SBM51/05 gateway module for Berg network monitoring

Application

The SBM51/05 gateway module with an RS485 connection is used to connect up to 8 Berg network monitoring components to the DDC3000 and DDC4000 systems.
Data communication between the network monitoring components and the SBM51/05 gateway module takes places via the RS485 interface.

The following types can be connected:
UBN304, UBN315, UBN3060.

Firmware version:

SBM51/05 V2.0

Content

Kieback&Peter GmbH & Co. KG
Tempelhofer Weg 50, 12347 Berlin/Germany
Telefon: +49 30 60095-0, Telefax: +49 30 60095-164
www.kieback-peter.de, info@kieback-peter.com

Functions of the SBM51/05

Registering the SBM on the DDC

After switching the supply voltage on, the SBM checks the availability of the switch cabinet bus and uses the basic menu to register with the DDC.

Parameterization in the basic menu

Activity on the foreign bus can be switched on (1) or off (0) using parameter 2202, bus mode source.

The time behavior is set using parameter 2203, cycle source. Parameter deleted or '0' represents continuous foreign bus operation. With parameter '1', the query cycle is started at a one minute interval.

A new foreign bus cycle is started every time the cycle source changes its state. If the current cycle should not be completed, an additional cycle is started afterward.

The actual value 2204, foreign bus status, is '1' if there are no serious errors.

These errors are:

- device monitoring switched on but no device detected.
- frequency error
- measured value overflow

Registering and deregistering energy monitoring devices

After releasing the foreign bus with parameter 2202 [1] of the basic menu, the SBM registers the totals menus /04, /08, /12, .., /32, which correspond to device addresses 1..8, with the DDC.

If parameter 2216 of the totals menu is set (1), the parameter 'Device type' will be queried for the corresponding device address, and if successful, the 'Version number' will be queried. If a valid answer is received, the corresponding phase menus are registered with the DDC, beginning with menu number [(Addr. - 1) * 4] + 1.

Parameterizing a device address that deviates from the basic setting

If a device with a device address between 9 and 247 is operated on the foreign bus, enter the address concerned in parameter 2240 of the corresponding totals menu.

The device address (default setting '1') can be changed on the device.

Querying the measured values of the energy monitoring devices and transferring them to the DDC according to the points list

The parameters from the individual menus are read by the device according to the points list and are entered in the data points. Only the electrical values for network consumption are taken into consideration. The values are instantaneous values.

If value 0 is set in parameter 2240 of the totals menu, the value of the corresponding device is not queried. The value is queried if the value is invalid or if it corresponds to the device address. The default setting address (1..8) applies for values from 248 to 254.

Parameter 2212 shows the address of the assigned device.

Power and energy values are scaled according to the specification in the parameters 2220 and 2245 of the totals menu. If they are not parameterized, the units kW or kWh apply.

Activating or deactivating device monitoring according to DDC parameterization

The search for connected devices can be switched on or off using parameter 2216 in the totals menu.

Invalid, 0	Search inactive
1	Search active

Data description (points lists)

Software menu M090 SBM51 gateway

Phase menu L1, L2, L3

Par. No.	Parameter, plain text	Supplied parameters, operating mode L1 L2 L3	Min.	Max.	Base	Unit
2209	External system malfunction	Participant is registered	0	1	Current value	
2210	Analog actual value 1	Delta voltage U12, U23, U31	0	2147483647	Current value	V
2211	Analog actual value 2	Phase voltage U1, U2, U3	0	2147483647	Current value	V
2212	Analog actual value 3	No value				
2251	Analog actual value 4	No value				
2215	Analog actual value 5	No value				
2252	Analog actual value 6	No value				
2253	Analog actual value 7	Phase current I1, I2, I3	-999999.99	999999.99	Current value	A
2254	Analog actual value 8	Effective power P1, P2, P3	-999999.99	999999.99	Current value	
2255	Analog actual value 9	Apparent power S1, S2, S3	-999999.99	999999.99	Current value	
2256	Analog actual value 10	Reactive power Q1, Q2, Q3	-999999.99	999999.99	Current value	
2257	Analog actual value 11	Power factor cos φ	-1.00	1.00	Current value	
2258	Analog actual value 12	No value **For UBN315:** L1: No value L2: System current L3: Apparent input energy				A VAh/ kVAh
2240	Q analog setpoint 1	No value				
2241	Q analog setpoint 2	No value				
2242	Q analog setpoint 3	No value				
2222	Act. digital value 1	No value				
2224	Act. digital value 2	No value				
2225	Digital actual value 3	No value				
2226	Act. digital value 4	No value				
2227	Act. digital value 5	No value				
2228	Act. digital value 6	No value				
2216	Q digital setpoint 1	No value				
2220	Q digital setpoint 2	No value				
2245	Q digital setpoint 3	No value				
2246	Q digital setpoint 4	No value				
2217	Operating mode	No value				

External system malfunction (parameter: 2209)

This value indicates that there is a device present for this menu group.

Analog actual value 8 to 10 (parameter: 2254, 2255, 2256)

You can use parameter 2220 Q digital setpoint 2 in the totals menu to control how the measured performance values are displayed within this software menu group.

Deleted, 0	Power in kW
1	Power in W

Analog actual value 12 (parameter: 2258), only for UBN315

You can use parameter 2245 Q digital setpoint 3 in the totals menu to control how the measured energy values are displayed within this software menu group.

2245	Deleted, 0	Energy in kVAh
	1	Energy in VAh

Software menu M090 SBM51 gateway

Totals menu

Par. No.	Parameter, plain text	Supplied parameters, operating mode L1 L2 L3	Min.	Max.	Base	Unit
2209	External system mal-function	Participant is registered	0	1	Current value	
2210	Analog actual value 1	Module type	0	99	Current value	
2211	Analog actual value 2	Version number	0	2147483647	Current value	
2212	Analog actual value 3	Device address	0	247	Current value	
2251	Analog actual value 4	Phase sequence 123 OK, 132 wrong	123	132	Current value	
2215	Analog actual value 5	No value				
2252	Analog actual value 6	No value				
2253	Analog actual value 7	Active energy Ep ∑	0.00	999999.99	Current value	
2254	Analog actual value 8	Effective power P ∑	0.00	999999.99	Current value	
2255	Analog actual value 9	Apparent power S ∑	0.00	999999.99	Current value	
2256	Analog actual value 10	Reactive power Q ∑	0.00	999999.99	Current value	
2257	Analog actual value 11	Power factor cos φ	-1.00	1.00	Current value	
2258	Analog actual value 12	Power frequency	0.00	999999.99	Current value	Hz
2240	Q analog setpoint 1	1..247 address 0 or is deleted	0.00	247.00	Deleted	
2241	Q analog setpoint 2	Connection type	1.00	4.00		
2242	Q analog setpoint 3	No value				
2222	Act. digital value 1	0 = Type OK 1 = No device	0	1	Current value	
2224	Act. digital value 2	0 = No error 1 = Error	0	1	Current value	
2225	Act. digital value 3	Connection type error 0 = OK, 1 = error	0	1	Current value	
2226	Act. digital value 4	Power frequency error 0 = OK, 1 = error	0	1	Current value	
2227	Act. digital value 5	Phase sequence 0 = OK, 1 = error	0	1	Current value	
2228	Act. digital value 6	No value				

Par. No.	Parameter, plain text	Supplied parameters, operating mode L1 L2 L3	Min.	Max.	Base	Unit
2216	Q digital setpoint 1	Address specification deleted, 0 = off 1 = on	0	1	Current value	
2220	Q digital setpoint 2	Power unit deleted, 0 = kW 1 = W	0	1	Current value	
2245	Q digital setpoint 3	Energy unit deleted, 0 = kWh 1 = Wh	0	1	Current value	
2246	Q digital setpoint 4	Energy unit deleted, 0 = 2245 1 = MWh	0	1	Current value	
2217	Operating mode	Undefined Stop, Auto	1	6		

External system malfunction (parameter: 2209)

This value indicates that there is a device present for this menu group.

Q analog setpoint 1 (parameter: 2240)

Address specification for the device to be read. If an address is not entered, the addresses 1..8 that correspond to the menu group apply.

The device is otherwise read with the address entered in parameter 2240 Q analog setpoint 1.

A device is not read with this software menu group if the value 0 is assigned in parameter 2240 Q analog setpoint 1.

Analog actual value 4 (parameter: 2251)

Only UBN3060 and UBN315

Analog actual value 7 (parameter: 2253)

It is possible to use parameter 2245 Q digital setpoint 3 and 2246 Q digital setpoint 4 to control how the measured energy values are displayed within this software menu group.

2245	Deleted, 0	Energy in kWh
	1	Energy in Wh
2246	Deleted, 0	Unit according to 2245
	1	Energy in MWh (version 1.1 and higher)

Analog actual value 8 to 10 (parameter: 2254, 2255, 2256)

You can use parameter 2220 Q digital setpoint 2 in the totals menu to control how the measured performance values are displayed within this software menu group.

Deleted, 0	Power in kW
1	Power in W

Q analog setpoint 2 (parameter: 2241)

The setpoint is compared with the value set on the device and the result is displayed in parameter 2224.

UBN304	
3	3 phase 3Wr/3CT
4	3 phase 4Wr/3CT
UBN3060	
1	Single-phase
3	3 phase 3Wr/2CT
4	3 phase 4Wr/3CT
UBN315	
1	Single-phase
2	3 phase 3Wr/3CT (UBN315 version 2.17 and higher)
3	3 phase 3Wr/2CT
4	3 phase 4Wr/3CT

Digital actual value 4 (parameter: 2226)

45 Hz < f_N < 65 Hz (power frequency f_N)

Q digital setpoint 1 (parameter: 2216)

Parameterization 2240 Q analog setpoint 1 release, does not apply for address '0'

Operating mode (parameter: 2217)

2217 = Stop: Device missing

2217 = Automatic: Device present

Reference parameter (register description)

Menu 1, phase 1

Par. no.	Parameter, plain text	Parameter L1	Register number	Parameter type	Unit
2210	Analog actual value 1	Delta voltage U12	$0010	integer	V_{eff}
2211	Analog actual value 2	Phase voltage U1	$0004	integer	V_{eff}
2253	Analog actual value 7	Phase current I1	$1010	float	A_{eff}
2254	Analog actual value 8	Effective power P1	$1030	float	W/kW
2255	Analog actual value 9	Apparent power S1	$1028	float	VA/kVA
2256	Analog actual value 10	Reactive power Q1	$1038	float	var/kvar
2257	Analog actual value 11	Power factor cos φ1	$1018	float	

Menu 2, phase 2

Par. no.	Parameter, plain text	Parameter L2	Register number	Parameter type	Unit
2210	Analog actual value 1	Delta voltage U23	$0014	integer	V_{eff}
2211	Analog actual value 2	Phase voltage U2	$0008	integer	V_{eff}
2253	Analog actual value 7	Phase current I2	$1012	float	A_{eff}
2254	Analog actual value 8	Effective power P2	$1032	float	W/kW
2255	Analog actual value 9	Apparent power S2	$102A	float	VA/kVA
2256	Analog actual value 10	Reactive power Q2	$103A	float	var/kvar
2257	Analog actual value 11	Power factor cos φ2	$101A	float	
2258	Analog actual value 12	**For UBN315:** System current	$100E		A

Menu 3, phase 3

Par. no.	Parameter, plain text	Parameter L3	Register number	Parameter type	Unit
2210	Analog actual value 1	Delta voltage U31	$0018	integer	V_{eff}
2211	Analog actual value 2	Phase voltage U3	$000C	integer	V_{eff}
2253	Analog actual value 7	Phase current I3	$1014	float	A_{eff}
2254	Analog actual value 8	Effective power P3	$1034	float	W/kW
2255	Analog actual value 9	Apparent power S3	$102C	float	VA/kVA
2256	Analog actual value 10	Reactive power Q3	$103C	float	var/kvar
2257	Analog actual value 11	Power factor cos φ3	$101C	float	
2258	Analog actual value 12	For UBN315: Apparent input energy	$105C	float	VAh/ kVAh

Menu 4, totals menu

Par. no.	Parameter, plain text	Parameter, total	Register number	Parameter type	Unit
2210	Analog actual value 1	Device type	$E00C	integer	
2211	Analog actual value 2	Version number	$E005	integer	
2212	Analog actual value 3	Device address	$E020	integer	
2251	Analog actual value 4	Phase sequence 123 OK, 132 wrong	$003C	integer	
2253	Analog actual value 7	Active energy Ep ∑	$103E	float	Wh/kWh
2254	Analog actual value 8	Effective power P ∑	$102E	float	W/kW
2255	Analog actual value 9	Apparent power S ∑	$1026	float	VA/kVA
2256	Analog actual value 10	Reactive power Q ∑	$1036	float	var/kvar
2257	Analog actual value 11	Power factor cos φ	$1016	float	
2258	Analog actual value 12	Power frequency	$1046	float	Hz
2225	Digital actual value 3	Connection type	$E038	Integer	

Setting the energy monitoring device

The settings for integrating Berg network analyzers in the DDC3000 and DDC4000 systems are as follows:

- COM-Port: COM1
- Port type: RS485 (via DIP switch for UBN3060; for UBN304 the port type is fixed)
- address: set
- protocol: MODBUS RTU
- baud rate: 9600 baud
- parity: none
- data bits: 8
- stop bit: 1

Exemplary Settings

- ADDR=01
- COM1=9600; R.N81
- PROT.COM1=MODB