts	
6	INPUT VOLTS CA	/10	Volts	
7	INVERTER VOLTS AB	/10	Volts	RMS voltage measured at the output of the inverter, measured phase to phase. 'AB' is phase A to B.
8	INVERTER VOLTS BC	/10	Volts	
9	INVERTER VOLTS CA	/10	Volts	
10	BYPASS VOLTS AB	/10	Volts	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	/10	Volts	
12	BYPASS VOLTS CA	/10	Volts	
13	MAIN LOGIC POWER	/10	Volts	Measure of the power supply for the UPS's logic, normally the unregulated supply, measured in DC volts. Service measure.
14	SECONDARY V+ POWER	/10	Volts	Measures of a bipolar supply for UPS control or analog circuits, measured in DC volts. Service measures.
15	SECONDARY V- POWER	/10	Volts	
16	INVERTER AVG CURRENT PHASE A	/10	Amps	A measure of the current output from the inverter phases, but not an RMS measure. Service measures.
17	INVERTER AVG CURRENT PHASE B	/10	Amps	
18	INVERTER AVG CURRENT PHASE C	/10	Amps	
19	INPUT CURRENT PHASE A	/10	Amps	A measure of the input phase currents for the UPS, in RMS amps.
20	INPUT CURRENT PHASE B	/10	Amps	
21	INPUT CURRENT PHASE C	/10	Amps	
22	OUTPUT TRUE POWER	/10	kW	Output and input power measurements (units: kW or kVA as appropriate).
23	INPUT TRUE POWER	/10	kW	
24	OUTPUT APPARENT POWER	/10	kVA	
25	INPUT APPARENT POWER	/10	kVA	
26	OUTPUT POWER FACTOR	/100	—	
27	INPUT POWER FACTOR	/100	—	Dimensionless value, 0.00 to 1.00; values outside this range mean "unknown."
28	OUTPUT FREQUENCY	/10	Hz	Frequency measurements (Hz).
29	INPUT FREQUENCY	/10	Hz	
30	INVERTER FREQUENCY	/10	Hz	
31	BYPASS FREQUENCY	/10	Hz	

Meters				
Register	Meter Name	Scale	Unit	Description
32	DC LINK VOLTS	/10	Volts	DC voltage rectifier to inverter. Service measure.
33	BATTERY CURRENT	/10	Amps	Battery measurements; discharge current is a negative current reading. DC amps or volts.
34	BATTERY VOLTAGE	/10	Volts	
35	% BATTERY LEFT	/10	%	Percentage of useful stored energy remaining (0% is fully discharged).
36	BATTERY TIME REMAINING	/10	Min	Estimated minutes until DCUV for the current load and state of charge of the battery (even if not "On Battery").
37	BATTERY CHARGE TIME	/10	Min	Estimated minutes required to fully charge (float) the battery.
38	PEAK INVERTER CURRENT PHASE A	/10	Amps	A measure of the inverter output peak phase current values. Service measures.
39	PEAK INVERTER CURRENT PHASE B	/10	Amps	
40	PEAK INVERTER CURRENT PHASE C	/10	Amps	
41	AVG INPUT I 3 PHASE SUM	/10	Amps	Average sum of the 3 phase input currents. Service measure.
42	Unused			—
43	INPUT CURRENT BAR CHART	/10	Amps	To compare against input phase currents. RMS amps.
44	Unused			—
45	DC VOLTS BAR CHART	/10	Volts	To compare against DC link volts. DC volts. Service measure.
46	Unused			—
47	BATTERY I BAR CHART	/10	Amps	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	/10	Volts	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	/10	Volts	
56	BYPASS VOLTS PHASE C	/10	Volts	
57	INPUT VOLTS PHASE A	/10	Volts	RMS voltage measured at the utility input of the UPS, measured phase to neutral.
58	INPUT VOLTS PHASE B	/10	Volts	
59	INPUT VOLTS PHASE C	/10	Volts	
60	INVERTER VOLTS PHASE A	/10	Volts	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 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	/10	Volts	
62	INVERTER VOLTS PHASE C	/10	Volts	
63	AMBIENT TEMPERATURE	/10	°C	Temperature measurement, in degrees Centigrade.
64	HEATSINK TEMPERATURE	/10	°C	At main power unit in the module; normally, the inverter.
65	POWER SUPPLY TEMPERATURE	/10	°C	Could be rectifier, charger, boost converter, or control power supply.

Meters				
Register	Meter Name	Scale	Unit	Description
66	LOAD CURRENT PHASE A	/10	Amps	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	/10	Amps	
68	LOAD CURRENT PHASE C	/10	Amps	
69	LOAD CURRENT PHASE A BAR CHART	/10	Amps	100% rated values for the output phase currents bar charts. RMS amps.
70	LOAD CURRENT PHASE B BAR CHART	/10	Amps	
71	LOAD CURRENT PHASE C BAR CHART	/10	Amps	
72	OUTPUT VA BAR CHART	/10	kVA	Rated kVA of the UPS (units: kVA).
73	Reserved	—	—	Reserved
74	Reserved	—	—	Reserved
75	POSITIVE DC LINK RAIL VOLTAGE	/10	Volts	Voltages for bipolar DC links. Service measures.
76	NEGATIVE DC LINK RAIL VOLTAGE	/10	Volts	
77	AUTO-BALANCE VOLTAGE	/10	Volts	DC voltage content of output. Service measure.
78	BATTERY TEMPERATURE	/10	°C	Temperature measurement, in degrees Centigrade.
79	OUTPUT VOLTS A	/10	Volts	Output voltages to the load measured (or determined) for phase to neutral.
80	OUTPUT VOLTS B	/10	Volts	
81	OUTPUT VOLTS C	/10	Volts	
82	NEUTRAL CURRENT	/10	Amps	RMS current in the output neutral line. RMS amps.
83	OUTPUT WATTS PHASE A	/10	kW	Output watts, measured line to neutral.
84	OUTPUT WATTS PHASE B	/10	kW	
85	OUTPUT WATTS PHASE C	/10	kW	
86	OUTPUT WATTS PHASE A, B, C	/10	kW	100% rated value for the output watts per phase bar charts.
87	RECTIFIER DC CURRENT	/10	Amps	DC current rectifier to DC link. Service measure.
88	POSITIVE BATTERY VOLTAGE	/10	Volts	Voltages for bipolar battery.
89	NEGATIVE BATTERY VOLTAGE	/10	Volts	
90	POSITIVE BATTERY CURRENT	/10	Amps	Currents for bipolar battery, DC amps; discharge current is a negative reading.
91	NEGATIVE BATTERY CURRENT	/10	Amps	

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