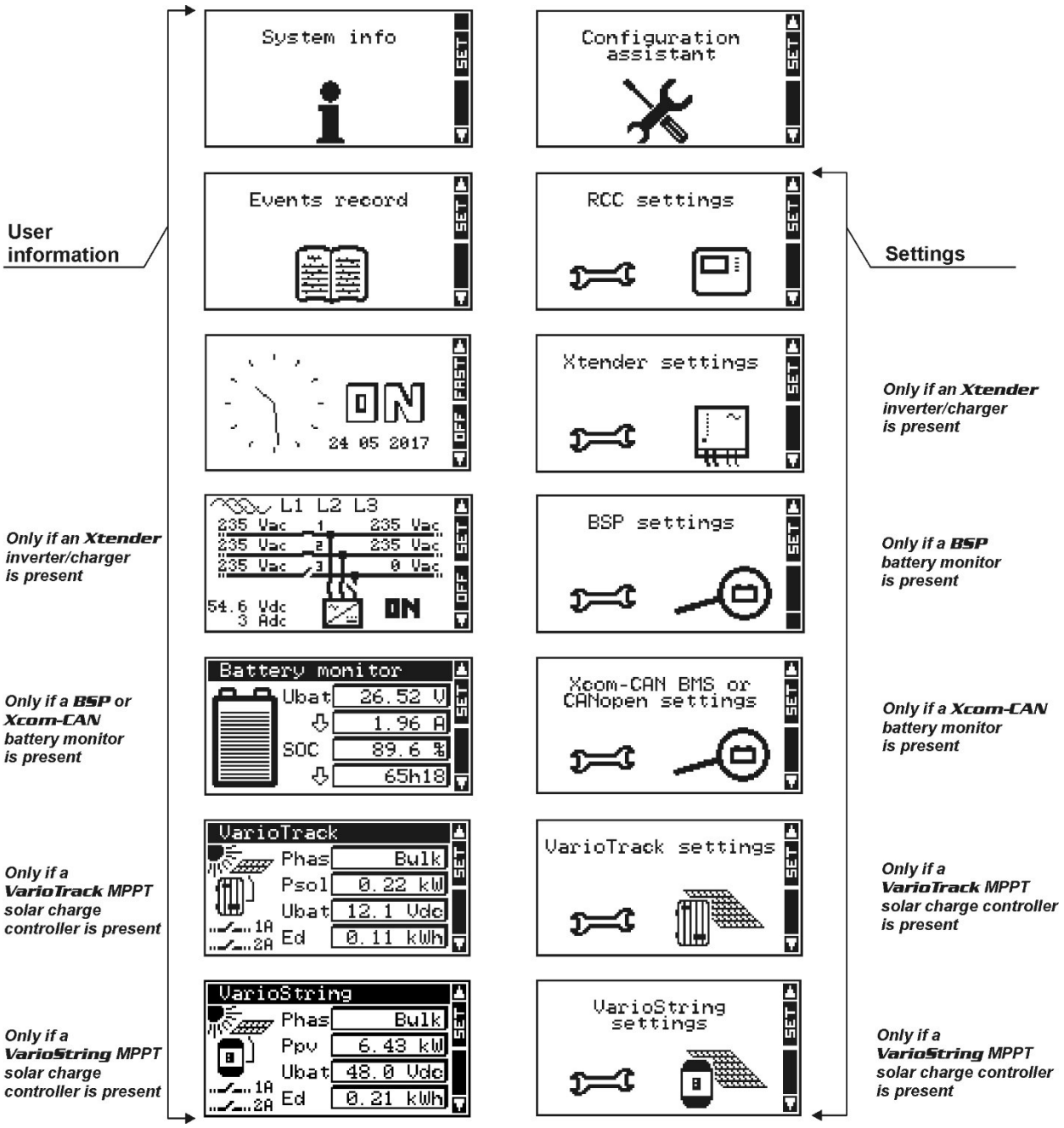
RCC-02/-03 remote control

Quick guide



The complete RCC user manual is available on the Studer SD card provided with the product. All user manuals can also be downloaded from our website: www.studer-innotec.com.

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TABLE OF CONTENTS

1 INTRODUCTION

This quick guide contains information relating to the functioning of the RCC-02 and RCC-03 remote controls. The RCC remote control can be used to control Xtender inverter/chargers, VarioTrack and VarioString MPPT solar charge controllers and their accessories.

1.1 CONTENTS: RCC REMOTE CONTROL

	RCC-02	RCC-03
1 remote control; RCC-02 for wall mounting or RCC-03 for panel mounting		
1 communication cable, 2m		
1 Micro SD card; for recording statistics, updates, backups or restoration of configurations or adjustments. Contains the complete RCC product manual in EN, FR, DE and ES		
Screws	-	4

2 LIMITATION OF RESPONSIBILITY

The placement, commissioning, use, maintenance and servicing of the RCC remote control cannot be monitored by Studer Innotec. For this reason, Studer Innotec assumes no responsibility or liability for damage, costs or losses resulting from an installation that does not conform to the instructions, from a defective functioning or from deficient maintenance.

The use of Studer Innotec devices is the responsibility of the customer in all cases. This equipment is neither designed nor guaranteed to supply installations used for vital medical care or any other critical installation carrying significant potential damage risks to people or to the environment. Studer Innotec does not assume any responsibility for the infringement of patent rights or other rights of third parties that result from using the devices.

The responsibility of Studer Innotec may not, under any circumstances, exceed the amount spent to purchase the product.

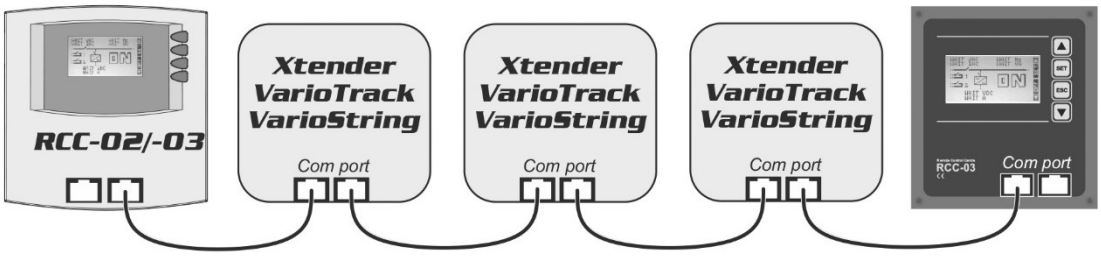
Studer Innotec reserves the right to make modifications to the product without prior notification.

3 CONNECTION

Devices in the Xtender- and Vario-series are equipped with a proprietary communication bus for data exchange, configuration and updating of the system. A connection in series is obtained by linking the devices within the system with the provided communication cables.

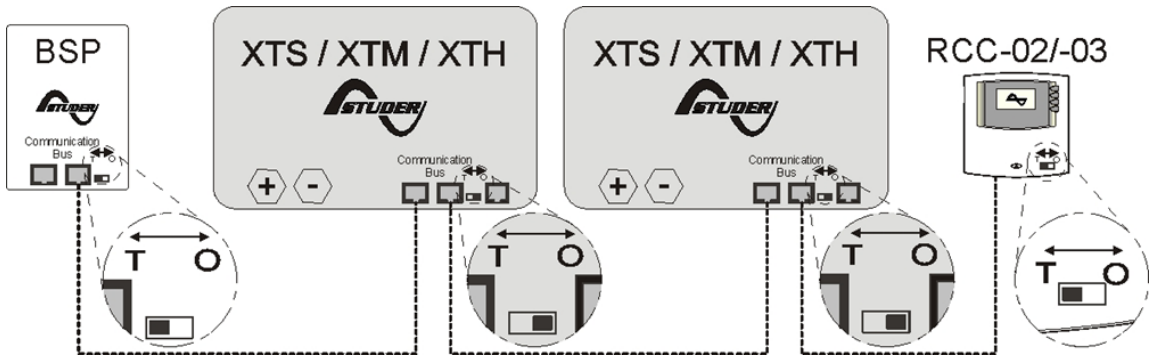
3.1 CORRECT POSITIONING OF THE RCC

The RCC remote control should always be positioned at the end of the communication bus in order to function properly. It must never be placed in between two devices connected to the battery (Xtender, VarioTrack and VarioString).



3.2 SETTING THE LINK ENDS

For a serial bus to function properly, the terminations must be activated on the units on both ends. Each device is equipped with a switch offering to choose between open "O" and terminated "T". By default, all switches are in the "T"- position on Studer Innotec products. Devices at the end of the line must be set to "T" (one cable) and all the others to "O" (two cables). A wrong setting of the termination switches can lead to an erratic running of the installation or impede its updating.



Example of an installation with indicated terminations.

4 USING THE REMOTE CONTROL

The RCC remote control contains four buttons to navigate between the different screens shown on the graphical display with backlighting. The function of a button may vary depending on the context in which it is used. Generally, the buttons UP and DOWN are used to alter values or options relating to what is on the display. The two buttons, SET and ESC, are used to access, confirm or quit the item shown.

5 SYSTEM CONFIGURATION

After installation, the system must be configurated to integrate the properties of elements outside the devices such as a battery and a possible voltage source (i.e the grid or a genset), depending on the desired application and wiring.

5.1 CONFIGURATION ASSISTANT

1 minute. Thanks to the Configuration Assistant, that's all the time you will need to set-up a new Xtender/Vario system. Using an RCC-02/-03 remote control, simply answer a few questions and all Studer devices in the system will be configured to ensure optimum performance.

When the system is switched on, the Configuration Assistant window will appear on the RCC-02/-03. If this is not the case and you still want to use this function, press the down (↓) key repeatedly until the "Configuration Assistant" window appears.

Press the SET key and follow the instructions displayed.

5.2 ADVANCED FUNCTIONS AND APPLICATIONS

Many other advanced functions and applications are possible with Xtender/Vario systems, but are not supported by the configurator, including the following:

- Battery settings as per specific manufacturer recommendations or specific applications
- Special functions of the auxiliary relays and remote entry
- AC coupling of grid-tie inverters (via frequency control)
- Injection of AC current to the grid
- Three-phase installations with different phase capacities
- Functions described in application notes
- Split phase installation

If more advanced functions or different settings are desired, many parameters can be accessed via the parameter settings windows of each device (XT, VT, VS, BSP, etc.). Detailed information for each parameter, user info and message (listed in the Quick Guide) can be found in the RCC user manual on the SD card included in this package.

⚠	An understanding of each parameter and its impact on the system is required when a change is made.

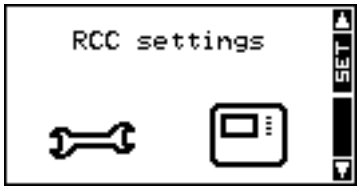
For more information on RCC-02/-03 features, see also the "accessories" chapter of the Xtender, VarioTrack, or VarioString user manuals.

ℹ	The functions of the auxiliary contacts are not modified by the Configuration Assistant and retain their factory functions as described in Chap. 7.5 of the Xtender manual: AUX1 = start of generator (or load shedding), AUX2 = inverter stopped (alarm)

6 ADJUSTMENT OF THE PARAMETERS

The parameters of your device are divided into several access levels, some protected by password. A description of the access levels is available in chapter 10.4 of the RCC user manual available on the SD card delivered with the RCC remote control. A detailed description of each parameter is available in the same manual.

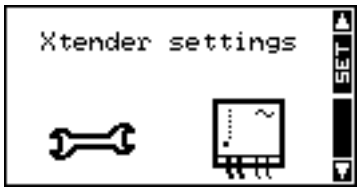
6.1 CONFIGURATION OF THE RCC (REMOTE CONTROL)



Level	Nr	RCC / Xcom-232i parameter description	Factory value
Basic	5000	Language	0 English
Expert	**5036**	**OTHER LANGUAGES**	
Basic	5038	Choice of the second language	French
Basic	5039	Choice of the third language	German
Basic	5040	Choice of the fourth language	Spanish
Basic	5001	Time	00:00
Basic	5002	Date	0
V.O.	5012	User level	16
Expert	5019	Force remote control to user BASIC level	-
Expert	**5057**	**DATALOGGER**	
Expert	5101	Datalogger enabled	Automatic
Expert	5059	Save today's datas	-
Inst.	5109	Datalogger reset when modifying the installation	No
Inst.	5120	Erase the 30 oldest log files from the SD card	-
Expert	5123	Activation of R&D tracks	No
Basic	**5013**	**SAVE AND RESTORE FILES**	
Basic	5041	Save all files (system backup)	-
Basic	5068	Restore all files (system recovery)	-
Basic	5070	Apply configuration files (masterfile)	-
Expert	5032	Separator of the .csv files	Automatic
Expert	**5069**	**Advanced backup functions**	
Expert	5030	Save messages	-
Expert	**5049**	**Save and restore RCC files**	
Expert	5015	Save RCC parameters	-
Expert	5016	Load RCC parameters	-
Inst.	5097	Create RCC configuration file (masterfile)	-
Expert	5098	Load RCC configuration file (masterfile)	-
Expert	**5050**	**Save and restore Xtender files**	
Expert	5017	Save Xtender parameters	-
Expert	5018	Load Xtender parameters	-
Inst.	5033	Create Xtender configuration file (masterfile)	-
Expert	5034	Load Xtender configuration file (masterfile)	-
Expert	5045	Load Xtender parameters preset	1
Expert	**5051**	**Save and restore BSP files**	
Expert	5052	Save BSP parameters	-

Level	Nr	RCC / Xcom-232i parameter description	Factory value
Expert	5053	Load BSP parameters	-
Inst.	5054	Create BSP configuration file (masterfile)	-
Expert	5055	Load BSP configuration file (masterfile)	-
Expert	**5084**	**Save and restore VarioTrack files**	
Expert	5085	Save VarioTrack parameters	-
Expert	5086	Load VarioTrack parameters	-
Inst.	5087	Create VarioTrack configuration file (masterfile)	-
Expert	5088	Load VarioTrack configuration file (masterfile)	-
Expert	**5114**	**Save and restore VarioString files**	
Expert	5115	Save VarioString parameters	-
Expert	5116	Load VarioString parameters	-
Inst.	5117	Create VarioString configuration file (masterfile)	-
Expert	5118	Load VarioString configuration file (masterfile)	-
Inst.	5047	Format the SD card	-
Expert	5061	Start update	-
Inst.	**5042**	**MODIFICATION OF ACCESS LEVELS OF MANY PARAMETERS**	
Inst.	5043	Change all parameters access level to:	Choose
Inst.	5044	Restore default access level of all parameters	-
Basic	**5007**	**BACKLIGHT**	
Basic	5093	Backlight mode	Delayed
Basic	5009	Backlight switch off after	120 sec
Expert	5026	Red backlight flashing on Xtender off and faulty	Yes
Basic	**5021**	**EXTENDED AND SPECIAL FUNCTIONS**	
Basic	5006	Display contrast	50%
Expert	5073	Choice of standard display	Xtender
Inst.	5111	Displaying of configuration assistant on startup	Automatic
Expert	5010	Come back to standard display after	600 sec
Expert	5011	Visibility of the transitory messages	60 sec
Basic	5027	Acoustic alarm active	Yes
Expert	5031	Remote control acoustic alarm duration	120 sec
Expert	5056	Switching ON and OFF of system on level "VIEW ONLY"	Yes
Expert	5071	Reset of all the remotes control	-
Expert	5121	Reset all devices of the system	-
Expert	**5094**	**SCOM**	
Expert	5105	Test of the modem's GPRS signal level (Xcom-GSM)	-
Inst.	5067	Clear info {17019} Maximum time interval between two scom requests	-
Inst.	5072	Xcom Portal watchdog activation	Automatic
Inst.	5113	Delay before Xcom Portal watchdog forces reconnection	15 minutes

6.2 CONFIGURATION OF THE XTENDER (INVERTER/CHARGER)



Level	Nr	Xtender parameter description	Factory value
Basic	**1100**	**BASIC SETTINGS**	
Basic	1551	Basic parameters set by means of the potentiomenter in the XTS	Yes
Basic	1107	Maximum current of AC source (Input limit)	32 Aac
Basic	1138	Battery charge current	60 Adc
Basic	1126	Smart-Boost allowed	Yes
Basic	1124	Inverter allowed	Yes
Expert	1125	Charger allowed	Yes
Basic	1552	Type of detection of the grid loss (AC-In)	Tolerant
Basic	1187	Standby level	10%
Basic	1395	Restore default settings	-
Inst.	1287	Restore factory settings	-
Expert	**1137**	**BATTERY MANAGEMENT AND CYCLE**	
Expert	1125	Charger allowed	Yes
Inst.	1646	Charger uses only power from AC-Out	No
Basic	1138	Battery charge current	60 Adc
Expert	1139	Temperature compensation	-3 mV/°C/cell
Expert	**1568**	**Undervoltage**	
Expert	1108	Battery undervoltage level without load	11.6/23.2/46.3 Vdc
Expert	**1531**	**Battery undervoltage dynamic compensation**	
Expert	1191	Battery undervoltage dynamic compensation	Yes
Expert	1532	Kind of dynamic compensation	Automatic
Expert	1109	Battery undervoltage level at full load	10.5/21/42 Vdc
Expert	1190	Battery undervoltage duration before turn off	3 min
Expert	1110	Restart voltage after batteries undervoltage	12/24/48 Vdc
Expert	1194	Battery adaptive low voltage (B.L.O)	No
Expert	1195	Max voltage for adaptive low voltage	12.5/25/49.9 Vdc
Expert	1307	Reset voltage for adaptive correction	13.2/26.4/52.8 Vdc
Expert	1298	Increment step of the adaptive low voltage	0.1/0.2/0.5 Vdc
Expert	1121	Battery overvoltage level	17/34.1/68.2 Vdc
Expert	1122	Restart voltage level after an battery overvoltage	16.2/32.4/64.8 Vdc
Expert	1140	Floating voltage	13.6/27.2/54.4 Vdc
Expert	1467	Force phase of floating	-
Expert	**1141**	**New cycle menu**	
Expert	1142	Force a new cycle	-
Inst.	1608	Use dynamic compensation of battery level (new cycle)	No
Expert	1143	Voltage level 1 to start a new cycle	12.5/25/49.9 Vdc
Expert	1144	Time period under voltage level 1 to start a new cycle	30 min
Expert	1145	Voltage level 2 to start a new cycle	12.3/24.6/49.2 Vdc
Expert	1146	Time period under voltage level 2 to start a new cycle	60 sec
Expert	1149	New cycle priority on absorption and equalization phases	No

Level	Nr	Xtender parameter description	Factory value
Expert	1147	Cycling restricted	No
Expert	1148	Minimal delay between cycles	3 hours
Expert	**1451**	**Absorption phase**	
Expert	1155	Absorption phase allowed	Yes
Expert	1156	Absorption voltage	14.4/28.8/57.6 Vdc
Expert	1157	Absorption duration	2 hours
Expert	1158	End of absorption triggered with current	No
Expert	1159	Current limit to quit the absorption phase	4 Adc
Expert	1160	Maximal frequency of absorption control	No
Expert	1161	Minimal delay since last absorption	2 hours
Expert	**1452**	**Equalization phase**	
Expert	1163	Equalization allowed	No
Expert	1162	Force equalization	-
Expert	1291	Equalization before absorption phase	Yes
Expert	1290	Equalization current	60 Adc
Expert	1164	Equalization voltage	15.6/31.2/62.4 Vdc
Expert	1165	Equalization duration	0.5 hours
Expert	1166	Number of cycles before an equalization	25
Expert	1284	Equalization with fixed interval	No
Expert	1285	Weeks between equalizations	26 weeks
Expert	1168	End of equalization triggered with current	No
Expert	1169	Current threshold to end equalization phase	4 Adc
Expert	**1453**	**Reduced floating phase**	
Expert	1170	Reduced floating allowed	No
Expert	1171	Floating duration before reduced floating	1 days
Expert	1172	Reduced floating voltage	13.2/26.4/52.8 Vdc
Expert	**1454**	**Periodic absorption phase**	
Expert	1173	Periodic absorption allowed	No
Expert	1174	Periodic absorption voltage	14.4/28.8/57.6 Vdc
Expert	1175	Reduced floating duration before periodic absorption	7 days
Expert	1176	Periodic absorption duration	0.5 hours
Expert	**1186**	**INVERTER**	
Basic	1124	Inverter allowed	Yes
Expert	1286	AC Output voltage	230 Vac
Expert	1548	AC voltage increase according to battery voltage	No
Expert	1560	Max AC voltage increase with battery voltage	10 Vac
Expert	1112	Inverter frequency	50 Hz
Expert	1536	Inverter frequency increase when battery full	No
Expert	1549	Inverter frequency increase according to battery voltage	No
Expert	1546	Max frequency increase	4 Hz
Expert	1534	Speed of voltage or frequency change in function of battery	0
Expert	**1420**	**Standby and turn on**	
Basic	1187	Standby level	10%
Expert	1189	Time delay between standby pulses	0.8 sec
Expert	1188	Standby number of pulses	1
Expert	1599	Softstart duration	0 sec
Expert	1438	Solsafe presence Energy source at AC-Out side	No
Expert	**1197**	**AC-IN AND TRANSFER**	

Level	Nr	Xtender parameter description	Factory value
Expert	1128	Transfer relay allowed	Yes
Expert	1580	Delay before closing transfer relay	0 min
Basic	1126	Smart-Boost allowed	Yes
Inst.	1607	Limitation of the power Boost	100%
Basic	1107	Maximum current of AC source (Input limit)	32 Aac
Expert	**1471**	**Max input current modification**	
Expert	1566	Using a secondary value for the maximum current of the AC source	No
Expert	1567	Second maximum current of the AC source (Input limit)	16 Aac
Expert	1527	Decrease max input limit current with AC-In voltage	No
Expert	1554	Decrease of the max. current of the source with input voltage activated by remote entry	No
Expert	1309	AC input low limit voltage to allow charger function	180 Vac
Expert	1433	Adaptation range of the input current according to the input voltage	10 Vac
Expert	1553	Speed of input limit increase	50
Expert	1295	Charge current decrease coef. at voltage limit to turn back in inverter mode	100%
Expert	1436	Overrun AC source current limit without opening the transfer relay (Input limit)	Yes
Basic	1552	Type of detection of the grid loss (AC-In)	Tolerant
Expert	1510	Tolerance on detection of AC-input loss (tolerant UPS mode)	100
Expert	1199	Input voltage giving an opening of the transfer relay with delay	200 Vac
Expert	1198	Time delay before opening of transfer relay	8 sec
Expert	1200	Input voltage giving an immediate opening of the transfer relay (UPS)	180 Vac
Inst.	1432	Absolute max limit for input voltage	270 Vac
Expert	1505	Delta frequency allowed above the standard input frequency	5 Hz
Expert	1506	Delta frequency allowed under the standard input frequency	5 Hz
Expert	1507	Duration with frequency error before opening the transfer	2 sec
Expert	1575	AC-IN current active filtering (Not in parallel)	No
Inst.	1557	Use an energy quota on AC-input	No
Inst.	1559	AC-In energy quota	1 kWh
Expert	**1201**	**AUXILIARY CONTACT 1**	
Expert	1202	Operating mode (AUX 1)	Automatic
Expert	1497	Combination of the events for the auxiliary contact (AUX 1)	Any (Function OR)
Expert	**1203**	**Temporal restrictions (AUX 1)**	
Expert	**1204**	**Program 1 (AUX 1)**	
Expert	1205	Day of the week (AUX 1)	None days
Expert	1206	Start hour (AUX 1)	07:00 hh:mm
Expert	1207	End hour (AUX 1)	20:00 hh:mm
Expert	**1208**	**Program 2 (AUX 1)**	
Expert	1209	Day of the week (AUX 1)	None days
Expert	1210	Start hour (AUX 1)	07:00 hh:mm
Expert	1211	End hour (AUX 1)	20:00 hh:mm
Expert	**1212**	**Program 3 (AUX 1)**	
Expert	1213	Day of the week (AUX 1)	None days
Expert	1214	Start hour (AUX 1)	07:00 hh:mm
Expert	1215	End hour (AUX 1)	20:00 hh:mm

Level	Nr	Xtender parameter description	Factory value
Inst.	**1216**	**Program 4 (AUX 1)**	
Inst.	1217	Day of the week (AUX 1)	None days
Inst.	1218	Start hour (AUX 1)	07:00 hh:mm
Inst.	1219	End hour (AUX 1)	20:00 hh:mm
Inst.	**1220**	**Program 5 (AUX 1)**	
Inst.	1221	Day of the week (AUX 1)	None days
Inst.	1222	Start hour (AUX 1)	07:00 hh:mm
Inst.	1223	End hour (AUX 1)	20:00 hh:mm
Expert	**1269**	**Contact active with a fixed time schedule (AUX 1)**	
Expert	**1270**	**Program 1 (AUX 1)**	
Expert	1271	Day of the week (AUX 1)	None days
Expert	1272	Start hour (AUX 1)	07:00 hh:mm
Expert	1273	End hour (AUX 1)	20:00 hh:mm
Expert	**1274**	**Program 2 (AUX 1)**	
Expert	1275	Day of the week (AUX 1)	None days
Expert	1276	Start hour (AUX 1)	07:00 hh:mm
Expert	1277	End hour (AUX 1)	20:00 hh:mm
Expert	**1278**	**Program 3 (AUX 1)**	
Expert	1279	Day of the week (AUX 1)	None days
Expert	1280	Start hour (AUX 1)	07:00 hh:mm
Expert	1281	End hour (AUX 1)	20:00 hh:mm
Expert	**1455**	**Contact active on event (AUX 1)**	
Expert	1225	Xtender is OFF (AUX 1)	No
Expert	1518	Xtender ON (AUX 1)	No
Expert	1543	Remote entry (AUX 1)	No
Expert	1226	Battery undervoltage alarm (AUX 1)	No
Expert	1227	Battery overvoltage (AUX 1)	No
Expert	1228	Inverter overload (AUX 1)	No
Expert	1229	Overtemperature (AUX 1)	No
Expert	1520	No overtemperature (AUX 1)	No
Expert	1231	Active charger (AUX 1)	No
Expert	1232	Active inverter (AUX 1)	No
Expert	1233	Active Smart-Boost (AUX 1)	No
Expert	1234	AC input presence but with fault (AUX 1)	No
Expert	1235	AC input presence (AUX 1)	No
Expert	1236	Transfer relay ON (AUX 1)	No
Expert	1237	AC-Out presence (AUX 1)	No
Expert	1238	Bulk charge phase (AUX 1)	No
Expert	1239	Absorption phase (AUX 1)	No
Expert	1240	Equalization phase (AUX 1)	No
Expert	1242	Floating (AUX 1)	No
Expert	1243	Reduced floating (AUX 1)	No
Expert	1244	Periodic absorption (AUX 1)	No
Inst.	1601	AC-In energy quota (AUX1)	No
Expert	**1245**	**Contact active according to battery voltage (AUX 1)**	
Expert	1288	Use dynamic compensation of battery level (AUX 1)	No
Expert	1246	Battery voltage 1 activate (AUX 1)	Yes
Expert	1247	Battery voltage 1 (AUX 1)	11.7/23.4/46.8 Vdc

Level	Nr	Xtender parameter description	Factory value
Expert	1248	Delay 1 (AUX 1)	1 min
Expert	1249	Battery voltage 2 activate (AUX 1)	Yes
Expert	1250	Battery voltage 2 (AUX 1)	11.9/23.9/47.8 Vdc
Expert	1251	Delay 2 (AUX 1)	10 min
Expert	1252	Battery voltage 3 activate (AUX 1)	Yes
Expert	1253	Battery voltage 3 (AUX 1)	12.1/24.2/48.5 Vdc
Expert	1254	Delay 3 (AUX 1)	60 min
Expert	1255	Battery voltage to deactivate (AUX 1)	13.5/27/54 Vdc
Expert	1256	Delay to deactivate (AUX 1)	60 min
Expert	1516	Deactivate if battery in floating phase (AUX 1)	Yes
Expert	**1257**	**Contact active with inverter power or Smart-Boost (AUX 1)**	
Expert	1258	Inverter power level 1 activate (AUX 1)	No
Expert	1259	Power level 1 (AUX 1)	120 % Pnom
Expert	1260	Time delay 1 (AUX 1)	1 min
Expert	1261	Inverter power level 2 activate (AUX 1)	No
Expert	1262	Power level 2 (AUX 1)	80 % Pnom
Expert	1263	Time delay 2 (AUX 1)	5 min
Expert	1264	Inverter power level 3 activate (AUX 1)	No
Expert	1265	Power level 3 (AUX 1)	50 % Pnom
Expert	1266	Time delay 3 (AUX 1)	30 min
Expert	1267	Inverter power level to deactivate (AUX 1)	40 % Pnom
Expert	1268	Time delay to deactivate (AUX 1)	5 min
Inst.	**1503**	**Contact active according to battery temperature (AUX 1) With BSP or BTS**	
Inst.	1446	Contact activated with the temperature of battery (AUX 1)	No
Inst.	1447	Contact activated over (AUX 1)	3 °C
Inst.	1448	Contact deactivated below (AUX 1)	5 °C
Expert	**1501**	**Contact active according to SOC (AUX 1) Only with BSP**	
Expert	1439	Contact activated with the SOC 1 of battery (AUX 1)	No
Expert	1440	Contact activated below SOC 1 (AUX 1)	50 % SOC
Expert	1581	Delay 1 (AUX 1)	12 hours
Expert	1582	Contact activated with the SOC 2 of battery (AUX 1)	No
Expert	1583	Contact activated below SOC 2 (AUX 1)	30 % SOC
Expert	1584	Delay 2 (AUX 1)	0.2 hours
Expert	1585	Contact activated with the SOC 3 of battery (AUX 1)	No
Expert	1586	Contact activated below SOC 3 (AUX 1)	20 % SOC
Expert	1587	Delay 3 (AUX 1)	0 hours
Expert	1441	Contact deactivated over SOC (AUX 1)	90 % SOC
Expert	1588	Delay to deactivate (AUX 1)	0.2 hours
Expert	1589	Deactivate if battery in floating phase (AUX 1)	Yes
Expert	1512	Security, maximum time of contact (AUX 1)	No
Expert	1514	Maximum time of operation of contact (AUX 1)	600 min
Expert	1569	Reset all settings (AUX 1)	-
Expert	**1310**	**AUXILIARY CONTACT 2**	
Expert	1311	Operating mode (AUX 2)	Reversed automatic
Expert	1498	Combination of the events for the auxiliary contact (AUX 2)	Any (Function OR)
Expert	**1312**	**Temporal restrictions (AUX 2)**	

Level	Nr	Xtender parameter description	Factory value
Expert	**1313**	**Program 1 (AUX 2)**	
Expert	1314	Day of the week (AUX 2)	None days
Expert	1315	Start hour (AUX 2)	07:00 hh:mm
Expert	1316	End hour (AUX 2)	20:00 hh:mm
Expert	**1317**	**Program 2 (AUX 2)**	
Expert	1318	Day of the week (AUX 2)	None days
Expert	1319	Start hour (AUX 2)	07:00 hh:mm
Expert	1320	End hour (AUX 2)	20:00 hh:mm
Expert	**1321**	**Program 3 (AUX 2)**	
Expert	1322	Day of the week (AUX 2)	None days
Expert	1323	Start hour (AUX 2)	07:00 hh:mm
Expert	1324	End hour (AUX 2)	20:00 hh:mm
Inst.	**1325**	**Program 4 (AUX 2)**	
Inst.	1326	Day of the week (AUX 2)	None days
Inst.	1327	Start hour (AUX 2)	07:00 hh:mm
Inst.	1328	End hour (AUX 2)	20:00 hh:mm
Inst.	**1329**	**Program 5 (AUX 2)**	
Inst.	1330	Day of the week (AUX 2)	None days
Inst.	1331	Start hour (AUX 2)	07:00 hh:mm
Inst.	1332	End hour (AUX 2)	20:00 hh:mm
Expert	**1378**	**Contact active with a fixed time schedule (AUX 2)**	
Expert	**1379**	**Program 1 (AUX 2)**	
Expert	1380	Day of the week (AUX 2)	None days
Expert	1381	Start hour (AUX 2)	07:00 hh:mm
Expert	1382	End hour (AUX 2)	20:00 hh:mm
Expert	**1383**	**Program 2 (AUX 2)**	
Expert	1384	Day of the week (AUX 2)	None days
Expert	1385	Start hour (AUX 2)	07:00 hh:mm
Expert	1386	End hour (AUX 2)	20:00 hh:mm
Expert	**1387**	**Program 3 (AUX 2)**	
Expert	1388	Day of the week (AUX 2)	None days
Expert	1389	Start hour (AUX 2)	07:00 hh:mm
Expert	1390	End hour (AUX 2)	20:00 hh:mm
Expert	**1456**	**Contact active on event (AUX 2)**	
Expert	1333	Xtender is OFF (AUX 2)	Yes
Expert	1519	Xtender ON (AUX 2)	No
Expert	1544	Remote entry (AUX 2)	No
Expert	1334	Battery undervoltage alarm (AUX 2)	Yes
Expert	1335	Battery overvoltage (AUX 2)	Yes
Expert	1336	Inverter overload (AUX 2)	Yes
Expert	1337	Overtemperature (AUX 2)	Yes
Expert	1521	No overtemperature (AUX 2)	No
Expert	1339	Active charger (AUX 2)	No
Expert	1340	Active inverter (AUX 2)	No
Expert	1341	Active Smart-Boost (AUX 2)	No
Expert	1342	AC input presence but with fault (AUX 2)	No
Expert	1343	AC input presence (AUX 2)	No
Expert	1344	Transfer contact ON (AUX 2)	No

Level	Nr	Xtender parameter description	Factory value
Expert	1345	AC out presence (AUX 2)	No
Expert	1346	Bulk charge phase (AUX 2)	No
Expert	1347	Absorption phase (AUX 2)	No
Expert	1348	Equalization phase (AUX 2)	No
Expert	1350	Floating (AUX 2)	No
Expert	1351	Reduced floating (AUX 2)	No
Expert	1352	Periodic absorption (AUX 2)	No
Inst.	1602	AC-In energy quota (AUX2)	No
Expert	**1353**	**Contact active according to battery voltage (AUX 2)**	
Expert	1354	Use dynamic compensation of battery level (AUX 2)	No
Expert	1355	Battery voltage 1 activate (AUX 2)	No
Expert	1356	Battery voltage 1 (AUX 2)	12/24/48 Vdc
Expert	1357	Delay 1 (AUX 2)	5 min
Expert	1358	Battery voltage 2 activate (AUX 2)	No
Expert	1359	Battery voltage 2 (AUX 2)	11.5/23/46.1 Vdc
Expert	1360	Delay 2 (AUX 2)	5 min
Expert	1361	Battery voltage 3 activate (AUX 2)	No
Expert	1362	Battery voltage 3 (AUX 2)	11/22.1/44.2 Vdc
Expert	1363	Delay 3 (AUX 2)	5 min
Expert	1364	Battery voltage to deactivate (AUX 2)	12.6/25.2/50.4 Vdc
Expert	1365	Delay to deactivate (AUX 2)	5 min
Expert	1517	Deactivate if battery in floating phase (AUX 2)	No
Expert	**1366**	**Contact active with inverter power or Smart-Boost (AUX 2)**	
Expert	1367	Inverter power level 1 activate (AUX 2)	No
Expert	1368	Power level 1 (AUX 2)	120 % Pnom
Expert	1369	Time delay 1 (AUX 2)	0 min
Expert	1370	Inverter power level 2 activate (AUX 2)	No
Expert	1371	Power level 2 (AUX 2)	80 % Pnom
Expert	1372	Time delay 2 (AUX 2)	5 min
Expert	1373	Inverter power level 3 activate (AUX 2)	No
Expert	1374	Power level 3 (AUX 2)	50 % Pnom
Expert	1375	Time delay 3 (AUX 2)	30 min
Expert	1376	Inverter power level to deactivate (AUX 2)	40 % Pnom
Expert	1377	Time delay to deactivate (AUX 2)	5 min
Inst.	**1504**	**Contact active according to battery temperature (AUX 2) With BSP or BTS**	
Inst.	1457	Contact activated with the temperature of battery (AUX 2)	No
Inst.	1458	Contact activated over (AUX 2)	3 °C
Inst.	1459	Contact deactivated below (AUX 2)	5 °C
Expert	**1502**	**Contact active according to SOC (AUX 2) Only with BSP**	
Expert	1442	Contact activated with the SOC 1 of battery (AUX 2)	No
Expert	1443	Contact activated below SOC 1 (AUX 2)	50 % SOC
Expert	1590	Delay 1 (AUX 2)	12 hours
Expert	1591	Contact activated with the SOC 2 of battery (AUX 2)	No
Expert	1592	Contact activated below SOC 2 (AUX 2)	30 % SOC
Expert	1593	Delay 2 (AUX 2)	0.2 hours
Expert	1594	Contact activated with the SOC 3 of battery (AUX 2)	No
Expert	1595	Contact activated below SOC 3 (AUX 2)	20 % SOC

Level	Nr	Xtender parameter description	Factory value
Expert	1596	Delay 3 (AUX 2)	0 hours
Expert	1444	Contact deactivated over SOC (AUX 2)	90 % SOC
Expert	1597	Delay to deactivate (AUX 2)	0.2 hours
Expert	1598	Deactivate if battery in floating phase (AUX 2)	Yes
Expert	1513	Security, maximum time of contact (AUX 2)	No
Expert	1515	Maximum time of operation of contact (AUX 2)	600 min
Expert	1570	Reset all settings (AUX 2)	-
Expert	**1489**	**AUXILIARY CONTACTS 1 AND 2 EXTENDED FUNCTIONS**	
Expert	1491	Generator control active	No
Expert	1493	Number of starting attempts	5
Expert	1492	Starter pulse duration (with AUX2)	3 sec
Expert	1494	Time before a starter pulse	3 sec
Expert	1574	Main contact hold/interrupt time	0 sec
Expert	**1101**	**SYSTEM**	
Expert	**1537**	**Remote entry (Remote ON/OFF)**	
Expert	1545	Remote entry active	Open
Expert	1538	Prohibits transfert relay	No
Expert	1539	Prohibits inverter	No
Expert	1540	Prohibits charger	No
Expert	1541	Prohibits Smart-Boost	No
Expert	1542	Prohibits grid feeding	No
Expert	1566	Using a secondary value for the maximum current of the AC source	No
Expert	1567	Second maximum current of the AC source (Input limit)	16 Aac
Expert	1554	Decrease of the max. current of the source with input voltage activated by remote entry	No
Expert	1576	ON/OFF command	No
Expert	1578	Activated by AUX1 state	No
Expert	1579	Prohibits battery priority	No
Inst.	1600	Disable minigrid mode	No
Inst.	1647	Prohibits charger using only power from AC-Out	No
Expert	1296	Batteries priority as energy source (Not in parallel)	No
Expert	1297	Battery priority voltage	12.9/25.8/51.6 Vdc
Expert	1565	Buzzer alarm duration	0 min
Expert	**1129**	**Auto restarts**	
Expert	1130	After battery undervoltage	Yes
Expert	1304	Number of batteries undervoltage allowed before definitive stop	3
Expert	1404	Time period for batteries undervoltages counting	0 sec
Expert	1305	Number of batteries critical undervoltage allowed before definitive stop	10
Expert	1405	Time period for critical batteries undervoltages counting	10 sec
Expert	1131	After battery overvoltage	Yes
Expert	1132	After inverter or Smart-Boost overload	Yes
Expert	1533	Delay to restart after an overload	5 sec
Expert	1134	After overtemperature	Yes
Expert	1111	Autostart to the battery connection	No
Expert	**1484**	**System earthing (Earth - Neutral)**	

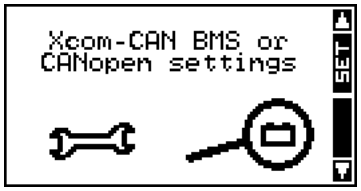
Level	Nr	Xtender parameter description	Factory value
Expert	1485	Prohibited ground relay	Yes
Expert	1486	Continuous neutral	No
Inst.	1628	Xtender watchdog enabled (SCOM)	No
Inst.	1629	Xtender watchdog delay (SCOM)	60 sec
Basic	1395	Restore default settings	-
Inst.	1287	Restore factory settings	-
Inst.	1550	Parameters saved in flash memory	Yes
Inst.	1415	ON of the Xtenders	-
Inst.	1399	OFF of the Xtenders	-
Expert	1468	Reset of all the inverters	-
Expert	**1282**	**MULTI XTENDER SYSTEM**	
Expert	1283	Integral mode	Yes
Expert	1461	Multi inverters allowed	Yes
Expert	1462	Multi inverters independents. Need reset {1468}	No
Expert	1555	Battery cycle synchronized by the master	Yes
Expert	1547	Allow slaves standby in multi-Xtender system	Yes
Expert	1571	Splitphase: L2 with 180 degrees phaseshift	No
Inst.	1437	Minigrid compatible	No
Inst.	1577	Minigrid with shared battery energy	No
Inst.	1556	Is the central inverter in distributed minigrid	No
Expert	**1522**	**GRID-FEEDING**	
Expert	1127	Grid feeding allowed	No
Expert	1523	Max grid feeding current	10 Aac
Expert	1524	Battery voltage target for forced grid feeding	12/24/48 Vdc
Expert	1525	Forced grid feeding start time	20:00 hh:mm
Expert	1526	Forced grid feeding stop time	20:00 hh:mm
Inst.	1610	Use of the defined phase shift curve for injection	No
Inst.	1622	Cos phi at P = 0%	1
Inst.	1623	Cos phi at the power defined by param {1613}	1
Inst.	1613	Power of the second cos phi point in % of Pnom	50%
Inst.	1624	Cos phi at P = 100%	1
Inst.	1627	ARN4105 frequency control enabled	No
Inst.	1630	Delta from user frequency to start derating	1 Hz
Inst.	1631	Delta from user frequency to reach 100% derating	2 Hz

6.3 CONFIGURATION OF THE BSP (BATTERY STATUS PROCESSOR)

Level	Nr	BSP parameter description	Factory value
Basic	**6000**	**BASIC SETTINGS (BSP)**	
Basic	6057	Voltage of the system	Automatic
Basic	6001	Nominal capacity	110 Ah
Basic	6002	Nominal discharge duration (C-rating)	20 h
Basic	6017	Nominal shunt current	500 A

Level	Nr	BSP parameter description	Factory value
Basic	6018	Nominal shunt voltage	50 mV
Expert	6003	Reset of battery history	-
Basic	6004	Restore default settings	-
Inst.	6005	Restore factory settings	-
Expert	**6016**	**ADVANCED SETTINGS (BSP)**	
Expert	6031	Reset of user counters	-
Expert	6055	Manufacturer SOC for 0% displayed	30%
Expert	6056	Manufacturer SOC for 100% displayed	100%
Expert	6042	Activate the end of charge synchronization	No
Expert	6024	End of charge voltage level	13.2/26.4/52.8 V
Expert	6025	End of charge current level	2 %cap
Expert	6065	Minimum duration before end of charge	5 min
Expert	6048	Temperature correction of the end of charge voltage	0 mV/°C/cell
Expert	6044	Activate the state of charge correction by the open circuit voltage	Yes
Expert	6058	Battery current limitation activated	No
Expert	6059	Max battery charge current	60 A
Expert	6019	Self-discharge rate	3 %/month
Expert	6020	Nominal temperature	20 °C
Expert	6021	Temperature coefficient	0.5 %cap/°C
Expert	6022	Charge efficiency factor	90%
Expert	6023	Peukert's exponent	1.2
Expert	6049	Use C20 Capacity as reference value	Yes

6.4 CONFIGURATION OF THE XCOM-CAN (MULTI-PROTOCOL COMMUNICATION MODULE)



Level	Nr	Xcom-CAN parameter description	Factory value
Basic	**6060**	**BASIC SETTINGS (Xcom-CAN BMS)**	
Basic	**6004**	**Restore default settings**	**-**
Inst.	**6005**	**Restore factory settings**	**-**
Expert	**6061**	**ADVANCED SETTINGS (Xcom-CAN BMS)**	
Expert	**6070**	**SOC level under which battery discharge is stopped**	**0 %**
Expert	**6062**	**SOC level for backup**	**100 %**
Expert	**6063**	**SOC level for grid feeding**	**100 %**
Expert	**6068**	**Allow user to define the maximum charge current of the battery**	**No**
Expert	**6069**	**Maximum charge current defined by user**	**10 A**
Expert	**6066**	**Manufacturer SOC for 0% displayed**	**0 %**
Expert	**6067**	**Manufacturer SOC for 100% displayed**	**100 %**
Expert	**6064**	**Use battery current limits instead of recommended values**	**No**

6.5 CONFIGURATION OF THE VARIOTRACK (MPPT SOLAR CHARGE CONTROLLER)

Level	Nr	VarioTrack parameter description	Factory value
Basic	**10000**	**BASIC SETTINGS**	
Expert	10054	Block manual programming (dip-switch)	No
Basic	10001	Voltage of the system	Automatic
Basic	10037	Synchronisation battery cycle with Xtender	Yes
Basic	10005	Floating voltage	13.6/27.2/54.4 Vdc
Basic	10009	Absorption voltage	14.4/28.8/57.6 Vdc
Basic	10017	Equalization allowed	No
Basic	10021	Equalization voltage	15.6/31.2/62.4 Vdc
Basic	10056	Restore default settings	-
Inst.	10057	Restore factory settings	-
Expert	**10003**	**BATTERY MANAGEMENT AND CYCLE**	
Basic	10037	Synchronisation battery cycle with Xtender	Yes
Expert	10002	Battery charge current	80 Adc
Expert	10334	Battery undervoltage	10/20/40 Vdc
Expert	10036	Temperature compensation	-3 mV/°C/cell
Expert	**10004**	**Floating phase**	
Basic	10005	Floating voltage	13.6/27.2/54.4 Vdc
Expert	10006	Force phase of floating	-
Expert	**10007**	**Absorption phase**	
Expert	10008	Absorption phase allowed	Yes
Basic	10009	Absorption voltage	14.4/28.8/57.6 Vdc
Expert	10010	Force absorption phase	-
Expert	10011	Absorption duration	120 min
Expert	10012	End of absorption triggered by the current	No
Expert	10013	Current threshold to end absorption phase	10 Adc
Expert	**10016**	**Equalization phase**	
Basic	10017	Equalization allowed	No
Expert	10018	Force equalization	-
Basic	10021	Equalization voltage	15.6/31.2/62.4 Vdc
Expert	10020	Equalization current	80 Adc
Expert	10022	Equalization duration	30 min
Expert	10052	Equalization with fixed interval	Yes
Expert	10025	Days between equalizations	26 days
Expert	10026	End of equalization triggered by the current	No
Expert	10027	Current threshold to end equalization phase	10 Adc
Expert	10019	Equalization before absorption phase	Yes
Expert	**10028**	**New cycle**	
Expert	10029	Force a new cycle	-
Expert	10030	Voltage level 1 to start a new cycle	12.2/24.4/48.8 Vdc
Expert	10031	Time period under voltage level 1 to start a new cycle	30 min
Expert	10032	Voltage level 2 to start a new cycle	11.8/23.6/47.2 Vdc

Level	Nr	VarioTrack parameter description	Factory value
Expert	10033	Time period under voltage level 2 to start a new cycle	2 min
Expert	10034	Cycling restricted	Yes
Expert	10035	Minimal delay between cycles	1 hours
Expert	**10038**	**SYSTEM**	
Expert	10054	Block manual programming (dip-switch)	No
Expert	10060	Check Earthing	No control
Inst.	10087	Disabling of the display button	No
Expert	**10312**	**Remote entry (Remote ON/OFF)**	
Expert	10313	Remote entry active	Open
Expert	10314	ON/OFF command	No
Expert	10315	Activated by AUX1 state	No
Expert	10316	Start equalization	No
Expert	10317	Send a message when remote entry changes state	No
Expert	10335	Partial shading check	No
Expert	10336	Time between checks	5 min
Inst.	10342	VarioTrack watchdog enabled (SCOM)	No
Inst.	10343	VarioTrack watchdog delay (SCOM)	60 sec
Expert	10200	Reset PV energy meter	-
Expert	10043	Reset daily solar production meters	-
Expert	10044	Reset daily min-max	-
Basic	10056	Restore default settings	-
Inst.	10057	Restore factory settings	-
Inst.	10058	Parameters saved in flash memory	Yes
Expert	10039	ON of the VarioTrack	-
Expert	10040	OFF of the VarioTrack	-
Expert	10051	Reset of all VarioTrack	-
Expert	**10088**	**AUXILIARY CONTACT 1**	
Expert	10089	Operating mode (AUX 1)	Automatic
Expert	10090	Combination of the events for the auxiliary contact (AUX 1)	Any (Function OR)
Expert	**10092**	**Contact activated in night mode (AUX 1)**	
Expert	10093	Activated in night mode (AUX 1)	No
Expert	10094	Delay of activation after entering night mode (AUX 1)	1 min
Expert	10095	Activation time for the auxiliary relay in night mode (AUX 1)	1 min
Expert	**10318**	**Contact active with a fixed time schedule (AUX 1)**	
Expert	10319	Contact activated with fixed time schedule (AUX 1)	No
Expert	10320	Start hour (AUX 1)	07:00 hh:mm
Expert	10321	End hour (AUX 1)	20:00 hh:mm
Expert	**10096**	**Contact active on event (AUX 1)**	
Expert	10198	VarioTrack is ON (AUX 1)	No
Expert	10091	VarioTrack is OFF (AUX 1)	No
Expert	10308	Remote entry (AUX 1)	No
Expert	10097	Battery undervoltage (AUX 1)	No
Expert	10334	Battery undervoltage	10/20/40 Vdc
Expert	10098	Battery overvoltage (AUX 1)	No
Expert	10099	Earth fault (AUX 1)	No
Expert	10100	PV error (48h without charge) (AUX 1)	No
Expert	10102	Overtemperature (AUX 1)	No
Expert	10104	Bulk charge phase (AUX 1)	No

Level	Nr	VarioTrack parameter description	Factory value
Expert	10105	Absorption phase (AUX 1)	No
Expert	10106	Equalization phase (AUX 1)	No
Expert	10107	Floating (AUX 1)	No
Expert	10108	Reduced floating (AUX 1)	No
Expert	10109	Periodic absorption (AUX 1)	No
Expert	**10110**	**Contact active according to battery voltage (AUX 1)**	
Expert	10111	Battery voltage 1 activate (AUX 1)	No
Expert	10112	Battery voltage 1 (AUX 1)	11.7/23.4/46.8 Vdc
Expert	10113	Delay 1 (AUX 1)	1 min
Expert	10114	Battery voltage 2 activate (AUX 1)	No
Expert	10115	Battery voltage 2 (AUX 1)	11.9/23.9/47.8 Vdc
Expert	10116	Delay 2 (AUX 1)	10 min
Expert	10117	Battery voltage 3 activate (AUX 1)	No
Expert	10118	Battery voltage 3 (AUX 1)	12.1/24.2/48.5 Vdc
Expert	10119	Delay 3 (AUX 1)	60 min
Expert	10120	Battery voltage to deactivate (AUX 1)	13.5/27/54 Vdc
Expert	10121	Delay to deactivate (AUX 1)	60 min
Expert	10122	Deactivate if battery in floating phase (AUX 1)	No
Expert	**10123**	**Contact active according to battery temperature (AUX 1) With BSP or BTS**	
Expert	10124	Contact activated with the temperature of battery (AUX 1)	No
Expert	10125	Contact activated over (AUX 1)	3 °C
Expert	10126	Contact deactivated below (AUX 1)	5 °C
Expert	10127	Only activated if the battery is not in bulk phase (AUX 1)	No
Expert	**10128**	**Contact active according to SOC (AUX 1) Only with BSP**	
Expert	10129	Contact activated with the SOC 1 of battery (AUX 1)	No
Expert	10130	Contact activated below SOC 1 (AUX 1)	50 % SOC
Expert	10131	Delay 1 (AUX 1)	12 hours
Expert	10132	Contact activated with the SOC 2 of battery (AUX 1)	No
Expert	10133	Contact activated below SOC 2 (AUX 1)	30%
Expert	10134	Delay 2 (AUX 1)	0.2 hours
Expert	10135	Contact activated with the SOC 3 of battery (AUX 1)	No
Expert	10136	Contact activated below SOC 3 (AUX 1)	20%
Expert	10137	Delay 3 (AUX 1)	0 hours
Expert	10138	Contact deactivated over SOC (AUX 1)	90 % SOC
Expert	10139	Delay to deactivate (AUX 1)	0.2 hours
Expert	10140	Deactivate if battery in floating phase (AUX 1)	No
Expert	10141	Reset all settings (AUX 1)	-
Expert	**10142**	**AUXILIARY CONTACT 2**	
Expert	10143	Operating mode (AUX 2)	Automatic
Expert	10144	Combination of the events for the auxiliary contact (AUX 2)	Any (Function OR)
Expert	**10146**	**Contact activated in night mode (AUX 2)**	
Expert	10147	Activated in night mode (AUX 2)	No
Expert	10148	Delay of activation after entering night mode (AUX 2)	1 min
Expert	10149	Activation time for the auxiliary relay in night mode (AUX 2)	1 min
Expert	**10322**	**Contact active with a fixed time schedule (AUX 2)**	
Expert	10323	Contact activated with fixed time schedule (AUX 2)	No
Expert	10324	Start hour (AUX 2)	07:00 hh:mm
Expert	10325	End hour (AUX 2)	20:00 hh:mm

Level	Nr	VarioTrack parameter description	Factory value
Expert	**10150**	**Contact active on event (AUX 2)**	
Expert	10199	VarioTrack is ON (AUX 2)	No
Expert	10145	VarioTrack is OFF (AUX 2)	No
Expert	10309	Remote entry (AUX 2)	No
Expert	10151	Battery undervoltage (AUX 2)	No
Expert	10334	Battery undervoltage	10/20/40 Vdc
Expert	10152	Battery overvoltage (AUX 2)	No
Expert	10153	Earth fault (AUX 2)	No
Expert	10154	PV error (48h without charge) (AUX 2)	No
Expert	10156	Overtemperature (AUX 2)	No
Expert	10158	Bulk charge phase (AUX 2)	No
Expert	10159	Absorption phase (AUX 2)	No
Expert	10160	Equalization phase (AUX 2)	No
Expert	10161	Floating (AUX 2)	No
Expert	10162	Reduced floating (AUX 2)	No
Expert	10163	Periodic absorption (AUX 2)	No
Expert	**10164**	**Contact active according to battery voltage (AUX 2)**	
Expert	10165	Battery voltage 1 activate (AUX 2)	No
Expert	10166	Battery voltage 1 (AUX 2)	11.7/23.4/46.8 Vdc
Expert	10167	Delay 1 (AUX 2)	1 min
Expert	10168	Battery voltage 2 activate (AUX 2)	No
Expert	10169	Battery voltage 2 (AUX 2)	11.9/23.9/47.8 Vdc
Expert	10170	Delay 2 (AUX 2)	10 min
Expert	10171	Battery voltage 3 activate (AUX 2)	No
Expert	10172	Battery voltage 3 (AUX 2)	12.1/24.2/48.5 Vdc
Expert	10173	Delay 3 (AUX 2)	60 min
Expert	10174	Battery voltage to deactivate (AUX 2)	13.5/27/54 Vdc
Expert	10175	Delay to deactivate (AUX 2)	60 min
Expert	10176	Deactivate if battery in floating phase (AUX 2)	No
Expert	**10177**	**Contact active according to battery temperature (AUX 2) With BSP or BTS**	
Expert	10178	Contact activated with the temperature of battery (AUX 2)	No
Expert	10179	Contact activated over (AUX 2)	3 °C
Expert	10180	Contact deactivated below (AUX 2)	5 °C
Expert	10181	Only activated if the battery is not in bulk phase (AUX 2)	No
Expert	**10182**	**Contact active according to SOC (AUX 2) Only with BSP**	
Expert	10183	Contact activated with the SOC 1 of battery (AUX 2)	No
Expert	10184	Contact activated below SOC 1 (AUX 2)	50 % SOC
Expert	10185	Delay 1 (AUX 2)	12 hours
Expert	10186	Contact activated with the SOC 2 of battery (AUX 2)	No
Expert	10187	Contact activated below SOC 2 (AUX 2)	30%
Expert	10188	Delay 2 (AUX 2)	0.2 hours
Expert	10189	Contact activated with the SOC 3 of battery (AUX 2)	No
Expert	10190	Contact activated below SOC 3 (AUX 2)	20%
Expert	10191	Delay 3 (AUX 2)	0 hours
Expert	10192	Contact deactivated over SOC (AUX 2)	90 % SOC
Expert	10193	Delay to deactivate (AUX 2)	0.2 hours
Expert	10194	Deactivate if battery in floating phase (AUX 2)	No
Expert	10195	Reset all settings (AUX 2)	-

6.6 CONFIGURATION OF THE VARIOSTRING (MPPT SOLAR CHARGE CONTROLLER)

Level	Nr	VarioString parameter description	Factory value
Basic	**14000**	**BASIC SETTINGS**	
Expert	14174	Block manual programming (dip-switch)	No
Expert	14001	Battery charge current (VS-120)	120 Adc
Expert	14217	Battery charge current (VS-70)	70 Adc
Basic	14002	Configuration of PV modules (VS-120)	Automatic
Basic	14067	Restore default settings	-
Inst.	14068	Restore factory settings	-
Expert	**14003**	**BATTERY MANAGEMENT AND CYCLE**	
Basic	14036	Synchronisation battery cycle with Xtender	Yes
Expert	14001	Battery charge current (VS-120)	120 Adc
Expert	14217	Battery charge current (VS-70)	70 Adc
Expert	14216	Battery undervoltage	40 Vdc
Expert	14035	Temperature compensation	-3 mV/°C/cell
Expert	**14004**	**Floating phase**	
Expert	14005	Floating voltage	54.4 Vdc
Expert	14006	Force phase of floating	-
Expert	**14007**	**Absorption phase**	
Expert	14008	Absorption phase allowed	Yes
Expert	14009	Absorption voltage	57.6 Vdc
Expert	14010	Force absorption phase	-
Expert	14011	Absorption duration	120 min
Expert	14012	End of absorption triggered by the current	No
Expert	14013	Current threshold to end absorption phase	10 Adc
Expert	**14016**	**Equalization phase**	
Expert	14017	Equalization allowed	No
Expert	14018	Force equalization	-
Expert	14021	Equalization voltage	62.4 Vdc
Expert	14020	Equalization current	80 Adc
Expert	14022	Equalization duration	30 min
Expert	14023	Equalization with fixed interval	Yes
Expert	14024	Days between equalizations	26 days
Expert	14025	End of equalization triggered by the current	No
Expert	14026	Current threshold to end equalization phase	10 Adc
Expert	14019	Equalization before absorption phase	Yes
Expert	**14027**	**New cycle**	
Expert	14028	Force a new cycle	-
Expert	14029	Voltage level 1 to start a new cycle	48.8 Vdc
Expert	14030	Time period under voltage level 1 to start a new cycle	30 min
Expert	14031	Voltage level 2 to start a new cycle	47.2 Vdc
Expert	14032	Time period under voltage level 2 to start a new cycle	2 min
Expert	14033	Cycling restricted	Yes

Level	Nr	VarioString parameter description	Factory value
Expert	14034	Minimal delay between cycles	1 hours
Expert	**14037**	**SYSTEM**	
Expert	14174	Block manual programming (dip-switch)	No
Expert	14040	Type of battery grounding	No control
Expert	**14194**	**Configuration for VS-120**	
Expert	14041	Type of PV grounding	No control
Expert	14175	Type of PV1 grounding	No control
Expert	14042	Type of PV2 grounding	No control
Expert	**14180**	**Type of MPPT algorithm**	
Expert	14043	Type of MPP tracking algorithm PV	LSF
Expert	14044	PV voltage fixed (for PV in series)	700 Vdc
Expert	14179	PV voltage fixed (for PV in //)	500 Vdc
Expert	14045	Ratio of PV open circuit voltage	0.7
Expert	14176	Type of MPP tracking algorithm PV1	LSF
Expert	14177	PV1 voltage fixed	500 Vdc
Expert	14178	Ratio of PV1 open circuit voltage	0.7
Expert	14046	Type of MPP tracking algorithm PV2	LSF
Expert	14047	PV2 voltage fixed	500 Vdc
Expert	14048	Ratio of PV2 open circuit voltage	0.7
Inst.	14192	Establishment time (Algo MPPT)	0 sec
Inst.	14193	Averaging time (algo MPPT)	0 sec
Inst.	14190	PV wiring type erased from memory	-
Expert	**14195**	**Configuration for VS-70**	
Expert	14196	Type of PV grounding	No control
Expert	**14180**	**Type of MPPT algorithm**	
Expert	14197	Type of MPP tracking algorithm PV	LSF
Expert	14198	PV voltage fixed	500 Vdc
Expert	14199	Ratio of PV open circuit voltage	0.7
Inst.	14192	Establishment time (Algo MPPT)	0 sec
Inst.	14193	Averaging time (algo MPPT)	0 sec
Expert	**14200**	**Remote entry (Remote ON/OFF)**	
Expert	14201	Remote entry active	Open
Expert	14202	ON/OFF command	No
Expert	14203	Activated by AUX1 state	No
Expert	14204	Start equalization	No
Expert	14205	Send a message when remote entry changes state	No
Inst.	14218	VarioString watchdog enabled (SCOM)	No
Inst.	14219	VarioString watchdog delay (SCOM)	60 sec
Expert	14182	Reset PV energy meter	-
Expert	14051	Reset daily solar production meters	-
Expert	14052	Reset daily min-max	-
Basic	14067	Restore default settings	-
Inst.	14068	Restore factory settings	-
Inst.	14069	Parameters saved in flash memory	Yes
Expert	14038	ON of the VarioString	-
Expert	14039	OFF of the VarioString	-
Expert	14059	Reset of all VarioString	-
Expert	**14070**	**AUXILIARY CONTACT 1**	

Level	Nr	VarioString parameter description	Factory value
Expert	14071	Operating mode (AUX 1)	Automatic
Expert	14072	Combination of the events for the auxiliary contact (AUX 1)	Any (Function OR)
Expert	**14073**	**Contact activated in night mode (AUX 1)**	
Expert	14074	Activated in night mode (AUX 1)	No
Expert	14075	Delay of activation after entering night mode (AUX 1)	1 min
Expert	14076	Activation time for the auxiliary relay in night mode (AUX 1)	1 min
Expert	**14206**	**Contact active with a fixed time schedule (AUX 1)**	
Expert	14207	Contact activated with fixed time schedule (AUX 1)	No
Expert	14208	Start hour (AUX 1)	07:00 hh:mm
Expert	14209	End hour (AUX 1)	20:00 hh:mm
Expert	**14077**	**Contact active on event (AUX 1)**	
Expert	14188	VarioString is ON (AUX 1)	No
Expert	14078	VarioString is OFF (AUX 1)	No
Expert	14214	Remote entry (AUX 1)	No
Expert	14079	Battery undervoltage (AUX 1)	No
Expert	14216	Battery undervoltage	40 Vdc
Expert	14080	Battery overvoltage (AUX 1)	No
Expert	14081	Earth fault (AUX 1)	No
Expert	14082	PV error (48h without charge) (AUX 1)	No
Expert	14083	Overtemperature (AUX 1)	No
Expert	14084	Bulk charge phase (AUX 1)	No
Expert	14085	Absorption phase (AUX 1)	No
Expert	14086	Equalization phase (AUX 1)	No
Expert	14087	Floating (AUX 1)	No
Expert	14088	Reduced floating (AUX 1)	No
Expert	14089	Periodic absorption (AUX 1)	No
Expert	**14090**	**Contact active according to battery voltage (AUX 1)**	
Expert	14091	Battery voltage 1 activate (AUX 1)	No
Expert	14092	Battery voltage 1 (AUX 1)	46.8 Vdc
Expert	14093	Delay 1 (AUX 1)	1 min
Expert	14094	Battery voltage 2 activate (AUX 1)	No
Expert	14095	Battery voltage 2 (AUX 1)	47.8 Vdc
Expert	14096	Delay 2 (AUX 1)	10 min
Expert	14097	Battery voltage 3 activate (AUX 1)	No
Expert	14098	Battery voltage 3 (AUX 1)	48.5 Vdc
Expert	14099	Delay 3 (AUX 1)	60 min
Expert	14100	Battery voltage to deactivate (AUX 1)	54 Vdc
Expert	14101	Delay to deactivate (AUX 1)	60 min
Expert	14102	Deactivate if battery in floating phase (AUX 1)	No
Expert	**14103**	**Contact active according to battery temperature (AUX 1) With BSP or BTS**	
Expert	14104	Contact activated with the temperature of battery (AUX 1)	No
Expert	14105	Contact activated over (AUX 1)	3 °C
Expert	14106	Contact deactivated below (AUX 1)	5 °C
Expert	14107	Only activated if the battery is not in bulk phase (AUX 1)	No
Expert	**14108**	**Contact active according to SOC (AUX 1) Only with BSP**	
Expert	14109	Contact activated with the SOC 1 of battery (AUX 1)	No
Expert	14110	Contact activated below SOC 1 (AUX 1)	50 % SOC
Expert	14111	Delay 1 (AUX 1)	12 hours

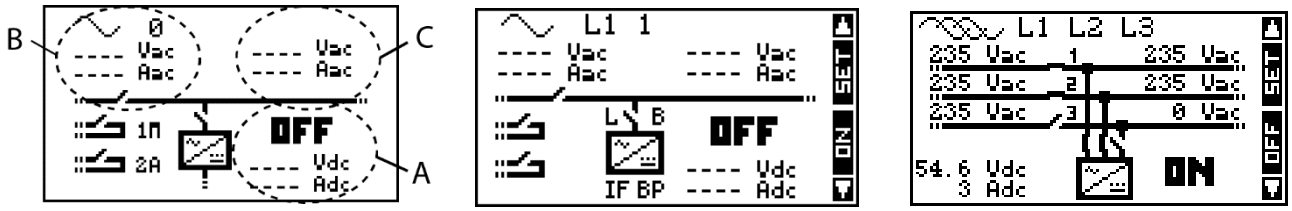
Level	Nr	VarioString parameter description	Factory value
Expert	14112	Contact activated with the SOC 2 of battery (AUX 1)	No
Expert	14113	Contact activated below SOC 2 (AUX 1)	30%
Expert	14114	Delay 2 (AUX 1)	0.2 hours
Expert	14115	Contact activated with the SOC 3 of battery (AUX 1)	No
Expert	14116	Contact activated below SOC 3 (AUX 1)	20%
Expert	14117	Delay 3 (AUX 1)	0 hours
Expert	14118	Contact deactivated over SOC (AUX 1)	90 % SOC
Expert	14119	Delay to deactivate (AUX 1)	0.2 hours
Expert	14120	Deactivate if battery in floating phase (AUX 1)	No
Expert	14121	Reset all settings (AUX 1)	-
Expert	**14122**	**AUXILIARY CONTACT 2**	
Expert	14123	Operating mode (AUX 2)	Automatic
Expert	14124	Combination of the events for the auxiliary contact (AUX 2)	Any (Function OR)
Expert	**14125**	**Contact activated in night mode (AUX 2)**	
Expert	14126	Activated in night mode (AUX 2)	No
Expert	14127	Delay of activation after entering night mode (AUX 2)	1 min
Expert	14128	Activation time for the auxiliary relay in night mode (AUX 2)	1 min
Expert	**14210**	**Contact active with a fixed time schedule (AUX 2)**	
Expert	14211	Contact activated with fixed time schedule (AUX 2)	No
Expert	14212	Start hour (AUX 2)	07:00 hh:mm
Expert	14213	End hour (AUX 2)	20:00 hh:mm
Expert	**14129**	**Contact active on event (AUX 2)**	
Expert	14189	VarioString is ON (AUX 2)	No
Expert	14130	VarioString is OFF (AUX 2)	No
Expert	14215	Remote entry (AUX 2)	No
Expert	14131	Battery undervoltage (AUX 2)	No
Expert	14216	Battery undervoltage	40 Vdc
Expert	14132	Battery overvoltage (AUX 2)	No
Expert	14133	Earth fault (AUX 2)	No
Expert	14134	PV error (48h without charge) (AUX 2)	No
Expert	14135	Overtemperature (AUX 2)	No
Expert	14136	Bulk charge phase (AUX 2)	No
Expert	14137	Absorption phase (AUX 2)	No
Expert	14138	Equalization phase (AUX 2)	No
Expert	14139	Floating (AUX 2)	No
Expert	14140	Reduced floating (AUX 2)	No
Expert	14141	Periodic absorption (AUX 2)	No
Expert	**14142**	**Contact active according to battery voltage (AUX 2)**	
Expert	14143	Battery voltage 1 activate (AUX 2)	No
Expert	14144	Battery voltage 1 (AUX 2)	46.8 Vdc
Expert	14145	Delay 1 (AUX 2)	1 min
Expert	14146	Battery voltage 2 activate (AUX 2)	No
Expert	14147	Battery voltage 2 (AUX 2)	47.8 Vdc
Expert	14148	Delay 2 (AUX 2)	10 min
Expert	14149	Battery voltage 3 activate (AUX 2)	No
Expert	14150	Battery voltage 3 (AUX 2)	48.5 Vdc
Expert	14151	Delay 3 (AUX 2)	60 min
Expert	14152	Battery voltage to deactivate (AUX 2)	54 Vdc

Level	Nr	VarioString parameter description	Factory value
Expert	14153	Delay to deactivate (AUX 2)	60 min
Expert	14154	Deactivate if battery in floating phase (AUX 2)	No
Expert	**14155**	**Contact active according to battery temperature (AUX 2) With BSP or BTS**	
Expert	14156	Contact activated with the temperature of battery (AUX 2)	No
Expert	14157	Contact activated over (AUX 2)	3 °C
Expert	14158	Contact deactivated below (AUX 2)	5 °C
Expert	14159	Only activated if the battery is not in bulk phase (AUX 2)	No
Expert	**14160**	**Contact active according to SOC (AUX 2) Only with BSP**	
Expert	14161	Contact activated with the SOC 1 of battery (AUX 2)	No
Expert	14162	Contact activated below SOC 1 (AUX 2)	50 % SOC
Expert	14163	Delay 1 (AUX 2)	12 hours
Expert	14164	Contact activated with the SOC 2 of battery (AUX 2)	No
Expert	14165	Contact activated below SOC 2 (AUX 2)	30%
Expert	14166	Delay 2 (AUX 2)	0.2 hours
Expert	14167	Contact activated with the SOC 3 of battery (AUX 2)	No
Expert	14168	Contact activated below SOC 3 (AUX 2)	20%
Expert	14169	Delay 3 (AUX 2)	0 hours
Expert	14170	Contact deactivated over SOC (AUX 2)	90 % SOC
Expert	14171	Delay to deactivate (AUX 2)	0.2 hours
Expert	14172	Deactivate if battery in floating phase (AUX 2)	No
Expert	14173	Reset all settings (AUX 2)	-

7 USER INFORMATION

Information regarding an installation's performance is shown on the RCC remote control's different product displays, representing each system equipment (XT, VT, VS, Xcom-CAN/BMS). Every user can choose which values to display and the selection procedure is explained in chapter 11 of the RCC product manual, available on the SD card delivered with the RCC remote control.

7.1 USER INFORMATION ON XTENDER DISPLAYS

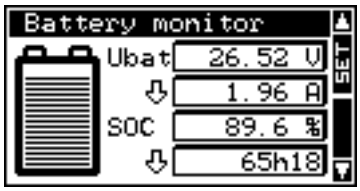


A = battery information, B = grid input information (AC-In), C = grid output information (AC-Out)

Nr	Name	Unit	Xtender information description
			Battery (A)
3000	Ubat	Vdc	Battery voltage
3005	Ibat (m)	Adc	Battery charge current
3004	Ibat	Ausr	Wanted battery charge current
3006	Ubat ond	Vrip	Battery voltage ripple
3010	Phase	Text	Battery cycle phase (----, Bulk, Absorpt., Equalise, Floating, R.float., Per.abs., Mixing, Forming)
3007	SOC	%	State of charge

Nr	Name	Unit	Xtender information description
3003	Comp P	Cdyn	Dynamic compensation of battery voltage
3001	Tbat	°C	Battery temperature
3002	Comp°C	Ctmp	Temperature compensation of battery voltage
3008	LVD	LVD	Low Voltage Disconect
3028	Mode	Text	Operating state (----, Inverter, Charger, Boost, Injection)
3076	E out YD	kWh	Discharge of battery of the previous day
3078	E out Day	kWh	Discharge of battery of the current day
3086	RME	Text	Remote entry state (RM EN 0, RM EN 1)
3160	LimSrc	Text	Source of limitation of the functions charger or injector (----, Ubatt, Ubattp, Ubattpp, Ibatt, Pchar, UbattInj, Iinj, Imax, Ilim, Ithermal, PchNeg)
3168		Text	Over temperature state (No Error, TR.Alarm, TR.Error, EL.Error, EL.Stop)
			Input AC (B)
3011	U in	Vac	Input voltage
3012	I in	Aac	Input current
3138	P in	kVA	Input power
3137	P in a	kW	Input active power
3084	F in	Hz	Input frequency
3017	I Limit Val	ILim	Input limit value
3080	Eac in YD	kWh	Energy AC-In from the previous day
3081	Eac in Day	kWh	Energy AC-In from the current day
3154	F in	Hz	Input frequency
3155	Injc	Aac	Desired AC injection current
3158	Injm	Aac	AC injection current limited (ARN4105)
3159	Injt	Text	AC injection current, type of limitation (ARN4105) (No limit, Freeze, NotImax)
			Output AC (C)
3021	U out	Vac	Output voltage
3022	I out	Aac	Output current
3139	P out	kVA	Output power
3136	Pout a	kW	Output active power
3085	F out	Hz	Output frequency
3082	Eac out YD	kWh	Consumers energy of the previous day
3083	Eac out Dy	kWh	Consumers energy of the current day
			General
3020	Transfert	Text	State of transfer relay (Opened, Closed)
3030	Rel out	Text	State of output relay (Opened, Closed)
3031	Aux 1	Text	State of auxiliary relay 1 (Opened, Closed)
3032	Aux 2	Text	State of auxiliary relay 2 (Opened, Closed)
3054	Aux 1	Text	Relay aux 1 mode (----, A, I, M, M, G)
3055	Aux 2	Text	Relay aux 2 mode (----, A, I, M, M, G)
3056	Lockings		Lockings flag
3019	Boost	Text	Boost active (Off, On)
3018	P sharing	Text	Input limite reached (Off, On)
3161	batPr	Text	Battery priority active (Off, On)
3162	InjFo	Text	Forced grid feeding active (Off, On)

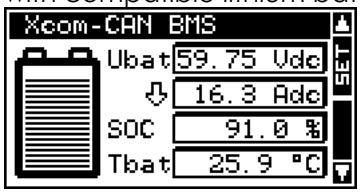
7.2 USER INFORMATION ON BSP DISPLAYS



Nr	Name	Unit	BSP information description
7000	Ubat	Vdc	Battery voltage
7001	Ibat	Adc	Battery current
7002	SOC	%	State of Charge
7003	Pbat	W	Power
7004	Trem		Remaining autonomy
7007	0d<	Ah	Ah charged today
7008	0d>	Ah	Ah discharged today
7009	-1d<	Ah	Ah charged yesterday
7010	-1d>	Ah	Ah discharged yesterday
7011	tot<	kAh	Total Ah charged
7012	tot>	kAh	Total Ah discharged
7013	Ttot	days	Total time
7017	cus>	Ah	Custom charge Ah counter
7018	cus<	Ah	Custom discharge Ah counter
7019	Tcus	h	Custom counter duration
7029	Tbat	°C	Battery temperature
7047	Sman	%	SOC manufacturer
7059	locE		Local daily communication error counter (CAN)

7.3 USER INFORMATION ON XCOM-CAN DISPLAYS

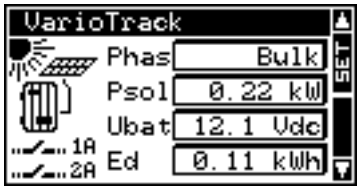
The user information below is only available when the Xcom-CAN is used in BMS mode (interface with compatible lithium batteries).



Nr	Name	Unit	Xcom-CAN information description
7000	Ubat	Vdc	Battery voltage
7001	Ibat	Adc	Battery current
7002	SOC	%	State of Charge
7003	Pbat	W	Power
7007	0d<	Ah	Ah charged today
7008	0d>	Ah	Ah discharged today
7029	Tbat	°C	Battery temperature
7053	bTyp		Battery Type
7054	BMSv		BMS Version
7055	bCap	Ah	Battery Capacity
7056	bmid		Reserved Manufacturer ID
7057	SOH	%	State Of Health

Nr	Name	Unit	Xcom-CAN information description
7058	hSOC	%	High resolution State of Charge
7061	UChL	Vdc	Charge voltage limit
7062	UDiL	Vdc	Discharge voltage limit
7063	IChL	Adc	Charge current limit
7064	IDiL	Adc	Discharge current limit
7065	IChR	Adc	Recommended charge current
7066	IDiR	Adc	Recommended discharge current

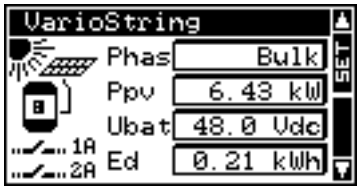
7.4 USER INFORMATION ON VARIOTRACK DISPLAYS



Nr	Name	Unit	VarioTrack information description
11000	Ubat	Vdc	Battery voltage
11001	Ibat	Adc	Battery current
11002	Upv	Vdc	Voltage of the PV generator*
11004	Psol	kW	Power of the PV generator
11005	Tbat	°C	Battery temperature
11006	Cd	Ah	Production in (Ah) for the current day
11007	Ed	kWh	Production in (kWh) for the current day
11008	kWhR	kWh	Produced energy resettable counter
11009	MWhT	MWh	Total produced energy
11010	Cd-1	Ah	Production in (Ah) for the previous day
11011	Ed-1	kWh	Production in (Wh) for the previous day
11015	Type	Text	Model of VarioTrack (VT-80, VT-65)
11016	Mode	Text	Operating mode (Night, StartUp, ---, Charger, ---, Security, OFF, ---, Charge, Charge V, Charge I, Charge T, Ch. Ibsp)
11017	PVmx	Vdc	Max PV voltage for the current day*
11018	Ibmx	Adc	Max battery current of the current day
11019	PVxP	kW	Max power production for the current day
11020	Bmax	Vdc	Max battery voltage for the current day
11021	Bmin	Vdc	Min battery voltage for the current day
11025	Sd	h	Number of irradiation hours for the current day
11026	Sd-1	h	Number of irradiation hours for the previous day
11034	Err	Text	Type of error (No Error, BatOverV, Earth, No Batt, OverTemp, BatOverV, PvOverV, Others, ---, ---, ---, ---, HardErr)
11037	Eqln	days	Number of days before next equalization
11038	Phas	Text	Battery cycle phase (Bulk, Absorpt., Equalize, Floating, ---, ---, R.float., Per.abs., ---, ---, ---, ---)
11066	Sync	Text	Synchronisation state (---, ---, ---, ---, XTslave, VTslave, ---, ---, VTmaster, Autonom., VSslave, VSmaster)
11069	VT state	Text	State of the VarioTrack (Off, On)
11076	locEr		Local daily communication error counter (CAN)
11082	RME	Text	Remote entry state (RM EN 0, RM EN 1)

*This information is not visible on the shared display (Multi) over all VT devices. It will however show on the individual display on each device.

7.5 USER INFORMATION ON VARIOSTRING DISPLAYS



Nr	Name	Unit	VarioString information description
15000	Ubat	Vdc	Battery voltage
15001	Ibat	Adc	Battery current
15002	Phas	Text	Battery cycle phase (Bulk, Absorpt., Equalize, Floating, ---, ---, R.float., Per.abs., ---, ---, ---, ---)
15003	conf	Text	PV type of wiring (Unknown, Independ., Series, Parallel, Error)
15004	Upv	Vdc	PV voltage*
15005	Upv1	Vdc	PV1 voltage*
15006	Upv2	Vdc	PV2 voltage*
15007	Ipv	Adc	PV current
15008	Ipv1	Adc	PV1 current
15009	Ipv2	Adc	PV2 current
15010	Ppv	kW	PV power
15011	Ppv1	kW	PV1 power
15012	Ppv2	kW	PV2 power
15013	Mode	Text	PV operating mode (Night, Security, OFF, Charge, ChargeV, Charge I, ChargeP, ChargeIpv, ChargeT, ---, Ch.Ibsp)
15014	Mod1	Text	PV1 operating mode (Night, Security, OFF, Charge, ChargeV, Charge I, ChargeP, ChargeIpv, ChargeT, ---, Ch.Ibsp)
15015	Mod2	Text	PV2 operating mode (Night, Security, OFF, Charge, ChargeV, Charge I, ChargeP, ChargeIpv, ChargeT, ---, Ch.Ibsp)
15016	Cd	Ah	Production PV in (Ah) for the current day
15017	Ed	kWh	Production PV in (kWh) for the current day
15018	Ed1	kWh	Production PV1 in (kWh) for the current day
15019	Ed2	kWh	Production PV2 in (kWh) for the current day
15020	kWhR	kWh	Produced PV energy resettable counter
15021	kWh1	kWh	Produced PV1 energy resettable counter
15022	kWh2	kWh	Produced PV2 energy resettable counter
15023	MWhT	MWh	Total PV produced energy
15024	MWh1	MWh	Total PV1 produced energy
15025	MWh2	MWh	Total PV2 produced energy
15026	Cd-1	Ah	Production PV in (Ah) for the previous day
15027	Ed-	kWh	Production PV in (Wh) for the previous day
15028	Ed1-	kWh	Production PV1 in (Wh) for the previous day
15029	Ed2-	kWh	Production PV2 in (Wh) for the previous day
15030	Sd	h	Number of irradiation hours for the current day
15031	Sd-1	h	Number of irradiation hours for the previous day
15032	Tbat	°C	Battery temperature
15033	Upmx	Vdc	Max PV voltage for the current day*
15034	Upm1	Vdc	Max PV1 voltage for the current day*
15035	Upm2	Vdc	Max PV2 voltage for the current day*
15036	Ibmx	Adc	Max battery current of the current day

Nr	Name	Unit	VarioString information description
15037	Ppmx	kW	Max PV power for the current day
15038	Ppm1	kW	Max PV1 power for the current day
15039	Ppm2	kW	Max PV2 power for the current day
15040	Ubmx	Vdc	Max battery voltage for the current day
15041	Ubmn	Vdc	Min battery voltage for the current day
15042	Tabs	h	Time in absorption of the current day
15049	Err	Text	Type of error (None, OverV_B, OverV_PV, OverV_PV1, OverV_PV2, OverI_PV, OverI_PV1, OverI_PV2, GroundBat, GroundPV, GroundPV1, GroundPV2, OverTemp, UnderV_B, Cabling, Other)
15050	Sync	Text	Synchronized with Xtender battery cycle (No, Yes)
15051	Sync	Text	Synchronisation state (---, ---, ---, ---, XTslave, VTslave, ---, ---, VTmaster, Autonom, VSslave, VSmaster)
15052	EqIn	days	Number of days before next equalization
15053	Bset	Vdc	Battery set point
15108	VS state	Text	State of the VarioString (Off, On)
15109	locEr		Local daily communication error counter (CAN)
15111	RME	Text	Remote entry state (RM EN 0, RM EN 1)

*This information is not visible on the shared display (Multi) over all VS devices. It will however show on the individual display on each device.

8 MESSAGES, ACCOUNT OF EVENTS & TROUBLESHOOT

Nr	Message	Troubleshoot
0	Warning (000): Battery low	XT: The battery voltage is below the battery undervoltage level set by {1108}. If the voltage remains below this level during the time period defined by {1190}, the device will turn off. VT: The battery voltage has been below the battery undervoltage level set by {10334} for more than 30 seconds. The device will not turn off. VS: The battery voltage is below the battery undervoltage level set by {14216}. The device will not turn off.
1	Warning (001): Battery too high	The battery voltage is above the value set by {1121}. The Xtender has shut down and will automatically restart as soon as the battery voltage is below the reactivation voltage set by {1122}.
3	(003): AC-In synchronization in progress	A valid AC source is present at the AC-In and the device synchronizes its voltage and frequency to it. The closing of the transfer relay can be delayed by {1580}.
4	Warning (004): Input frequency AC-In wrong	The AC-In frequency is invalid; it is either above {1112} plus {1505} or below {1112} minus {1506}.

Nr	Message	Troubleshoot
6	Warning (006): Input voltage AC-In too high	The AC-In source has exceeded the max AC voltage {1432} during 600ms.
7	Warning (007): Input voltage AC-In too low	The AC-In source is lost or close to the set limits defined by {1200} or {1199} / {1198}.
8	Halted (008): Inverter overload SC	There has been a short-circuit or a connection of too many loads. Control the connected loads and verify that there has been no short-circuit before restarting the device.
9	Halted (009): Charger short circuit	The power required for the loads connected to AC-Out is too high. Perhaps a load that is too powerful for the system has been connected or there is a short-circuit in the AC-Out of the Xtender. Inspect which loads are present and verify the absence of a short-circuit before restarting the device.
11	Warning (011): AC-In Energy quota	The daily AC-In energy quota has been reached {1559}. Tomorrow it will be possible to consume the same quantity of energy.
12	(012): Use of battery temperature sensor	Indicates the presence of a BTS-01 temperature probe connected to the device that sent the message.
14	Halted (014): Over temperature EL	XT: The max internal electronics temperature has been reached. Confirm the ventilation air inputs and outputs are not obstructed. Confirm the fans are working properly (the device performs a fan test when it is connected to the battery and you can hear the fans spin during a few seconds while turning on. VT:VS: The device is stopped after surpassing the max internal electronics temperature.
15	Halted (015): Inverter overload BL	The power required by the loads in inverter mode is too large. The power of the connected loads is greater than what the Xtender (Pnom, P30) can provide. The RCC-02 shows the power delivered by the device.
16	Warning (016): Fan error detected	XT: Check the proper functioning of the ventilation fans during the start-up test of the Xtender (power on). Make sure there is nothing obstructing the fan blades and that they are clean. If the error persists, please contact your supplier. VT:VS: The external ventilation module (ECF-01) is defective or has been disconnected during the functioning of the device.
18	Warning (018): Excessive battery voltage ripple	Check the battery cable sections, their tightening and their length.

Nr	Message	Troubleshoot
19	Halted (019): Battery undervoltage	The battery under voltage level, set by parameter {1108}, has been exceeded during a time period defined by {1190} or has reached the critical battery under voltage level set by parameter {1488}. Verify if a restart is authorized {1130} and if yes, how many times {1304} over which time period {1305}. If the system is in "auto-restart", the inverter function will remain prohibited as long as the voltage has not reached {1110}.
20	Halted (020): Battery overvoltage	XT: The overvoltage level set by parameter {1121} has been exceeded. If auto restart is authorized {1131}, the device will remain turned off until the auto-restart voltage {1122} is reached. VT:VS: Slow or fast battery overvoltage.
21	(021): Transfer not authorized, AC-Out current is higher than {1107}	The inverter's loads require more power than allowed by the input current limit set by parameter {1107} and exceeding the max current of the source is forbidden ({1436} = no) The Xtender will not connect to the source on AC-In as long as the consumers require a current greater than the value of the input limit {1107}.
22	Halted (022): Voltage presence on AC-Out	The Xtender detects a voltage above 50Vac at the AC-Out and considers an external source is present, therefore, the device is not allowed to start-up. In a three phase system, the phenomenon can occur if one phase is missing and a three phase load is connected. If so, test activating the integral mode {1283}, which prevents all phases from starting if one is missing. In a system with Xtenders in parallel, the AC-Out voltage test is automatically deactivated in the Xtender.
23	Halted (023): Phase not defined	Verify that a phase has been selected in the Xtender emitting the message. In a multi-Xtender system this is mandatory. If no phase selector jumper is present, phase 1 is assigned by default.
24	Warning (024): Change the clock battery	The date and time are incorrect. Change them with parameters {5001} and {5002}. Check the clock's battery status or presence on the XT-VT or VS.
25	Halted (025): Unknown Command board. Software upgrade needed	Hardware incompatibility. Upgrade your software by installing the latest version available on our website: www.studer-innotec.com/en/downloads. If the error persists, please contact your supplier.
26	Halted (026): Unknown Power board. Software upgrade needed	See troubleshoot nr 25
28	Halted (028): Voltage incompatibility Power - Command	See troubleshoot nr 25
30	Halted (030): Power incompatibility Power - Command	See troubleshoot nr 25
32	Halted (032): Power board software incompatibility	See troubleshoot nr 25

Nr	Message	Troubleshoot
34	Halted (034): FID corruption, call factory	The Factory Identification number (FID) is corrupted. This number is necessary for systems with multiple devices. Contact your Studer distributor.
35	(035): Memory structure modified	Information, the structure of the backup area has been modified. In this situation, specific settings (parameters) are lost.
36	Halted (036): Parameter file lacking	A software problem has been detected. Upgrade your software by installing the latest version available on our website: www.studer-innotec.com/en/downloads.
38	Warning (038): Upgrade of the device software advised	See troubleshoot nr 36
40	Warning (040): Upgrade of the device software advised	See troubleshoot nr 36
41	Warning (041): Over temperature TR	The transformer's temperature limit is reached. The device will only provide half of its nominal power until the temperature is back to normal. Make sure that there is nothing obstructing the fan blades and that they are clean. Check the proper functioning of the ventilation (fans spin during the start-up test).
42	Halted (042): Unauthorized energy source at the output	A power source (e.g. a grid inverter) has been detected at the AC-Out, thus an additional power supply with charger effect. This is only authorized when {1536} or {1549} is activated or the system is externally controlled {1438} . The presence of a power source at AC-Out is only permitted under certain conditions.
49	(049): Transfer opened because AC-In max current exceeded {1107}	The input limit has been exceeded which is not allowed by parameter {1436}. Thus the transfer opens and the device switches to inverter mode, if possible.
50	Error (050): Incomplete data transfer	Problem associated with the SD card. The code in parenthesis indicates the origin of the problem. From R514 (01.2013) a second message further describes the origin of the problem.
51	(051): The update is finished	Message displayed at the end of a software update that has been completed successfully.
52	(052): Your installation is already updated	When an SD card with a software update folder (02) is inserted, into an RCC or Xcom device, the version of the files on the SD card are compared to the version installed on each device. This message appears if all the devices have software versions that are the same or more recent than those on the SD card.
53	Halted (053): Devices not compatible, software update required	There are different versions of the CAN communication protocol installed on the devices in the system. A full software update to the most recent version is required.

Nr	Message	Troubleshoot
54	(054): Please wait. Data transfer in progress	Message displayed when data is being transferred (software update, save files, upload files, etc.). The user can not make the message disappear from the RCC screen. It disappears automatically when the process is finished. The activity of the RCC on the CAN bus is limited to the transfer of data while the message is displayed.
55	Error (055): No SD card inserted	The SD card is not present when the code tries to access it (for example when saving the datalogger at midnight).
57	(057): Operation finished successfully	The operation related to the SD card has finished correctly (save, upload, etc.).
58	Halted (058): Master synchronization missing	The synchronization signals necessary for a three-phase or parallel system are missing for more than 2 seconds. Check the communication bus, cables and terminations.
59	Halted (059): Inverter overload HW	The power required in inverter mode is greater than the allowed limit. Check that the power of the loads present at AC-Out do not exceed the device power (P30 and Pnom). The RCC-02 indicates the power delivered at the device output.
60	Warning (060): Time security 1512 AUX1	The relay's maximum activation time is reached and it is deactivated whatever the other programmed conditions. If this relay is used to control the AC source (generator or network) this situation can occur if the available power for the charger is insufficient (due to the presence of consumers) or if a problem exists at the battery bank (element in DC). It is necessary either to reduce the charges present in this situation or to lengthen the time of this security in order to guarantee a charge cycle during the allotted time, to control the integrity of the battery bank. No further relay activation will be possible until this security has been released. To do this, deactivate and reactivate the function {1512}, {1513}.
61	Warning (061): Time security 1513 AUX2	See troubleshoot nr 60
62	Warning (062): Genset, no AC-In coming after AUX command	The auxiliary relays are programmed to control the generator {1491}. The activation conditions are fulfilled, but after the start-up attempts, the AC voltage from the generator is still not present at AC-In. Check the cabling between generator and the Xtender. Check the status of the protection equipment (circuit breakers) and the automatic start-up settings of the generator.
63	(063): Save parameter XT	These messages are not displayed but saved in the message list (message file on the SD card and listed under the messages tab of the web portal). They indicate a modification of a parameter, the value is saved with the message and the user reference.
64	(064): Save parameter BSP	See troubleshoot nr 63
65	(065): Save parameter VarioTrack	See troubleshoot nr 63

Nr	Message	Troubleshoot
71	Error (071): Insufficient disk space on SD card	The SD card is full, and some files must be deleted. When this message appears, the 30 oldest log files on the SD card are deleted automatically when the day's log file is saved to the SD card at midnight.
73	(073): Datalogger is enabled on this RCC	With the previous version of the communication bus, only one RCC had the datalogger activated by default. That RCC was identified via this message.
74	(074): Save parameter Xcom-MS	See troubleshoot nr 63
79	Halted (079): More than 9 XTs in the system	The number of Xtender in a system is limited to 9 devices. Switch off the system, adjust the number of devices and switch the system back on (battery).
80	Halted (080): No battery (or reverse polarity)	The battery voltage must be greater than 3V in order for it to be detected.
81	Warning (081): Earthing fault	The configured limits for the earth potential have been exceeded. The wiring of the installation should be verified.
82	Halted (082): PV overvoltage	The converter has stopped as the PV voltage limit is exceeded. The sizing of the module chains must be verified. Exceeding the permitted voltage can seriously damage the device.
83	Warning (083): No solar production in the last 48h	The device has been in night mode or stopped for more than 48h. The wiring of the installation must be checked. Cloudy weather does not cause this alarm.
84	(084): Equalization performed	Indicates that the equalization phase has finished correctly. The message is not sent when the end of the equalization phase is forced by one of the following parameters (signals): {1467}, {1142}, {10006}, {10010}, {10029}, {14006}, {14010}, {14028}.
85	Error (085): Modem not available	No response from the modem. Check the wiring of the Xcom-232i.
86	Error (086): Incorrect PIN code, unable to initiate the modem	Check that the correct PIN code has been entered in the Xcom configurator.
87	Error (087): Insufficient Signal from GSM modem	Test the signal's level before connection. Update the installation with the latest release. Try moving the GSM modem's antenna to improve the reception quality. Check the 3G coverage of your provider.
88	Error (088): No connection to GSM network	Sufficient signal level, but impossible to connect to the operator network. Update the installation with the latest release. Check that the GSM modem is functioning properly by referring to the FAQ chapter of the product manual available on the SD card. Check the 3G coverage of your provider.
89	Error (089): No Xcom server access	Impossible for the Xcom-LAN or Xcom-GSM to connect to the server. Update the installation with the latest software release. Check that the GSM modem is functioning properly by referring to the FAQ chapter of the product manual available on the SD card.
90	(090): Xcom server connected	Notification of the successful completion of the connection.

Nr	Message	Troubleshoot
91	Error (091): Update software of other RCC or Xcom-232i	All RCC and Xcom-232i connected to the same communication bus should have the same software version. It is necessary to update each one individually with its SD or microSD card.
92	Error (092): More than 3 RCC or Xcom-232i in the system	The max number of devices of the same type has been surpassed. Adjust the number of devices in the system and restart.
93	Error (093): More than 1 BSP in the system	See troubleshoot nr 92
94	Error (094): More than 1 Xcom-MS in the system	See troubleshoot nr 92
95	Error (095): More than 15 VarioTrack in the system	See troubleshoot nr 92
121	Error (121): Impossible communication with target device	Problem related to the exchange of files with a device that is not properly identified. Check the communication cables and the terminations of the communication bus.
122	Error (122): SD card corrupted	Check for errors on your SD card by using a computer. Retrieve the existing data and format the SD card (FAT or FAT32 format). If you use a standard SD card bought in a general store the compatibility with your Studer accessory is not guaranteed.
123	Error (123): SD card not formatted	The formatting of the SD card is not recognized. Only FAT and FAT32 formats are compatible with Studer accessories.
124	Error (124): SD card not compatible	If you are using the SD card delivered with your accessory, try formatting it on a PC (FAT or FAT32). If you are using a standard SD card bought in a general store the compatibility with your Studer accessory is not guaranteed.
125	Error (125): SD card format not recognized. Should be FAT	If you are using the SD card delivered with your accessory, try formatting it on a PC (FAT or FAT32). If you are using a standard SD card bought in a general store the compatibility with your Studer accessory is not guaranteed.
126	Error (126): SD card write protected	Disable the write protection of your SD card.
127	Error (127): SD card, file(s) corrupted	If you are using the SD card delivered with your accessory, try formatting it on a PC (FAT or FAT32). If you are using a standard SD card bought in a general store the compatibility with your Studer accessory is not guaranteed.
128	Error (128): SD card file or directory could not be found	The directory is not present on the SD card. Check the contents of the SD card.
129	Error (129): SD card has been prematurely removed	The SD card was removed before the data transfer finished. This operation may induce a permanent malfunction of one of the system's devices and must be avoided.
130	Error (130): Update directory is empty	The update folder is empty.
131	(131): The VarioTrack is configured for 12V batteries	After detection of a 12V battery, this message is sent when an RCC is connected to the system.

Nr	Message	Troubleshoot
132	(132): The VarioTrack is configured for 24V batteries	After detection of a 24V battery, this message is sent when an RCC is connected to the system.
133	(133): The VarioTrack is configured for 48V batteries	After detection of a 48V battery, this message is sent when an RCC is connected to the system.
134	(134): Reception level of the GSM signal	Indication of the GSM signal level in the Xcom-GSM
137	(137): VarioTrack master synchronization lost	No VarioTrack synchronization signal for 10s. The device continues to operate with its own charge profile. Check the communication cables and the terminations of the communication bus.
138	Error (138): XT master synchronization lost	No synchronisation with the Xtender for 10 s.
139	(139): Synchronized on VarioTrack master	Sent after receiving the first frame of synchronization with the VarioTrack.
140	(140): Synchronized on XT master	Sent after receiving the first frame of synchronization with the Xtender.
142	Error (142): More than 15 VarioString in the system	See troubleshoot nr 92
144	(144): Save parameter VarioString	See troubleshoot nr 63
145	Error (145): SIM card blocked, PUK code required	SIM card blocked. PUK required. To unblock SIM card, a mobile phone should be used to enter the PUK.
146	Error (146): SIM card missing	Missing SIM card
147	Error (147): Install R532 firmware release prior to install an older release	If you want to install a release prior to the R532 release, you must first install the R532 release.
148	(148): Datalogger function interrupted (SD card removed)	Since the SD card is not present, there will not be any datalogs saved to the SD card at midnight each day.
149	Error (149): Parameter setting incomplete	The directory containing the parameters of the device in operation does not contain all the necessary files.
150	Error (150): Cabling error between PV and VarioString	Check that the cable connections of the PV modules corresponds to the type of cabling set in parameter settings.
162	Error (162): Communication loss with RCC or Xcom-232i	The device does is not communicating on the CAN bus. Check the communication cable and the connection to the battery of all devices.
163	Error (163): Communication loss with Xtender	See troubleshoot nr 162
164	Error (164): Communication loss with BSP	See troubleshoot nr 162
165	Error (165): Communication loss with Xcom-MS	See troubleshoot nr 162
166	Error (166): Communication loss with VarioTrack	See troubleshoot nr 162
167	Error (167): Communication loss with VarioString	See troubleshoot nr 162
168	(168): Synchronized with VarioString master	Sent after receiving the first frame of synchronization with VS.
169	(169): Synchronization with VarioString master lost	Sent if the synchronization with the VS has not been received in the past 10s.

Nr	Message	Troubleshoot
170	Warning (170): No solar production in the last 48h on PV1	Check that the PV modules are connected correctly and the state of protection equipment (fuses and circuit breakers).
171	Warning (171): No solar production in the last 48h on PV2	See troubleshoot nr 170
172	Error (172): FID change impossible. More than one unit.	The change of FID is not possible since more than 1 device is connected to the RCC. In order to change the FID, the RCC should be connected to only 1 other device.
175	Halted (175): Critical undervoltage	The critical under voltage level has been reached and the device is immediately halted. Restart is authorized if the max number of automatic restarts {1305} has not been reached in the time frame of {1405}.
176	(176): Calibration setting lost	An Xtender calibration zone is missing, and therefore will not be used. In a system with software version 1.6.xx, it is possible to force a modification. Contact your Studer distributor.
177	(177): An Xtender has started up	The device has started. This appears when the device is connected to a battery, after a software update, or after a reset of the auxiliary relays {1569} or {1570} or software {1468}.
178	(178): No BSP. Necessary for programming with SOC	In order to use parameters that use the state of charge (SOC), an accessory that provides this information is needed: BSP 500, BSP 1200 or Xcom-CAN_BMS.
179	(179): No BTS or BSP. Necessary for programming with temperature	In order to use parameters that use the battery temperature, an accessory that provides this information is needed: BTS-01, BSP 500, BSP 1200 or Xcom-CAN_BMS.
180	(180): Command entry activated	XT: The remote entry is activated and therefore the corresponding programming will be performed. This is referring to the effective activation and therefore will depend on the setting of {1545}, not if the remote entry is physically open or shut. VT: When parameter {10317} is used, a message is sent in the event of activation of the remote entry. VS: When parameter {14205} is used, a message is sent in the event of activation of the remote entry.
181	Error (181): Disconnection of BTS	Battery Temperature Sensor (BTS) has been disconnected. The message is sent from the device to which the BTS was physically connected.
182	(182): BTS/BSP battery temperature measurement used by a device	The device that sends this message indicates that it will use the battery temperature information.

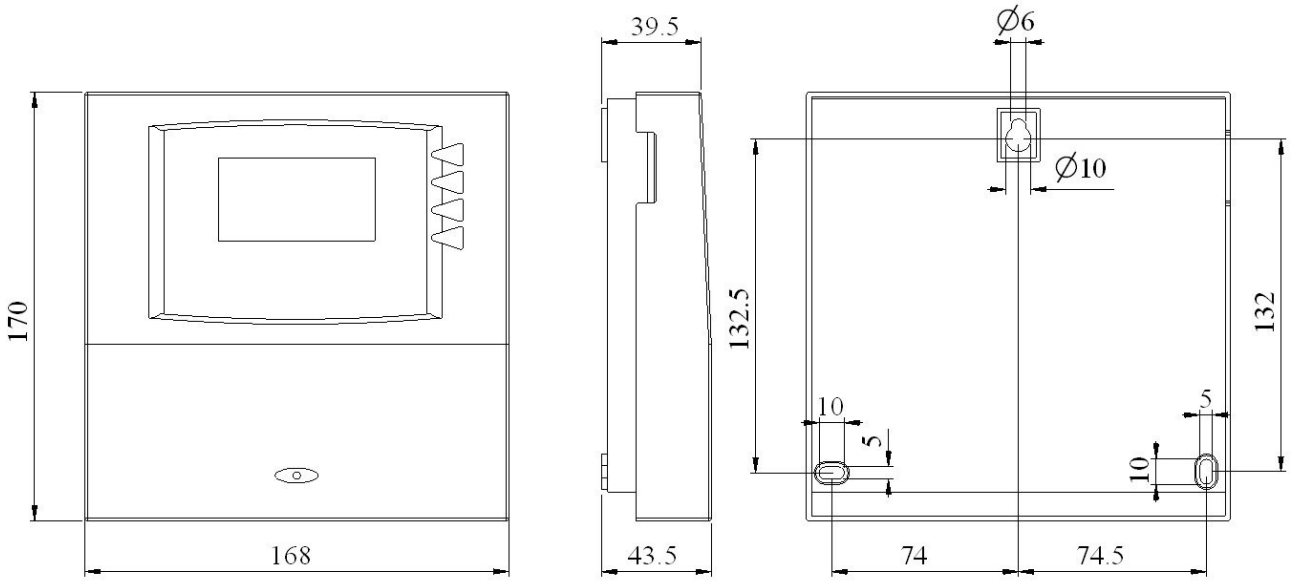
Nr	Message	Troubleshoot
183	Halted (183): An Xtender has lost communication with the system	An XTH/XTM/XTS has disappeared from the communication bus. For security reasons, the system has halted. Check each Xtender in the system. The RCC, system info section is helpful to see which devices are present on the communication bus.
184	Error (184): Check phase orientation or circuit breakers state on AC-In	A device has received permission to connect to the AC-In from the master of the phase, but either the grid is absent at its AC-In, the phase is incorrect, or the phase and neutral cables are crossed.
185	Warning (185): AC-In voltage level with delay too low	The AC-In voltage was below {1199} during {1198}.
186	Halted (186): Critical undervoltage (fast)	The critical under voltage has been reached. AC output is cut immediately.
187	Halted (187): Critical overvoltage (fast)	The critical battery over voltage limit has been reached. AC output is cut immediately.
188	(188): CAN stage startup	The communication CAN has restarted. This happens normally during device start-up, when the first accessory is connected to the communication bus, or after a certain number of communication errors is reached. Check the termination switches on each device as well as the communication cables.
191	(191): Parameter not supported	The command is not supported. Example: change the user level of a menu title.
192	(192): Unknown reference	The parameter or information reference does not exist.
193	(193): Invalid value	This value is impossible for this property
194	(194): Value too low	The value is below the minimum limit
195	(195): Value too high	The value is above the maximum limit
196	(196): Writing error	Write is possible, but failed.
197	(197): Reading error	Read is possible, but failed.
198	(198): User level insufficient	The parameter user level is higher than the access rights of the SCOM (only factory level parameters are not accessible by SCOM).
200	Error (200): Memory full	Not possible to add another telephone number for periodic reports or events.
202	Warning (202): External alarm arrives	The communicating battery has activated a warning (problem occurred) via the Xcom-CAN. Some features of the installation may be temporarily disabled. The problem should be solved thanks to the Xcom-CAN's communication with the battery. The battery continues to function when an alarm appears.
203	(203): External alarm leaves	The communicating battery has deactivated a warning (problem solved) via the Xcom-CAN. The features that were temporarily deactivated are now automatically reactivated thanks to the Xcom-CAN's communication with the battery.

Nr	Message	Troubleshoot
204	Error (204): External stop arrives	The communicating battery has activated an alarm (problem occurred) via the Xcom-CAN. Some features of the installation may be temporarily disabled. Depending on the severity of the problem, the battery may disconnect from the installation (opening the internal relays of the battery). The BMS can continue to operate and still communicate depending on the battery used (depending on the manufacturer). ATTENTION, in this case it is possible that the devices shut off completely as they no longer receive power from the battery (0V on the battery terminals +BAT et -BAT).
205	(205): External stop leaves	The communicating battery has deactivated an alarm (problem solved) via the Xcom-CAN. If the battery has been disconnected (opening of the internal battery relays), the battery must be restarted (please follow the battery activation procedure provided by the manufacturer).
206	Halted (206): Board hardware incompatibility	This message appears when the hardware versions of the PCB and Control boards are not compatible. The message could be due to hardware problems, or problems reading the version (e.g. the device has condensation).
207	(207): AUX1 relay activation	The conditions are met for the activation of AUX1 relay. The cause of the activation can be seen on the RCC-02/03.
208	(208): AUX1 relay deactivation	The conditions required for the activation of relay AUX1 are not all present, and therefore AUX1 is deactivated. The cause of the deactivation can be seen on the RCC-02/03.
209	(209): AUX2 relay activation	The conditions are met for the activation of AUX2 relay. The cause of the activation can be seen on the RCC-02/03.
210	(210): AUX2 relay deactivation	The conditions required for the activation of relay AUX2 are not all present, and therefore AUX2 is deactivated. The cause of the deactivation can be seen on the RCC-02/03.
211	(211): Command entry deactivated	XT: The remote entry is deactivated and therefore the corresponding programming will not be performed. This is referring to the effective deactivation and therefore will depend on the setting of {1545}, not if the remote entry is physically open or shut. VT: When parameter {10317} is used, a message is sent in the event of deactivation of the remote entry. VS: When parameter {14205} is used, a message is sent in the event of deactivation of the remote entry.
213	(213): Battery current limitation by the BSP stopped	Message sent by master 2 seconds after stopping to receive a signal for limiting the current from the BSP.
214	Warning (214): Half period RMS voltage limit exceeded, transfer opened	An AC voltage lower than the minimum limit {1200} was detected (during half a sine wave) and the transfer relay opened.

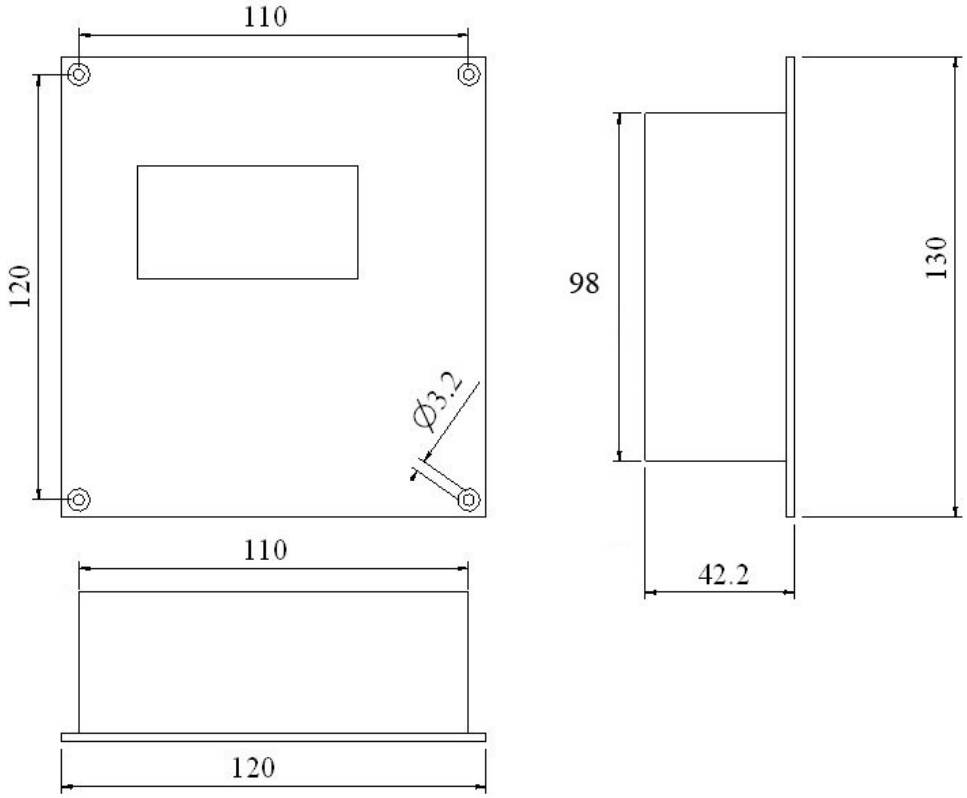
Nr	Message	Troubleshoot
215	Warning (215): UPS limit reached, transfer opened	The UPS part detected a loss of AC-In (mode {1552} and sensibility function {1510}), therefore the transfer relay opened.
216	Warning (216): Scom watchdog caused the reset of Xcom-232i	Problem with SCOM protocol. See the technical description of the SCOM protocol, available on Studer website, for more information.
217	Warning (217): CAN problem at Xtender declaration	Problem with the Xtender announcing itself (old version of communication bus CAN1).
218	Warning (218): CAN problem while writing parameters	The system tried to write a parameter 3 times without any success. Check the CAN bus wiring and the CAN bus terminations.
222	(222): Front ON/OFF button pressed	The front on/off button was pressed.
223	(223): Main OFF detected	The main off was performed.
224	(224): Delay before closing transfer relay in progress {1580}	Generator preheating has started.
255	Halted (255): Incompatible devices, update mandatory	See troubleshoot nr 53

9 DIMENSIONS

9.1 RCC-02



9.2 RCC-03



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