

Title: TBK 17 91083 - BACnet Interface for UPS v4

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Reason for updating: Rev A.			
CREATION			
To: Internal use			



## 1. GENERAL DESCRIPTION

### 1.1. BACnet Interface

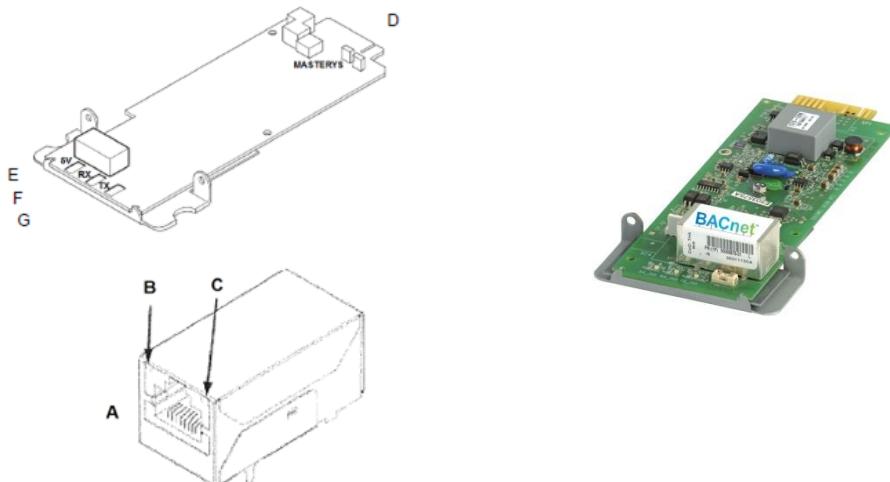
This BACNet interface is a network adapter for the professional monitoring using BACnet protocol of a single and modular UPS or parallel UPS system.

### 1.2. BACnet compliance

This interface respects following references:

Reference	Document	Date
1	ANSI/ASHRAE Standard 135-2004	2004
2	ANSI/ASHRAE Addendum w ANSI/ASHRAE Standard 135-2008 (Integer Value & BitString Value Objects Types)	Jan 2010

### 1.3. Ethernet Interface



- (A): Ethernet connection
- (B) :Link status
- (C): Network activity
- (D): Jumper for UPS Power supply selection
- (E): Power Led
- (F): Rx Led
- (G): Tx Led

### 1.4. SOCOMEc UPS COMPATIBILITY

BACnet Interface is compatible with the following SOCOMEc UPS products:

- **ITYS-PRO**
- **MODULYS GP 2.0**
- **MASTERYS BC, IP+, EM and Green Power**
- **DELPHYS MP / MX**
- **DELPHYS BC, Green Power and Xtend**
- And all new SOCOMEc UPS with standard COM-Slot.

### 1.5. INTERFACE STARTING

The interface needs around 1 minute to start the communication with UPS.

(F) and (G) Leds flashing indicate the communication between the interface and the UPS.

(F) Led flashing every 2 seconds means that the interface doesn't communicate with UPS

## 2. REQUIREMENTS

### 2.1. AGILIPLUG FINDER tool

This tool must be installed in a Windows™ computer to discover the IP addresses of all BACnet interfaces connected on the same local network.

The network settings have to be done through the web interface.

DCHP is enabled by default

### 2.2. BACnet interface installation

BACnet interface is installed and screwed into one of the available COM-Slots.

The interface is powered by the UPS and communicates through serial link to the internal µC board of the UPS.

The serial link COM port must be set on the UPS control panel to establish the communication with UPS.

### 2.3. UPS serial link settings

- **MODULYS GP2.0 / ITYS PRO:** 57600bds, no parity, slave 1:COM-Slot 1 or COM-Slot 2
- **MASTERYS BC / GP / GP 2.0 / IP+ / EM:** 9600bds, no parity, slave 1: COM-Slot 1 or COM-Slot 2
- **DELPHYS MP / MP elite + / EM / MX:** 9600bds, no parity, slave 1: COM-Slot 5 only
- **DELPHYS BC / GP / GP2.0 / Xtend:** 9600bds, no parity, slave 1: COM-Slot 2 only

### 2.4. Multi-Units monitoring

The monitoring through BACnet for parallel UPS system can be done in 2 ways:

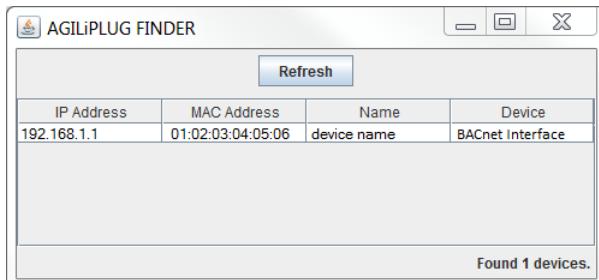
First possibility by using one single BACnet interface:

The BACnet protocol will provide a UPS system overview. The interface manages BACnet Objects at UPS level. BACnet Objects related to unit level are not set.

Second possibility by installing a BAC interface in each unit:

The BACnet protocol will provide a UPS system overview and a detailed view of the local unit. UPS and Unit BACnet Objects will be populated. Each unit is monitored by a dedicated IP address and specific BACnet Device Identifier.

## 3. AGILIPLUG FINDER



Once the BACnet interface has been detected, the web page can be opened from this application. Select the device, and click on [Open AGILIPLUG Web page](#) button.

#### 4. BACnet WEB INTERFACE

Login to access to web page:

- Login: root
- Password: admin

##### 4.1. Home page

The screenshot shows the BACnet interface's Home page. At the top left is the socomec logo. To its right is the text "BACnet interface". Below this is a navigation menu with links: Home, Network, BACnet, File Management, Upload Firmware, and Reboot. The main content area has a dark blue header bar with the word "Home" in white. Below it, a message says "Welcome to the management and configuration web interface. You can use the navigation menus on the left to access additional pages." Underneath, there are four lines of text: "Name: BACnet interface", "IP Address: 172.23.22.146", "MAC Address: 00:40:9D:AD:8F:49", and "Up Time: 27 minutes 9 seconds".

##### 4.2. Network settings

Select Network menu item

The screenshot shows the Network Settings page. The left sidebar includes the socomec logo, "BACnet interface", and the Network menu item. The main content area has a dark blue header bar with "Network Settings" in white. It contains two radio buttons: "Obtain an IP address automatically (DHCP)" (selected) and "Use the following IP address". Below these are three input fields: "IP v4 Address" (empty), "Subnet Mask" (255.255.0.0), and "Default Gateway" (empty). At the bottom is a "Apply" button.



Reboot interface after changing IP settings.  
Default IP address if DHCP not found: 169.254.255.255

##### 4.3. BACnet Configuration

Select BACnet menu item

The screenshot shows the BACnet Settings page. The left sidebar includes the socomec logo, "BACnet interface", and the BACnet menu item. The main content area has a dark blue header bar with "BACnet Settings" in white. It contains two input fields: "Device Identifier" (1338) and "Unit Number" (0). At the bottom is a "Apply" button.

By default the "Device Identifier" is set to 1338

"Unit Number" has to be set in case of multi-units monitoring for UPS parallel system.



This number should be equal to unit number where the interface is installed. A "Unit Number" set to 2, for example, means that the BACnet interface has been installed in the unit 2 of a parallel system, and it will provide data from unit 2 to remote management system.

In case of multi-units monitoring, "Unit Number" has to be set on each one with a different Device Identifier.

## 5. BACnet OBJECTS DESCRIPTION

### 5.1. List of Objects related to UPS architecture

The BACnet interface manages 2 groups of objects according the UPS architecture.

- Objects related to UPS system;
- Objects related to unit.

SINGLE UNIT UPS	PARALLEL UPS SYSTEM	
	BACnet interface as "Concentrator" mode	BACnet interface as "Multi-Units" mode
		
1 BACnet Interface	1 BACnet Interface	N BACnet Interface. N = number of units

	Single unit UPS	Parallel system UPS		
		One unique interface "Unit Number"=0*	Multi-Units interface installation "Unit Number"=local unit*	
DeviceStatus		common		
Alarms		common		
UPSLoadStatus	Objects not managed. set to 0 as default values	Objects set with UPS system data	Objects set with UPS system data	UPS level
UPSStatus				
UPSAlarms				
UPS_OUTPUT_				
UnitLoadStatus	Objects set with single unit data	All MV UNIT_ objects are set with the synthesis of all units data  All AV UNIT_OUTPUT_ objects will be have same values as UPS_OUTPUT_ objects	Objects set with local unit data	Unit level
UnitStatus				
UnitAlarms				
BatteryStatus				
InputRecStatus				
RectifierStatus				
InverterStatus				
InputBypStatus				
UNIT_				
RECTIFIER_				
BATTERY_				
BYPASS_				

(\*) to be set through BACnet web page.



For single unit UPS: all objects related to UPS (parallel system) are not updated with data.

## 5.2. List of BACnet Object

### 5.2.1. DEVICE OBJECT

Property Identifier	Property Datatype	Conform. Code	UPS Value
Object_Identifier	BACnetObjectIdentifier	Required	
<b>Object_Name</b>	CharacterString	Required	<b>UPS model</b>
Object_Type	BACnetObjectType	Required	
System_Status	BACnetDeviceStatus	Required	
<b>Vendor_Name</b>	CharacterString	Required	<b>SOCOME UPS</b>
<b>Vendor_Identifier</b>	Unsigned16	Required	<b>591</b>
<b>Model_Name</b>	CharacterString	Required	<b>Nominal kVA</b>
Firmware_Revision	CharacterString	Required	
Application_Software_Version	CharacterString	Required	
<b>Location</b>	CharacterString	Optional	<b>Unit number</b>
<b>Description</b>	CharacterString	Optional	<b>Serial number</b>
Protocol_Version	Unsigned	Required	
Protocol_Revision	Unsigned	Required	
Protocol_Services_Supported	BACnetServicesSupported	Required	
Protocol_Object_Types_Supported	BACnetObjectTypesSupported	Required	
Object_List	BACnetARRAY[N] of BACnetObjectIdentifier	Required	
Max_APDU_Length_Accepted	Unsigned	Required	
Segmentation_Supported	BACnetSegmentation	Required	
Max_Segments_Accepted	Unsigned	Optional	
VT_Classes_Supported	List of BACnetVTClass	Optional	
Active_VT_Sessions	List of BACnetVTSes	Optional	
<b>Local_Time</b>	Time	Optional	<b>UPS time</b>
<b>Local_Date</b>	Date	Optional	<b>UPS day</b>
UTC_Offset	INTEGER	Optional	
Daylight_Savings_Status	BOOLEAN	Optional	
APDU_Segment_Timeout	Unsigned	Optional	
APDU_Timeout	Unsigned	Optional	
Number_Of_APDU_Retries	Unsigned	Optional	
List_Of_Session_Keys	List of BACnetSessionKey	Optional	
Time_Synchronization_Recipients	List of BACnetRecipient	Optional	
Max_Master	Unsigned(1..127)	Optional	
Max_Info_Frames	Unsigned	Optional	
Device_Address_Binding	List of BACnetAddressBinding	Required	
Database_Revision	Unsigned	Required	
Configuration_Files	BACnetARRAY[N] of BACnetObjectIdentifier	Optional	
Last_Restore_Time	BACnetTimeStamp	Optional	
Backup_Failure_Timeout	Unsigned16	Optional	
Active_COV_Subscriptions	List of BACnetCOVSubscription	Optional	
Slave_Proxy_Enable	BACnetArray[N] of BOOLEAN	Optional	
Manual_Slave_Address_Binding	List of BACnetAddressBinding	Optional	
Auto_Slave_Discovery	BACnetArray[N] of BOOLEAN	Optional	
Slave_Address_Binding	List of BACnetAddressBinding	Optional	
<b>Profile_Name</b>	CharacterString	Optional	Measurements factor N/A factor_10 (*) no_factor (*)

(\*) only for ITYS-PRO – MODULYS GP 2.0 and new UPS ranges.

### 5.2.2. ANALOG-VALUE OBJECTS

The BACnet interface reads real format value from UPS. The measurement format and the factor\_10 (\*) have to be applied to have the right value displayed on the monitoring system.

Measurements described with fixed format have to be displayed consequently.

Measurements depending of factor\_10 have to be displayed with one decimal. The real format value read from interface have to be divided by 10 before displaying on the monitoring system.

Example for frequency (\_fr): fixed format is ##.#; real value read from the interface = 500, final value to displayed: 50 . 0

Object Name	Object type	Instance	Units	Code	Format	factor_10 (*) to apply if defined	Value = -1
UPS_OUTPUT_Lr	AV	0	%	98	###		
UPS_OUTPUT_kVA	AV	1	kVA	9		Yes	Not available
UPS_OUTPUT_kw	AV	2	kW	48		Yes	Not available
UPS_OUTPUT_Lr1	AV	3	%	98	###		
UPS_OUTPUT_Lr2	AV	4	%	98	###		Single phase UPS
UPS_OUTPUT_Lr3	AV	5	%	98	###		Single phase UPS
UPS_OUTPUT_I1	AV	6	A	3			
UPS_OUTPUT_I2	AV	7	A	3			Single phase UPS
UPS_OUTPUT_I3	AV	8	A	3			Single phase UPS
UPS_OUTPUT_kVA1	AV	9	kVA	9		Yes	Not available
UPS_OUTPUT_kVA2	AV	10	kVA	9		Yes	Single phase UPS
UPS_OUTPUT_kVA3	AV	11	kVA	9		Yes	Single phase UPS
UPS_OUTPUT_kw1	AV	12	kW	48		Yes	Not available
UPS_OUTPUT_kw2	AV	13	kW	48		Yes	Single phase UPS
UPS_OUTPUT_kw3	AV	14	kW	48		Yes	Single phase UPS
UPS_OUTPUT_V1	AV	15	V	5	###		
UPS_OUTPUT_V2	AV	16	V	5	###		Single phase UPS
UPS_OUTPUT_V3	AV	17	V	5	###		Single phase UPS
UPS_OUTPUT_U12	AV	18	V	5	###		Single phase UPS
UPS_OUTPUT_U23	AV	19	V	5	###		Single phase UPS
UPS_OUTPUT_U31	AV	20	V	5	###		Single phase UPS
UPS_OUTPUT_fr	AV	21	Hz	27	##.#		
UPS_OUTPUT_cf	AV	22		95	#.#		Not available
UPS_OUTPUT_pf1	AV	23		15	+/-#.##		Not available
UPS_OUTPUT_pf2	AV	24		15	+/-#.##		Single phase UPS
UPS_OUTPUT_pf3	AV	25		15	+/-#.##		Single phase UPS
UNIT_OUTPUT_Lr	AV	26	%	98	#.##		
UNIT_OUTPUT_kVA	AV	27	kVA	9		Yes	Not available
UNIT_OUTPUT_kw	AV	28	kW	48		Yes	Not available
UNIT_OUTPUT_Lr1	AV	29	%	98	###		
UNIT_OUTPUT_Lr2	AV	30	%	98	###		Single phase UPS
UNIT_OUTPUT_Lr3	AV	31	%	98	###		Single phase UPS
UNIT_OUTPUT_I1	AV	32	A	3		Yes	
UNIT_OUTPUT_I2	AV	33	A	3		Yes	Single phase UPS
UNIT_OUTPUT_I3	AV	34	A	3		Yes	Single phase UPS
UNIT_OUTPUT_kVA1	AV	35	kVA	9		Yes	
UNIT_OUTPUT_kVA2	AV	36	kVA	9		Yes	Single phase UPS
UNIT_OUTPUT_kVA3	AV	37	kVA	9		Yes	Single phase UPS
UNIT_OUTPUT_kw1	AV	38	kW	48		Yes	Not available
UNIT_OUTPUT_kw2	AV	39	kW	48		Yes	Single phase UPS
UNIT_OUTPUT_kw3	AV	40	kW	48		Yes	Single phase UPS
UNIT_OUTPUT_V1	AV	41	V	5	###		
UNIT_OUTPUT_V2	AV	42	V	5	###		Single phase UPS
UNIT_OUTPUT_V3	AV	43	V	5	###		Single phase UPS
UNIT_OUTPUT_U12	AV	44	V	5	###		Single phase UPS
UNIT_OUTPUT_U23	AV	45	V	5	###		Single phase UPS
UNIT_OUTPUT_U31	AV	46	V	5	###		Single phase UPS
UNIT_OUTPUT_fr	AV	47	Hz	27	##.#		
UNIT_OUTPUT_cf	AV	48		95	#.#		Not available

UNIT_OUTPUT_pf1	AV	49		15	+/-#.##		Not available
UNIT_OUTPUT_pf2	AV	50		15	+/-#.##		Single phase UPS
UNIT_OUTPUT_pf3	AV	51		15	+/-#.##		Single phase UPS
UNIT_TMP	AV	52	°C	62	##.#		
RECTIFIER_V1	AV	53	V	5	###		
RECTIFIER_V2	AV	54	V	5	###		Single phase UPS
RECTIFIER_V3	AV	55	V	5	###		Single phase UPS
RECTIFIER_U12	AV	56	V	5	###		Single phase UPS
RECTIFIER_U23	AV	57	V	5	###		Single phase UPS
RECTIFIER_U31	AV	58	V	5	###		Single phase UPS
RECTIFIER_Fr	AV	59	Hz	27	##.#		Not available
RECTIFIER_I1	AV	60	A	3		Yes	Not available
RECTIFIER_I2	AV	61	A	3		Yes	Single phase UPS
RECTIFIER_I3	AV	62	A	3		Yes	Single phase UPS
RECTIFIER_kw1	AV	63	kW	48		Yes	Not available
RECTIFIER_kw2	AV	64	kW	48		Yes	Single phase UPS
RECTIFIER_kw3	AV	65	kW	48		Yes	Single phase UPS
BATTERY_V+	AV	66	V	5		Yes	
BATTERY_V-	AV	67	V	5		Yes	Not available
BATTERY_I+	AV	68	A	3	+/-	Yes	
BATTERY_I-	AV	69	A	3	+/-	Yes	Not available
BATTERY_%	AV	70	%	98	###		
BATTERY_Ah	AV	71	Ah	95		Yes	
BATTERY_Min	AV	72	Min	72	###		
BATTERY_s	AV	73	Sec	73	###		Not available
BATTERY_TMP	AV	74	°C	62	##.#		Not available
BYPASS_V1	AV	75	V	5	###		
BYPASS_V2	AV	76	V	5	###		Single phase UPS
BYPASS_V3	AV	77	V	5	###		Single phase UPS
BYPASS_U12	AV	78	V	5	###		Single phase UPS
BYPASS_U23	AV	79	V	5	###		Single phase UPS
BYPASS_U31	AV	80	V	5	###		Single phase UPS
BYPASS_Fr	AV	81	Hz	27	##.#		
BYPASS_I1	AV	82	A	3		Yes	Not available
BYPASS_I2	AV	83	A	3		Yes	Single phase UPS
BYPASS_I3	AV	84	A	3		Yes	Single phase UPS
BYPASS_kw1	AV	85	kW	48		Yes	Not available
BYPASS_kw2	AV	86	kW	48		Yes	Single phase UPS
BYPASS_kw3	AV	87	kW	48		Yes	Single phase UPS

(\*) 'factor\_10' or 'no\_factor' are managed by **ITYS-PRO**, **MODULYS GP2.0** and new UPS ranges.

 For all other UPS ranges, **MASTERYS** and **DELPHYS**, this information is N/A. the fixed format has to be applied for those UPS ranges.

### 5.2.3. MULTI-STATES OBJECTS

Object Name	Object type	Instance	Number of states
DeviceStatus	MV	0	4
UPSLoadStatus	MV	1	7
UnitLoadStatus	MV	2	7
UnitStatus	MV	3	6
Alarms	MV	4	4
BatteryStatus	MV	5	10
RectifierStatus	MV	6	2
InverterStatus	MV	7	2
InputRecStatus	MV	8	4
InputBypStatus	MV	9	4

### 5.2.4. BIT-STRING OBJECTS

Object Name	Object type	Instance	Number of bits
UPSStatus	BSV	0	16
UPSArms	BSV	1	23
UnitAlarms	BSV	2	31

## 6. BACnet OBJECTS DEFINITION

### 6.1. ANALOG-VALUE OBJECTS

Object Name	Description	Single Unit	Parallel concentrator	Parallel Multi-Units
UPS_OUTPUT_Lr	Global output load rate of parallel UPS system	0	UPS level	UPS level
UPS_OUTPUT_KVA	Global output apparent power of parallel UPS system	0		
UPS_OUTPUT_kw	Global output active power of parallel UPS system	0		
UPS_OUTPUT_Lr1	Output load rate phase 1 of parallel UPS system	0		
UPS_OUTPUT_Lr2	Output load rate phase 2 of parallel UPS system	0		
UPS_OUTPUT_Lr3	Output load rate phase 3 of parallel UPS system	0		
UPS_OUTPUT_I1	Output current phase 1 of parallel UPS system	0		
UPS_OUTPUT_I2	Output current phase 2 of parallel UPS system	0		
UPS_OUTPUT_I3	Output current phase 3 of parallel UPS system	0		
UPS_OUTPUT_KVA1	Output apparent power phase 1 of parallel UPS system	0		
UPS_OUTPUT_KVA2	Output apparent power phase 2 of parallel UPS system	0		
UPS_OUTPUT_KVA3	Output apparent power phase 3 of parallel UPS system	0		
UPS_OUTPUT_kw1	Output active power phase 1 of parallel UPS system	0		
UPS_OUTPUT_kw2	Output active power phase 2 of parallel UPS system	0		
UPS_OUTPUT_kw3	Output active power phase 3 of parallel UPS system	0		
UPS_OUTPUT_V1	Output voltage phase 1	0		
UPS_OUTPUT_V2	Output voltage phase 2	0		
UPS_OUTPUT_V3	Output voltage phase 3	0		
UPS_OUTPUT_U12	Output voltage phase 1-2	0		
UPS_OUTPUT_U23	Output voltage phase 2-3	0		
UPS_OUTPUT_U31	Output voltage phase 3-1	0		
UPS_OUTPUT_fr	Output frequency	0		
UPS_OUTPUT_cf	Output crest factor	0		
UPS_OUTPUT_pf1	Output power factor phase 1	0		
UPS_OUTPUT_pf2	Output power factor phase 2	0		
UPS_OUTPUT_pf3	Output power factor phase 3	0		
UNIT_OUTPUT_Lr	Global output load rate of the unit	Unit level	Equal to UPS values	Unit level
UNIT_OUTPUT_KVA	Global output apparent power of the unit			
UNIT_OUTPUT_kw	Global output active power of the unit			
UNIT_OUTPUT_Lr1	Output load rate phase 1 of the unit			
UNIT_OUTPUT_Lr2	Output load rate phase 2 of the unit			
UNIT_OUTPUT_Lr3	Output load rate phase 3 of the unit			
UNIT_OUTPUT_I1	Output current phase 1 of the unit			
UNIT_OUTPUT_I2	Output current phase 2 of the unit			
UNIT_OUTPUT_I3	Output current phase 3 of the unit			
UNIT_OUTPUT_KVA1	Output apparent power phase 1 of the unit			
UNIT_OUTPUT_KVA2	Output apparent power phase 2 of the unit			
UNIT_OUTPUT_KVA3	Output apparent power phase 3 of the unit			
UNIT_OUTPUT_kw1	Output active power phase 1 of the unit			
UNIT_OUTPUT_kw2	Output active power phase 2 of the unit			
UNIT_OUTPUT_kw3	Output active power phase 3 of the unit			
UNIT_OUTPUT_V1	Output voltage phase 1			
UNIT_OUTPUT_V2	Output voltage phase 2			
UNIT_OUTPUT_V3	Output voltage phase 3			
UNIT_OUTPUT_U12	Output voltage phase 1-2			
UNIT_OUTPUT_U23	Output voltage phase 2-3			
UNIT_OUTPUT_U31	Output voltage phase 3-1			
UNIT_OUTPUT_fr	Output frequency			
UNIT_OUTPUT_cf	Output crest factor			
UNIT_OUTPUT_pf1	Output power factor phase 1			
UNIT_OUTPUT_pf2	Output power factor phase 2			
UNIT_OUTPUT_pf3	Output power factor phase 3			
UNIT_TMP	Unit ambient temperature	Unit level	Unit level	Unit level

Object Name	Description	Single Unit	Parallel concentrator	Parallel Multi-Units
RECTIFIER_V1	Rectifier voltage phase 1		Unit level	
RECTIFIER_V2	Rectifier voltage phase 2			
RECTIFIER_V3	Rectifier voltage phase 3			
RECTIFIER_U12	Rectifier voltage phase 1-2			
RECTIFIER_U23	Rectifier voltage phase 2-3			
RECTIFIER_U31	Rectifier voltage phase 3-1			
RECTIFIER_Fr	Rectifier frequency			
RECTIFIER_I1	Rectifier current phase 1 of the unit			
RECTIFIER_I2	Rectifier current phase 2 of the unit			
RECTIFIER_I3	Rectifier current phase 3 of the unit			
RECTIFIER_kw1	Rectifier active power phase 1 of the unit			
RECTIFIER_kw2	Rectifier active power phase 2 of the unit			
RECTIFIER_kw3	Rectifier active power phase 3 of the unit			
BATTERY_V+	Battery voltage or Battery positive string voltage			
BATTERY_V-	Battery negative string voltage			
BATTERY_I+	Battery current or Battery positive string current			
BATTERY_I-	Battery negative string current			
BATTERY_%	Battery capacity			
BATTERY_Ah	Battery capacity			
BATTERY_Min	Remaining backup time –when the UPS is on battery			
BATTERY_s	Power on battery time			
BATTERY_TMP	Battery temperature			
BYPASS_V1	Bypass voltage phase 1			
BYPASS_V2	Bypass voltage phase 2			
BYPASS_V3	Bypass voltage phase 3			
BYPASS_U12	Bypass voltage phase 1-2			
BYPASS_U23	Bypass voltage phase 2-3			
BYPASS_U31	Bypass voltage phase 3-1			
BYPASS_Fr	Bypass frequency			
BYPASS_I1	Bypass current phase 1 of the unit			
BYPASS_I2	Bypass current phase 2 of the unit			
BYPASS_I3	Rectifier current phase 3 of the unit			
BYPASS_kw1	Bypass active power phase 1 of the unit			
BYPASS_kw2	Bypass active power phase 2 of the unit			
BYPASS_kw3	Bypass active power phase 3 of the unit			

## 6.2. MULTI-STATES OBJECTS

### 6.2.1. DeviceStatus

MULTI-STATE	Values	Description
Running	1	BACnet + UPS com OK
Ready	2	Interface operating
No com with UPS	3	Interface doesn't communicates with the UPS
fault	4	Internal device failure

### 6.2.2. UPSLoadStatus

MULTI-STATE	Value	Description
ON MAINT. BYPASS	1	Load supplied by Maintenance Bypass
ON BATTERY	2	UPS operating on Battery
ON INVERTER	3	Load protected by Inverter
NORMAL MODE	4	Load supplied in Normal mode
ECO MODE	5	UPS in eco mode
ON BYPASS	6	Load supplied by automatic Bypass
LOAD OFF	7	Load OFF – default value

### 6.2.3. UnitLoadStatus

MULTI-STATE	Value	Description
ON MAINT. BYPASS	1	Load supplied by Maintenance Bypass
ON BATTERY	2	Unit operating on Battery
ON INVERTER	3	Load protected by Inverter
NORMAL MODE	4	Load supplied in Normal mode (*)
ECO MODE	5	Unit in eco mode
ON BYPASS	6	Load supplied by automatic Bypass
LOAD OFF	7	Load OFF - default value

(\*) for "OFF Line" working UPS only

### 6.2.4. UnitStatus

MULTI-STATE	Value	Description
SERVICE MODE	1	In Service mode
ISOLATED	2	Unit isolated – not connected to output bus-bar
ON STANDBY	3	Unit ready and load not supplied
AUTO-TEST	4	Internal auto-test running
OPERATING	5	Unit supplies the load
AVAILABLE	6	Unit is ready to supply the load – default value

### 6.2.5. Alarm

MULTI-STATE	Value	Description
NO ALARM	1	No alarm present
CRITICAL ALARM	2	At least one of Rectifier, Inverter or bypass critical alarms is present
PREVENTIVE ALARM	3	At least one of Rectifier, Inverter or bypass preventive alarms is present
GENERAL ALARM	4	At least one alarm is present, and not listed as critical or preventive alarm

#### 6.2.6. BatteryStatus

MULTI-STATE	Value	Description
NO BATTERY	1	Battery no present
DISCONNECTED	2	Battery disconnected
DISCHARGED	3	Battery discharged
LOW	4	End of Back-up Time
DISCHARGING	5	Operating on Battery
DISCHARG. TO INPUT	6	Battery discharge to Input (BCR optional function)
ALARM	7	Battery Alarm
TESTING	8	Battery Test in progress
CHARGING	9	Battery charging
OK	10	Default value

#### 6.2.7. RectifierStatus

MULTI-STATE	Value	Description
OFF	1	Rectifier OFF
ON	2	Rectifier ON

#### 6.2.8. InverterStatus

MULTI-STATE	Value	Description
OFF	1	Inverter OFF
ON	2	Inverter ON

#### 6.2.9. InputRecStatus

MULTI-STATE	Value	Description
NOT PRESENT	1	Rectifier Input Supply not present
OUT OF TOL	2	Rectifier Input Supply out of tolerance
GEN SET	3	Gen set ON
OK	4	Rectifier Input Supply present

#### 6.2.10. InputBypStatus

MULTI-STATE	Value	Description
NOT PRESENT	1	Bypass Input Supply not present
OUT OF TOL	2	Bypass Input Supply out of tolerance
SYNCHRO INV	3	Synchronization with inverter
OK	4	Bypass Input Supply present

## 6.3. BIT-STRING OBJECT

### 6.3.1. UPSstatus

BIT-STRING	bits	Description – set for parallel UPS system only
ENERGY SAVER ON	b00	UPS in energy saver
UNIT 1 OPERATING	b01	
UNIT 2 OPERATING	b02	
UNIT 3 OPERATING	b03	
UNIT 4 OPERATING	b04	
UNIT 5 OPERATING	b05	
UNIT 6 OPERATING	b06	
UNIT 7 OPERATING	b07	
UNIT 8 OPERATING	b08	Set if the related unit is operating and supplied the load
UNIT 9 OPERATING	b09	
UNIT 10 OPERATING	b10	
UNIT 11 OPERATING	b11	
UNIT 12 OPERATING	b12	
UNIT 13 OPERATING	b13	
UNIT 14 OPERATING	b14	
UNIT 15 OPERATING	b15	

### 6.3.2. UPSAlarms

BIT-STRING	bits	Description – set for parallel UPS system only
UPS IMMINENT STOP	b00	Imminent Stop
UPS OVERLOAD	b01	Overload Alarm
BYPASS LOCKED	b02	transfer locked after number of auto bypass or by control
BYPASS IMPOSSIBLE	b03	Inverter/bypass sources not synchronized
INSUFF. RESOURCES	b04	Insufficient Resources
REDUNDANCY LOST	b05	Redundancy lost
PARALLEL FAULT	b06	Parallel board Alarm
UPS GENERAL ALARM	b07	
UNIT 1 ALARM	b08	
UNIT 2 ALARM	b09	
UNIT 3 ALARM	b10	
UNIT 4 ALARM	b11	
UNIT 5 ALARM	b12	
UNIT 6 ALARM	b13	
UNIT 7 ALARM	b14	
UNIT 8 ALARM	b15	
UNIT 9 ALARM	b16	
UNIT 10 ALARM	b17	
UNIT 11 ALARM	b18	
UNIT 12 ALARM	b19	
UNIT 13 ALARM	b20	
UNIT 14 ALARM	b21	
UNIT 15 ALARM	b22	

### 6.3.3. UnitAlarms

BIT-STRING	bits	Description
IMMINENT STOP	b00	Unit in Imminent Stop
OVERLOAD	b01	Unit Overload Alarm
TEMPERATURE	b02	Unit over temperature alarm
BYPASS LOCKED	b03	transfer locked after number of auto bypass or by control
BYPASS IMPOSSIBLE	b04	Inverter/bypass sources not synchronized
MAINTENANCE AL.	b05	Maintenance Alarm
UNIT GENERAL ALARM	b06	Unit General Alarm
BAT. DISCONNECTED	b07	Battery disconnected
BAT. DISCHARGED	b08	Battery discharged
BATTERY LOW	b09	End of Back-up Time
ON BATTERY	b10	Operating on Battery
BAT. TEMPERATURE	b11	Battery Temperature Alarm*
BATTERY ROOM	b12	Battery Room Alarm*
BAT. TEST FAILED	b13	Battery Test failed
BATTERY ALARM	b14	Battery Alarm
CHARGER ALARM	b15	Charger Alarm
REC. CRITICAL	b16	Rectifier Critical Alarm
REC. PREVENTIVE	b17	Rectifier Preventive Alarm
GEN SET ALARM	b18	Gen Set Alarm*
INV. CRITICAL	b19	Inverter Critical Alarm
INV. PREVENTIVE	b20	Inverter Preventive Alarm
BYP. CRITICAL	b21	Bypass Critical Alarm
BYP. PREVENTIVE	b22	Bypass Preventive Alarm
FAN FAILURE	b23	FAN Failure
MAINTENANCE BYPASS	b24	Maintenance Bypass Alarm
UPS POWER OFF	b25	UPS Power OFF* (EPO)
INTERNAL FAILURE	b26	Internal / Communication failure
External Input 1	b27	Programmable alarm**
External Input 2	b28	Programmable alarm**
External Input 3	b29	Programmable alarm**
External Input 4	b30	Programmable alarm**

(\*) information coming from external devices in option

(\*\*) this option is not available for all UPS range.

### 6.3.4. UPS COMPATIBILITY

 As the BACnet interface is compatible for all SOCOMEc UPS range, all measurements, alarms and status present in BACnet objects are not managed.

Please refer to UPS user manual to have the detail of data managed by your UPS.

## 7. UPS COMPATIBILITY

### 7.1. UPS status

Status	MASTERYS	DELPHYS MP / MX	DELPHYS BC / GP	ITYS-PRO / MODULYS GP 2.0
ON MAINT. BYPASS				
ON BATTERY				
ON INVERTER				
NORMAL MODE	Not managed	Not managed	Not managed	
ECO MODE				
ON BYPASS				
LOAD OFF				
SERVICE MODE				
ISOLATED	Not managed			
ON STANDBY				
AUTO-TEST	Not managed	Not managed	Not managed	
OPERATING				
AVAILABLE				
NO BATTERY				
DISCONNECTED				
DISCHARGED				
LOW				
DISCHARGING				
DISCH. TO INPUT	Not managed	Not managed		
ALARM				
TESTING				
CHARGING				
OK				
SYNCHRO INV	Not managed			
ENERGY SAVER ON	Not managed	Not managed		
UNIT 1 OPERATING				
UNIT 2 OPERATING				
UNIT 3 OPERATING				
UNIT 4 OPERATING				
UNIT 5 OPERATING				
UNIT 6 OPERATING				
UNIT 7 OPERATING	Not managed	Not managed		
UNIT 8 OPERATING	Not managed	Not managed		
UNIT 9 OPERATING	Not managed	Not managed	Not managed	
UNIT 10 OPERATING	Not managed	Not managed	Not managed	
UNIT 11 OPERATING	Not managed	Not managed	Not managed	
UNIT 12 OPERATING	Not managed	Not managed	Not managed	
UNIT 13 OPERATING	Not managed	Not managed	Not managed	
UNIT 14 OPERATING	Not managed	Not managed	Not managed	
UNIT 15 OPERATING	Not managed	Not managed	Not managed	

## 7.2. UPS alarms

Alarms	MASTERYS	DELPHYS MP / MX	DELPHYS BC / GP	ITYS-PRO / MODULYS GP 2.0
UPS IMMINENT STOP				
UPS OVERLOAD				
BYPASS LOCKED				
BYPASS IMPOSSIBLE				
INSUFF. RESOURCES				
REDUNDANCY LOST				
PARALLEL FAULT				
UPS GENERAL ALARM				
UNIT 1 ALARM				
UNIT 2 ALARM				
UNIT 3 ALARM				
UNIT 4 ALARM				
UNIT 5 ALARM				
UNIT 6 ALARM				
UNIT 7 ALARM	Not managed	Not managed		
UNIT 8 ALARM	Not managed	Not managed		
UNIT 9 ALARM	Not managed	Not managed	Not managed	
UNIT 10 ALARM	Not managed	Not managed	Not managed	
UNIT 11 ALARM	Not managed	Not managed	Not managed	
UNIT 12 ALARM	Not managed	Not managed	Not managed	
UNIT 13 ALARM	Not managed	Not managed	Not managed	
UNIT 14 ALARM	Not managed	Not managed	Not managed	
UNIT 15 ALARM	Not managed	Not managed	Not managed	
IMMINENT STOP				
OVERLOAD				
TEMPERATURE				
BYPASS LOCKED				
BYPASS IMPOSSIBLE				
MAINTENANCE AL.				
UNIT GENERAL ALARM				
BAT. DISCONNECTED				
BAT. DISCHARGED				
BATTERY LOW				
ON BATTERY				
BAT. TEMPERATURE	Not managed	Not managed	(UPS option)	
BATTERY ROOM	Not managed	Not managed	(UPS option)	(UPS option)
BAT. TEST FAILED				
BATTERY ALARM				
CHARGER ALARM				
REC. CRITICAL				
REC. PREVENTIVE				
GEN SET ALARM				
INV. CRITICAL				
INV. PREVENTIVE				
BYP. CRITICAL				
BYP. PREVENTIVE				
FAN FAILURE				
MAINTENANCE BYPASS				
UPS POWER OFF				
INTERNAL FAILURE				
External Input 1	(UPS option)	(UPS option)	(UPS option)	(UPS option)
External Input 2				
External Input 3				
External Input 4				

## 7.3. UPS Measurements

### 7.3.1. Output measurements

Measurements	MASTERYS	DELPHYS MP / MX	DELPHYS BC / GP	ITYS-PRO / MODULYS GP 2.0
_OUTPUT_Lr				
_OUTPUT_kVA	-1 / not managed			
_OUTPUT_kw				
_OUTPUT_Lr1				
_OUTPUT_Lr2				
_OUTPUT_Lr3				
_OUTPUT_I1				
_OUTPUT_I2				
_OUTPUT_I3				
_OUTPUT_kVA1				
_OUTPUT_kVA2				
_OUTPUT_kVA3				
_OUTPUT_kw1	-1 / not managed			
_OUTPUT_kw2	-1 / not managed			
_OUTPUT_kw3	-1 / not managed			
_OUTPUT_V1				
_OUTPUT_V2				
_OUTPUT_V3				
_OUTPUT_U12	-1 / not managed			
_OUTPUT_U23	-1 / not managed			
_OUTPUT_U31	-1 / not managed			
_OUTPUT_fr				
_OUTPUT_cf	-1 / not managed			
_OUTPUT_pf1	-1 / not managed			
_OUTPUT_pf2	-1 / not managed			
_OUTPUT_pf3	-1 / not managed			
UNIT_TMP	-1 / not managed			

7.3.2. Subsets measurements

Measurements	MASTERYS	DELPHYS MP / MX	DELPHYS BC / GP	ITYS-PRO / MODULYS GP 2.0
RECTIFIER_V1				
RECTIFIER_V2				
RECTIFIER_V3				
RECTIFIER_U12	-1 / not managed			
RECTIFIER_U23	-1 / not managed			
RECTIFIER_U31	-1 / not managed			
RECTIFIER_Fr				
RECTIFIER_I1		-1 / not managed		
RECTIFIER_I2		-1 / not managed		
RECTIFIER_I3		-1 / not managed		
RECTIFIER_kw1	-1 / not managed	-1 / not managed	-1 / not managed	
RECTIFIER_kw2	-1 / not managed	-1 / not managed	-1 / not managed	
RECTIFIER_kw3	-1 / not managed	-1 / not managed	-1 / not managed	
BATTERY_V+				
BATTERY_V-		-1 / not managed	-1 / not managed	
BATTERY_I+				
BATTERY_I-		-1 / not managed	-1 / not managed	
BATTERY_%				
BATTERY_Ah				
BATTERY_Min				
BATTERY_s	-1 / not managed	-1 / not managed		
BATTERY_TMP				
BYPASS_V1				
BYPASS_V2				
BYPASS_V3				
BYPASS_U12	-1 / not managed			
BYPASS_U23	-1 / not managed			
BYPASS_U31	-1 / not managed			
BYPASS_Fr				
BYPASS_I1	-1 / not managed	-1 / not managed	-1 / not managed	
BYPASS_I2	-1 / not managed	-1 / not managed	-1 / not managed	
BYPASS_I3	-1 / not managed	-1 / not managed	-1 / not managed	
BYPASS_kw1	-1 / not managed	-1 / not managed	-1 / not managed	
BYPASS_kw2	-1 / not managed	-1 / not managed	-1 / not managed	
BYPASS_kw3	-1 / not managed	-1 / not managed	-1 / not managed	

## 8. BACNET OBJECTS PROPERTIES

### 8.1. ANALOG-VALUE

Property Identifier	Conform. Code	Property Datatype	Example
Object_Identifier	Required	BACnetObjectIdentifier	Analog Value #1
Object_Name	Required	CharacterString	UPS Output kVA
Object_Type	Required	BACnetObjectType	Analog Value (2)
Present_Value	Required	REAL	0.00
Description	Optional	CharacterString	UPS Output kVA
Status_Flags	Required	BACnetStatusFlags	In_Alarm, Fault, Overridden, Out_Of_Service flags
Event_State	Required	BACnetEventState	Normal (0)
Out_Of_Service	Required	BOOLEAN	False
Units	Required	BACnetEngineeringUnits	kVA (9)

### 8.2. MULTI-STATES OBJECTS

Property Identifier	Conform. Code	Property Datatype	Example
Object_Identifier	Required	BACnetObjectIdentifier	MultiStateValue #1
Object_Name	Required	CharacterString	UPSLoadStatus
Object_Type	Required	BACnetObjectType	MultiStateValue (19)
Present_Value	Required	Unsigned	NORMAL MODE (4)
Description	Optional	CharacterString	UPSLoadStatus
Status_Flags	Required	BACnetStatusFlags	In_Alarm, Fault, Overridden, Out_Of_Service flags
Event_State	Required	BACnetEventState	Normal (0)
Out_Of_Service	Required	BOOLEAN	FALSE
Number_Of_States	Required	Unsigned	7
State_Text	Optional	BACnetARRAY[N] of CharacterString	1 = ON MAINT. BYPASS 2 = ON BATTERY 3 = ON INVERTER 4 = NORMAL MODE 5 = ECO MODE 6 = ON BYPASS 7 = LOAD OFF
Relinquish_Default	Optional	Unsigned	7

### 8.3. BIT-STRING OBJECTS

Property Identifier	Conform. Code	Property Datatype	Example
Object_Identifier	Required	BACnetObjectIdentifier	BitStringValue #0
Object_Name	Required	CharacterString	UPSStatus
Object_Type	Required	BACnetObjectType	BitStringValue (39)
Description	Optional	CharacterString	UPSStatus
Present_Value	Required	BIT STRING	F,F,T,F,F,F,F,F,F,F,F,F,F,F,F
Bit_Text	Optional	BACnetARRAY[N] of CharacterString	ENERGY SAVER UNIT OPERATING 1 UNIT OPERATING 2 UNIT OPERATING 3 UNIT OPERATING 4 UNIT OPERATING 5 UNIT OPERATING 6 UNIT OPERATING 7 UNIT OPERATING 8 UNIT OPERATING 9 UNIT OPERATING 10 UNIT OPERATING 11 UNIT OPERATING 12 UNIT OPERATING 13 UNIT OPERATING 14 UNIT OPERATING 15
Status_Flags	Required	BACnetStatusFlags	In_Alarm, Fault, Overridden, Out_Of_Service flags
Event_State	Optional	BACnetEventState	NORMAL (0)
Out_Of_Service	Optional	BOOLEAN	FALSE