

User Manual of
EXTEND JBUS/MODBUS serial link
DELPHYS MP - MX & elite

UPS/NTA GB/JBUSEXT_MPMX.B

29/06/2010

FOREWORD

We thank you for the trust you have in our Uninterruptible Power Systems.

This equipment is fitted with up to date technology. Rectifier and inverter subsets are provided with power semiconductors (IGBT) including a digital micro-controller.

Our equipment complies with IEC EN 62040-2 standard.

CAUTION : "This is a product for restricted sales distribution to informed partners. Installation restrictions or additional measures may be needed to prevent disturbances".

SOCOMECSICON UPS reserves the right to modify their specifications at any time as far as this contributes to technical progress.

SAVETY REQUIREMMENT

Using conditions:

Do read carefully these operation instructions before using the JBUS/MODBUS interface.

Whatever the repairs, they must be made only by authorised staffs, which have been suitably trained. It is recommended that the ambient temperature and humidity of the UPS environment are maintained below the values specified by the manufacturer.

UPS operating reference

Respect the safety requirements.

Do read carefully the operation instructions of **DELPHYS MX / MP**.

For an optimal operation, it is recommended to maintain the ambient temperature and humidity of the UPS environment below the values specified by the manufacturer.

This equipment meets the requirements of the European directives applied to this product. As a consequence it is labelled as follows:



ENVIRONMENT

Recycling of electrical products and equipment.

Provision is made in European countries to break up and recycle materials making up the system. The various components must be disposed of in accordance with the legal provisions in force in the country where the system is installed.

INTRODUCTION

General purpose

This document provides required information of the JBUS/MODBUS protocol serial link.

Before connecting a supervision equipment or BMS system (Building management system) to the UPS, it is necessary to install and set up the serial interface.

This interface is located in the **DELPHYS MX / MP** « com-slot », and should be set through the control panel or via the graphic touch screen (optional).

DELPHYS MX / MP is able to manage up to 2 independent JBUS/MODBUS serial links.

JBUS/MODBUS protocol

This document does not explain the JBUS/MODBUS protocol management. Please refer on www.modbus.org web site for more information.

The **DELPHYS MX / MP** JBUS/MODBUS uses the following functions :

- function 3 for reading *Input Registers* (16 bits),
- function 6 for writing *single Registers (to control UPS)*.

The data field is composed of words, defined by a MSB (most significant byte) and a LSB (lowest significant byte), and displayed in the following order on the serial link.

1 WORD DATA					
b ₇	MSB	b ₀	b ₇	LSB	b ₀
b ₁₅				b ₀	

Data decoding

Status and alarms Information

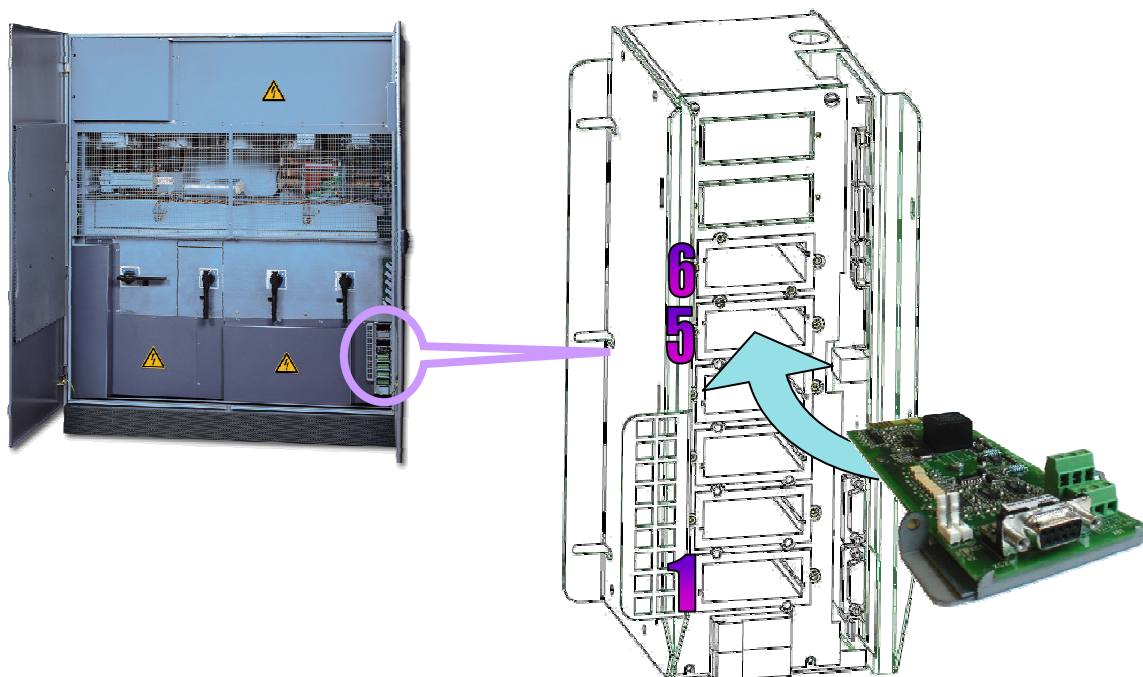
This information are coding in bit. This means that 1 word defines 16 information. If the related bit is set to 1, this information is active or true.

Measurements and counters data

1 word defines a measurement or a counter. Some values are numeric decimal signed or unsigned (0 to 65535 or from -32767 to 32767), or in hexadecimal (0x0000 to 0xFFFF).

JBUS/MODBUS SERIAL INTERFACE INSTALLATION INSIDE DELPHYS MX / MP

'Com-Slots' localisation



The « Com-Slots » integrates all communication interfaces, and it is located at the bottom of the UPS, on the right side.
 Slots 5 and 6 are dedicated to JBUS/MODBUS serial interfaces.
 Slots 1 to 4 are used for the alarm report boards, 3 inputs and 4 programmable relays (ADC).

JBUS/MODBUS serial interface plug in

The serial interface should be plugged in the corresponding slot, and fixed with 2 screws.
DELPHYS MX / MP is able to manage up to 2 independent JBUS/MODBUS interfaces. Each interface can be set differently, like the slave numbers.

JBUS interface in parallel system configuration

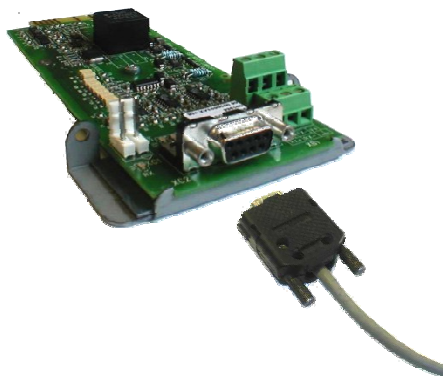
! There is only one JBUS/MODBUS serial link interface for a parallel system configuration. One serial interface is used for the whole installation. The access to the data of the UPS module or unit is managed by the table addressing¹.

Connections and cablings

NOTE : there is only one connection per interface (RS232 or RS422 or RS485)

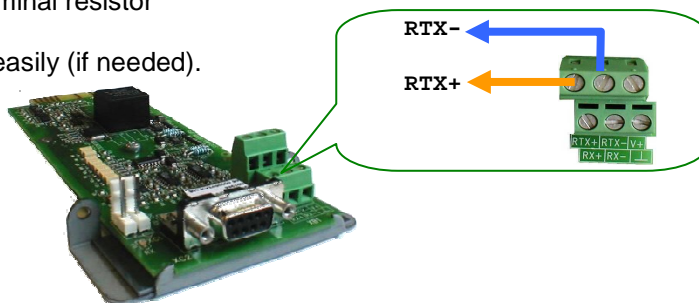
✓ *RS232 connection*

- ☞ Standard PC connection
- ☞ Sub-D 9 pins connector
- ☞ Pin 2 : Rx
- ☞ Pin 3 : Tx
- ☞ Pin 5 : GND



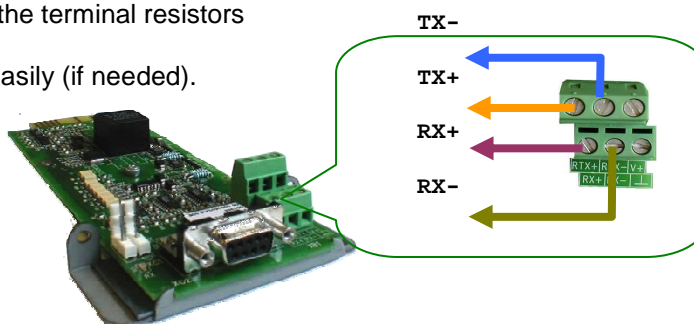
✓ *Isolated RS485 connection*

- ☞ 2 wires connection
- ☞ « dip-switch ① » allows connecting the terminal resistor
- ☞ Isolation via “opto-coupler”
- ☞ 2 polarization resistors could be removed easily (if needed).



✓ *Isolated RS422 connection*

- ☞ 4 wires connection
- ☞ « dip-switch ① and ② » allows connecting the terminal resistors
- ☞ Isolation via “opto-coupler”
- ☞ 4 polarization resistors could be removed easily (if needed).



RECOMMENDATIONS

Before making any connection, please check the cabling. A wrong connection or cabling can damage the serial link interface.

JBUS/MODBUS LINK

Serial link 1 and 2 default settings

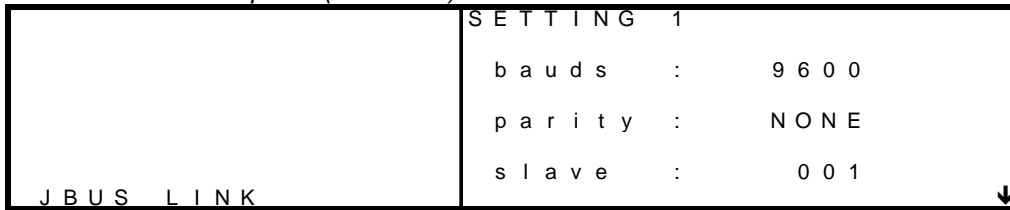
Baud rate: 9600 bauds
 Parity: NONE
 Data: 8 bits
 Stop: 1 bit
 Slave: 1

The serial link settings can be set from the control panel or from the graphic touch screen.

How to change the serial link settings ?

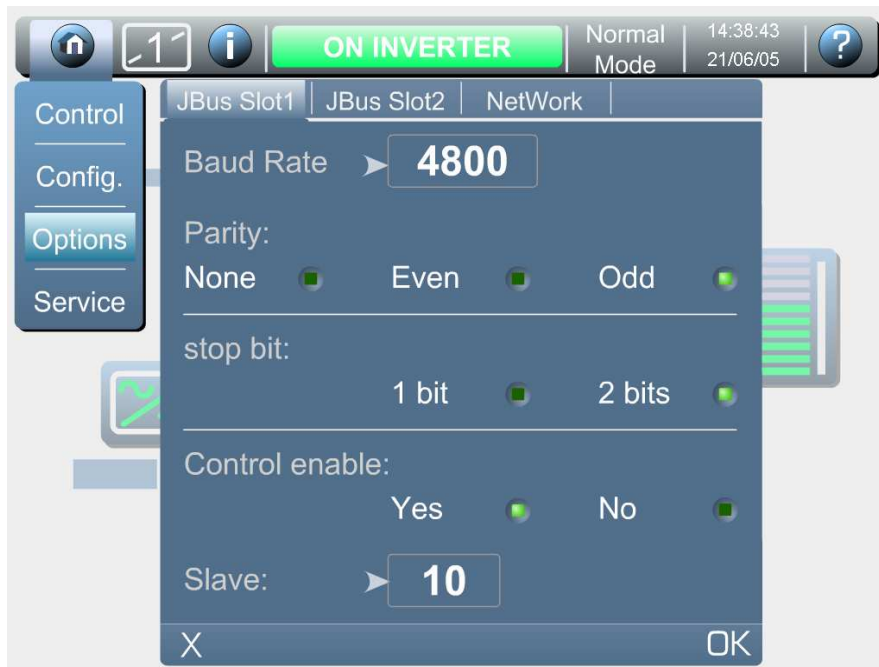
Available baud rate: 1200 - 2400 - 4800 - 9600 - 19200 bauds
 Parity: EVEN - ODD - NONE
 Slave number: 1 to 32

Settings screen of the control panel (last menu)



Select the settings with **ENTER**
 Change the value with **^** and **v**

Graphic touch screen:



JBUS/MODBUS 1 settings are linked to the interface located in slot 5.
 JBUS/MODBUS 2 settings are linked to the interface located in slot 6.



The serial interface should be activated by the CIM or the factory during the UPS commissioning. This mode needs a special configuration code (PLC mode has to be activated via UPS maintenance tools).

JBUS/MODBUS Protocol

Reminder:

The JBUS/MODBUS protocol available on **DELPHYS MX / MP** is slave and in RTU mode. It uses the function 3 as 'read registers' and the function 6 as 'write register'. The slave number is set via the control panel or via the graphic touch screen.

Conventions

The table addresses are written in hexadecimal, beginning with '0x'. Some PLC systems request a relative address starting from 400 (0x0190) or 40001 (0x9C41), on this address it's necessary to add the first address of the JBUS/MODBUS table.

Frame errors management:

In case of wrong data request, the UPS answers with the following frame error :

Error function code	Error code	Cause
80 + code function	1	Function error
80 + code function	2	Addresses error
80 + code function	3	Wrong data
80 + code function	6	busy
80 + code function	8	Write register error

EXTEND JBUS/MODBUS TABLES

For specific needs

To optimize the data traffic between the UPS and the remote equipment, **DELPHYS MX / MP** is able to sent in one frame all information, including states and alarms, and also measurements. The addressing map is absolute; this means that the first address defines the complete table. The next address defines an other data table.

To use this specific mapping, you need to check if your remote system is able to manage the address mapping independently of the length of it.

Specific JBUS/MODBUS Tables

TABLE	Absolute address	length	Function
Common bypass table	0x0387	16 (240 bits)	3 READ
Common bypass Measurements	0x0397	64	3 READ
DATA unit 1	0x0381	16	3 READ
Measurements unit 1	0x0391	64	3 READ
DATA unit 2	0x0382	16	3 READ
Measurements unit 2	0x0392	64	3 READ
DATA unit 3	0x0383	16	3 READ
Measurements unit 3	0x0393	64	3 READ
DATA unit 4	0x0384	16	3 READ
Measurements unit 4	0x0394	64	3 READ
DATA unit 5	0x0385	16	3 READ
Measurements unit 5	0x0395	64	3 READ
DATA unit 6	0x0386	16	3 READ
Measurements unit 6	0x0396	64	3 READ

How to read data:

The identification, status and alarms tables should be read completely (this means the number of word to read is equal to the table length).

The measurements table could be read word by word or per group, without exceed the length of the table.

Incoming data structure:

Example of 6 words											
1	2	3	4	5	6	7	8	9	10	11	12
MSB 0	LSB 0	MSB 1	LSB 1	MSB 2	LSB 2	MSB 3	LSB 3	MSB 4	LSB 4	MSB 5	LSB 5
WORD 0		WORD 1		WORD 2		WORD 3		WORD 4		WORD 5	
b ₁₅	b ₀	b ₁₅	b ₀	b ₁₅	b ₀	b ₁₅	b ₀	b ₁₅	b ₀	b ₁₅	b ₀
S15	S00	S31	S16	S47	S32	S63	S48	S79	S64	S95	S80
A15	A00	A31	A16	A47	A32	A63	A48				
M00		M01		M02		M03		M04		M05	

DATA fields detail (11 words)

		STATES		0x038n	0x0387
b0	Rectifier	S00	Rectifier on	X	
b1	WORD 0	S01	Rect mains fault	X	
b2		S02	Battery test interrupted	X	
b3		S03	Battery charging	X	
b4		S04	Battery test on	X	
b5		S05	Battery charged	X	
b6		S06	Battery breaker closed	X	
b7		S07	charger on		
b8		S08	Boost charge		
b9		S09			
b10		S10			
b11		S11			
b12		S12			
b13		S13			
b14		S14			
b15		S15			
b0	Inverter	S16	Inverter on	X	
b1	WORD 1	S17			
b2		S18			
b3		S19			
b4		S20			
b5		S21			
b6		S22			
b7		S23			
b8		S24			
b9		S25			
b10		S26			
b11		S27			
b12		S28			
b13		S29			
b14		S30			
b15		S31			
b0	Bypass	S32	Unit load on Inverter	X	X
b1	WORD 2	S33	Unit load on Automatic Bypass	X	X
b2		S34	Unit load not supplied	X	X
b3		S35	Unit load on maintenance Bypass	X	X
b4		S36	ECO/MODE activated	X	
b5		S37	Automatic Bypass mains out of tol. (1)	X	
b6		S38	Inverter Switch closed	X	
b7		S39	Bypass Switch activated	X	
b8		S40	Output switch Q2/3 closed	X	
b9		S41	Local maintenance Bypass Q5 closed	X	
b10		S42	Remote maintenance Bypass closed	X	
b11		S43	Q21 switch closed	X	
b12		S44	Q22 switch closed	X	
b13		S45	Unit isolated from inst.	X	
b14		S46	Unit available	X	
b15		S47	ACS forced	-	-

		STATES		0x038n	0x0387
b0	Common	S48	ESD		
b1	WORD 3	S49	Generator set active		
b2		S50	Auxiliary input 1	X	X
b3		S51	Auxiliary input 2	X	X
b4		S52	Auxiliary input 3	X	X
b5		S53	Auxiliary input 4	X	X
b6		S54	Auxiliary input 5	X	X
b7		S55	Auxiliary input 6	X	X
b8		S56	Automatic Bypass input is synchro. With Ref		
b9		S57	Ext. synchro ref (ACS on)		
b10		S58	Commissioning code waiting		
b11		S59	eco mode forcé		
b12		S60	energy saver off		
b13		S61	ext. Auto start request		
b14		S62			
b15		S63			
b0	Synoptic	S64	Load protected by inverter		X
b1	WORD 4	S65	Load on Automatic Bypass		X
b2		S66	Load not supplied		X
b3		S67	Load on maintenance Bypass		X
b4		S68	Auto start in progress		X
b5		S69	Maintenance bypass in progress		X
b6		S70	Auxiliary input 7		X
b7		S71	Auxiliary input 8		X
b8		S72	Auxiliary input 9		X
b9		S73	Auxiliary input 10		X
b10		S74	Auxiliary input 11		X
b11		S75	Auxiliary input 12		
b12		S76	Maintenance mode		
b13		S77	Alerte Preventive maintenance		
b14		S78	Unit in stand-by		
b15		S79	Energy saver activated		
b0	Parallel	S80	Unit 1 operating in //		X
b1	WORD 5	S81	Unit 2 operating in //		X
b2		S82	Unit 3 operating in //		X
b3		S83	Unit 4 operating in //		X
b4		S84	Unit 5 operating in //		X
b5		S85	Unit 6 operating in //		X
b6		S86			
b7		S87			
b8		S88			
b9		S89			
b10		S90			
b11		S91			
b12		S92			
b13		S93			
b14		S94			
b15		S95			

		ALARMS		0x038n	0x0387
b0	Rectifier	A00	Rectifier Critical Alarm	X	
b1	WORD 6	A01	Battery General Alarm	X	
b2		A02	Battery room	X	
b3		A03	Battery test failed	X	
b4		A04	Battery circuit open	X	
b5		A05	Battery discharged	X	
b6		A06	End of backup time	X	
b7		A07	Rectifier Preventive alarm	X	
b8		A08	Charger general alarm	X	
b9		A09	BHC general alarm	X	
b10		A10	Battery String 1 alarm	X	
b11		A11	Battery String 2 alarm	X	
b12		A12	Battery String 3 alarm	X	
b13		A13	Battery String 4 alarm	X	
b14		A14	Battery String 5 alarm	X	
b15		A15	Battery String 6 alarm	X	
b0	Inverter	A16	Inverter critical Alarm	X	
b1	WORD 7	A17	Inverter preventive alarm	X	
b2		A18			
b3		A19			
b4		A20			
b5		A21			
b6		A22			
b7		A23			
b8		A24			
b9		A25			
b10		A26			
b11		A27			
b12		A28			
b13		A29			
b14		A30			
b15		A31			
b0	By-Pass	A32	Bypass critical Alarm	X	X
b1	WORD 8	A33	Transfer impossible		X
b2		A34	Transfer blocked		X
b3		A35	Maintenance Bypass alarm		X
b4		A36	Insufficient Resources		X
b5		A37	Back feed protection open		X
b6		A38	Bypass preventive alarm		X
b7		A39			
b8		A40			
b9		A41			
b10		A42			
b11		A43			
b12		A44			
b13		A45			
b14		A46			
b15		A47			

	ALARMS			0x038n	0x0387
b0	Common	A48	Control critical alarm	X	X
b1	WORD 9	A49	Unit Imminent stop	X	
b2		A50	Operating on battery	X	
b3		A51	Unit overload	X	
b4		A52	ACS source lost	X	
b5		A53	Batterie en décharge	X	-
b6		A54	Maintenance alarm	X	X
b7		A55	Control preventive alarm	X	X
b8		A56	ambiante temp alarm	X	X
b9		A57			
b10		A58			
b11		A59			
b12		A60			
b13		A61			
b14		A62			
b15		A63			
b0	Synoptic	A64	Redundancy loss alarm		X
b1	WORD 10	A65	Unit 1 general alarm		X
b2		A66	Unit 2 general alarm		X
b3		A67	Unit 3 general alarm		X
b4		A68	Unit 4 general alarm		X
b5		A69	Unit 5 general alarm		X
b6		A70	Unit 6 general alarm		X
b7		A71	UPS Imminent stop	X	X
b8		A72	Mimic-Panel	X	X
b9		A73	UPS General Alarm	X	X
b10		A74	UPS overload	X	X
b11		A75	Ext input alarme	X	X
b12		A76	maintenance warning	X	X
b13		A77	maintenance alarm	X	x
b14		A78			
b15		A79			

MEASUREMENTS fields detail (80 words)

MEASUREMENTS			0x039n	0x0397
Rectifier	M00	Rect. mains volt. U12 V	X	
	M01	Rect. mains volt. U13 V	X	
	M02	Rect. mains volt. U23 V	X	
	M03	Rect. mains freq. x10Hz	X	
	M04	DC voltage V	X	
	M05	DC current (bridge 1+2) A	X	
	M06	Battery voltage V	X	
	M07	Battery current A	X	
	M08	Battery T° °C	X	
	M09	Battery capacity Ah	X	
	M10	Remaining backup time mn	X	
	M11	Battery capacity %	X	
	M12	Time on battery	X	
	M13	Average battery temperature	X	
	M14			
M15				
Inverter	M16	Inv. output voltage U13 V	X	
	M17	Inv. output voltage U21 V	X	
	M18	Inv. output voltage U32 V	X	
	M19	Inverter frequency x10Hz	X	
	M20			
	M21			
	M22			
	M23			
	M24			
	M25			
	M26			
	M27			
	M28			
	M29			
	M30			
	M31			
	By-Pass	M32	Output voltage L1 V	X
M33		Output voltage L2 V	X	X
M34		Output voltage L3 V	X	X
M35		Output current L1 A	X	X
M36		Output current L2 A	X	X
M37		Output current L3 A	X	X
M38		Output frequency x10Hz	X	X
M39		BYP mains frequency x10Hz	X	X
M40		BYP mains voltage U13 V	X	X
M41		BYP mains voltage U21 V	X	X
M42		BYP mains voltage U32 V	X	X
M43		Global power kVA	X	X
M44		Output load rate L1 %	X	X
M45		Output load rate L2 %	X	X
M46		Output load rate L3 %	X	X
M47		Output unit power in kW	X	X

MESURES			0x039n	0x0397
Common	M48	External sync. freq x10Hz	X	
	M49	Ambient T° °C	X	
	M50	Unit load rate %	X	X
	M51	kVA L1	X	X
	M52	kVA L2	X	X
	M53	kVA L3	X	X
	M54	kW L1	X	X
	M55	kW L2	X	X
	M56	kW L3	X	X
	M57	pf L1	X	X
	M58	pf L2	X	X
	M59	pf L3	X	X
	M60	cf	X	X
	M61			
	M62			
	M63	Module number	X	X
Synoptic	M64	last battery test Year/month		
	M65	last battery test day		
	M66	last battery test hh:mm		
	M67	next battery test Y/M		
	M68	next battery test day		
	M69	next battery test hh:mm		
	M70	hours on inverter		
	M71	minutes on mains		
	M72	minutes on battery		
	M73	number of by-pass		
	M74	number of mains absence		
	M75	number of battery discharge		
	M76			
	M77			
	M78			
	M79			

STANDARD JBUS/MODBUS TABLES FOR SINGLE UNIT UPS

In parallel of the extended tables, it's also possible reading the standard JBUS/MODBUS, according the following tables.

STANDARD JBUS/MODBUS tables

§	TABLE	Start addresses	Table length in words	JBUS/MODBUS FUNCTION
1	UPS Identification	0x0000	12	3 READ
2	Date and hours	0x0360	4	3 READ
3	UPS Configurations	0x00E0	32	3 READ
4	Status (96 bits)	0x0020	6	3 READ
5	Alarms (64 bits)	0x0040	4	3 READ
6	Measurements	0x0060	48	3 READ
7	Controls permission	0x05C0	2	3 READ
8	UPS Controls	0x05B0	1	6 WRITE

How to read data:

The identification, status and alarms tables should be read completely (this means the number of word to read is equal to the table length).

The measurements table could be read word by word or per group, without exceed the length of the table. (from 0x0060 to 0x008F).

Incoming data structure:

Example of 6 words											
1	2	3	4	5	6	7	8	9	10	11	12
MSB 0	LSB 0	MSB 1	LSB 1	MSB 2	LSB 2	MSB 3	LSB 3	MSB 4	LSB 4	MSB 5	LSB 5
WORD 0		WORD 1		WORD 2		WORD 3		WORD 4		WORD 5	
b ₁₅	b ₀	b ₁₅	b ₀	b ₁₅	b ₀	b ₁₅	b ₀	b ₁₅	b ₀	b ₁₅	b ₀
S15	S00	S31	S16	S47	S32	S63	S48	S79	S64	S95	S80
A15	A00	A31	A16	A47	A32	A63	A48				
M00		M01		M02		M03		M04		M05	

'Concentrator mode' in parallel system configuration

The above JBUS/MODBUS table can be used in case of a parallel system configuration. The TOR data from all units or modules are managed in order to create a 'virtual single unit'. The logic combination 'OR' is used to create the single unit data base, except following states and alarms :

Information	Combination if redundant UPS	Combination if not redundant UPS
S00	OR	AND
S05	AND	OR
S15	AND	OR
A02	AND	OR
A07	AND	OR
A31	AND	OR

UPS IDENTIFICATION: Address 0x0000, 12 words

CODE	DESCRIPTION	Number of WORDS	ADDRESS	Type	Remarks
I00	UPS CODE	1 WORD	0x0000	Numeric value	515 = DELPHYS MX 516 = DELPHYS MX elite
I01	UPS Power	1 WORD	0x0001	Numeric value	In kVA * 10 5000 = 500kVA
I02	Module number	1 WORD	0x0002	Numeric value	1
I03	Serial number	5 WORDS	0x0003	1 word = 2 ASCII codes	LSB = 1. char MSB = 2. char UPS Code:CCCCCAaYYYYXXXXXXNn Code read :aXXXXXXXXn
I04	Reserved	1 WORD	0x0008	0	
I05	Reserved	1 WORD	0x0009	0	
I06	Reserved	1 WORD	0x000A	0	
I07	Reserved	1 WORD	0x000B	0	

DATE & HOURS: Address 0x0360, 4 words

CODE	DESCRIPTION	Number of words	Addresses	Type	Remarks
D00	Minutes / seconds	1	0x0360	Byte value	MSB = minutes LSB = seconds
D01	Hours / day	1	0x0361	Byte value	MSB = day LSB = hours
D02	Month / day of week	1	0x0362	Byte value	MSB = month LSB = day of the week 1=Monday 7=Sunday
D03	year	1	0x0363		00 = 2000

UPS CONFIGURATION: Address 0x00E0, 32 words

Code	Measurements	Unit	Address	REMARKS
T00	Nominal start input voltage	V	0x00E0	
T01	Nominal start output voltage	V	0x00E1	
T02	Nominal input frequency	Hz	0x00E2	
T03	Nominal output frequency	Hz	0x00E3	
T04	Version	value * 100	0x00E4	100 = V1.00
T05			0x00E5	
T06			0x00E6	
T07			0x00E7	
T08	Nominal battery capacity	Ah * 10	0x00E8	3000 = 300Ah
T09	Number of battery elements		0x00E9	
T10	Reserved		0x00EA	Set to 0xFFFF (-1)
T11	Reserved		0x00EB	Set to 0xFFFF (-1)
T12	Reserved		0x00EC	
T13	Working mode	Bits field	0x00ED	b0 not used b1 = with battery b2 = Gen Set present b3 = 'energy saver' enabled
T14	Redundancy level (only in //)	value	0x00EE	0 = without 1 = N+1
T15	Reserved		0x00EF	100
T16	Reserved		0x00F0	Set to 0xFFFF (-1)
..	Reserved			
T31			0x00FF	

STATUS: Address 0x0020, 6 words

CODE	DESCRIPTION	BIT	ADDRESS	REMARKS
S00	Rectifier Input supply present	0	0x0020	
S01	Inverter ON	1	0x0020	
S02	Rectifier ON	2	0x0020	
S03	Load protected by inverter	3	0x0020	
S04	Load on automatic bypass	4	0x0020	
S05	Load on battery	5	0x0020	
S06	Remote controls disable	6	0x0020	0 = controls enabled
S07	Eco-mode ON	7	0x0020	If this function is available
S08		8	0x0020	
S09		9	0x0020	
S10		10	0x0020	
S11		11	0x0020	
S12		12	0x0020	
S13		13	0x0020	
S14	Battery test failed	14	0x0020	
S15	Battery near end of backup time	15	0x0020	IMMINENT STOP and end of backup time
S16	Battery discharged	0	0x0021	
S17	Battery OK	1	0x0021	No alarm and battery circuit closed
S18		2	0x0021	
S19		3	0x0021	
S20		4	0x0021	
S21		5	0x0021	
S22		6	0x0021	
S23		7	0x0021	
S24		8	0x0021	
S25		9	0x0021	
S26	Bypass input supply present	10	0x0021	
S27	Battery charging	11	0x0021	
S28	Bypass input frequency out of tolerance	12	0x0021	
S29		13	0x0021	Set to 1
S30	UPS on parallel system	14	0x0021	= 0 for single unit
S31		15	0x0021	
S32	Unit operating (available or coupled)	0	0x0022	
S33		1	0x0022	
S34		2	0x0022	
S35		3	0x0022	
S36		4	0x0022	
S37		5	0x0022	
S38	External Input 1	6	0x0022	IN1 ADC slot 1 or 2
S39	External Input 2	7	0x0022	IN2 ADC slot 1 or 2
S40	External Input 3	8	0x0022	IN3 ADC slot 1 or 2
S41	External Input 4	9	0x0022	IN1 ADC slot 3
S42	Controls permission table manage	10	0x0022	Set to 1
S43		11	0x0022	
S44		12	0x0022	
S45		13	0x0022	
S46	Operating on Gen Set	14	0x0022	
S47		15	0x0022	
S48	Maintenance mode active	0	0x0023	
S49	End of the first maintenance period	1	0x0023	
S50		2	0x0023	
S51		3	0x0023	
S52		4	0x0023	
S53		5	0x0023	
S54		6	0x0023	
S55		7	0x0023	
S56		8	0x0023	
S57		9	0x0023	
S58		10	0x0023	
S59		11	0x0023	
S60		12	0x0023	
S61		13	0x0023	
S62		14	0x0023	
S63		15	0x0023	

.../...

.../...

CODE	DESCRIPTION	BIT	ADRESSE	REMARQUES
S64	Boost charge ON	0	0x0024	
S65		1	0x0024	
S66	Inverter switch closed	2	0x0024	
S67	Bypass breaker closed	3	0x0024	
S68	Maintenance bypass breaker closed (Q5)	4	0x0024	
S69	Remote maintenance bypass breaker closed	5	0x0024	
S70	Output breaker closed (Q3)	6	0x0024	
S71	Q21 closed	7	0x0024	
S72	Q22 closed	8	0x0024	
S73	Unit working	9	0x0024	On inverter or on bypass
S74		10	0x0024	
S75		11	0x0024	
S76	normal mode active	12	0x0024	No Eco-mode No 'energy-saver' active
S77		13	0x0024	
S78		14	0x0024	
S79		15	0x0024	
S80		0	0x0025	
S81		1	0x0025	
S82		2	0x0025	
S83		3	0x0025	
S84		4	0x0025	
S85		5	0x0025	
S86		6	0x0025	
S87		7	0x0025	
S88		8	0x0025	
S89		9	0x0025	
S90		10	0x0025	
S91		11	0x0025	
S92		12	0x0025	
S93		13	0x0025	
S94		14	0x0025	
S95		15	0x0025	

Status without description are not managed by **DELPHYS MX / MP**.

ALARMS: Address 0x0040, 4 words

CODE	DESCRIPTION	BIT	ADRESSE	REMARQUES
A00	General Alarm	0	0x0040	Activated if one alarm active
A01	Battery failure	1	0x0040	Battery fault, room and circuit open synthesis
A02	UPS overload	2	0x0040	
A03				
A04	Control failure (com, internal supply...)	4	0x0040	Ctrl board critical alarm
A05	Rectifier input supply out of tolerance	5	0x0040	
A06	Bypass input supply out of tolerance	6	0x0040	
A07	Over temperature alarm	7	0x0040	
A08	Maintenance bypass closed	8	0x0040	Q5 closed
A09		9	0x0040	
A10	Battery charger fault	10	0x0040	
A11		11	0x0040	
A12		12	0x0040	
A13		13	0x0040	
A14		14	0x0040	
A15		15	0x0040	
A16		0	0x0041	
A17	Improper condition of use (Q3 and Q5 closed)	1	0x0041	Maintenance bypass alarm
A18	Inverter stopped for overload (or bypass transfer)	2	0x0041	Imminent stop and overload
A19	Microprocessor control system	3	0x0041	Ctrl board preventive Al.
A20		4	0x0041	
A21	Synchronisation fault (PLL fault)	5	0x0041	ACS source fault
A22	Rectifier input supply fault	6	0x0041	
A23	Rectifier preventive alarm	7	0x0041	
A24		8	0x0041	
A25	Inverter preventive alarm	9	0x0041	
A26	Charger general alarm	10	0x0041	
A27		11	0x0041	
A28		12	0x0041	
A29	Bypass preventive alarm	13	0x0041	
A30		14	0x0041	
A31	Imminent STOP	15	0x0041	
A32	Unit 1 general alarm	0	0x0042	
A33		1	0x0042	
A34		2	0x0042	
A35		3	0x0042	
A36		4	0x0042	
A37		5	0x0042	
A38	External alarm	6	0x0042	To configure
A39		7	0x0042	
A40		8	0x0042	
A41		9	0x0042	
A42	e-Service	10	0x0042	NOT AVAILABLE
A43		11	0x0042	
A44	Servicing alarm	12	0x0042	
A45	Automatic and manual transfer disable	13	0x0042	
A46	Automatic transfer disable	14	0x0042	
A47	Battery room alarm	15	0x0042	
A48	Maintenance bypass alarm	0	0x0043	
A49	Battery discharged	1	0x0043	
A50		2	0x0043	
A51	Synoptic alarm	3	0x0043	
A52	Rectifier fault	4	0x0043	Critical alarm
A53		5	0x0043	
A54	Inverter fault	6	0x0043	Critical alarm
A55		7	0x0043	
A56		8	0x0043	
A57		9	0x0043	
A58	ESD activated	10	0x0043	
A59	Battery circuit open	11	0x0043	
A60		12	0x0043	
A61		13	0x0043	
A62	Bypass critical alarm	14	0x0043	
A63		15	0x0043	

Alarms without description are not managed by **DELPHYS MX / MP**.

MEASUREMENTS: Address 0x0060, up to 48 words

Code	Description	Unit	ADDRESSES	REMARKS
M00	Load rate phase1	%	0x0060	
M01	Load rate phase 2	%	0x0061	Set to 0xFFFF if one phase
M02	Load rate phase 3	%	0x0062	Set to 0xFFFF if one phase
M03	UPS load rate	%	0x0063	
M04	Battery Capacity	%	0x0064	
M05	Battery Capacity	Ah*10	0x0065	
M06	Input bypass voltage phase 1	V	0x0066	
M07	Input bypass voltage phase 2	V	0x0067	Set to 0xFFFF if one phase
M08	Input bypass voltage phase 3	V	0x0068	Set to 0xFFFF if one phase
M09	Output voltage phase 1	V	0x0069	
M10	Output voltage phase 2	V	0x006A	Set to 0xFFFF if one phase
M11	Output voltage phase 3	V	0x006B	Set to 0xFFFF if one phase
M12			0x006C	Set to 0xFFFF (-1)
M13			0x006D	Set to 0xFFFF (-1)
M14			0x006E	Set to 0xFFFF (-1)
M15	Output current phase 1	A*10	0x006F	
M16	Output current phase 2	A*10	0x0070	Set to 0xFFFF if one phase
M17	Output current phase 3	A*10	0x0071	Set to 0xFFFF if one phase
M18	Input bypass frequency	Hz*10	0x0072	
M19	Output frequency	Hz*10	0x0073	
M20	Battery voltage (+)	V*10	0x0074	
M21	Battery voltage (-)	V*10	0x0075	Set to 0
M22	Ambient Temperature	°C	0x0076	
M23	Remaining backup time	Minutes	0x0077	Set when the load is on battery
M24	Battery current	A*10	0x0078	
M25			0x0079	Set to 0xFFFF (-1)
M26			0x007A	Set to 0xFFFF (-1)
M27			0x007B	Set to 0xFFFF (-1)
M28	Rectifier voltage (+)	V	0x007C	
M29	Rectifier voltage (-)	V	0x007D	Set to 0
M30			0x007E	Set to 0xFFFF (-1)
M31			0x007F	Set to 0xFFFF (-1)
M32			0x0080	Set to 0xFFFF (-1)
M33	Rectifier input voltage phase 1	V	0x0081	
M34	Rectifier input voltage phase 2	V	0x0082	
M35	Rectifier input voltage phase 3	V	0x0083	
M36	UPS output power	kW*10	0x0084	
M37	Output power phase 1	kVA*10	0x0085	
M38	Output power phase 2	kVA*10	0x0086	Set to 0xFFFF if one phase
M39	Output power phase 3	kVA*10	0x0087	Set to 0xFFFF if one phase
M40			0x0088	Set to 0xFFFF (-1)
M41			0x0089	Set to 0xFFFF (-1)
M42			0x008A	Set to 0xFFFF (-1)
M43			0x008B	
M44			0x008C	
M45			0x008D	
M46			0x008E	
M47			0x008F	

ENABLED CONTROLS TABLE: Address 0x05C0, 2 words

CODE	DESCRIPTION	BIT	ADDRESSES	REMARKS
C00		0		
C01		1		
C02		2		
C03	Eco-mode enabled	3	0x05C0	
C04	normal Mode enabled	4	0x05C0	
C05		5		
C06		6		
C07		7		
C08		8		
C09		9		
C10	Automatic Bypass transfer enabled	10	0x05C0	
C11	Inverter transfer enabled	11	0x05C0	
C12		12		
C13		13		
C14		14		
C15		15		
C16	Battery test enabled	0	0x05C1	
C17		1		
C18		2		
C19		3		
C20		4		
C21		5		
C22		6		
C23		7		
C24		8		
C25		9		
C26		10		
C27		11		
C28		12		
C29		13		
C30		14		
C31		15		

CONTROLS SEND TO UPS: Address 0x05B0, write 1 words

For a remote UPS control, it is necessary to set the serial interface in “remote” mode using the Human Machine Interface.

Local controls of the control panel or graphic touch screen are no more available.

The control table below shows if the selected control is allowed or not. If the control sent to the UPS is not allowed, the function will be ignored.

Controls available by JBUS/MODBUS connection:

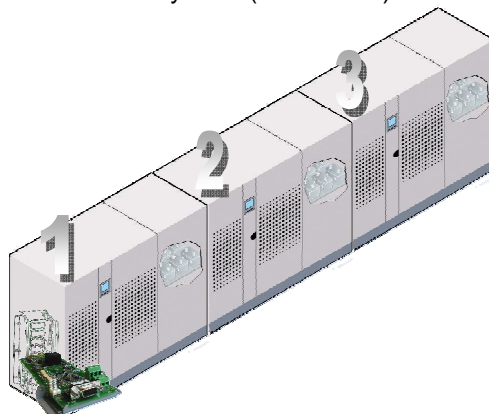
Code	Controls	Value to write	ADDRESS	REMARKS
C03	Eco-mode	0x0003	0x05B0	
C04	Normal mode	0x0004	0x05B0	
C10	Automatic bypass transfer	0x000A	0x05B0	
C11	Inverter transfer	0x000B	0x05B0	
C16	Battery test	0x0010	0x05B0	

STANDARD JBUS/MODBUS TABLES IN PARALLEL SYSTEM CONFIGURATION

Reminder

In UPS parallel system configuration, there is only one JBUS/MODBUS interface. The addresses mapping gives the possibility to read data from each module and common bypass. There is no link between the JBUS/MODBUS salve number and the UPS unit or module one.

The interface is plugged in the 'com-slots' of the common cabinet in case of central bypass installation or in the UPS unit 1 "com slots" in case of modular system (see bellow).



How to read data:

The identifications, status and alarms tables should be read completely in one JBUS/MODBUS frame; this means the number of word to read is equal to the table length.

The measurements table could be read word by word, without exceed the length of the table. (from 0x0060 to 0x008F).

Incoming data structure:

Example of 6 words											
1	2	3	4	5	6	7	8	9	10	11	12
MSB 0	LSB 0	MSB 1	LSB 1	MSB 2	LSB 2	MSB 3	LSB 3	MSB 4	LSB 4	MSB 5	LSB 5
WORD 0		WORD 1		WORD 2		WORD 3		WORD 4		WORD 5	
b ₁₅	b ₀	b ₁₅	b ₀	b ₁₅	b ₀	b ₁₅	b ₀	b ₁₅	b ₀	b ₁₅	b ₀
S15	S00	S31	S16	S47	S32	S63	S48	S79	S64	S95	S80
A15	A00	A31	A16	A47	A32	A63	A48				
M00		M01		M02		M03		M04		M05	

JBUS/MODBUS link setting

The setting of the link is made from the control panel or from the graphic touch screen of the common cabinet or of the UPS unit 1.

STANDARD JBUS/MODBUS tables in parallel system configuration with central bypass (AC)

TABLE	Start addresses	Table length in words	JBUS/MODBUS FUNCTION
Identification	0x0000	12	3 READ
Configurations	0x00E0	32	3 READ
Date and hours	0x0360	4	3 READ
States CC (96 bits)	0x0020	6	3 READ
Alarms CC (64 bits)	0x0040	4	3 READ
Measurements CC	0x0060	48	3 READ
States module 1 (96 bits)	0x1020	6	3 READ
Alarms module 1 (64 bits)	0x1040	4	3 READ
Measurements module 1	0x1060	48	3 READ
States module 2 (96 bits)	0x2020	6	3 READ
Alarms module 2 (64 bits)	0x2040	4	3 READ
Measurements module 2	0x2060	48	3 READ
States module 3 (96 bits)	0x3020	6	3 READ
Alarms module 3 (64 bits)	0x3040	4	3 READ
Measurements module 3	0x3060	48	3 READ
States module 4 (96 bits)	0x4020	6	3 READ
Alarms module 4 (64 bits)	0x4040	4	3 READ
Measurements module 4	0x4060	48	3 READ
States module 5 (96 bits)	0x5020	6	3 READ
Alarms module 5 (64 bits)	0x5040	4	3 READ
Measurements module 5	0x5060	48	3 READ
States module 6 (96 bits)	0x6020	6	3 READ
Alarms module 6 (64 bits)	0x6040	4	3 READ
Measurements module 6	0x6060	48	3 READ
Controls permission	0x05C0	2	3 READ
UPS Controls	0x05B0	1	6 WRITE

STANDARD JBUS/MODBUS table in modular parallel system

TABLE	Start addresses	Table length in words	JBUS/MODBUS FUNCTION
Identification	0x0000	12	3 READ
Configurations UPS	0x00E0	32	3 READ
Date and hours	0x0360	4	3 READ
Output UPS Measurements	0x0060	48	3 READ
States unit 1 (96 bits)	0x1020	6	3 READ
Alarms unit 1 (64 bits)	0x1040	4	3 READ
Measurements unit 1	0x1060	48	3 READ
States unit 2 (96 bits)	0x2020	6	3 READ
Alarms unit 2 (64 bits)	0x2040	4	3 READ
Measurements unit 2	0x2060	48	3 READ
States unit 3 (96 bits)	0x3020	6	3 READ
Alarms unit 3 (64 bits)	0x3040	4	3 READ
Measurements unit 3	0x3060	48	3 READ
States unit 4 (96 bits)	0x4020	6	3 READ
Alarms unit 4 (64 bits)	0x4040	4	3 READ
Measurements unit 4	0x4060	48	3 READ
States unit 5 (96 bits)	0x5020	6	3 READ
Alarms unit 5 (64 bits)	0x5040	4	3 READ
Measurements unit 5	0x5060	48	3 READ
States unit 6 (96 bits)	0x6020	6	3 READ
Alarms unit 6 (64 bits)	0x6040	4	3 READ
Measurements unit 6	0x6060	48	3 READ

UPS IDENTIFICATION: Address 0x0000, 12 words

CODE	DESCRIPTION	Number of WORDS	ADDRESS	Type	Remarks
I00	UPS CODE	1 WORD	0x0000	Numeric value	1018 = DELPHYS MX MODULAIRE 1019 = DELPHYS MX // common by-pass 1020 = DELPHYS MX elite modular 1021 = DELPHYS MX elite // by-pass
I01	UPS Power	1 WORD	0x0001	Numeric value	In kVA * 10 5000 = 500kVA
I02	Module number	1 WORD	0x0002	Numeric value	1
I03	Serial number	5 WORDS	0x0003	1 word = 2 ASCII codes	LSB = 1. char MSB = 2. char UPS Code:CCCCCAaYXXXXXXXXNn Code read :aXXXXXXXXn
I04	Reserved	1 WORD	0x0008	0	
I05	Reserved	1 WORD	0x0009	0	
I06	Reserved	1 WORD	0x000A	0	
I07	Reserved	1 WORD	0x000B	0	


DATE & HOURS: Address 0x0360, 4 words

CODE	DESCRIPTION	Number of words	Addresses	Type	Remarks
D00	Minutes / seconds	1	0x0360	Byte value	MSB = minutes LSB = seconds
D01	Hours / day	1	0x0361	Byte value	MSB = day LSB = hours
D02	Month / day of week	1	0x0362	Byte value	MSB = month LSB = day of the week 1=Monday 7=Sunday
D03	year	1	0x0363		00 = 2000

USP CONFIGURATION: Address 0x00E0, 32 words

Code	Measurements	Unit	Address	REMARKS
T00	Nominal start input voltage	V	0x00E0	
T01	Nominal start output voltage	V	0x00E1	
T02	Nominal input frequency	Hz	0x00E2	
T03	Nominal output frequency	Hz	0x00E3	
T04	Version	value * 100	0x00E4	100 = V1.00
T05			0x00E5	
T06			0x00E6	
T07			0x00E7	
T08	Nominal battery capacity	Ah * 10	0x00E8	3000 = 300Ah
T09	Number of battery elements		0x00E9	
T10	Reserved		0x00EA	Set to 0xFFFF (-1)
T11	Reserved		0x00EB	Set to 0xFFFF (-1)
T12	Reserved		0x00EC	
T13	Working mode	Bits field	0x00ED	b0 not used b1 = with battery b2 = Gen Set present b3 = 'energy saver' enabled
T14	Redundancy level	value	0x00EE	0 = without 1 = N+1
T15	Reserved		0x00EF	100
T16	Reserved		0x00F0	Set to 0xFFFF (-1)
..				
T31	Reserved		0x00FF	

Preliminary remarks

 The following JBUS/MODBUS addresses tables indicate the LSB byte and the MSB. The MSB depends of the module number requested: **NN** indicates the unit number (00 = common, 01=unit 1, ...)

An 'x' in the 'CC' (central bypass), 'Module' or 'Unit' column means that this information is available on this equipment.

STATUS : Address 0xNN20, 6 words

CODE	DESCRIPTION	BIT	ADDRESS	CC	Module	Unit
S00	Rectifier Input supply present	0	0xNN20		X	X
S01	Inverter ON	1	0xNN20		X	X
S02	Rectifier ON	2	0xNN20		X	X
S03	Load protected by inverter	3	0xNN20	X	X	X
S04	Load on automatic bypass	4	0xNN20	X		X
S05	Load on battery / Battery discharging	5	0xNN20		X	X
S06	Remote controls disable	6	0xNN20			X
S07	Eco-mode ON	7	0xNN20	X	X	X
S08		8	0xNN20			
S09		9	0xNN20			
S10		10	0xNN20		X	X
S11		11	0xNN20			
S12		12	0xNN20			
S13		13	0xNN20			
S14	Battery test failed	14	0xNN20		X	X
S15	Battery near end of backup time	15	0xNN20		X	X
S16	Battery discharged	0	0xNN21		X	X
S17	Battery OK	1	0xNN21		X	X
S18		2	0xNN21			
S19		3	0xNN21			
S20		4	0xNN21			
S21		5	0xNN21			
S22		6	0xNN21			
S23		7	0xNN21	X		X
S24		8	0xNN21		X	X
S25		9	0xNN21			
S26	Bypass input supply present	10	0xNN21	X		X
S27	Battery charging	11	0xNN21		X	X
S28	Bypass input frequency out of tolerance	12	0xNN21		X	X
S29		13	0xNN21			
S30	UPS on parallel system	14	0xNN21	X	X	X
S31		15	0xNN21			
S32	Unit 1 operating	0	0xNN22	X		X
S33	Unit 2 operating	1	0xNN22	X		X
S34	Unit 3 operating	2	0xNN22	X		X
S35	Unit 4 operating	3	0xNN22	X		X
S36	Unit 5 operating	4	0xNN22	X		X
S37	Unit 6 operating	5	0xNN22	X		X
S38	External Input 1	6	0xNN22	X	X	X
S39	External Input 2	7	0xNN22	X	X	X
S40	External Input 3	8	0xNN22	X	X	X
S41	External Input 4	9	0xNN22			
S42	Controls permission table manage	10	0xNN22	X	X	X
S43		11	0xNN22			
S44		12	0xNN22			
S45		13	0xNN22			
S46	Operating on Gen Set	14	0xNN22	X	X	X
S47		15	0xNN22			

.../...

.../...

CODE	DESCRIPTION	BIT	ADDRESS	CC	Module	Unit
S48	Maintenance mode active	0	0xNN23	X	X	X
S49	End of the first maintenance period	1	0xNN23			
S50		2	0xNN23			
S51		3	0xNN23			
S52		4	0xNN23			
S53		5	0xNN23			
S54		6	0xNN23			
S55		7	0xNN23			
S56		8	0xNN23			
S57		9	0xNN23			
S58		10	0xNN23			
S59		11	0xNN23			
S60		12	0xNN23			
S61		13	0xNN23			
S62		14	0xNN23			
S63		15	0xNN23			
S64	Boost charge ON	0	0xNN24		X	X
S65		1	0xNN24	X		X
S66	Inverter switch closed	2	0xNN24		X	X
S67	Bypass breaker closed	3	0xNN24			
S68	Maintenance bypass breaker closed (Q5)	4	0xNN24	X		X
S69	Remote maintenance bypass breaker closed	5	0xNN24	X		X
S70	Output breaker closed (Q3)	6	0xNN24	X	X	X
S71	Q21 closed	7	0xNN24		X	X
S72	Q22 closed	8	0xNN24		X	X
S73	Unit working	9	0xNN24		X	X
S74	Energy saver activated	10	0xNN24	X	X	X
S75		11	0xNN24			
S76	normal mode active	12	0xNN24	X	X	X
S77		13	0xNN24			
S78		14	0xNN24			
S79		15	0xNN24			
S80		0	0xNN25			
S81		1	0xNN25			
S82		2	0xNN25			
S83		3	0xNN25			
S84		4	0xNN25			
S85		5	0xNN25			
S86		6	0xNN25			
S87		7	0xNN25			
S88		8	0xNN25			
S89		9	0xNN25			
S90		10	0xNN25			
S91		11	0xNN25			
S92		12	0xNN25			
S93		13	0xNN25			
S94		14	0xNN25			
S95		15	0xNN25			

ALARMS: Address 0xNN40, 4 words

CODE	DESCRIPTION	BIT	ADDRESS	AC	Module	Unite
A00	General Alarm	0	0xNN40	X	X	X
A01	Battery failure	1	0xNN40		X	X
A02	UPS overload	2	0xNN40	X	X	X
A03						
A04	Control failure - critical alarm	4	0xNN40			
A05	Rectifier input supply out of tolerance	5	0xNN40	X	X	X
A06	Bypass input supply out of tolerance	6	0xNN40	X		X
A07	Over temperature alarm	7	0xNN40	X	X	X
A08	Maintenance bypass closed	8	0xNN40	X		X
A09						
A10	Battery charger fault				X	X
A11						
A12						
A13						
A14						
A15						
A16						
A17	Improper condition of use (Q3 and Q5 closed)	1	0xNN41	X		X
A18	Inverter stopped for overload (or bypass transfer)	2	0xNN41		X	X
A19	Microprocessor control system - preventive al.	3	0xNN41	X	X	X
A20						
A21	PLL fault	5	0xNN41	X		X
A22	Rectifier input supply fault	6	0xNN41	X		X
A23	Rectifier preventive alarm	7	0xNN41		X	X
A24						
A25	Inverter preventive alarm	9	0xNN41		X	X
A26	Charger general alarm	10	0xNN41		X	X
A27						
A28						
A29	Bypass preventive alarm	13	0xNN41	X	X	X
A30						
A31	Imminent STOP	15	0xNN41	X	X	X
A32	Unit 1 general alarm	0	0xNN42	X		X
A33	Unit 2 general alarm	1	0xNN42	X		X
A34	Unit 3 general alarm	2	0xNN42	X		X
A35	Unit 4 general alarm	3	0xNN42	X		X
A36	Unit 5 general alarm	4	0xNN42	X		X
A37	Unit 6 general alarm	5	0xNN42	X		X
A38	External alarm	6	0xNN42	X	X	X
A39						
A40						
A41						
A42	e-Service	10	0xNN42			
A43	redundancy loss	11	0xNN42	X		X
A44	Servicing alarm	12	0xNN42	X		
A45	Automatic and manual transfer disable	13	0xNN42	X		X
A45	Automatic transfer disable	14	0xNN42	X		X
A47	Battery room alarm	15	0xNN42		X	X
A48	Maintenance bypass alarm	0	0xNN43	X		X
A49	Battery discharged	1	0xNN43		X	X
A50		2	0xNN43	X		X
A51	Synoptic alarm	3	0xNN43			
A52	Rectifier fault - critical alarm	4	0xNN43		X	X
A53						
A54	Inverter fault - critical alarm	6	0xNN43		X	X
A55						
A56						
A57						
A58	ESD activated	10	0xNN43	X	X	X
A59	Battery circuit open	11	0xNN43		X	X
A62	Bypass critical alarm	14	0xNN43	X	X	X

For more detail, please refer to the single unit UPS table.

MEASUREMENTS: Address 0xNN60, 48 words

Code	Measurements	Units	ADDRESS	REMARKS
M00	Load rate phase1	%	0xNN60	
M01	Load rate phase 2	%	0xNN61	Set to 0xFFFF if one phase
M02	Load rate phase 3	%	0xNN62	Set to 0xFFFF if one phase
M03	UPS load rate	%	0xNN63	
M04	Battery Capacity	%	0xNN64	
M05	Battery Capacity	Ah*10	0xNN65	
M06	Input bypass voltage phase 1	V	0xNN66	
M07	Input bypass voltage phase 2	V	0xNN67	Set to 0xFFFF if one phase
M08	Input bypass voltage phase 3	V	0xNN68	Set to 0xFFFF if one phase
M09	Output voltage phase 1	V	0xNN69	
M10	Output voltage phase 2	V	0xNN6A	Set to 0xFFFF if one phase
M11	Output voltage phase 3	V	0xNN6B	Set to 0xFFFF if one phase
M12			0xNN6C	Set to 0xFFFF (-1)
M13			0xNN6D	Set to 0xFFFF (-1)
M14			0xNN6E	Set to 0xFFFF (-1)
M15	Output current phase 1	A*10	0xNN6F	
M16	Output current phase 2	A*10	0xNN70	Set to 0xFFFF if one phase
M17	Output current phase 3	A*10	0xNN71	Set to 0xFFFF if one phase
M18	Input bypass frequency	Hz*10	0xNN72	
M19	Output frequency	Hz*10	0xNN73	
M20	Battery voltage (+)	V*10	0xNN74	
M21	Battery voltage (-)	V*10	0xNN75	Set to 0
M22	Ambient Temperature	°C	0xNN76	
M23	Remaining backup time	Minutes	0xNN77	Set when the load is on battery
M24	Battery current	A*10	0xNN78	
M25			0xNN79	Set to 0xFFFF (-1)
M26			0xNN7A	Set to 0xFFFF (-1)
M27			0xNN7B	Set to 0xFFFF (-1)
M28	Rectifier voltage (+)	V	0xNN7C	
M29	Rectifier voltage (-)	V	0xNN7D	Set to 0
M30		V	0xNN7E	Set to 0xFFFF (-1)
M31		V	0xNN7F	Set to 0xFFFF (-1)
M32			0xNN80	Set to 0xFFFF (-1)
M33	Rectifier input voltage phase 1	V	0xNN81	
M34	Rectifier input voltage phase 2	V	0xNN82	
M35	Rectifier input voltage phase 3	V	0xNN83	
M36	UPS output power	kW*10	0xNN84	
M37	Output power phase 1	kVA*10	0xNN85	
M38	Output power phase 2	kVA*10	0xNN86	Set to 0xFFFF if one phase
M39	Output power phase 3	kVA*10	0xNN87	Set to 0xFFFF if one phase
M40			0xNN88	Set to 0xFFFF (-1)
M41			0xNN89	Set to 0xFFFF (-1)
M42			0xNN8A	Set to 0xFFFF (-1)
M43			0xNN8B	
M44			0xNN8C	
M45			0xNN8D	
M46			0xNN8E	
M47			0xNN8F	

Rectifier and battery measurements are not available in the 'CC' table (common bypass)

ENABLED CONTROLS TABLE: Address 0x05C0, 2 words

CODE	DESCRIPTION	BIT	ADDRESS	REMARKS
C00		0		
C01		1		
C02		2		
C03	Eco-mode enabled	3	0x05C0	
C04	Mode normal enabled	4	0x05C0	
C05		5		
C06		6		
C07		7		
C08		8		
C09		9		
C10	Automatic Bypass transfer enabled	10	0x05C0	
C11	Inverter transfer enabled	11	0x05C0	
C12		12		
C13		13		
C14		14		
C15		15		
C16	Battery test enabled module 1	0	0x15C1	
C16	Battery test enabled module 2	0	0x25C1	
C16	Battery test enabled module 3	0	0x35C1	
C16	Battery test enabled module 4	0	0x45C1	
C16	Battery test enabled module 5	0	0x55C1	
C16	Battery test enabled module 5	0	0x65C1	

Remark: A bit set to 0 means that the control is disabled by the UPS. The control will be not executed.

TO SEND CONTROL TO UPS: Address 0x05B0, write 1 words

For a remote UPS control, it is necessary to set the serial interface in “remote” mode using the Human Machine Interface.

Local controls of the control panel or graphic touch screen are no more available.

The control table below shows if the selected control is allowed or not. If the control sent to the UPS is not allowed, the function will be ignored.

Controls available by JBUS/MODBUS connection:

Code	Control	Value to write	ADDRESS	REMARKS
C03	Eco-mode	0x0003	0x05B0	
C04	Normal mode	0x0004	0x05B0	
C10	Automatic bypass transfer	0x000A	0x05B0	
C11	Inverter transfer	0x000B	0x05B0	
C16	Battery Test module 1	0x0010	0x15B0	
C16	Battery Test module 2	0x0010	0x25B0	
C16	Battery Test module 3	0x0010	0x35B0	
C16	Battery Test module 4	0x0010	0x45B0	
C16	Battery Test module 5	0x0010	0x55B0	
C16	battery Test module 6	0x0010	0x65B0	