Technical specification

Xtender serial protocol

Author : Marc Emery

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Contents

1. Introduction

This technical specification describes the protocol used to communicate with the Studer Innotec Xcom-232i communication module. It is also valid for the discontinuted RCC-02/-03 special execution ES N° 32 (RCC-02/-03-32).

1.1 Conventions used in this document

- Numbers that start with "0x" are in hexadecimal, like in the C integer litterals.
- constant values are usually represented in UPPER CASE
- field names are in lower_case_with_underscore

1.2 List of acronyms

RCC	The Studer Innotec remote control used to configure the Xtender system
Xcom-232i	The Studer Innotec RS-232 communication module that has the function of a DCE, Data Communications Equipment
DTE	Data Terminal Equipment, the PC or controller system that wants to communicate with the Xcom-232i
SCOM	Naming prefix used for the Studer Innotec serial protocol

2. Physical layer

The physical layer is RS-232. The Xcom-232i is equiped with a DE-9 (also known as DB-9) Female connector which provides this interface.

The serial port is galvanically separated with an isolation of 500 V DC relative to the negative battery potential.

2.1 Connector Pinning

On the female connector of the RCC, only the wires "receive data", "transmitted data" and ground are connected. The other wires are not connected, and the DTE must ignore signals such as CTS, DTR or DCD.

pin number	usage
1	not connected
2	RxD
3	TxD
4	not connected
5	GND
6	not connected
7	not connected
8	not connected
9	not connected

2.2 Cable to use

The cable to be used with a PC is a Female-Male, straight.

3. Data link layer

The data link layer, as defined in the OSI model, is used to send and receive frame on the RS-232.

3.1 USART configuration

The RS-232 is defined with :

- A fixed baudrate of 38400 bps
- 1 start bit
- 8 bit of data, LSB first
- 1 parity bit
- even parity
- 1 stop bit

3.2 Byte Endianness

All values are in little endian, i.e. LSB bytes are send on the Physical layer first.

3.3 Frame

The Xcom-232i and the DTE exchange frames consist of a header of 14 bytes followed by a variable number of data bytes and 2 bytes of checksum.

start_-byte	**frame_-flags**	**src_-addr**	**dst_-addr**	**data_-length**	**header_-checksum**	**frame_-data**	**data_-checksum**
1 byte	1 byte	4 bytes	4 bytes	2 bytes = N	2 bytes	N bytes	2 bytes

- The start byte is always 0xAA
- a frame_flags field, reserved, must be 0x00 in this version of the protocol
- src_addr is the source address, 32 bit little endian
- dest_addr is the destination address, 32 bit little endian
- the length of the frame's data, in byte
- the checksum of the header, from frame_flags to data_length (included)
- the data bytes
- the checksum of all the data bytes of frame_data
- The maximum number of frame_data is 242 (so that 14+242+2 = 256)

The checksum is computed with the following algorithm:

```
A = 0xFF
B = 0
For I FROM 0 TO number_of_bytes -1 DO
   A := (A + DATA[I]) mod 0x100;
   B := (B + A) mod 0x100;
END
checksum[0] := A
checksum[1] := B
```

A and B are byte values and the addition is made modulo 256.

After an invalid parity bit, header or data checksum, the data link layer is reseted and waits for an other frame.

3.4 Addressing the devices

address	devices	remarks
101 to 109	XTH and XTM inverters	ordered by the index displayed on the RCC
301 to 331	MPPT	ordered by the index displayed on the RCC
401	Xcom MS	
501 to 503	Xcom-232i	
601	BSP	
1	alias for the gateway that the DTE uses to communicate (the Xcom-232i to which you speak with RS-232)	

3.5 Response delay

The response delay of the Xcom-232i can be up to 2 seconds. This is a good value for a timeout in the DTE implementation.

4. Application layer

The OSI layers 3 to 6 are not used. The application layer defines a number of « services ». A DTE sends a request frame and waits for a response frame from the Xcom-232i. If an error in the header checksum or data checksum is detected, there is no response from the application layer and the Xcom-232i waits for another request as if nothing has been received.

The Xcom-232i copies the src_addr of the request in the response dst_addr.

4.1 Services

The first two bytes of frame_data define the type of service and different flags for this service.

service_flags	service_id	service_data
1 byte	1 byte	N bytes

service_flags:

BIT7-BIT2 : reserved, must be all zero in this version of the protocol

BIT1 : is_response flag, 0 if it is a request from the DTE to the Xcom-232i, 1 if it is response from the Xcom-232i

BIT0 : error flag, 0 in case of success, 1 if an error occurred. In case of a request, error is always 0.

service_id:

One of the following services, described later in this document:

READ_PROPERTY = 0x01

service_data:

The data specific to the service. In case of a problem the errors are reported in a service-specific way, but the response has to include the error code described in the next section.

4.2 Object model

The different data accessible on each device are organized in object classes. Every object class has a number of properties. The service READ_PROPERTY is used to read the object's properties.

4.2.1 READ_PROPERTY service

This service is used to read an object's property.

The DTE sends a request frame with the following frame_data:

flags	service_id	object_type	object_id	property_id
0x00	0x01	2 bytes	4 bytes	2 bytes

flags : is_response =0, error=0

service_id : 0x01 for READ_PROPERTY

object_type : the object type identifier, defined later in this document

object_id : the object identifier, specific to each object type, i.e. two objects with different type can have the same id

property_id : identify the property in the object

The RCC responds with a frame with the following frame_data:

service_flags	service_id	object_type	object_id	property_id	property_data
0x02 or 0x03	0x01	2 bytes	4 bytes	2 bytes	N bytes

flags : flags_response = 1, error= 0 or 1

service_id : 0x01 for READ_PROPERTY

object_type : same as the request

object_id : same as the request

property_id : same as the request

property_data : If error=0 the value of the property, in the type of the property. If error=1, two bytes identifying the error code.

4.2.2 WRITE_PROPERTY service

This service is used to write an object's property.

The DTE sends a request frame with the following frame_data:

flags	service_id	object_type	object_id	property_id	property_data
0x00	0x02	2 bytes	4 bytes	2 bytes	n byte

flags : is_response = 0, error = 0

service_id : 0x02 for WRITE_PROPERTY

object_type : the object type identifier, defined later in this document

object_id : the object identifier, specific to each object type, i.e. two objects with different types can have the same id

property_id : identify the property in the object

property_data : the data in the right data type.

The RCC responds with a frame with the following frame_data:

service_flags	service_id	object_type	object_id	property_id	error_id
0x02 or 0x03	0x02	2 bytes	4 bytes	2 bytes	0 or 2 bytes

flags : flags_response = 1, error= 0 or 1

service_id : 0x01 for READ_PROPERTY

object_type : same as the request

object_id : same as the request

property_id : same as the request

property_data : If the flag error = 0, 0 byte of data if not, to byte of type bytes identifying the error code.

4.2.3 Format

The property data are encoded in different formats described below. Some properties have a format that can be different from one object to an other in the same object_type. For example an the value_qsp of parameter can be an ENUM or a FLOAT depending on the parameter id (identified by the object_id). In this case it is described here as type DYNAMIC. The DTE must then know the exact type of the property for each object to decode it.

INVALID_FORMAT = 0

BOOL = 1 : binary data, 1 byte, 0 = false, 1 = true, other values are invalid

FORMAT = 2 : a property what define the format of an other property, 16 bit integer

ENUM = 3 : a value that is part of a enumeration of possible values, represented with a 16 bit integer

ERROR = 4 : 16 bit error code

INT32 = 5 : 32 bit signed value

FLOAT = 6 : float in 32 bit IEEE 754 format, little endian

STRING = 7 : ISO_8859-15 string of 8 bit characters

DYNAMIC = 8 : a property with a different format for each object id

BYTE_STREAM = 9 : a stream a byte of abitrary length

example of dynamic value:

an object class has the property "type" of format FORMAT and the property "value" of format DYNAMIC.

for the object x, if "type" = 6 (FLOAT), "value" is a 4 byte IEEE 754 little endian float.

4.3 Error codes

The following error codes can be returned:

name	error_id	meaning
INVALID_FRAME	0x0001	malformed frame
DEVICE_NOT_FOUND	0x0002	wrong dst_addr field
RESPONSE_TIMEOUT	0x0003	no response of the server
SERVICE_NOT_SUPPORTED	0x0011	wrong service_id field
INVALID_SERVICE_ARGUMENT	0x0012	wrong service_data
SCOM_ERROR_GATEWAY_BUSY	0x0013	gateway (for example XCOM-232i) busy
TYPE_NOT_SUPPORTED	0x0021	the object_type requested doesn't exist
OBJECT_ID_NOT_FOUND	0x0022	no object with this object_id was found
PROPERTY_NOT_SUPPORTED	0x0023	the property identified by property_id doesn't exist
INVALID_DATA_LENGTH	0x0024	the field property_data has an invalid number of bytes
PROPERTY_IS_READ_ONLY	0x0025	a writing to this property is not allowed
INVALID_DATA	0x0026	this value is impossible for this property
DATA_TOO_SMALL	0x0027	the value is below the minimum limit
DATA_TOO_BIG	0x0028	the value is above the maximum limit

WRITE_PROPERTY_FAILED	0x0029	writing is possible, but failed
READ_PROPERTY_FAILED	0x002A	readind is possible, but failed
ACCESS_DENIED	0x002B	insufficient user access
INVALID_SHELL_ARG	0x0081	the command line tool used received the wrong arguments

4.4 System state objects

These objects are the information about the current state of the system. They cannot be modified and their values change during the operation of the system.

object_type = 0x01

object_id : see the table in next section

4.4.1 Properties

Name	**property_id**	**format**	**remark**
Value	0x01	DYNAMIC	variable length, see the format in following table

4.4.2 Available system states on the Xtender Inverter

The values defined in the following table are accessible on the Xtender XTH and XTM inverters. The states available are the same as the values that can be chosen to be displayed on the RCC.

The system states are related with inverter parameters that you can be configured with the RCC. The description of the functionalities for each parameter can be found in the RCC manual with the index by id number at the end.

id	Description	short name	unit on the RCC	unit	FORMAT	related parameter or description
3000	Battery voltage	Ubat	Vdc	V	FLOAT	
3001	Battery temperature	Tbat	°C	°C no sensor : return ~32767 °C	FLOAT	value given by the external battery temperature sensor BTS-01
3005	Battery charge current	Ibat (m)	Adc	A	FLOAT	
3006	Battery voltage ripple	Ubat ond	Vrip	V	FLOAT	
3010	Battery cycle phase	Phase		0: invalid value 1:Bulk 2: Absorpt. 3: Equalise 4: Floating 5: R.float. 6: Per.abs. 7: Mixing 8: Forming	ENUM	see parameter {1137}
3011	Input voltage AC-In	U in	Vac	V	FLOAT	
3012	AC input current AC-In	I in	Aac	A	FLOAT	
3013	Input power AC-In	P in	kVA	kVA	FLOAT	
3014	Input frequency	F in	Hz	Hz	FLOAT	
3018	Power sharing active	P sharing			BOOL	see parameter {1107}
3019	Boost active	Boost			BOOL	see parameter {1126}
3020	State of transfer relay	Transfert		0: Opened 1: Closed	ENUM	
3021	Output voltage AC-Out	U out	Vac	V	FLOAT	
3022	Output current AC-Out	I out	Aac	A	FLOAT	
3023	Output power AC-Out	P out	kVA	kVA	FLOAT	
3024	Output frequency	F out	Hz	Hz	FLOAT	
3028	Operating state	Mode		0: invalid value 1: Inverter 2: Charger 3: Boost 4: Injection	ENUM	give the current working mode of the inverter. See {1107} for Boost, {1522} for Injection (grid-feeding), charger and inverter mode are oblivious.
3030	State of output relay	Rel out		0: Opened 1: Closed	ENUM	
3031	State of auxiliary relay I	Aux 1		0: Opened 1: Closed	ENUM	see parameter {1201}
3032	State of auxiliary relay II	Aux 2		0: Opened 1: Closed	ENUM	see parameter {1201}
3049	State of the system	Sys state		0: Off 1: On	ENUM	
3051	Search mode state	SB state		0: Off 1: On	ENUM	see parameter {1187}
3076	Discharge of battery of the previous day	E out YD	E2O	kWh	FLOAT	
3078	Discharge of battery of the current day	E out Day	E1O	kWh	FLOAT	
3080	Energy from AC-In of the previous day	Eac in YD	E2	kWh	FLOAT	
3081	Energy from AC-In of the current day	Eac in Day	E1	kWh	FLOAT	
3082	Consumers energy of the previous day	Eac out YD	E2	kWh	FLOAT	
3083	Consumers energy of the current day	Eac out Dy	E1	kWh	FLOAT	

4.4.3 Available system states on the BSP

As on the inverter, all values that can be displayed on the RCC can be read.

id	Description	short name	unit on the RCC	unit	FORMAT	related parameter or description
7000	Battery voltage	Ubat	V	V	FLOAT	
7001	Battery current	Ibat	A	A	FLOAT	
7002	State of Charge	SOC	%	%	FLOAT	
7003	Power	C_cons	W	%	FLOAT	
7004	Remaining autonomy	Trem	minutes	minutes	FLOAT	
7006	Relative capacity	Crel	%	%	FLOAT	
7007	Ah charged today	0d<	Ah	Ah	FLOAT	
7008	Ah discharged today	0d>	Ah	Ah	FLOAT	
7009	Ah charged yesterday	-1d<	Ah	Ah	FLOAT	
7010	Ah discharged yesterday	-1d>	Ah	Ah	FLOAT	
7011	Total kAh charged	tot<	kAh	kAh	FLOAT	
7012	Total kAh discharged	tot>	kAh	kAh	FLOAT	
7013	Total time	Ttot	days	days	FLOAT	
7017	Custom charge Ah counter	cus>	Ah	Ah	FLOAT	
7018	Custom discharge Ah counter	cus<	Ah	Ah	FLOAT	
7019	Custom counter duration	Tcus	h	h	FLOAT	
7029	Battery temperature	Tbat	℃	℃	FLOAT	

4.5 Parameter objects

All parameters accessible from the remote control can also be modified with the protocol. The behaviour is the same as if a physical person changes the value with the remote control buttons. Currently, only changes at the level qsp are possible.

Values of type FLOAT can take any value between min and max but are rounded to the edition step on the remote control.

object_type = 0x02

4.5.1 Properties

Name	property_id	format	Remark
value_qsp	0x05	DYNAMIC	the value that can be entered on the remote control in level qsp or installer.
min_qsp	0x06	DYNAMIC	Minimum that can be entered on the remote control in level qsp or installer.
max_qsp	0x07	DYNAMIC	Maximum that can be entered on the remote control in level qsp or installer.
level_qsp	0x08	ENUM	accessibility level of this parameter modifiable in level qsp or installer.

4.5.2 Values of level properties

The property level_qsp of type ENUM can take the following values:

Name	value
VIEW_ONLY	0x00
BASIC	0x10
EXPERT	0x20
INSTALLER	0x30
QSP	0x40

4.5.3 Available parameters on the Xtender Inverter

The change of parameters when the inverters are in operation should be done carefully. The modification of parameters can restart the corresponding algorithm inside the inverter, and thus the change of a value in a cyclic way could sometimes lead to unexpected behaviour.

object_id : a number starting at 1000. See the complete parameter references at the end of the RCC User manual.

4.5.4 Cyclic write of parameters on the Xtender Inverter

The Xtender inverter store the parameter values in a non volatile flash memory. Because of the endurance of this memory, the number of write on a single parameter property is only garanted for 1000 write operations.

To allow the cyclic write of parameters without count limit, the parameter {1550} "Parameters saved in flash memory" as been introduced in the Xtender software.

This parameter has the value "yes" by default. A write of "no" to this parameter value stop the write in the non-volatile flash memory. This operation is written in the flash memory only the first time, so consecutive writes of the value "no" to {1550} can be repeated without limit.

After parameter {1550} has been set to "no", all other parameters can be written without count limit. Because the values of all other parameters are not stored in flash, the read operation will give the values before {1550} as be changed to "no". Also, after a reset the old values will be taken.

To use the inverter with cyclic write operations you must:

- ensure that all inverters have a firmware version >= 1.4.6
- set the parameter {1550} to "no" on all targeted inverter
- avoid to write cyclically on other devices like BSP, RCC, ...
- ensure that no "reset default/factory settings", "apply configuration file (masterfile)" or modification with the remote control change {1550} to "yes"

It is a good pratice to cyclically write "no" to {1550}.

A write of "yes" to the parameter {1550} reactivate the write in flash. It will be written in the flash every time and should not be used more that 1000 time.

4.5.5 Hours encoding

the hours encoding is in minute since 00:00 in INT32. For example 13:41 is 13*60+41 = 821.

4.5.6 Days of the week encoding

The days of the week selection (parameters {1205}, for example) is coded as a bit field in a INT32. A day selected as it bit set to 1.

bit	BIT31-7	BIT6	BIT5	BIT4	BIT3	BIT2	BIT1	BIT0
day of the week	undefined	SU	SA	FR	TH	WE	TU	MO

4.5.7 Month of the year encoding

The month of the year selection (parameters {1479}, for example) is coded as a bit field in a INT32. A month selected as it bit set to 1. January is BIT0 and December BIT11. The BIT31 to 12 are undefined.

4.5.8 Date encoding

The Date (parameters {5002}, for example) is coded as a INT32. The value is the number of second since 1.1.1970 00:00:00.

4.5.9 Signal encoding

The Signal (parameters {1468}, for example) is coded as a INT32. To send a signal, you must write the value 1 to the parameter value.

5. Examples of frames

The byte stream is represented in hexadecimal. As specified above, the encoding is little endian.

5.1 Command line tool

To help the implementation of the protocol we supply the command line tool `scom.exe`. Please contact Studer Innotec for the last version of the executable.

5.2 Read the value of a system state

generated by the command:

```
>scom.exe --port=COM3 --verbose=3 read_property src_addr=1 dst_addr=101
object_type=1 object_id=3000 property_id=1 format=FLOAT
```

Request

start_-byte	**frame_-flags**	**src_addr = 1**	**dst_addr = 101 (first inverter)**	**data_length = 10**	**header_-checksum**	**frame_-data**	**data_-checksum**
AA	00	01000000	65000000	0A00	6F71	10 bytes	C590

flags : is_response = false error = false	**service_id = READ_-PROPERTY**	**object_type = SYSTEM_STATE**	**object_id = 3000**	**property_id = value**
00	01	0100	B80B0000	0100

Total number of bytes: 14+10+2 = 26 bytes

Response

start_-byte	**frame_-flags**	**src_addr =101**	**dst_addr = 1**	**data_length = 14**	**header_-checksum**	**frame_-data**	**data_-checksum**
AA	00	65000000	01000000	0E00	7309	14 bytes	6357

flags : is_response = true error = false	**service_id = READ_PROPERTY**	**object_type = SYSTEM_STATE**	**object_id = 3000**	**property_id = value**	**value= 23.453125**
02	01	0100	B80B0000	0100	00A0BB41

Total number of bytes: 14+14+2 = 30 bytes

5.3 Write the qsp_value of a parameter

Set the battery charge current at 12.0 A.

generated by the command:

```
>scom.exe --port=COM3 --verbose=3 write_property src_addr=1 dst_addr=101
object_type=2 object_id=1138 property_id=5 format=FLOAT value=12.0
```

Request

start_-byte	**frame_-flags**	**src_-addr=1**	**dst_addr-=101**	**data_-length = 14**	**header_-checksum**	**frame_data**	**data_-checksum**
0xAA	00	01000000	65000000	0E00	7379	14 bytes	FF9B

flags : **is_response =false** **error =false**	**service_id =** **WRITE_-PROPERTY**	**object_type =** **PARAMETER**	**object_id =** **1138**	**property_id =** **value_qsp**	**property_data = 12.0**
00	02	0200	72040000	0500	00004041

Total number of bytes: 14+14+2 = 30 bytes

Response

start_-byte	**frame_-flags**	**src_-addr=1**	**dst_addr-=101**	**data_-length = 10**	**header_-checksum**	**frame_data**	**data_-checksum**
0xAA	00	65000000	01000000	0A00	6F01	10 bytes	0x80F6

flags : **is_response =true** **error =false**	**service_id =** **WRITE_-PROPERTY**	**object_type =** **PARAMETER**	**object_id =** **1138**	**property_id =** **value_qsp**
02	02	0200	72040000	0500

Total number of bytes: 14+10+2 = 26 bytes

6. Annexes

6.1 Xtender parameters

Level	User ref.	Parameter	Scom format
Basic	1100	BASIC SETTINGS	ONLY LEVEL
Basic	1551	Basic parameters set with buttons (inside XTS)	BOOL
Basic	1107	Maximum current of AC source (Input limit)	FLOAT
Basic	1138	Battery charge current	FLOAT
Basic	1126	Smart-Boost allowed	BOOL
Basic	1124	Inverter allowed	BOOL
Basic	1552	Type of detection of AC-input loss (UPS)	ENUM
Basic	1187	Standby level	FLOAT
Basic	1395	Restore default settings	INT32
Inst.	1287	Restore factory settings	INT32
Expert	1137	BATTERY MANAGEMENT AND CYCLE	ONLY LEVEL
Expert	1125	Charger allowed	BOOL
Basic	1138	Battery charge current	FLOAT
Expert	1139	Battery temperature compensation	FLOAT
Expert	1568	Undervoltage	ONLY LEVEL
Expert	1108	Battery undervoltage level without load	FLOAT
Expert	1531	Battery undervoltage dynamic compensation	ONLY LEVEL
Expert	1191	Battery undervoltage dynamic compensation	BOOL
Expert	1532	Kind of dynamic compensation	BOOL
Expert	1109	Battery undervoltage level at full load	FLOAT
Expert	1190	Battery undervoltage duration before turn off	FLOAT
Expert	1110	Restart voltage after batteries undervoltage	FLOAT
Expert	1194	Battery adaptive low voltage (B.L.O)	BOOL
Expert	1195	Max voltage for adaptive low voltage	FLOAT
Expert	1307	Reset voltage for adaptive correction	FLOAT
Expert	1298	Increment step of the adaptive low voltage	FLOAT
Expert	1121	Battery overvoltage level	FLOAT
Expert	1122	Restart voltage level after an battery overvoltage	FLOAT
Expert	1140	Battery floating level	FLOAT
Expert	1467	Force phase of floating	INT32
Expert	1141	New cycle menu	ONLY LEVEL
Expert	1142	Force a new cycle	INT32
Expert	1143	Battery voltage level 1 to start a new cycle	FLOAT
Expert	1144	Time period under battery voltage level 1 to start a new cycle	FLOAT
Expert	1145	Battery voltage level 2 to start a new cycle	FLOAT
Expert	1146	Time period under battery voltage level 2 to start a new cycle	FLOAT
Expert	1149	New cycle priority on absorption and equalization phases	BOOL
Expert	1147	Battery cycling restricted	BOOL
Expert	1148	Minimal delay between cycles	FLOAT
Expert	1451	Phase of absorption	ONLY LEVEL
Expert	1155	Absorption phase allowed	BOOL
Expert	1156	Battery absorption voltage	FLOAT
Expert	1157	Absorption duration	FLOAT
Expert	1158	End of absorption triggered with current	BOOL
Expert	1159	Current limit to quit the absorption phase	FLOAT
Expert	1160	Maximal frequency of absorption control	BOOL
Expert	1161	Minimal delay since last absorption	FLOAT
Expert	1452	Phase of equalization	ONLY LEVEL
Expert	1163	Equalization allowed	BOOL
Expert	1162	Force equalization	INT32
Expert	1291	Equalization before absorption phase	BOOL
Expert	1290	Equalization current	FLOAT
Expert	1164	Equalization voltage	FLOAT
Expert	1165	Equalization duration	FLOAT

Expert	1166	Number of cycles before an equalization	FLOAT
Expert	1284	Equalization at fixed interval	BOOL
Expert	1285	Weeks between equalizations	FLOAT
Expert	1168	End of equalization triggered with current	BOOL
Expert	1169	Current limit to quit the equalization phase	FLOAT
Expert	1453	Phase of reduced floating	ONLY LEVEL
Expert	1170	Reduced floating allowed	BOOL
Expert	1171	Floating duration before reduced floating	FLOAT
Expert	1172	Reduced floating voltage	FLOAT
Expert	1454	Phase of periodic absorption	ONLY LEVEL
Expert	1173	Periodic absorption allowed	BOOL
Expert	1174	Periodic absorption voltage	FLOAT
Expert	1175	Reduced floating duration before periodic absorption	FLOAT
Expert	1176	Periodic absorption duration	FLOAT
Expert	1186	INVERTER	ONLY LEVEL
Basic	1124	Inverter allowed	BOOL
Expert	1286	AC Output voltage	FLOAT
Expert	1548	AC voltage increase according to battery voltage	BOOL
Expert	1560	Max AC voltage increase with battery voltage	FLOAT
Expert	1112	Inverter frequency	FLOAT
Expert	1536	Inverter frequency increase when battery full	BOOL
Expert	1549	Inverter frequency increase according to battery voltage	BOOL
Expert	1546	Max frequency increase	FLOAT
Expert	1534	Speed of voltage or frequency change in function of battery	FLOAT
Expert	1420	Standby and turn on	ONLY LEVEL
Basic	1187	Standby level	FLOAT
Expert	1189	Time delay between standby pulses	FLOAT
Expert	1188	Standby number of pulses	FLOAT
Expert	1599	Softstart duration	FLOAT
Expert	1438	Solsafe presence Energy source at AC-Out side	BOOL
QSP	1572	Modulator ru_soll	BOOL
Expert	1197	AC-IN AND TRANSFER	ONLY LEVEL
Expert	1128	Transfer relay allowed	BOOL
Expert	1580	Delay before closing transfer relay	FLOAT
Basic	1126	Smart-Boost allowed	BOOL
Basic	1107	Maximum current of AC source (Input limit)	FLOAT
Expert	1471	Max input current modification	ONLY LEVEL
Expert	1566	Use an alternate max input current	BOOL
Expert	1567	Second maximum current of AC source (Input limit)	FLOAT
Expert	1527	Decrease max input limit current with AC-In voltage	BOOL
Expert	1554	Decrease max input limit activated by remote entry	BOOL
Expert	1309	AC input low limit voltage to allow charger function	FLOAT
Expert	1433	Adaptation range of the input current according to the input voltage	FLOAT
Expert	1553	Speed of input limit increase	FLOAT
Expert	1295	Charge current decrease coef. at voltage limit to turn back in inverter mode	FLOAT
Expert	1436	Overrun AC source current limit without opening the transfer relay (Input limit)	BOOL
Basic	1552	Type of detection of AC-input loss (UPS)	ENUM
Expert	1510	Tolerance on detection of AC-input loss (tolerant UPS mode)	FLOAT
Expert	1199	Input voltage giving an opening of the transfer relay with delay	FLOAT
Expert	1198	Time delay before opening of transfer relay	FLOAT
Expert	1200	Input voltage giving an immediate opening of the transfer relay (UPS)	FLOAT
Inst.	1432	Absolute max limit for input voltage	FLOAT
QSP	1500	Standby of the charger allowed	BOOL
Expert	1505	Delta frequency allowed above the standard input frequency	FLOAT
Expert	1506	Delta frequency allowed under the standard input frequency	FLOAT
Expert	1507	Duration with frequency error before opening the transfer	FLOAT
Expert	1575	AC-IN current active filtering	BOOL
Expert	1201	AUXILIARY CONTACT 1	ONLY LEVEL
Expert	1202	Operating mode (AUX 1)	ENUM
Expert	1497	Combination of the events for the auxiliary contact (AUX 1)	BOOL
Expert	1203	Temporal restrictions (AUX 1)	ONLY LEVEL

Expert	1204	Program 1 (AUX 1)	ONLY LEVEL
Expert	1205	Day of the week (AUX 1)	ENUM
Expert	1206	Start hour (AUX 1)	INT32
Expert	1207	End hour (AUX 1)	INT32
Expert	1208	Program 2 (AUX 1)	ONLY LEVEL
Expert	1209	Day of the week (AUX 1)	ENUM
Expert	1210	Start hour (AUX 1)	INT32
Expert	1211	End hour (AUX 1)	INT32
Expert	1212	Program 3 (AUX 1)	ONLY LEVEL
Expert	1213	Day of the week (AUX 1)	ENUM
Expert	1214	Start hour (AUX 1)	INT32
Expert	1215	End hour (AUX 1)	INT32
Inst.	1216	Program 4 (AUX 1)	ONLY LEVEL
Inst.	1217	Day of the week (AUX 1)	ENUM
Inst.	1218	Start hour (AUX 1)	INT32
Inst.	1219	End hour (AUX 1)	INT32
Inst.	1220	Program 5 (AUX 1)	ONLY LEVEL
Inst.	1221	Day of the week (AUX 1)	ENUM
Inst.	1222	Start hour (AUX 1)	INT32
Inst.	1223	End hour (AUX 1)	INT32
Expert	1269	Contact active with a fixed time schedule (AUX 1)	ONLY LEVEL
Expert	1270	Program 1 (AUX 1)	ONLY LEVEL
Expert	1271	Day of the week (AUX 1)	ENUM
Expert	1272	Start hour (AUX 1)	INT32
Expert	1273	End hour (AUX 1)	INT32
Expert	1274	Program 2 (AUX 1)	ONLY LEVEL
Expert	1275	Day of the week (AUX 1)	ENUM
Expert	1276	Start hour (AUX 1)	INT32
Expert	1277	End hour (AUX 1)	INT32
Expert	1278	Program 3 (AUX 1)	ONLY LEVEL
Expert	1279	Day of the week (AUX 1)	ENUM
Expert	1280	Start hour (AUX 1)	INT32
Expert	1281	End hour (AUX 1)	INT32
Expert	1455	Contact active on event (AUX 1)	ONLY LEVEL
Expert	1225	Xtender is OFF (AUX 1)	BOOL
Expert	1518	Xtender ON (AUX 1)	BOOL
Expert	1543	Remote entry (AUX 1)	BOOL
Expert	1226	Battery undervoltage (AUX 1)	BOOL
Expert	1227	Battery overvoltage (AUX 1)	BOOL
Expert	1228	Inverter or Smart- Boost overload (AUX 1)	BOOL
Expert	1229	Overtemperature (AUX 1)	BOOL
Expert	1520	No overtemperature (AUX 1)	BOOL
Expert	1231	Active charger (AUX 1)	BOOL
Expert	1232	Active inverter (AUX 1)	BOOL
Expert	1233	Active Smart-Boost (AUX 1)	BOOL
Expert	1234	AC input presence but with fault (AUX 1)	BOOL
Expert	1235	AC input presence (AUX 1)	BOOL
Expert	1236	Transfer relay ON (AUX 1)	BOOL
Expert	1237	AC out presence (AUX 1)	BOOL
Expert	1238	Bulk charge phase (AUX 1)	BOOL
Expert	1239	Absorption phase (AUX 1)	BOOL
Expert	1240	Equalization phase (AUX 1)	BOOL
Expert	1242	Floating (AUX 1)	BOOL
Expert	1243	Reduced floating (AUX 1)	BOOL
Expert	1244	Periodic absorption (AUX 1)	BOOL
Expert	1529	Autonomy test running (AUX 1)	BOOL
Expert	1245	Contact active according to battery voltage (AUX 1)	ONLY LEVEL
Expert	1288	Use dynamic compensation of battery level (AUX 1)	BOOL
Expert	1246	Battery voltage 1 activate (AUX 1)	BOOL
Expert	1247	Battery voltage 1 (AUX 1)	FLOAT
Expert	1248	Delay 1 (AUX 1)	FLOAT

Expert	1249	Battery voltage 2 activate (AUX 1)	BOOL
Expert	1250	Battery voltage 2 (AUX 1)	FLOAT
Expert	1251	Delay 2 (AUX 1)	FLOAT
Expert	1252	Battery voltage 3 activate (AUX 1)	BOOL
Expert	1253	Battery voltage 3 (AUX 1)	FLOAT
Expert	1254	Delay 3 (AUX 1)	FLOAT
Expert	1255	Battery voltage to deactivate (AUX 1)	FLOAT
Expert	1256	Delay to deactivate (AUX 1)	FLOAT
Expert	1516	Deactivate if battery in floating phase (AUX 1)	BOOL
Expert	1257	Contact active with inverter power or Smart-Boost (AUX 1)	ONLY LEVEL
Expert	1258	Inverter power level 1 activate (AUX 1)	BOOL
Expert	1259	Power level 1 (AUX 1)	FLOAT
Expert	1260	Time delay 1 (AUX 1)	FLOAT
Expert	1261	Inverter power level 2 activate (AUX 1)	BOOL
Expert	1262	Power level 2 (AUX 1)	FLOAT
Expert	1263	Time delay 2 (AUX 1)	FLOAT
Expert	1264	Inverter power level 3 activate (AUX 1)	BOOL
Expert	1265	Power level 3 (AUX 1)	FLOAT
Expert	1266	Time delay 3 (AUX 1)	FLOAT
Expert	1267	Inverter power level to deactivate (AUX 1)	FLOAT
Expert	1268	Time delay to deactivate (AUX 1)	FLOAT
Inst.	1503	Contact active according to battery temperature (AUX 1) With BSP or BTS	ONLY LEVEL
Inst.	1446	Contact activated with the temperature of battery (AUX 1)	BOOL
Inst.	1447	Contact activated over (AUX 1)	FLOAT
Inst.	1448	Contact deactivated below (AUX 1)	FLOAT
Expert	1501	Contact active according to SOC (AUX 1) Only with BSP	ONLY LEVEL
Expert	1439	Contact activated with the SOC 1 of battery (AUX 1)	BOOL
Expert	1440	Contact activated below SOC 1 (AUX 1)	FLOAT
Expert	1581	Delay 1 (AUX 1)	FLOAT
Expert	1582	Contact activated with the SOC 2 of battery (AUX 1)	BOOL
Expert	1583	Contact activated below SOC 2 (AUX 1)	FLOAT
Expert	1584	Delay 2 (AUX 1)	FLOAT
Expert	1585	Contact activated with the SOC 3 of battery (AUX 1)	BOOL
Expert	1586	Contact activated below SOC 3 (AUX 1)	FLOAT
Expert	1587	Delay 3 (AUX 1)	FLOAT
Expert	1441	Contact deactivated over SOC (AUX 1)	FLOAT
Expert	1588	Delay to deactivate (AUX 1)	FLOAT
Expert	1589	Deactivate if battery in floating phase (AUX 1)	BOOL
Expert	1512	Security, maximum time of contact (AUX 1)	BOOL
Expert	1514	Maximum time of operation of contact (AUX 1)	FLOAT
Expert	1569	Reset all settings (AUX 1)	INT32
Expert	1310	AUXILIARY CONTACT 2	ONLY LEVEL
Expert	1311	Operating mode (AUX 2)	ENUM
Expert	1498	Combination of the events for the auxiliary contact (AUX 2)	BOOL
Expert	1312	Temporal restrictions (AUX 2)	ONLY LEVEL
Expert	1313	Program 1 (AUX 2)	ONLY LEVEL
Expert	1314	Day of the week (AUX 2)	ENUM
Expert	1315	Start hour (AUX 2)	INT32
Expert	1316	End hour (AUX 2)	INT32
Expert	1317	Program 2 (AUX 2)	ONLY LEVEL
Expert	1318	Day of the week (AUX 2)	ENUM
Expert	1319	Start hour (AUX 2)	INT32
Expert	1320	End hour (AUX 2)	INT32
Expert	1321	Program 3 (AUX 2)	ONLY LEVEL
Expert	1322	Day of the week (AUX 2)	ENUM
Expert	1323	Start hour (AUX 2)	INT32
Expert	1324	End hour (AUX 2)	INT32
Inst.	1325	Program 4 (AUX 2)	ONLY LEVEL
Inst.	1326	Day of the week (AUX 2)	ENUM
Inst.	1327	Start hour (AUX 2)	INT32
Inst.	1328	End hour (AUX 2)	INT32

Inst.	1329	Program 5 (AUX 2)	ONLY LEVEL
Inst.	1330	Day of the week (AUX 2)	ENUM
Inst.	1331	Start hour (AUX 2)	INT32
Inst.	1332	End hour (AUX 2)	INT32
Expert	1378	Contact active with a fixed time schedule (AUX 2)	ONLY LEVEL
Expert	1379	Program 1 (AUX 2)	ONLY LEVEL
Expert	1380	Day of the week (AUX 2)	ENUM
Expert	1381	Start hour (AUX 2)	INT32
Expert	1382	End hour (AUX 2)	INT32
Expert	1383	Program 2 (AUX 2)	ONLY LEVEL
Expert	1384	Day of the week (AUX 2)	ENUM
Expert	1385	Start hour (AUX 2)	INT32
Expert	1386	End hour (AUX 2)	INT32
Expert	1387	Program 3 (AUX 2)	ONLY LEVEL
Expert	1388	Day of the week (AUX 2)	ENUM
Expert	1389	Start hour (AUX 2)	INT32
Expert	1390	End hour (AUX 2)	INT32
Expert	1456	Contact active on event (AUX 2)	ONLY LEVEL
Expert	1333	Xtender is OFF (AUX 2)	BOOL
Expert	1519	Xtender ON (AUX 2)	BOOL
Expert	1544	Remote entry (AUX 2)	BOOL
Expert	1334	Battery undervoltage (AUX 2)	BOOL
Expert	1335	Battery overvoltage (AUX 2)	BOOL
Expert	1336	Inverter or Smart-Boost overload (AUX 2)	BOOL
Expert	1337	Overtemperature (AUX 2)	BOOL
Expert	1521	No overtemperature (AUX 2)	BOOL
Expert	1339	Active charger (AUX 2)	BOOL
Expert	1340	Active inverter (AUX 2)	BOOL
Expert	1341	Active Smart-Boost (AUX 2)	BOOL
Expert	1342	AC input presence but with fault (AUX 2)	BOOL
Expert	1343	AC input presence (AUX 2)	BOOL
Expert	1344	Transfer contact ON (AUX 2)	BOOL
Expert	1345	AC out presence (AUX 2)	BOOL
Expert	1346	Bulk charge phase (AUX 2)	BOOL
Expert	1347	Absorption phase (AUX 2)	BOOL
Expert	1348	Equalization phase (AUX 2)	BOOL
Expert	1350	Floating (AUX 2)	BOOL
Expert	1351	Reduced floating (AUX 2)	BOOL
Expert	1352	Periodic absorption (AUX 2)	BOOL
Expert	1530	Autonomy test running (AUX 2)	BOOL
Expert	1353	Contact active according to battery voltage (AUX 2)	ONLY LEVEL
Expert	1354	Use dynamic compensation of battery level (AUX 2)	BOOL
Expert	1355	Battery voltage 1 activate (AUX 2)	BOOL
Expert	1356	Battery voltage 1 (AUX 2)	FLOAT
Expert	1357	Delay 1 (AUX 2)	FLOAT
Expert	1358	Battery voltage 2 activate (AUX 2)	BOOL
Expert	1359	Battery voltage 2 (AUX 2)	FLOAT
Expert	1360	Delay 2 (AUX 2)	FLOAT
Expert	1361	Battery voltage 3 activate (AUX 2)	BOOL
Expert	1362	Battery voltage 3 (AUX 2)	FLOAT
Expert	1363	Delay 3 (AUX 2)	FLOAT
Expert	1364	Battery voltage to deactivate (AUX 2)	FLOAT
Expert	1365	Delay to deactivate (AUX 2)	FLOAT
Expert	1517	Deactivate if battery in floating phase (AUX 2)	BOOL
Expert	1366	Contact active with inverter power or Smart-Boost (AUX 2)	ONLY LEVEL
Expert	1367	Inverter power level 1 activate (AUX 2)	BOOL
Expert	1368	Power level 1 (AUX 2)	FLOAT
Expert	1369	Time delay 1 (AUX 2)	FLOAT
Expert	1370	Inverter power level 2 activate (AUX 2)	BOOL
Expert	1371	Power level 2 (AUX 2)	FLOAT
Expert	1372	Time delay 2 (AUX 2)	FLOAT

Expert	1373	Inverter power level 3 activate (AUX 2)	BOOL
Expert	1374	Power level 3 (AUX 2)	FLOAT
Expert	1375	Time delay 3 (AUX 2)	FLOAT
Expert	1376	Inverter power level to deactivate (AUX 2)	FLOAT
Expert	1377	Time delay to deactivate (AUX 2)	FLOAT
Inst.	1504	Contact active according to battery temperature (AUX 2) With BSP or BTS	ONLY LEVEL
Inst.	1457	Contact activated with the temperature of battery (AUX 2)	BOOL
Inst.	1458	Contact activated over (AUX 2)	FLOAT
Inst.	1459	Contact deactivated below (AUX 2)	FLOAT
Inst.	1460	Contact activated only if the battery is charged (AUX 2)	BOOL
Expert	1502	Contact active according to SOC (AUX 2) Only with BSP	ONLY LEVEL
Expert	1442	Contact activated with the SOC 1 of battery (AUX 2)	BOOL
Expert	1443	Contact activated below SOC 1 (AUX 2)	FLOAT
Expert	1590	Delay 1 (AUX 2)	FLOAT
Expert	1591	Contact activated with the SOC 2 of battery (AUX 2)	BOOL
Expert	1592	Contact activated below SOC 2 (AUX 2)	FLOAT
Expert	1593	Delay 2 (AUX 2)	FLOAT
Expert	1594	Contact activated with the SOC 3 of battery (AUX 2)	BOOL
Expert	1595	Contact activated below SOC 3 (AUX 2)	FLOAT
Expert	1596	Delay 3 (AUX 2)	FLOAT
Expert	1444	Contact deactivated over SOC (AUX 2)	FLOAT
Expert	1597	Delay to deactivate (AUX 2)	FLOAT
Expert	1598	Deactivate if battery in floating phase (AUX 2)	BOOL
Expert	1513	Security, maximum time of contact (AUX 2)	BOOL
Expert	1515	Maximum time of operation of contact (AUX 2)	FLOAT
Expert	1570	Reset all settings (AUX 2)	INT32
Expert	1489	AUXILIARY CONTACTS 1 AND 2 EXTENDED FUNCTIONS	ONLY LEVEL
Expert	1491	Generator control active	BOOL
Expert	1493	Number of starting attempts	FLOAT
Expert	1492	Starter pulse duration (with AUX2)	FLOAT
Expert	1494	Time before a starter pulse	FLOAT
Expert	1574	Main contact hold/interrupt time	FLOAT
Expert	1101	SYSTEM	ONLY LEVEL
Expert	1537	Remote entry (Remote ON/OFF)	ONLY LEVEL
Expert	1545	Remote entry active	BOOL
Expert	1538	Prohibits transfert relay	BOOL
Expert	1539	Prohibits inverter	BOOL
Expert	1540	Prohibits charger	BOOL
Expert	1541	Prohibits Smart-Boost	BOOL
Expert	1542	Prohibits grid feeding	BOOL
Expert	1566	Use an alternate max input current	BOOL
Expert	1567	Second maximum current of AC source (Input limit)	FLOAT
Expert	1554	Decrease max input limit activated by remote entry	BOOL
Expert	1576	ON/OFF command	BOOL
Inst.	1578	Activated by AUX1 state	BOOL
Inst.	1579	Prohibits battery priority	BOOL
Expert	1296	Batteries priority as energy source	BOOL
Expert	1297	Battery priority voltage	FLOAT
Expert	1565	Buzzer alarm duration	FLOAT
Expert	1129	Auto restarts	ONLY LEVEL
Expert	1130	After battery undervoltage	BOOL
Expert	1304	Number of batteries undervoltage allowed before definitive stop	FLOAT
Expert	1404	Time period for batteries undervoltages counting	FLOAT
Expert	1305	Number of batteries critical undervoltage allowed before definitive stop	FLOAT
Expert	1405	Time period for critical batteries undervoltages counting	FLOAT
Expert	1131	After battery overvoltage	BOOL
Expert	1132	After inverter or Smart-Boost overload	BOOL
Expert	1533	Delay to restart after an overload	FLOAT
Expert	1134	After overtemperature	BOOL
Expert	1111	Autostart to the battery connection	BOOL
Expert	1484	System earthing (Earth - Neutral)	ONLY LEVEL

Expert	1485	Prohibited ground relay	BOOL
Expert	1486	Continuous neutral	BOOL
Expert	1473	Autotest of the battery autonomy	ONLY LEVEL
Expert	1474	Functionality test (weekly)	BOOL
Expert	1495	Start manually a functionality test (weekly)	INT32
Expert	1475	Day in the week of the test	ENUM
Expert	1476	Hour of the beginning of the test	INT32
Expert	1477	Duration of the test	FLOAT
Expert	1478	Autonomy test (monthly)	BOOL
Expert	1496	Start manually an autonomy test (monthly)	INT32
Expert	1479	Months of the test	ENUM
Expert	1480	Day in the month of the test	FLOAT
Expert	1481	Day in the week of the test	ENUM
Expert	1482	Hour of the beginning of the test	INT32
Expert	1483	Duration of the test	FLOAT
Inst.	1550	Parameters saved in flash memory	BOOL
Inst.	1415	Global ON of the system	INT32
Inst.	1399	Global OFF of the system	INT32
Expert	1468	Reset of all the inverters	INT32
Expert	1282	MULTI XTENDER SYSTEM	ONLY LEVEL
Expert	1283	Integral mode	BOOL
Expert	1461	Multi inverters allowed	BOOL
Expert	1462	Multi inverters independents	BOOL
Expert	1555	Battery cycle synchronized by master	BOOL
Expert	1547	Allow slaves standby in multi-Xtender system	BOOL
Expert	1571	Splitphase: L2 with 180 degrees phaseshift	BOOL
Inst.	1437	Minigrid compatible	BOOL
Inst.	1577	Minigrid with shared battery energy	BOOL
Expert	1522	GRID-FEEDING	ONLY LEVEL
Expert	1127	Grid feeding allowed	BOOL
Expert	1523	Max grid feeding current	FLOAT
Expert	1524	Battery voltage target for forced grid feeding	FLOAT
Expert	1525	Forced grid feeding start time	INT32
Expert	1526	Forced grid feeding stop time	INT32

6.2 BSP parameters

Level	User ref.	Parameter	Scom format
Basic	6000	BASIC SETTINGS	ONLY LEVEL
Basic	6001	Nominal capacity	FLOAT
Basic	6002	Nominal discharge duration (C-rating)	FLOAT
Basic	6017	Nominal shunt current	FLOAT
Basic	6018	Nominal shunt voltage	FLOAT
Expert	6003	Reset of battery history	INT32
Basic	6004	Restore default settings	INT32
Inst.	6005	Restore factory settings	INT32
Expert	6016	ADVANCED SETTINGS	ONLY LEVEL
Expert	6031	Reset of user counters	INT32
Expert	6019	Self-discharge rate	FLOAT
Expert	6020	Nominal temperature	FLOAT
Expert	6021	Temperature coefficient	FLOAT
Expert	6022	Charge efficiency factor	FLOAT
Expert	6023	Peukert's exponent	FLOAT
Expert	6042	Activate the end of charge synchronization	BOOL
Expert	6024	End of charge voltage level	FLOAT
Expert	6025	End of charge current level	FLOAT
Expert	6026	Minimum duration before end of charge	FLOAT

6.3 RCC parameters

Level	User ref.	Parameter	Scom format
Basic	5000	Language	ENUM
Expert	5036	Other languages	ONLY LEVEL
Basic	5038	Choice of the second language	ENUM
Basic	5039	Choice of the third language	ENUM
Basic	5040	Choice of the fourth language	ENUM
Basic	5001	Time	INT32
Basic	5002	Date	INT32
Basic	5003	Day	FLOAT
Basic	5004	Month	ENUM
Basic	5005	Year	FLOAT
V.O.	5012	User level	Not supported
Expert	5019	Force remote control to user BASIC level	INT32
Expert	5057	Datalogger	ONLY LEVEL
Expert	5058	Datalogger enabled	BOOL
Expert	5059	Save today's datas	INT32
Basic	5013	Save and restore files	ONLY LEVEL
Basic	5041	Save all files (system backup)	INT32
Basic	5068	Restore all files (system recovery)	INT32
Basic	5070	Apply configuration files (masterfile)	INT32
Expert	5032	Separator of the .csv files	ENUM
Expert	5069	Advanced backup functions	ONLY LEVEL
Expert	5030	Save messages	INT32
Expert	5049	Save and restore RCC files	ONLY LEVEL
Expert	5015	Save RCC parameters	INT32
Expert	5016	Load RCC parameters	INT32
Expert	5050	Save and restore Xtender files	ONLY LEVEL
Expert	5017	Save Xtender parameters	INT32
Expert	5018	Load Xtender parameters	INT32
Inst.	5033	Create Xtender configuration file (masterfile)	INT32
Expert	5034	Load Xtender configuration file (masterfile)	INT32
Expert	5045	Load Xtender parameters preset	Not supported
Expert	5051	Save and restore BSP files	ONLY LEVEL
Expert	5052	Save BSP parameters	INT32
Expert	5053	Load BSP parameters	INT32
Inst.	5054	Create BSP configuration file (masterfile)	INT32
Expert	5055	Load BSP configuration file (masterfile)	INT32
Inst.	5047	Format the SD card	INT32
Expert	5061	Start update	INT32
Inst.	5042	Modification of access levels of many parameters	ONLY LEVEL
Inst.	5043	Change all parameters access level to:	ENUM
Inst.	5044	Restore default access level of all parameters	INT32
Expert	5007	Backlight	ONLY LEVEL
Expert	5008	Backlight always off	BOOL
Expert	5009	Backlight switch off after	FLOAT
Expert	5026	Red backlight flashing on Xtender off and faulty	BOOL
Basic	5021	Extended and special functions	ONLY LEVEL
Basic	5006	Display contrast	FLOAT
Inst.	5073	Choice of standard display	ENUM
Expert	5010	Come back to standard display after	FLOAT
Expert	5011	Visibility of the transitory messages	FLOAT
Basic	5027	Acoustic alarm active	BOOL
Expert	5031	Remote control acoustic alarm duration	FLOAT
Expert	5056	Switching ON and OFF of system on level "VIEW ONLY"	BOOL
Inst.	5071	Reset of all the remotes control	INT32
Inst.	5072	Activation of old CAN protocol (v 1.1.x)	BOOL