

MODBUS Protokoll

für

CS121 M

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MODBUS Protokoll

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1. MODBUS

Zum Fernsteuern und Überwachen von Geräten ist in jedem CS121 M ein Modbus interface. Das Auslesen von Messwerten, Events, Status und anderen Informationen in einem Master-Slave Protokoll ist so möglich.

1.1 Verfügbare MODBUS Funktions Codes

Implementierte MODBUS Funktionen in CS121 M Geräten:

Code	Original Modbus Funktionen
03H	read n output words (read- and writable words)
04H	read n input words (only readable words)
06H	write one output word
10H	write n output words

Der CS121 M unterscheidet nicht zwischen Ein- und Ausgangs Bits oder Worte. Dieses bedeutet, dass es keinen Unterschied zwischen Funktion 03H und 04H gibt. Die Baudrate ist justierbar von 1200 bis 38400 Baud.

Der ASCII Modus funktioniert auf den CS121/131 Adaptern mit den Kommunikationsparametern 7/E/1, 7/E/2 oder 7/N/2 mit Baudraten von 1200 bis 38400. Wir empfehlen für den ASCII Modus den Gebrauch von den Parametern 7/N/2 mit der höchsten Baudrate, die Ihr Gerät unterstützt.

Der RTU Modus funktioniert auf den CS121/131 Adaptern mit den Kommunikationsparametern 8/E/1, 8/E/2, 8/N/1, 8/N/2, 8/O/1 oder 8/O/2 mit Baudraten von 1200 bis 38400. Wir empfehlen für den RTU Modus den Gebrauch von den Parametern 8/E/1 mit der höchsten Baudrate, die Ihr Gerät unterstützt.

MODBUS Parameter

Modus	Parität	DataBits	StoppBits
RTU	None	8	1
RTU	Even	8	1
RTU	Odd	8	1
ASCII	None	7	2
ASCII	Even	7	1
ASCII	Odd	7	1

Sollte es beim Modbus Polling zu fehlerhaften Antworten kommen (Timeout Errors, Transaction ID Errors, Write Errors etc.), kann es sein, dass der Abfragezyklus zu niedrig bzw. zu schnell konfiguriert worden ist. Dies führt zu nicht beantworteten Anfragen oder sogar zu einem Reboot durch den eingebauten Watchdog im CS121, weil das System überlastet ist. Weiterhin kann es bei MODBUS over IP oder RS485 auf Grund von Traffic im Bus oder Netzwerk zu erheblichen Antwortverzögerungen kommen, da es sich beim CS121 um ein Multigerät handelt und dieses zeitgleich mehrere Tasks abarbeiten muss.

HINWEIS: Bitte definieren Sie einen **Response Timeout** von mind. 2000ms (bei einem schnellen MODBUS over IP oder RS485 Netzwerk/Bus bzw. entsprechend höher z.B. 4000ms bei langsamen Verbindungen). **Der Timeout ist soweit zu erhöhen, bis die Fehlermeldungen ausbleiben.**

1.2 Ausnahme Codes

Mit Ausnahme von Broadcast Nachrichten, wobei das Master Gerät eine Anfrage zu dem Slave Gerät sendet, wird eine normale Antwort erwartet. Eine von vier möglichen Events kann nach der Anfrage des Master Gerät eintreten.

Wenn die Slave Einheit eine Anfrage aufgrund eines Kommunikation-Fehlers nicht erhält, so wird die Master-Einheit mit einer timeout Meldung antworten.

Wenn die Slave-Einheit eine Anfrage erhält, jedoch ein Kommunikations-Fehler parity, LRC, CRC eintritt, so reagiert die Master-Einheit mit einer timeout Meldung.

Wenn die Slave-Einheit eine Anfrage ohne einen Kommunikatons-Fehler erhält, jedoch ein Auslesen aufgrund z.b. eines nicht-existenten Register nicht möglich ist, so antwortet die Slave-Einheit mit einer Ausnahme Meldung, welche die Master-Einheit über den Grund der Fehlermeldung informiert.

Verfügbare Ausnahme Codes:

Code	Bedeutung
02H	Illegal data Address: Die Daten Adresse welche mit der Anfrage erhalten wurde, ist keine zulässige Adresse für den Slave.
03H	Illegal data value: Ein Wert welcher in der Anfrage enthalten war, ist kein zulässiger Wert für den Slave.
06H	Slave device busy: Der Slave verarbeitet ein zeitintensives Programm-Kommando. Die Master-Einheit wird die Nachricht erneut senden, wenn die Slave-Einheit frei geworden ist.

Verfügbare Modbus Zustände im CS121 M Adapter (ASCII und RTU)

2 MODBUS Kommandos

Die nachfolgenden Tabellen beinhalten die Allgemeinen Kommandos und Beschreibungen, sowie Beispiele mit ASCII und RTU framing.

2.1 Auslesen von Worten (Funktionen 03h und 04h)

Für den CS121 gibt es keinen Unterschied zwischen diesen Funktionen.

Anfrage:

slave number	function code	address of first word to read		word count		checksum, LRC or CRC
1 byte	1 byte	high byte	Low byte	high byte	low byte	1 or 2 byte(s)

Antwort:

slave number	function code	Byte count	high byte of first word	low byte of first word	bytes with contents of n words	Checksum LRC or CRC
1 byte	1 byte	1 byte	1 byte	1 byte	n * 2 bytes	1 or 2 byte(s)

2.1.1 Beispiel: Auslesen von Worten, Funktionen 04h, ASCII Modus

Lese ein Wort bei Adresse 63h (= 99 decimal):

Anfrage:

Byte	1	2, 3	4, 5	6, 7	8, 9	10, 11	12, 13	14, 15	16	17
Bedeutung	leading colon	Slave number	function code	address of first word to read high byte low byte		word count to read high byte low byte		LRC	Carriage return	line feed LF
ASCII	:	0 1	0 4	0 0	6 3	0 0	0 1	9 7	<CR>	<LF>
HEX	[3A]	[30][31]	[30][34]	[30][30]	[36][33]	[30][30]	[30][31]	[39][37]	[0D]	[0A]

ASCII: Daten, welche die Verbindung als ASCII Charakter senden

HEX: Hexadezimal Datenwerte

Antwort:

Byte	1	2, 3	4, 5	6, 7	8, 9	10, 11	12, 13	14	15
Bedeutung	leading colon	Slave number	function code	byte count	contents of the word high byte low byte		LRC	carriage return	line feed LF
ASCII	:	0 1	0 4	0 2	1 2	3 4	B 3	<CR>	<LF>
HEX	[3A]	[30][31]	[30][34]	[30][32]	[31][32]	[33][34]	[42][33]	[0D]	[0A]

→ Das Wort bei Adresse hat den Wert 1234h = 4660 dezimal.

2.1.2 Beispiel: Lese Worte, Funktionen 04h, RTU Modus

Lese ein Wort bei Adresse 63h (= 99 dezimal):

Anfrage:

Byte		1	2	3	4	5	6	7	8	
Bedeutung	silent interval ≥ 3.5 characters	Slave number	function code	address of first word to read high byte low byte		word count to read high byte low byte		CRC low byte High byte		silent interval ≥ 3.5 characters
RTU HEX		[01]	[04]	[00]	[63]	[00]	[01]	[C1]	[D4]	

Antwort:

Byte		1	2	3	4	5	6	7	
Bedeutung	silent interval ≥ 3.5 characters	Slave number	function code	byte count	Contents of the word high byte low byte		CRC low byte high byte		Silent interval ≥ 3.5 characters
RTU HEX		[01]	[04]	[02]	[12]	[34]	[B4]	[47]	

→ Das Wort bei Adresse hat den Wert 1234h = 4660 dezimal.

2.2 Schreibe ein Wort (Funktion 06h)

Anfrage:

slave number	function code	address of word to write		word value		checksum, LRC or CRC
1 byte	1 byte	high byte	low byte	high byte	low byte	1 or 2 byte(s)

Antwort:

slave number	function code	address of word to write		word value		checksum, LRC or CRC
1 byte	1 byte	high byte	low byte	high byte	low byte	1 or 2 byte(s)

2.2.1 Beispiel: Schreibe ein Wort, Funktion 06h, ASCII Modus

Schreibe ein Wort bei Adresse 3Dh (= 61 dezimal) mit Wert 10E1h (= 1234

dezimal).

Anfrage:

Byte	1	2, 3	4, 5	6, 7	8, 9	10, 11	12, 13	14, 15	16	17
Bedeutung	leading colon	Slave number	function code	address of word to write high byte low byte		word value high byte low byte		LRC	carriage return	Line feed LF
ASCII	:	0 1	0 6	0 0	3 D	1 0	E 1	C B	<CR>	<LF>
HEX	[3A]	[30][31]	[30][36]	[30][30]	[33][44]	[31][30]	[45][31]	[43][42]	[0D]	[0A]

Antwort:

Byte	1	2, 3	4, 5	6, 7	8, 9	10, 11	12, 13	14, 15	16	17
Bedeutung	leading colon	Slave number	function code	address of word to write high byte low byte		word value high byte low byte		LRC	carriage return	Line feed LF
ASCII	:	0 1	0 6	0 0	3 D	1 0	E 1	C B	<CR>	<LF>
HEX	[3A]	[30][31]	[30][36]	[30][30]	[33][44]	[31][30]	[45][31]	[43][42]	[0D]	[0A]

2.2.2 Beispiel: Schreibe ein Wort, Funktion 06h, RTU Modus

Schreibe ein Wort bei Adresse 3Dh (= 61 dezimal) mit Wert 10E1h (= 1234 dezimal).

Anfrage:

Byte		1	2	3	4	5	6	7	8	
Bedeutung	silent interval >= 3.5 characters	Slave number	function code	address of word to write high byte low byte		word value high byte low byte		CRC low byte high byte		silent interval >= 3.5 characters
RTU HEX		[01]	[06]	[00]	[3D]	[10]	[E1]	[D5]	[8E]	

Antwort:

Byte		1	2	3	4	5	6	7	8	
Bedeutung	silent interval >= 3.5 characters	Slave number	function code	address of word to write high byte low byte		word value high byte low byte		CRC low byte high byte		silent interval >= 3.5 characters
RTU HEX		[01]	[06]	[00]	[3D]	[10]	[E1]	[D5]	[8E]	

2.3 Schreibe Worte (Funktion 10h)

Anfrage:

slave number	function code	Address of first word to write		Number of words to write		number of data bytes	high byte for first word	low data byte for first word	data bytes	checksum LRC or CRC
		High byte	low byte	high byte	low byte		1 byte	1 byte		
1 byte	1 byte					1 byte	1 byte	1 byte	n bytes	1 or 2 byte(s)

Antwort:

slave number	function code	address of first word to write		number of words to write		checksum, LRC or CRC
1 byte	1 byte	high byte	low byte	high byte	low byte	1 or 2 byte(s)

2.3.1 Beispiel: Schreibe Worte, Funktionen 10h, ASCII Modus

Schreibe 3 Worte bei Adresse 41h..43h (= 65..67 dezimal) mit den Werten 10E1h (= 1234 dezimal), 1357h (= 4951 dezimal) und ABCDh (= 43981 dezimal).

Anfrage:

Byte	1	2, 3	4, 5	6, 7	8, 9	10, 11	12, 13	14, 15
Bedeutung	leading colon	Slave number	function code	address of first word to write		number of words to write		number of data bytes
				high byte	low byte	high byte	low byte	
ASCII	:	0 1	1 0	0 0	4 1	0 0	0 3	0 6
HEX	[3A]	[30][31]	[31][30]	[30][30]	[34][31]	[30][30]	[30][33]	[30][36]

16, 17	18, 19	20, 21	22, 23	24, 25	26, 27	28, 29	30	31
Word value for first word		word value for second word		word value for third word		LRC	carriage return	line feed LF
high byte	low byte	high byte	low byte	high byte	low byte			
1 0	E 1	1 3	5 7	A B	C D	D 2	<CR>	<LF>
[31][30]	[45][31]	[31][33]	[35][37]	[41][42]	[43][44]	[44][32]	[0D]	[0A]

Antwort :

Byte	1	2, 3	4, 5	6, 7	8, 9	10, 11	12, 13	14, 15	14, 15	17
Bedeutung	leading colon	Slave number	function code	address of first word to write		number of words to write		LRC	carriage return	line feed LF
				high byte	low byte	high byte	low byte			
ASCII	:	0 1	1 0	0 0	4 1	0 0	0 3	A B	<CR>	<LF>
HEX	[3A]	[30][31]	[31][30]	[30][30]	[34][31]	[30][30]	[30][33]	[41][42]	[0D]	[0A]

2.3.2 Beispiel: Schreibe Worte, Funktion 10h, RTU Modus

Schreibe 3 Worte bei Adresse 41h..43h (= 65..67 dezimal) mit den Werten 0E1h (= 1234 dezimal), 1357h (= 4951 dezimal) und ABCDh (= 43981 dezimal).

Anfrage:

Byte		1	2	3	4	5	6	7
Bedeutung	silent interval >= 3.5 characters	Slave number	function code	address of first word to write high byte low byte		number of words to write high byte low byte		number of data bytes
RTU HEX		[01]	[10]	[00]	[41]	[00]	[03]	[06]

8	9	10	11	12	13	14	15	
word value for first word High byte low byte		word value for second word high byte low byte		word value for third word high byte low byte		CRC low byte high byte		silent interval >= 3.5 characters
[10]	[E1]	[13]	[57]	[AB]	[CD]	[00]	[E6]	


Antwort:


Byte		1	2	3	4	5	6	7	8	
Bedeutung	silent interval >= 3.5 characters	Slave number	function code	address of first word to write high byte low byte		number of words to write high byte low byte		CRC low byte high byte		silent interval >= 3.5 characters
RTU HEX		[01]	[10]	[00]	[41]	[00]	[03]	[D0]	[1C]	

A USV Parameter

A.1 Standard USV – Adressen Beschreibung

Bitte beachten: Der „Typ U/S“ definiert, ob die Antwort ein mathematisches Vorzeichen (+/-) hat oder nicht. „Typ U“ bedeutet unsigned (ohne Vorzeichen), „Typ S“ bedeutet signed (mit Vorzeichen). Die Antwort kann negativ oder positiv sein.

 Einige Clients (z. B. MODBUS Poll) verwenden „MODBUS Adressen“ mit einem gültigen Bereich von 0-65535. Da es aber auch Clients gibt, die „MODBUS Register“ mit einem gültigen Bereich von 1-65536 verwenden, ist es erforderlich, eine 1 zur Adresse hinzu zu addieren!

 Wenn Sie eine PILLER USV mit einer CS121 FirmWare Version 4.29.3 oder höher im Einsatz haben, schauen Sie bitte für die entsprechenden MODBUS-Werte in das Benutzerhandbuch Ihrer USV. Sollte gleichzeitig ein BACS System angeschlossen sein, sind die BACS Werte via MODBUS nicht abrufbar.

Adresse	Typ	Funktion	Name	Beschreibung	Länge
97	U	3 / 4	OUTPUT_VOLT0	Output Voltage Phase 1 in V	1
98	U	3 / 4	OUTPUT_VOLT1	Output Voltage Phase 2 in V	1
99	U	3 / 4	OUTPUT_VOLT2	Output Voltage Phase 3 in V	1
100	U	3 / 4	OUTPOWER0	Outpower Phase 1 %	1
101	U	3 / 4	OUTPOWER1	Outpower Phase 2 %	1
102	U	3 / 4	OUTPOWER2	Outpower Phase 3 %	1
103	U	3 / 4	BATTCAP	Battery Capacity %	1
104	S	3 / 4	INVOLT0	Input Voltage Phase 1 V	1
105	S	3 / 4	INVOLT1	Input Voltage Phase 2 V	1
106	S	3 / 4	INVOLT2	Input Voltage Phase 3 V	1
107	S	3 / 4	TEMPDEG	Temperature C°	1
108	S	3 / 4	AUTONOMTIME	Autonomy Time minutes	1
109	U	3 / 4	STATUS (e. g. UPS normal = "4", Powerfail = "12", Battery test running = "68", Bypass = "5")	UPS Status (ASCII HEX) Please note UPSMAN status bytes table below	1
110	S	3 / 4	BATTVOLT	Battery Voltage V	1
111	U	3 / 4	INFREQ0	Input Frequency Hz Phase 1	1
112	U	3 / 4	INFREQ1	Input Frequency Hz Phase 2	1
113	U	3 / 4	INFREQ2	Input Frequency Hz Phase 3	1
114	U	3 / 4	CNT_PF	Powerfail Counter	1
115	U	3 / 4	Alarm Battery Bad	1 = active; 0 = not active	1
116	U	3 / 4	Alarm: On Battery	1 = active; 0 = not active	1
117	U	3 / 4	Alarm: Battery Low	1 = active; 0 = not active	1
118	U	3 / 4	Alarm: Battery Depleted	1 = active; 0 = not active	1
119	U	3 / 4	Alarm: Over temperature	1 = active; 0 = not active	1
120	U	3 / 4	Alarm: Input Bad	1 = active; 0 = not active	1
121	U	3 / 4	Alarm: Output Bad	1 = active; 0 = not active	1
122	U	3 / 4	Alarm: Output Overload	1 = active; 0 = not active	1

123	U	3 / 4	Alarm: On Bypass	1 = active; 0 = not active	1
124	U	3 / 4	Alarm: Bypass Bad	1 = active; 0 = not active	1
125	U	3 / 4	Alarm: Output Off as requested.	1 = active; 0 = not active	1
126	U	3 / 4	Alarm: UPS Off as requested.	1 = active; 0 = not active	1
127	U	3 / 4	Alarm: Charger Failed	1 = active; 0 = not active	1
128	U	3 / 4	Alarm: UPS Output Off	1 = active; 0 = not active	1
129	U	3 / 4	Alarm: UPS System Off	1 = active; 0 = not active	1
130	U	3 / 4	Alarm: Fan Failure	1 = active; 0 = not active	1
131	U	3 / 4	Alarm: fuse failure	1 = active; 0 = not active	1
132	U	3 / 4	Alarm: general fault	1 = active; 0 = not active	1
133	U	3 / 4	Alarm: diagnose test failed	1 = active; 0 = not active	1
134	U	3 / 4	Alarm: communication lost	1 = active; 0 = not active	1
135	U	3 / 4	Alarm: awaiting power	1 = active; 0 = not active	1
136	U	3 / 4	Alarm: shutdown pending	1 = active; 0 = not active	1
137	U	3 / 4	Alarm: shutdown imminent	1 = active; 0 = not active	1
138	U	3 / 4	Alarm: test in progress	1 = active; 0 = not active	1
139	U	3 / 4	AUX Port 1	1 = active (high) 0 = not active (low)	1
140	U	3 / 4	AUX Port 2	1 = active (high) 0 = not active (low)	1
141	U	3 / 4	AUX Port 3	1 = active (high) 0 = not active (low)	1
142	U	3 / 4	AUX Port 4	1 = active (high) 0 = not active (low)	1
143	U	3 / 4	Sensormanager/SM TCOM sensor 1	Analog value	1
144	U	3 / 4	Sensormanager/SM THCOM sensor 2	Analog value	1
145	U	3 / 4	Sensormanager sensor 3	Analog value	1
146	U	3 / 4	Sensormanager sensor 4	Analog value	1
147	U	3 / 4	Sensormanager sensor 5	Analog value	1
148	U	3 / 4	Sensormanager sensor 6	Analog value	1
149	U	3 / 4	Sensormanager sensor 7	Analog value	1
150	U	3 / 4	Sensormanager sensor 8	Analog value	1

Section OEM	NEWAVE UPS		
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99	U	3 / 6	Timesynchronization signal	Command 16 (write) : When this signal is set, the CS121 sets the internal clock to 01:00 of the same day. Command 3 (read) : shows 1 when signal has arrived, shows 0 when sync has been done.	1
139	U	3 / 4	Manual Bypass Switch Closed	0 = open 1 = closed	1
140	U	3 / 4	OUTPUT_VOLT0	Outputvoltage Phase 1	1
141	U	3 / 4	OUTPUT_VOLT1	Outputvoltage Phase 2	1
142	U	3 / 4	OUTPUT_VOLT2	Outputvoltage Phase 3	1
143	U	3 / 4	OutputCurrent Phase A * 10	Output Current Phase 1 in Ampere *10	1
144	U	3 / 4	OutputCurrent Phase B * 10	Output Current Phase 2 in Ampere *10	1
145	U	3 / 4	OutputCurrent Phase C * 10	Output Current Phase 3 in Ampere *10	1
146	U	3 / 4	xid3017 Bits 0-15	Statusbit of UPS 1 = true, 0 = false	1
147	U	3 / 4	xid3017 Bits 16-31	Statusbit, for details please contact NEWAVE	1
148	U	3 / 4	xid645 Bits 0-15	Alarmbit, for details please contact NEWAVE	1
149	U	3 / 4	xid645 Bits 16-31	Alarmbit, for details please contact NEWAVE	1
150	U	3 / 4	xid645 Bits 32-47	Alarmbit, for details please contact NEWAVE	1
151	U	3 / 4	xid645 Bits 48-63	Alarmbit, for details please contact NEWAVE	1
152	U	3 / 4	Sensormanager/SM TCOM sensor 1	Analog value	1
153	U	3 / 4	Sensormanager/SM THCOM sensor 2	Analog value	1
154	U	3 / 4	Sensormanager sensor 3	Analog value	1
155	U	3 / 4	Sensormanager sensor 4	Analog value	1
156	U	3 / 4	Sensormanager sensor 5	Analog value	1
157	U	3 / 4	Sensormanager sensor 6	Analog value	1
158	U	3 / 4	Sensormanager sensor 7	Analog value	1
159	U	3 / 4	Sensormanager sensor 8	Analog value	1
160	U	3 / 4	TrueOutputPower Phase A in KW	True Output Power Current Phase 1 in Kilowatt	1
161	U	3 / 4	TrueOutputPower Phase B in KW	True Output Power Current Phase 2 in Kilowatt	1
162	U	3 / 4	TrueOutputPower Phase C in KW	True Output Power Current Phase 3 in Kilowatt	1
163	U	3 / 4	AUX Port 1	1 = active (high) 0 = not active (low)	1
164	U	3 / 4	AUX Port 2	1 = active (high) 0 = not active (low)	1

165	U	3 / 4	AUX Port 3	1 = active (high) 0 = not active (low)	1
166	U	3 / 4	AUX Port 4	1 = active (high) 0 = not active (low)	1

Section OEM			MASTERGUARD		
139	U	3 / 4	PXWARN		2
141	U	3 / 4	FAULT CODE 1		1
142	U	3 / 4	FAULT CODE 2		1
143	U	3 / 4	FAULT CODE 3		1
144	U	3 / 4	FAULT CODE 4		1
145	U	3 / 4	BADBATTBLOCK 1		1
146	U	3 / 4	BADBATTBLOCK 1		1
147	U	3 / 4	BADBATTBLOCK 1		1
148	U	3 / 4	BADBATTBLOCK 1		1
149	U	3 / 4	BADBATTBLOCK 1		1
150	U	3 / 4	BADBATTBLOCK 1		1

Section OEM			RITTAL		
Digital Input Status(DI)					
0	bit	2	Bypass working	Status 0: Normal, Status 1: Alert	1
1	bit	2	Bypass Interruption	Status 0: Normal, Status 1: Alert	1
2	bit	2	Rectifier Failure	Status 0: Normal, Status 1: Alert	1
3	bit	2	Inverter Failure	Status 0: Normal, Status 1: Alert	1
4	bit	2	Over Temperature	Status 0: Normal, Status 1: Alert	1
5	bit	2	Over Load	Status 0: Normal, Status 1: Alert	1
6	bit	2	0	Status 0: Normal, Status 1: Alert	1
7	bit	2	Battery Voltage too Low	Status 0: Normal, Status 1: Alert	1
8	bit	2	Fuse broken	Status 0: Normal, Status 1: Alert	1
9	bit	2	Battery discharging	Status 0: Normal, Status 1: Alert	1
10	bit	2	0	Status 0: Floating charge Status 1: Instant charging	1
11~30	bit	2	For future expansion		1
After 31	bit	2	Venders own definition		1
Analog Measurement point (AI)					
00	word	4	U in R phase input voltage	0.1 Volt	2
01	word	4	U in S phase input voltage	0.1 Volt	2
02	word	4	U in T phase input voltage	0.1 Volt	2
03	word	4	I in R phase input current	0.1A	2
04	word	4	I in S phase input current	0.1A	2
05	word	4	I in T phase input current	0.1A	2
06	word	4	F input frequency	0.1Hz	2
07	word	4	U out R phase output voltage	0.1 Volt	2

08	word	4	U out S phase output voltage	0.1 Volt	2
09	word	4	U out T phase output voltage	0.1 Volt	2
10	word	4	I out R phase output current	0.1A	2
11	word	4	I out S phase output current	0.1A	2
12	word	4	I out T phase output current	0.1A	2
13	word	4	P out output power	0.1kVA	2
14	word	4	P out output power	0.1kW	2
15	word	4	PF output power factor	0.01Cos	2
16	word	4	U Bypass R phase voltage	0.1 Volt	2
17	word	4	U Bypass S phase voltage	0.1 Volt	2
18	word	4	U Bypass T phase voltage	0.1 Volt	
19	word	4	F out output frequency	0.1Hz	
20	word	4	U Bat battery voltage	0.1 Volt	
21	word	4	I charch Bat battery charging/discharging	0.1A	
22	word	4	Temp 1 battery temperature	0.1degC	
23	word	4	Temp 2 battery temperature	0.1degC	
24	word	4	Temp 3 battery temperature	0.1degC	
25	word	4	Temp 4 battery temperature	0.1degC	
26	word	4	Temp 5 UPS shelf temperature	0.1degC	

Digital output (DO)

Function 1 to read data; 5 to control the function

0	bit	1 / 5	UPS Turn On		
1	bit	1 / 5	UPS Shut down		
2	bit	1 / 5	Alarm Reset		
3	bit	1 / 5	Battery Instant Charging		
4	bit	1 / 5	Battery Floating Charging		
5~10	bit		For future expansion		
After			Vender self definition		

Section OEM			Rittal	New from CS121 firmware version 4.22.14	
139	U	3 / 4	Manual Bypass Switch Closed	0 = open 1 = closed	1
140	U	3 / 4	OUTPUT_VOLT0	Outputvoltage Phase 1	1
141	U	3 / 4	OUTPUT_VOLT1	Outputvoltage Phase 2	1
142	U	3 / 4	OUTPUT_VOLT2	Outputvoltage Phase 3	1
143	U	3 / 4	OutputCurrent Phase A * 10	Output Current Phase 1 in Ampere *10	1
144	U	3 / 4	OutputCurrent Phase B * 10	Output Current Phase 2 in Ampere *10	1
145	U	3 / 4	OutputCurrent Phase C * 10	Output Current Phase 3 in Ampere *10	1
146	U	3 / 4	xid3017 Bits 0-15	Statusbit of UPS 1 = true, 0 = false	1
147	U	3 / 4	xid3017 Bits 16-31	Statusbit, for details please contact NEWAVE	1
148	U	3 / 4	xid645 Bits 0-15	Alarmbit, for details please contact NEWAVE	1
149	U	3 / 4	xid645 Bits 16-31	Alarmbit, for details please contact NEWAVE	1
150	U	3 / 4	xid645 Bits 32-47	Alarmbit, for details please contact NEWAVE	1
151	U	3 / 4	xid645 Bits 48-63	Alarmbit, for details please contact NEWAVE	1
152	U	3 / 4	Sensormanager/SM TCOM sensor 1	Analog value	1
153	U	3 / 4	Sensormanager/SM THCOM sensor 2	Analog value	1
154	U	3 / 4	Sensormanager sensor 3	Analog value	1
155	U	3 / 4	Sensormanager sensor 4	Analog value	1
156	U	3 / 4	Sensormanager sensor 5	Analog value	1
157	U	3 / 4	Sensormanager sensor 6	Analog value	1
158	U	3 / 4	Sensormanager sensor 7	Analog value	1
159	U	3 / 4	Sensormanager sensor 8	Analog value	1
160	U	3 / 4	TrueOutputPower Phase A in KW	True Output Power Current Phase 1 in Kilowatt	1
161	U	3 / 4	TrueOutputPower Phase B in KW	True Output Power Current Phase 2 in Kilowatt	1
162	U	3 / 4	TrueOutputPower Phase C in KW	True Output Power Current Phase 3 in Kilowatt	1
163	U	3 / 4	AUX Port 1	1 = active (high) 0 = not active (low)	1
164	U	3 / 4	AUX Port 2	1 = active (high) 0 = not active (low)	1

165	U	3 / 4	AUX Port 3	1 = active (high) 0 = not active (low)	1
166	U	3 / 4	AUX Port 4	1 = active (high) 0 = not active (low)	1

Section OEM			Netminder for all LT and MD types		
Address	Type	Function	Name	Description	Len
100	U	3/4	INVOLT	Input Voltage	1
101	U	3/4	OUTPUTVOLT	Output Voltage	1
102	U	3/4	BATTVOLT	Battery Voltage	1
103	U	3/4	OUTPUTCURR	Output Current	1
104	U	3/4	LOADPERC	Load (%)	1
105	U	3/4	OUTPUTPOW	Output Power in W	1
106	U	3/4	KVA	KVA	1
107	U	3/4	FREQUENCY	Frequency	1
108	U	3/4	CS121UPSSTAT	CS121 UPS Status	1
109	U	3/4	Alarm: Battery Bad	1 = active; 0 = not active	1
110	U	3/4	Alarm: On Battery	1 = active; 0 = not active	1
111	U	3/4	Alarm: Battery Low	1 = active; 0 = not active	1
112	U	3/4	Alarm: Battery Depleted	1 = active; 0 = not active	1
113	U	3/4	Alarm: Overtemperature	1 = active; 0 = not active	1
114	U	3/4	Alarm: Input Bad	1 = active; 0 = not active	1
115	U	3/4	Alarm: Output Bad	1 = active; 0 = not active	1
116	U	3/4	Alarm: Output Overload	1 = active; 0 = not active	1
117	U	3/4	Alarm: On Bypass	1 = active; 0 = not active	1
118	U	3/4	Alarm: Bypass Bad	1 = active; 0 = not active	1
119	U	3/4	Alarm: Output Off As Requested	1 = active; 0 = not active	1
120	U	3/4	Alarm: UPS Off As Requested	1 = active; 0 = not active	1
121	U	3/4	Alarm: Charger Failed	1 = active; 0 = not active	1
122	U	3/4	Alarm: UPS Output Off	1 = active; 0 = not active	1
123	U	3/4	Alarm: UPS System Off	1 = active; 0 = not active	1
124	U	3/4	Alarm: Fan Failure	1 = active; 0 = not active	1
125	U	3/4	Alarm: Fuse Failure	1 = active; 0 = not active	1
126	U	3/4	Alarm: General Fault	1 = active; 0 = not active	1

Section OEM			Netminder for all LT and MD types		
127	U	3/4	Alarm: Diagnosis Test Failed	1 = active; 0 = not active	1
128	U	3/4	Alarm: Communication Lost	1 = active; 0 = not active	1
129	U	3/4	Alarm: Awaiting Power	1 = active; 0 = not active	1
130	U	3/4	Alarm: Shutdown Pending	1 = active; 0 = not active	1
131	U	3/4	Alarm: Shutdown Imminent	1 = active; 0 = not active	1
132	U	3/4	Alarm: Test In Progress	1 = active ; 0 = not active	1
133	U	3/4	AUX Port 1	1 = active (high) ; 0 = not active (low)	1
134	U	3/4	AUX Port 2	1 = active (high) ; 0 = not active (low)	1
135	U	3/4	AUX Port 3	1 = active (high) ; 0 = not active (low)	1
136	U	3/4	AUX Port 4	1 = active (high) ; 0 = not active (low)	1
137	U	3/4	SensorManager/SMTH_COM, Sensor 1	Analog Value	1
138	U	3/4	SensorManager/SMTH_COM, Sensor 2	Analog Value	1
139	U	3/4	SensorManager/Sensor 3	Analog Value	1
140	U	3/4	SensorManager/Sensor 4	Analog Value	1
141	U	3/4	SensorManager/Sensor 5	Analog Value	1
142	U	3/4	SensorManager/Sensor 6	Analog Value	1
143	U	3/4	SensorManager/Sensor 7	Analog Value	1
144	U	3/4	SensorManager/Sensor 8	Analog Value	1
145	U	3/4	Result of the last Battery Test	Value 3 = Battery Test passed, Value 4 = Battery Test failed	1

Section OEM			Netminder EON		
1	U	3 / 4	Manufacturer	Manufacturer	1
17	U	3 / 4	Version	Version	1
33	U	3 / 4	Identification	Identification	1
65	U	3 / 4	MODEL	UPS Model	1
97	U	3 / 4	AUTONOMTIME	Autonomy time in minutes	1
98	U	3 / 4	BATTCAP	Battery capacity in percent	1
99	U	3 / 4	OUTFREQ0	Output Frequency	1
100	U	3 / 4	OUTPUTVOLT0	Output Voltage Phase 1	1
101	U	3 / 4	OUTPUTVOLT1	Output Voltage Phase 2	1
102	U	3 / 4	OUTPUTVOLT1	Output Voltage Phase 3	1

103	U	3 / 4	OUTPOWER0	Outpower Phase 1 in %	1
104	U	3 / 4	OUTPOWER1	Outpower Phase 2 in %	1
105	U	3 / 4	OUTPOWER2	Outpower Phase 3 in %	1
106	U	3 / 4	OUTPOWER0	Outpower Phase 1 in VA	1
107	U	3 / 4	OUTPOWER1	Outpower Phase 2 in VA	1
108	U	3 / 4	OUTPOWER2	Outpower Phase 3 in VA	1
109	U	3 / 4	INPUTFREQ0	Input Frequency Phase 1 in Hz	1
110	U	3 / 4	INPUTFREQ1	Input Frequency Phase 2 in Hz	1
111	U	3 / 4	INPUTFREQ2	Input Frequency Phase 3 in Hz	1
112	U	3 / 4	INPUTVOLT0	Input Voltage Phase 1 in V	1
113	U	3 / 4	INPUTVOLT1	Input Voltage Phase 2 in V	1
114	U	3 / 4	INPUTVOLT2	Input Voltage Phase 3 in V	1
115	U	3 / 4	INPUTCURR0	Input Current Phase 1 in A	1
116	U	3 / 4	INPUTCURR1	Input Current Phase 2 in A	1
117	U	3 / 4	INPUTCURR2	Input Current Phase 3 in A	1
118	U	3 / 4	INPUTPOW0	Input Power Phase 1 in W	1
119	U	3 / 4	INPUTPOW1	Input Power Phase 2 in W	1
120	U	3 / 4	INPUTPOW1	Input Power Phase 3 in W	1
121	U	3 / 4	BATTVOLT	Battery Voltage in V	1
122	U	3 / 4	BATTTEMPDEG	Battery Temperature in Degree Celsius	1
123	U	3 / 4	BATTSEC	Seconds on Battery	1
124	U	3 / 4	Battery Condition	Battery Condition	1
125	U	3 / 4	Amount of Input Phases	Amount of Input Phases	1
126	U	3 / 4	Amount of Output Phases	Amount of Output Phases	1
127	U	3 / 4	Results of Battery Test	1 Ok, 2 Active, 3 Canceled, 4 Failed, else: not started yet	1
128	U	3 / 4	Powerfail	Powerfail	1
129	U	3 / 4	System Shutdown	System Shutdown	1
130	U	3 / 4	UPSMAN started	UPSMAN started	1
131	U	3 / 4	UPS Connection lost	UPS connection lost	1
132	U	3 / 4	UPS Battery old	UPS Battery old	1
133	U	3 / 4	Load >80%	Load >80%	1
134	U	3 / 4	Load >90%	Load >90%	1
135	U	3 / 4	Overload	Overload	1
136	U	3 / 4	Overtemperature Condition	Overtemperature Condition	1
137	U	3 / 4	Bypass on	Bypass on	1
138	U	3 / 4	Battery low	Battery low	1
139	U	3 / 4	Batteries are weak	Batteries are weak	1
140	U	3 / 4	General Alarm Condition	General Alarm Condition	1
141	U	3 / 4	Input Bad Condition	Input Bad Condition	1
142	U	3 / 4	Output Bad Condition	Output Bad Condition	1
143	U	3 / 4	Bypass Not Available	Bypass Not Available	1
144	U	3 / 4	Low Battery Shutdown	Low Battery Shutdown	1
145	U	3 / 4	System off	System off	1
146	U	3 / 4	System Shutdown	System Shutdown	1

147	U	3 / 4	Charger Failure	Charger Failure	1
148	U	3 / 4	Manual Restart Required	Manual Restart Required	1
149	U	3 / 4	Output Circuit Breaker Open	Output Circuit Breaker Open	1
150	U	3 / 4	Remote Emergency Power off	Remote Emergency Power off	1
151	U	3 / 4	Shutdown imminent	Shutdown imminent	1

Section OEM	Netminder for all other types				
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Section OEM			Netminder for all other types		
Address	Type	Function	Name	Description	Len
100	U	3/4	INVOLT	Input Voltage (I1-n)	1
101	U	3/4	INVOLT	Input Voltage (I2-n)	1
102	U	3/4	INVOLT	Input Voltage (I1-I2)	1
103	U	3/4	OUTPUTVOLT	Output Voltage (I1-n)	1
104	U	3/4	OUTPUTVOLT	Output Voltage (I2-n)	1
105	U	3/4	OUTPUTVOLT	Output Voltage /(I1-I2)	1
106	U	3/4	OUTPUTCURR	Output Current (I1-n)	1
107	U	3/4	OUTPUTCURR	Output Current (I2-n)	1
108	U	3/4	OUTPUTWAT	Output Watts (I1-n)	1
109	U	3/4	OUTPUTWAT	Output Watts (I2-n)	1
110	U	3/4	OUTPUTWAT	Output Watts (I1-I2)	1
111	U	3/4	OUTPUTWATTOT	Output watts (total)	1
112	U	3/4	OUTPUTVA	Output VA (I1-n)	1
113	U	3/4	OUTPUTVA	Output VA (I2-n)	1
114	U	3/4	OUTPUTVA	Output VA (I1-I2)	1
115	U	3/4	OUTPUTVATOT	Output VA (total)	1
116	U	3/4	OUTPUTLOAD	Output Load (I1-n)	1
117	U	3/4	OUTPUTLOAD	Output Load (I2-n)	1
118	U	3/4	OUTPUTFREQ	Output Frequency	1
119	U	3/4	BATTVOLT	Battery Voltage	1
120	U	3/4	PERCBATT	Percentage Battery	1
121	U	3/4	DCCHARGECURR	DC Charging Current	1
122	U	3/4	CS121UPSSTAT	CS121 UPS Status	1
123	U	3/4	Alarm: Battery Bad	1 = active; 0 = not active	1
124	U	3/4	Alarm: On Battery	1 = active; 0 = not active	1
125	U	3/4	Alarm: Battery Low	1 = active; 0 = not active	1
126	U	3/4	Alarm: Battery Depleted	1 = active; 0 = not active	1
127	U	3/4	Alarm: Overtemperature	1 = active; 0 = not active	1
128	U	3/4	Alarm: Input Bad	1 = active; 0 = not active	1
129	U	3/4	Alarm: Output Bad	1 = active; 0 = not active	1

Section OEM			Netminder for all other types		
				active	
130	U	3/4	Alarm: Output Overload	1 = active; 0 = not active	1
131	U	3/4	Alarm: On Bypass	1 = active; 0 = not active	1
132	U	3/4	Alarm: Bypass Bad	1 = active; 0 = not active	1
133	U	3/4	Alarm: Ouput Off As Requested	1 = active; 0 = not active	1
134	U	3/4	Alarm: UPS Off As Requested	1 = active; 0 = not active	1
135	U	3/4	Alarm: Charger Failed	1 = active; 0 = not active	1
136	U	3/4	Alarm: UPS Output Off	1 = active; 0 = not active	1
137	U	3/4	Alarm: UPS System Off	1 = active; 0 = not active	1
138	U	3/4	Alarm: Fan Failure	1 = active; 0 = not active	1
139	U	3/4	Alarm: Fuse Failure	1 = active; 0 = not active	1
140	U	3/4	Alarm: General Fault	1 = active; 0 = not active	1
141	U	3/4	Alarm: Diagnosis Test Failed	1 = active; 0 = not active	1
142	U	3/4	Alarm: Communication Lost	1 = active; 0 = not active	1
143	U	3/4	Alarm: Awaiting Power	1 = active; 0 = not active	1
144	U	3/4	Alarm: Shutdown Pending	1 = active; 0 = not active	1
145	U	3/4	Alarm: Shutdown Imminent	1 = active; 0 = not active	1
146	U	3/4	Alarm: Test In Progress	1 = active; 0 = not active	1
147	U	3/4	AUX Port 1	1 = active (high) ; 0 = not active (low)	1
148	U	3/4	AUX Port 2	1 = active (high) ; 0 = not active (low)	1
149	U	3/4	AUX Port 3	1 = active (high) ; 0 = not active (low)	1
150	U	3/4	AUX Port 4	1 = active (high) ; 0 = not active (low)	1
151	U	3/4	SensorManager/SMTH_COM, Sensor 1	Analog Value	1
152	U	3/4	SensorManager/SMTH_COM, Sensor 2	Analog Value	1
153	U	3/4	SensorManager/Sensor 3	Analog Value	1
154	U	3/4	SensorManager/Sensor 4	Analog Value	1

Section OEM			Netminder for all other types		
155	U	3/4	SensorManager/Sensor 5	Analog Value	1
156	U	3/4	SensorManager/Sensor 6	Analog Value	1
157	U	3/4	SensorManager/Sensor 7	Analog Value	1
158	U	3/4	SensorManager/Sensor 8	Analog Value	1
159	U	3/4	Result of the last Battery Test	Value 3 = Battery Test passed, Value 4 = Battery Test failed	1

Section OEM			AEG Protect 3. M 2.0		
Address	Type	Function	Name	Description	Len
100	U	3/4	(SNMPALARMS&0x6102)==0	Normal Operation	1
101	U	3/4	(SNMPALARMS&0x100)>>8	On Bypass	1
102	U	3/4	(SNMPALARMS&0x2)>>1	On Battery	1
103	U	3/4	(SNMPALARMS&0x400)>>14	UPS System Off	1
104	U	3/4	(SNMPALARMS&0x2000)>>17	General Fault	1
105	U	3/4	(SNMPALARMS&0x8000)>>19	Communication Lost	1
106	U	3/4	(SNMPALARMS&0x20)>>5	Input Bad	1
107	U	3/4	(SNMPALARMS&0x1000)>>12	Charger Failed	1
108	U	3/4	(SNMPALARMS&0x1)	Battery Bad	1
109	U	3/4	(SNMPALARMS&0x40)>>6	Output Bad	1
110	U	3/4	(SNMPALARMS&0x200)>>9	Bypass Bad	1
111	U	3/4	(SNMPALARMS&0x4)>>2	Low Battery	1
112	U	3/4	(SNMPALARMS&0x8)>>3	Depleted Battery	1
113	U	3/4	(SNMPALARMS&0x10)>>4	Temperature Bad	1
114	U	3/4	(SNMPALARMS&0x80)>>7	Output Overload	1
115	U	3/4	(SNMPALARMS&0x8000)>>15	Fan Failure	1
116	U	3/4	(SNMPALARMS&0x2000)>>13	UPS Output Off	1

Section OEM			AEG Protect 3. M 2.0		
117	U	3/4	AUX1STATE	1 = active (high) ; 0 = not active (low)	1
118	U	3/4	AUX2STATE	1 = active (high) ; 0 = not active (low)	1
119	U	3/4	AUX3STATE	1 = active (high) ; 0 = not active (low)	1
120	U	3/4	AUX4STATE	1 = active (high) ; 0 = not active (low)	1
121	U	3/4	AMBTEMP		1
122	U	3/4	INFREQ0	Input Frequency Hz Phase 1	1
123	U	3/4	INVOLT0	Input Voltage Phase 1 V	1
124	U	3/4	INVOLT1	Input Voltage Phase 2 V	1
125	U	3/4	INVOLT1	Input Voltage Phase 3 V	1
126	U	3/4	INCURR0	Input Current Phase 1 in Ampere	1
127	U	3/4	INCURR1	Input Current Phase 2 in Ampere	1
128	U	3/4	INCURR2	Input Current Phase 3 in Ampere	1
129	U	3/4	EX_BYF_FREQ		1
130	U	3/4	EX_BYF_VOLT0		1
131	U	3/4	EX_BYF_VOLT1		1
132	U	3/4	EX_BYF_VOLT2		1
133	U	3/4	(EX_BATT_VOLTNEG+ EX_BATT_VOLTPOS)* 10.0		1
134	U	3/4	(EX_BATT_CURRNEG+ EX_BATT_CURRPOS)* 5.0		1
135	U	3/4	MIN(ftoi(BATTCAP),ftoi(EX_BATT_CAPNEG))		1
136	U	3/4	AUTONOMTIME	Autonomy Time Minutes	1
137	U	3/4	TEMPDEG	Temperature C°	1
138	U	3/4	OUTFREQ0	Output Frequency Hz	1
139	U	3/4	OUTPUT_VOLT0	Output Voltage Phase 1 V	1
140	U	3/4	OUTPUT_VOLT1	Output Voltage Phase 2 V	1
141	U	3/4	OUTPUT_VOLT2	Output Voltage Phase 3 V	1
142	U	3/4	OUTPOWER0	Outpower Phase 1 %	1
143	U	3/4	OUTPOWER1	Outpower Phase 2 %	1

Section OEM			AEG Protect 3. M 2.0		
144	U	3/4	OUTPOWER2	Outpower Phase 3 %	1
145	U	3/4	EX_OUT_CURR0		1
146	U	3/4	EX_OUT_CURR1		1
147	U	3/4	EX_OUT_CURR2		1
148	U	3/4	EX_OUT_WATT0		1
149	U	3/4	EX_OUT_WATT1		1
150	U	3/4	EX_OUT_WATT2		1

Section Borri 4000 Std. Panel			E-Tec 310 to 380 (m)	SALICRU SLC NX/DL/CUBE	
1	U	3 / 4	Manufacturer	Manufacturer	1
17	U	3 / 4	Version	Version	1
33	U	3 / 4	Identification	Identification	1
65	U	3 / 4	Model	Model	1
97	U	3 / 4	AUTONOMTIME	Autonomy time in minutes	1
98	U	3 / 4	BATTCAP	Battery capacity in percent	1
99	U	3 / 4	OUTPUT	Output Source 0 Mains, 1 Battery, 2 Bypass	1
100	U	3 / 4	OUTFREQ0	Output Frequency	1
101	U	3 / 4	SOLAWROV0	Outputvoltage Phase 1 in V	1
102	U	3 / 4	SOLAWROV1	Outputvoltage Phase 2 in V	1
103	U	3 / 4	SOLAWROV2	Outputvoltage Phase 3 in V	1
104	U	3 / 4	SOLAWROC0	Output Current Phase 1 in A	1
105	U	3 / 4	SOLAWROC1	Output Current Phase 2 in A	1
106	U	3 / 4	SOLAWROC2	Output Current Phase 3 in A	1
107	U	3 / 4	OUTPOWER0	Outpower Phase 1 %	1
108	U	3 / 4	OUTPOWER1	Outpower Phase 2 %	1
109	U	3 / 4	OUTPOWER2	Outpower Phase 3 %	1
110	U	3 / 4	SOLSETEMPBAD	Temperature bad	1
111	U	3 / 4	SOLSEINPUTBAD	Input bad	1
112	U	3 / 4	SOLSEOVERLOAD	Overload	1
113	U	3 / 4	SOLSEBYPASSFAULT	Bypass fault	1
114	U	3 / 4	SOLSECHARGERFAULT	Charger fault	1
115	U	3 / 4	SOLSEGENERALFAULT	General fault	1
116	U	3 / 4	SOLSESDPENDING	Shutdown pending	1
117	U	3 / 4	SOLSETESTRESULT	Test result	1
118	U	3 / 4	(SNMPALARMS&0x80000)>>19	Communication Lost Alarm	1
119	U	3 / 4	INFREQ0	Input Frequency Phase 1 in Hz	1
120	U	3 / 4	INFREQ1	Input Frequency Phase 2 in Hz	1
121	U	3 / 4	INFREQ2	Input Frequency Phase 3 in Hz	1
122	U	3 / 4	INVOLT0	Input Voltage Phase 1 in V	1
123	U	3 / 4	INVOLT1	Input Voltage Phase 2 in V	1
124	U	3 / 4	INVOLT2	Input Voltage Phase 3 in V	1
125	U	3 / 4	INCURR0	Input Current Phase 1 in A	1
126	U	3 / 4	INCURR1	Input Current Phase 2 in A	1
127	U	3 / 4	INCURR2	Input Current Phase 3 in A	1

128	U	3 / 4	EX_BYP_VOLT0	Bypass Voltage Phase 1 in V	1
129	U	3 / 4	EX_BYP_VOLT1	Bypass Voltage Phase 2 in V	1
130	U	3 / 4	EX_BYP_VOLT2	Bypass Voltage Phase 3 in V	1
131	U	3 / 4	EX_BYP_CURR0	Bypass Current Phase 1 in A	1
132	U	3 / 4	EX_BYP_CURR1	Bypass Current Phase 2 in A	1
133	U	3 / 4	EX_BYP_CURR2	Bypass Current Phase 3 in A	1
134	U	3 / 4	EX_BYP_WATT0	Bypass Watt Phase 1	1
135	U	3 / 4	EX_BYP_WATT1	Bypass Watt Phase 2	1
136	U	3 / 4	EX_BYP_WATT2	Bypass Watt Phase 3	1

Section OEM	POWERTRONIX			
			MIZAR	
Adresse	Name	ALCOR	QUASAR	SUPERNOVAE
100	Outpower Phase 1 %	x	x	x
101	Outpower Phase 2 %	x	x	x
102	Outpower Phase 3 %	x	x	x
103	Battery Capacity %	x	x	x
104	Input Voltage Phase 1 V	x	x	x
105	Input Voltage Phase 2 V	x	x	x
106	Input Voltage Phase 3 V	x	x	x
107	Temperature °C	not supported	x	x
108	Autonomy Time minutes	x	x	x
109	UPS Status (ASCII Hex)	x	x	x
110	Battery Voltage V	x	x	x
111	Input Frequency Phase 1 Hz	not supported	x	not supported
112	Input Frequency Phase 2 Hz	not supported	x	not supported
113	Input Frequency Phase 3 Hz	not supported	x	not supported
114	Powerfail Counter	x	x	x
115	Alarm: Battery Bad	x	x	x
116	Alarm: On Battery	x	x	x
117	Alarm: Battery Low	not supported	not supported	x
118	Alarm: Battery Depleted	x	not supported	x
119	Alarm: Overtemperature	x	not supported	x
120	Alarm: Input Bad	x	x	x
121	Alarm: Output Bad	not supported	x	not supported
122	Alarm: Output Overload	x	x	x
123	Alarm: On Bypass	x	x	x
124	Alarm: Bypass Bad	x	x	x

125	Alarm: Output Off As Requested	x	x	x
126	Alarm: UPS Off As Requested	x	x	x
127	Alarm: Charger Failed		x	x
128	Alarm: UPS Output Off	x	x	x
129	Alarm: UPS Sytem Off	not supported	x	not supported
130	Alarm: Fan Failure	x	not supported	x
131	Alarm: Fuse Failure	not supported	not supported	not supported
132	Alarm: General Fault	x	x	x
133	Alarm: Diagnose Test Failed	not supported	not supported	not supported
134	Alarm: Communication Lost	x	x	x
135	Alarm: Awaiting Power	not supported	not supported	not supported
136	Alarm: Shutdown Pending	not supported	not supported	not supported
137	Alarm: Shutdown Imminent	not supported	not supported	not supported
138	Alarm: Test In Progress	x	not supported	not supported
139	AUX Port 1	x	x	x
140	AUX Port 2	x	x	x
141	AUX Port 3	x	x	x
142	AUX Port 4	x	x	x

Section MHD Modular	Multimatic Modular	AEG Protect 1. Modular, ENIGMA	
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100	U	3 / 4	OUTPOWER0	Outpower Phase 1 %	1
101	U	3 / 4	OUTPOWER1	Outpower Phase 2 %	1
102	U	3 / 4	OUTPOWER2	Outpower Phase 3 %	1
103	U	3 / 4	BATTCAP	Battery Capacity %	1
104	S	3 / 4	INVOLT0	Input Voltage Phase 1 V	1
105	S	3 / 4	INVOLT1	Input Voltage Phase 2 V	1
106	S	3 / 4	INVOLT2	Input Voltage Phase 3 V	1
107	S	3 / 4	TEMPDEG	Temperature C°	1
108	S	3 / 4	AUTONOMTIME	Autonomy Time minutes	1

109	U	3 / 4	STATUS (e. g. UPS normal = "4", Powerfail = "12", Battery test running = "68", Bypass = "5")	UPS Status (ASCII HEX), please note UPSMAN status bytes table below	1
110	U	3 / 4	BATTVOLT	Battery Voltage V	1
111	U	3 / 4	INFREQ0	Input Frequency Hz Phase 1	1
112	U	3 / 4	INFREQ1	Input Frequency Hz Phase 2	1
113	U	3 / 4	INFREQ2	Input Frequency Hz Phase 3	1
114	U	3 / 4	CNT_PF	Powerfail Counter	1
115	U	3 / 4	(SNMPALARMS&0x1)	Alarm Battery Bad	1
116	U	3 / 4	(SNMPALARMS&0x2)>>1	Alarm: On Battery	1
117	U	3 / 4	(SNMPALARMS&0x4)>>2	Alarm: Battery Low	1
118	U	3 / 4	(SNMPALARMS&0x8)>>3	Alarm: Battery Depleted	1
119	U	3 / 4	(SNMPALARMS&0x10)>>4	Alarm: Over temperature	1
120	U	3 / 4	(SNMPALARMS&0x20)>>5	Alarm: Input Bad	1
121	U	3 / 4	(SNMPALARMS&0x40)>>6	Alarm: Output Bad	1
122	U	3 / 4	(SNMPALARMS&0x80)>>7	Alarm: Output Overload	1
123	U	3 / 4	(SNMPALARMS&0x100)>>8	Alarm: On Bypass	1
124	U	3 / 4	(SNMPALARMS&0x200)>>9	Alarm: Bypass Bad	1
125	U	3 / 4	(SNMPALARMS&0x400)>>10	Alarm: Output Off as requested.	1
126	U	3 / 4	(SNMPALARMS&0x800)>>11	Alarm: UPS Off as requested.	1
127	U	3 / 4	(SNMPALARMS&0x1000)>>12	Alarm: Charger Failed	1
128	U	3 / 4	(SNMPALARMS&0x2000)>>13	Alarm: UPS Output Off	1
129	U	3 / 4	(SNMPALARMS&0x4000)>>14	Alarm: UPS System Off	1
130	U	3 / 4	(SNMPALARMS&0x8000)>>15	Alarm: Fan Failure	1
131	U	3 / 4	(SNMPALARMS&0x10000)>>16	Alarm: fuse failure	1
132	U	3 / 4	(SNMPALARMS&0x20000)>>17	Alarm: general fault	1
133	U	3 / 4	(SNMPALARMS&0x40000)>>18	Alarm: diagnose test failed	1
134	U	3 / 4	(SNMPALARMS&0x80000)>>19	Alarm: communication lost	1
135	U	3 / 4	(SNMPALARMS&0x100000)>>20	Alarm: awaiting power	1
136	U	3 / 4	(SNMPALARMS&0x200000)>>21	Alarm: shutdown pending	1
137	U	3 / 4	(SNMPALARMS&0x400000)>>22	Alarm: shutdown imminent	1
138	U	3 / 4	(SNMPALARMS&0x800000)>>23	Alarm: test in progress	1
139	U	3 / 4	AUX1STATE	AUX Port 1	1
140	U	3 / 4	AUX2STATE	AUX Port 2	1

141	U	3 / 4	AUX3STATE	AUX Port 3	1
142	U	3 / 4	AUX4STATE	AUX Port 4	1
143	U	3 / 4	TEMP1	Sensormanager/SMTCOM sensor 1	1
144	U	3 / 4	TEMP2	Sensormanager/SMTHCOM sensor 2	1
145	U	3 / 4	TEMP3	Sensormanager sensor 3	1
146	U	3 / 4	TEMP4	Sensormanager sensor 4	1
147	U	3 / 4	TEMP5	Sensormanager sensor 5	1
148	U	3 / 4	TEMP6	Sensormanager sensor 6	1
149	U	3 / 4	TEMP7	Sensormanager sensor 7	1
150	U	3 / 4	TEMP8	Sensormanager sensor 8	1
151	U	3 / 4	AEESerModulePresent(1)	Status data, for details please contact Effekta directly	1
152	U	3 / 4	AEESerModulePresent(2)	Status data, for details please contact Effekta directly	1
153	U	3 / 4	AEESerModulePresent(3)	Status data, for details please contact Effekta directly	1
154	U	3 / 4	AEESerModulePresent(4)	Status data, for details please contact Effekta directly	1
155	U	3 / 4	AEESerModulePresent(5)	Status data, for details please contact Effekta directly	1
156	U	3 / 4	AEESerModulePresent(6)	Status data, for details please contact Effekta directly	1
157	U	3 / 4	AEESerModuleError(1,1)	Status data, for details please contact Effekta directly	1
158	U	3 / 4	AEESerModuleError(1,2)	Status data, for details please contact Effekta directly	1
159	U	3 / 4	AEESerModuleError(1,3)	Status data, for details please contact Effekta directly	1
160	U	3 / 4	AEESerModuleError(1,4)	Status data, for details please contact Effekta directly	1
161	U	3 / 4	AEESerModuleError(2,1)	Status data, for details please contact Effekta directly	1
162	U	3 / 4	AEESerModuleError(2,2)	Status data, for details please contact Effekta directly	1
163	U	3 / 4	AEESerModuleError(2,3)	Status data, for details please contact Effekta directly	1
164	U	3 / 4	AEESerModuleError(2,4)	Status data, for details please contact Effekta	1

				directly	
165	U	3 / 4	AEESerModuleError(3,1)	Status data, for details please contact Effekta directly	1
166	U	3 / 4	AEESerModuleError(3,2)	Status data, for details please contact Effekta directly	1
167	U	3 / 4	AEESerModuleError(3,3)	Status data, for details please contact Effekta directly	1
168	U	3 / 4	AEESerModuleError(3,4)	Status data, for details please contact Effekta directly	1
169	U	3 / 4	AEESerModuleError(4,1)	Status data, for details please contact Effekta directly	1
170	U	3 / 4	AEESerModuleError(4,2)	Status data, for details please contact Effekta directly	1
171	U	3 / 4	AEESerModuleError(4,3)	Status data, for details please contact Effekta directly	1
172	U	3 / 4	AEESerModuleError(4,4)	Status data, for details please contact Effekta directly	1
173	U	3 / 4	AEESerModuleError(5,1)	Status data, for details please contact Effekta directly	1
174	U	3 / 4	AEESerModuleError(5,2)	Status data, for details please contact Effekta directly	1
175	U	3 / 4	AEESerModuleError(5,3)	Status data, for details please contact Effekta directly	1
176	U	3 / 4	AEESerModuleError(5,4)	Status data, for details please contact Effekta directly	1
177	U	3 / 4	AEESerModuleError(6,1)	Status data, for details please contact Effekta directly	1
178	U	3 / 4	AEESerModuleError(6,2)	Status data, for details please contact Effekta directly	1
179	U	3 / 4	AEESerModuleError(6,3)	Status data, for details please contact Effekta directly	1
180	U	3 / 4	AEESerModuleError(6,4)	Status data, for details please contact Effekta directly	1
181	U	3 / 4	AEESerModuleWarning(1)	Status data, for details please contact Effekta directly	1

182	U	3 / 4	AEESerModuleWarning(2)	Status data, for details please contact Effekta directly	1
183	U	3 / 4	AEESerModuleWarning(3)	Status data, for details please contact Effekta directly	1
184	U	3 / 4	AEESerModuleWarning(4)	Status data, for details please contact Effekta directly	1
185	U	3 / 4	AEESerModuleWarning(5)	Status data, for details please contact Effekta directly	1
186	U	3 / 4	AEESerModuleWarning(6)	Status data, for details please contact Effekta directly	1
187	U	3 / 4	AEESerModuleState(1)	Status data, for details please contact Effekta directly	1
188	U	3 / 4	AEESerModuleState(2)	Status data, for details please contact Effekta directly	1
189	U	3 / 4	AEESerModuleState(3)	Status data, for details please contact Effekta directly	1
190	U	3 / 4	AEESerModuleState(4)	Status data, for details please contact Effekta directly	1
191	U	3 / 4	AEESerModuleState(5)	Status data, for details please contact Effekta directly	1
192	U	3 / 4	AEESerModuleState(6)	Status data, for details please contact Effekta directly	1
193	U	3 / 4	AEESerModuleVolt(1)	Status data, for details please contact Effekta directly	1
194	U	3 / 4	AEESerModuleVolt(2)	Status data, for details please contact Effekta directly	1
195	U	3 / 4	AEESerModuleVolt(3)	Status data, for details please contact Effekta directly	1
196	U	3 / 4	AEESerModuleVolt(4)	Status data, for details please contact Effekta directly	1
197	U	3 / 4	AEESerModuleVolt(5)	Status data, for details please contact Effekta directly	1
198	U	3 / 4	AEESerModuleVolt(6)	Status data, for details please contact Effekta directly	1
199	U	3 / 4	AEESerModuleCurr(1)	Status data, for details please contact Effekta directly	1

200	U	3 / 4	AEESerModuleCurr(2)	Status data, for details please contact Effekta directly	1
201	U	3 / 4	AEESerModuleCurr(3)	Status data, for details please contact Effekta directly	1
202	U	3 / 4	AEESerModuleCurr(4)	Status data, for details please contact Effekta directly	1
203	U	3 / 4	AEESerModuleCurr(5)	Status data, for details please contact Effekta directly	1
204	U	3 / 4	AEESerModuleCurr(6)	Status data, for details please contact Effekta directly	1

Section Inform UPS			Pyramid DSP/Online DSP	Standard UPS values plus the following	
151	U	3 / 4	OUTPUT_VOLT0	Outputvoltage Phase 1	1
152	U	3 / 4	OUTPUT_VOLT1	Outputvoltage Phase 2	1
153	U	3 / 4	OUTPUT_VOLT2	Outputvoltage Phase 3	1
154	U	3 / 4	OUTPUT_CURRENT0	Output Current Phase 1 in Ampere *10	1
155	U	3 / 4	OUTPUT_CURRENT1	Output Current Phase 2 in Ampere *10	1
156	U	3 / 4	OUTPUT_CURRENT2	Output Current Phase 3 in Ampere *10	1

Section			Transfer Switches	All Transfer Switch vendors, except PILLER	
1	U	3 / 4	Sources Asynchronous	Warning, input current difference, switching might not be possible	1
2	U	3 / 4	Static Switch A Failure	Alarm, switching failure	1
3	U	3 / 4	Static Switch B Failure	Alarm, switching failure	1
4	U	3 / 4	On Static Switch A	Supplied from input A	1
5	U	3 / 4	On Static Switch B	Supplied from input B	1
6	U	3 / 4	On Manual Bypass A	Supplied via bypass from input A	1
7	U	3 / 4	On Manual Bypass A	Supplied via bypass from input B	1
8	U	3 / 4	Source A Failure	Alarm, input A failure, problem with voltage	1
9	U	3 / 4	Source B Failure	Alarm, input B failure, problem with voltage	1
10	U	3 / 4	General Fault	General alarm	1
11	U	3 / 4	Redundancy Lost	Redundancy lost,	1
12	U	3 / 4	Output Overload	To much load	1
13	U	3 / 4	Output Failure	Output failure	1

Section			EverExceed Inverter		
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100	U	3 / 4	TEMPDEG	Temperature in Degrees	1
101	U	3 / 4	INFREQ0	Line frequency	1
102	U	3 / 4	INVOLT0	Line voltage	1
103	U	3 / 4	OUTFREQ0	Frequency	1
104	U	3 / 4	OUTPUT_VOLT0	Output voltage	1
105	U	3 / 4	EX_OUT_VA0	Output power	1
106	U	3 / 4	STATUS	GENEREX UPS status (see below)	1
107	U	3 / 4	EX_EXTSTATUS	Alarm information	1
108	U	3 / 4	STATUS&1	Bypass mode, 1 = on, 0 = off	1
109	U	3 / 4	(STATUS&0x02)>>2	Output active, 1 = on, 0 = off	1
110	U	3 / 4	(STATUS&0x100)>>8	Overload, 1 = on, 0 = off	1
111	U	3 / 4	(STATUS&0x2000)>>13	General alarm, 1 = on, 0 = off	1

UPS Status EverExceed	Hex-Value	Dec-Value	Description
UPS_SB_BYPASS_MODE	0x0001	1	Bypass mode
UPS_SB_OUTPUT_ACT	0x0004	4	Output active
UPS_SB_OUTPUT_HIGH	0x0100	256	Overload
UPS_SB_UPS_FAILED	0x2000	8192	General alarm

Section			Gamatronic DC System		
100	U	3 / 4	TEMPDEG	Temperature in Degrees	1
101	U	3 / 4	INVOLT0	AC Input Voltage Phase 1	1
102	U	3 / 4	OUTPUT_VOLT0	DC Output Voltage	1
103	U	3 / 4	EX_OUT_CURR0	Total Output Current	1
104	U	3 / 4	EX_OUT_WATT0	Output Power in Watt	1
105	U	3 / 4	BATTVOLT	Battery Voltage	1
106	U	3 / 4	EX_BATT_CURRPOS	Battery Current	1
107	U	3 / 4	EX_NOM_VOLT	Nominal Voltage	1
108	U	3 / 4	EX_NOM_CURR	Nominal Current	1
109	U	3 / 4	STATUS	GENEREX UPS Status (see below)	1
110	U	3 / 4	(EX_EXTSTATUS & 0xffff0000)>>16	Bytes 98-99 (Device Status)	1
111	U	3 / 4	EX_EXTSTATUS & 0xffff	Bytes 100-101 (Device Status)	1
112	U	3 / 4	(STATUS&0x02)>>2	Output active, 1 = on, 0 = off	1
113	U	3 / 4	(STATUS&0x20)>>5	Overtemperature, 1 = on, 0 = off	1
114	U	3 / 4	(STATUS&0x40)>>6	Test active, 1 = on, 0 = off	1
115	U	3 / 4	(STATUS&0x100)>>8	Overload, 1 = on, 0 = off	1
116	U	3 / 4	(STATUS&0x2000)>>13	General alarm, 1 = on, 0 = off	1

UPS Status Gamatronic DC System	Hex-Value	Dec-Value	Description
UPS_SB_OUTPUT_ACT	0x0004	4	Output active
UPS_SB_OVER_TEMP	0x0020	32	Overtemperature
UPS_SB_TEST_ACT	0x0040	64	Test active

UPS Status Gamatronic DC System	Hex-Value	Dec-Value	Description
UPS_SB_OUTPUT_HIGH	0x0100	256	Overload
UPS_SB_UPS_FAILED	0x2000	8192	General alarm

Section	Emerson Gold Plus SI / Static Inverter				
109	U	3 / 4	STATUS	UPS Status(ASCII HEX)	1
110	U	3 / 4	BATTVOLT	Battery Voltage V	2
111	S	3 / 4	BATTCURRENT	Battery Current I	2
112	U	3 / 4	OUTPUTFREQ	Output Frequency	2
115	U	3 / 4	Alarm Battery Bad	1 = active; 0 = not active	1
116	U	3 / 4	Alarm: On Battery	1 = active; 0 = not active	1
117	U	3 / 4	Alarm: Battery Low	1 = active; 0 = not active	1
118	U	3 / 4	Alarm: Battery Depleted	1 = active; 0 = not active	1
119	U	3 / 4	Alarm: Over temperature	1 = active; 0 = not active	1
120	U	3 / 4	Alarm: Input Bad	1 = active; 0 = not active	1
121	U	3 / 4	Alarm: Output Bad	1 = active; 0 = not active	1
122	U	3 / 4	Alarm: Output Overload	1 = active; 0 = not active	1
123	U	3 / 4	Alarm: On Bypass	1 = active; 0 = not active	1
124	U	3 / 4	Alarm: Bypass Bad	1 = active; 0 = not active	1
125	U	3 / 4	Alarm: Output Off as requested.	1 = active; 0 = not active	1
126	U	3 / 4	Alarm: UPS Off as requested.	1 = active; 0 = not active	1
127	U	3 / 4	Alarm: Charger Failed	1 = active; 0 = not active	1
128	U	3 / 4	Alarm: UPS Output Off	1 = active; 0 = not active	1
129	U	3 / 4	Alarm: UPS System Off	1 = active; 0 = not active	1
130	U	3 / 4	Alarm: Fan Failure	1 = active; 0 = not active	1
131	U	3 / 4	Alarm: fuse failure	1 = active; 0 = not active	1
132	U	3 / 4	Alarm: general fault	1 = active; 0 = not active	1
133	U	3 / 4	Alarm: diagnose test failed	1 = active; 0 = not active	1
134	U	3 / 4	Alarm: communication lost	1 = active; 0 = not active	1
135	U	3 / 4	Alarm: awaiting power	1 = active; 0 = not active	1

				active	
136	U	3 / 4	Alarm: shutdown pending	1 = active; 0 = not active	1
137	U	3 / 4	Alarm: shutdown imminent	1 = active; 0 = not active	1
138	U	3 / 4	Alarm: test in progress	1 = active; 0 = not active	1
139	U	3 / 4	OUTPUTCURRENT L1	LOADCURRENT1	2
140	U	3 / 4	OUTPUTCURRENT L2	LOADCURRENT2	2
141	U	3 / 4	OUTPUTCURRENT L3	LOADCURRENT3	2

BACS Parameters

Standard BACS – Address Description

Note: the max. number of BACS Modules requestable through MODBUS is 256.

Note: “Type U/S”: this defines whether the answer has an algebraic sign (math. +/-) or not. U means “unsigned”. S means “signed”, this answer may be positive or negative.

Address	Type	Function	Name	Description	Length
1000	U	3 / 4	<RESERVED>	Reserved, do not use *4	1
1001	U	3 / 4	<RESERVED>	Reserved, do not use *5	1
1002	U	3 / 4	BACS_ALARM_...	BACS Alarm Flags (see alarm flag definition below) *6	1
1003	U	3 / 4	<RESERVED>	Reserved, do not use	1
...
1010	S	3 / 4	STRING_01_CUR	String 1 current in Ampere [A]	1
1011	S	3 / 4	<RESERVED>	Reserved, do not use	1
...
1015	S	3 / 4	STRING_02_CUR	String 2 current in Ampere [A]	1
...
1055	S	3 / 4	STRING_10_CUR	String 10 current in Ampere [A]	1
...
1060	S	3 / 4	MODULE_001_TEMP	Module 1 Temperature in Celsius [°C] (see Temfjasdfashfklashf) *1	1
1061	S	3 / 4	MODULE_001_VOLT	Module 1 Voltage in Volt [V] *2	1
1062	S	3 / 4	MODULE_001_IMPC	Module 1 Impedance in milliOhm [mΩ] *3	1
1063	U	3 / 4	MODULE_001_ALARM	Module 1 Alarm flags – *6	1
1064	S	3 / 4	MODULE_001_EQ	Module 1 Equalizing in Percent [%]	1

1065	S	3 / 4	MODULE_002_TEMP	Module 2 Temperature in Celsius [°C] *1	1
...	MODULE_x until No. 256.
2335	S	3 / 4	MODULE_256_TEMP	Module 256 Temperature in Celsius [°C] *1	1
2336	S	3 / 4	MODULE_256_VOLT	Module 256 Voltage in Volt [V] *2	1
2337	S	3 / 4	MODULE_256_IMPC	Module 256 Impedance in milliOhm [mΩ] *3	1
2338	U	3 / 4	MODULE_256_ALARM	Module 256 Alarm flags *6	1
2339	S	3 / 4	MODULE_256_ALARM	Module 256 Equalizing in Percent [%]	1

Note: A value of -1 or -9999 means: This value is currently “Not available” (“N/A”).

***1 - Temperature value definition:**

Temperature T in °C $T = \frac{X-78}{2}$ e.g. $T = \frac{128-78}{2} = 25$

0xXX → 0 bis 255
0x7F 127 => 24,5°C
0x80 128 => 25°C
0x81 129 => 25,5°C

***2 - Voltage value definition:**

Voltage U in V Wert / 1000

e.g. **Voltage U in V** = 12825 / 1000 = 12,825 V

***3 - Impedance value definition:**

Impedance Z in mΩ Wert / 100

e.g. **Impedance Z in mΩ** = 4372 / 1000 = 43,72 mΩ

***4 – Address 1000 MODBUS/SNMP** (hexadecimal) (decimal)

BACS_ALARM_NONE	0x0000	0
BACS_ALARM_RUNNING	0x0001	1
BACS_ALARM_CONNECTED	0x0002	2
BACS_ALARM_MODULE_LOST	0x0004	4

BACS_ALARM_DISCHARGING	0x0008	8
BACS_ALARM_CHARGING	0x0010	16
BACS_ALARM_DISCHARGING_STOPPED	0x0020	32
BACS_ALARM_FLOAT_CHARGING	0x0040	64
BACS_ALARM_EQUALIZING	0x0080	128
BACS_ALARM_SYSTEM_FAILURE	0x0100	256
BACS_ALARM_VOLTAGE_OUTOFRANGE	0x0200	512
BACS_ALARM_TEMPERATURE_OUTOFRANGE	0x0400	1024
BACS_ALARM_RESISTOR-OUTOFRANGE	0x0800	2048
BACS_ALARM_MODULE-ADDRESSING	0x1000	4096
BACS_ALARM_MODULE-SEARCHING	0x2000	8192
BACS_ALARM_MODULE-INITIALIZING	0x4000	16384
BACS_ALARM_MODULE-POLLING	0x8000	32768

***5 – Address 1001 MODBUS/SNMP** (hexadecimal) (decimal)

BACS_STATE-GENERAL-ALARM	0x0001	1
BACS_STATE-VOLTAGE-DIFF-HIGH	0x0002	2
BACS_STATE-BATTERY-BREAKER-OPEN	0x0004	4

***6 – Alarm flags definition MODBUS/SNMP** (hexadecimal) (decimal)

BACS_ALARM_NONE	0x0000	0
BACS_ALARM_GENERAL_ALARM	0x0001	1
BACS_ALARM_COMMUNICATION_LOST	0x0002	2
BACS_ALARM_VOLTAGE_HIGH	0x0004	4
BACS_ALARM_VOLTAGE_LOW	0x0008	8
BACS_ALARM_TEMPERATURE_HIGH	0x0010	16
BACS_ALARM_TEMPERATURE_LOW	0x0020	32
BACS_ALARM_RESISTOR_HIGH	0x0040	64
BACS_ALARM_RESISTOR_LOW	0x0080	128
BACS_ALARM_EQUALIZING_ERR	0x0100	256
BACS_ALARM_VOLTAGE_WARN_HIGH	0x0200	512
BACS_ALARM_VOLTAGE_WARN_LOW	0x0400	1024
BACS_ALARM_TEMPERATURE_WARN_HIGH	0x0800	2048
BACS_ALARM_TEMPERATURE_WARN_LOW	0x1000	4096
BACS_ALARM_RESISTOR_WARN_HIGH	0x2000	8192
BACS_ALARM_RESISTOR_WARN_LOW	0x4000	16384
BACS_ALARM_MODREV_INCOMPATIBLE	0x8000	32768

Andere OEM's	->Siehe OEM MODBUS Dokumentation
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* Länge: Länge in Worten

A.2 UPSMAN Status Bytes – Standard Device Status Bits

UPS Status	Hex-Value	Dec-Value	Description
UPS_SB_BYPASS_MODE	0x0001	1	power piped thru
UPS_SB_SHUTDOWN	0x0002	2	shutdown ups
UPS_SB_OUTPUT_ACT	0x0004	4	inverter on = UPS OK
UPS_SB_BACKUP_MODE	0x0008	8	battery power
UPS_SB_BATTERY_LOW	0x0010	16	low battery err
UPS_SB_OVER_TEMP	0x0020	32	over temp err
UPS_SB_TEST_ACT	0x0040	64	test in progress
UPS_SB_INPUT_HIGH	0x0080	128	over power err
UPS_SB_OUTPUT_HIGH	0x0100	256	over load err
UPS_SB_INVERTER_FAILURE	0x0200	512	Inverter error
UPS_SB_BATTERY_BAD	0x0400	1024	Battery error
UPS_SB_ECO_MODE	0x0800	2048	eco - bypass
UPS_SB_INVERTER_WARN	0x1000	4096	eco - bypass
UPS_SB_UPS_FAILED	0x2000	8192	prser flag
UPS_SB_COMM_LOST	0x4000	16384	for snmp
UPS_SB_DVG_ALARM	0x8000	32768	SiteManager/SiteMonitor

Example (decimal):

STATUS= „5” means UPS_SB_OUTPUT_ACT (4) + UPS_SB_BYPASS_MODE (1) are active != UPS on Bypass!

STATUS= „12” means UPS_SB_OUTPUT_ACT (4) + UPS_SB_BACKUP_MODE (8) are active != UPS Powerfail!

STATUS= „22” means UPS_SB_OUTPUT_ACT (4) + UPS_SB_BACKUP_MODE (8) + UPS_SB_BATTERY_LOW (10) are active != UPS Powerfail and Battery low!

STATUS= „4” means UPS_SB_OUTPUT_ACT (4) + no other alarms = UPS OK

Zusatz

1. RS-485 Connector

Mini-DIN 8 pol. Pinout

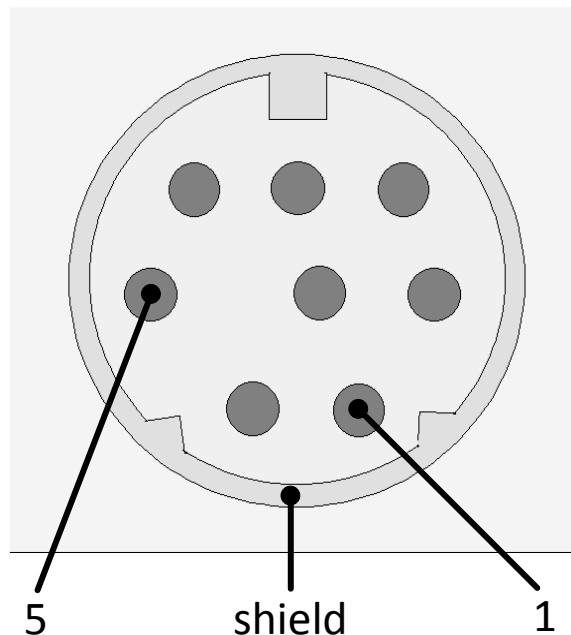


Bild1 Mini DIN 8 Female Connector on CS121
Frontansicht

Pin1: -> RS485-B (+)
Pin5: -> RS485-A (-)
shield: -> GND

2. Bus Termination

Es ist nötig die Jumper auf dem letzten Bus des RS-485 Connectors für die Bus Bestimmung zu setzen. (120 Ohm) Die Jumper sind bei Neuauslieferung bereits gesetzt. Bitte entfernen sie hierzu die 4 Schrauben auf der Unterseite des Adapters. Die J1 Jumper finden sich in der Nähe des Netzwerkeingangs auf der Platine, neben dem „+“ Symbol. Default ist „OFF“ = der CS121 ist nicht das letzte Gerät. Um den RS485 Bus zu terminieren, müssen Sie den Jumper schliessen.



3. Konfiguration

Bitte nutzen sie das Telnet (network connection) tool für die Konfiguration mit der Default IP Adresse 10.10.10.10. Hierzu schalten bringen sie den DIP-Schalter 1 in die „OFF“ Position. Falls sie einen RS-232/ RS-485 Konverter zur Verfügung haben, können sie die Konfiguration auch mit Hyperterminal via COM2 durchführen.

4. FAQs

Wenn Sie bei den MODBUS Abfragen den Wert „-9999“ erhalten, bedeutet dies, dass dieser Wert an dieser Adresse nicht vorhanden ist. Die Abfrage solche Werte sollte dauerhaft vermieden werden.