



# Technical specification

---

## Studer Modbus RTU Appendix

Date : 01.07.21

Version : V1.6.28 (R676)

403K\Technical specification - Studer Modbus Appendix.pdf

Contents

1. APPENDIX..... 3

1.1 XTENDER 120VAC SPECIFIC PARAMETERS..... 3

1.2 XTENDER PARAMETERS ..... 3

1.3 XTENDER INFOS..... 18

1.4 BSP PARAMETERS ..... 24

1.5 BSP INFOS ..... 25

1.6 XCOM-CAN BMS PARAMETERS..... 26

1.7 XCOM-CAN BMS INFOS ..... 27

1.8 VARIOTRACK PARAMETERS..... 28

1.9 VARIOTRACK INFOS..... 39

1.10 VARIOSTRING PARAMETERS..... 43

1.11 VARIOSTRING INFOS ..... 51

1.12 RCC MESSAGES..... 57



## 1. Appendix

The information in the appendices is valid for the latest software release. For a detailed changelog, please see the document Release\_Rxxx.pdf in the latest "Studer system update" available on [www.studer-innotec.com](http://www.studer-innotec.com).

A major release (from R5xx to R6xx, for example) can imply significant changes that should be validated.

Remark: all parameters and infos value are encoded according to the standard format IEEE 754-2008: single precision floating point (see "Technical specification Studer Modbus RTU Protocol V1.0.x\_EN.pdf" chapter "8.5 Data encoding" for details).

### 1.1 Xtender 120Vac specific parameters

While using Xtenders -01 (120Vac), some parameters have specific values. The following list contain them. The others are the same for all Xtender types.

Level	Modbus register	Nr	Xtender parameter description	Unit	Default	Min	Max	Format	Increment
Expert	372	1286	AC Output voltage	Vac	120	55	140	FLOAT	1
Expert	920	1560	Max AC voltage increase with battery voltage	Vac	5	2	8	FLOAT	1
Expert	418	1309	AC input low limit voltage to allow charger function	Vac	90	50	115	FLOAT	5
Expert	666	1433	Adaptation range of the input current according to the input voltage	Vac	5	2	15	FLOAT	1
Expert	198	1199	Input voltage giving an opening of the transfer relay with delay	Vac	100	40	115	FLOAT	5
Expert	200	1200	Input voltage giving an immediate opening of the transfer relay (UPS)	Vac	90	40	115	FLOAT	5
Inst.	664	1432	Absolute max limit for input voltage	Vac	135	117.5	145	FLOAT	5

### 1.2 Xtender parameters

Level	Modbus register	Nr	Xtender parameter description	Unit	Default	Min	Max	Format	Increment
Basic	0	1100	BASIC SETTINGS					"MENU"	
Basic	902	1551	Basic parameters set by means of the potentiometer in the XTS		1:Yes	0:No	1:Yes	"BOOL"	1
Basic	14	1107	Maximum current of AC source (Input limit)	Aac	32	2	50	FLOAT	1

Level	Modbus register	Nr	Xtender parameter description	Unit	Default	Min	Max	Format	Increment
Basic	76	1138	Battery charge current	Adc	60	0	200	FLOAT	1
Basic	52	1126	Smart-Boost allowed		1:Yes	0:No	1:Yes	"BOOL"	1
Basic	48	1124	Inverter allowed		1:Yes	0:No	1:Yes	"BOOL"	1
Expert	50	1125	Charger allowed		1:Yes	0:No	1:Yes	"BOOL"	1
Basic	904	1552	Type of detection of the grid loss (AC-In)		2:Tolerant	1:Slow	4:Fast	"ENUM"	Only 1 bit 1:Slow 2:Tolerant 4:Fast
Basic	174	1187	Standby level	%	10	0	100	FLOAT	10
Basic	590	1395	Restore default settings		S	S	S	"SIGNAL"	
Inst.	374	1287	Restore factory settings		S	S	S	"SIGNAL"	
<b>Expert</b>	<b>74</b>	<b>1137</b>	<b>BATTERY MANAGEMENT AND CYCLE</b>					"MENU"	
Expert	50	1125	Charger allowed		1:Yes	0:No	1:Yes	"BOOL"	1
Inst.	1092	1646	Charger uses only power from AC-Out		0:No	0:No	1:Yes	"BOOL"	1
Basic	76	1138	Battery charge current	Adc	60	0	200	FLOAT	1
Expert	78	1139	Temperature compensation	mV/°C/cell	-3	-8	0	FLOAT	1
QSP	1030	1615	Fast charge/inject regulation		0:No	0:No	1:Yes	"BOOL"	1
QSP	1090	1645	Pulses cutting regulation for XT (Not XTS)		0:No	0:No	1:Yes	"BOOL"	1
<b>Expert</b>	<b>936</b>	<b>1568</b>	<b>Undervoltage</b>					"MENU"	
Expert	16	1108	Battery undervoltage level without load	Vdc	46.3	36	72	FLOAT	0.1
<b>Expert</b>	<b>862</b>	<b>1531</b>	<b>Battery undervoltage dynamic compensation</b>					"MENU"	
Expert	182	1191	Battery undervoltage dynamic compensation		1:Yes	0:No	1:Yes	"BOOL"	1
Expert	864	1532	Kind of dynamic compensation		1:Automatic	0:Manual	1:Automatic	"ENUM"	Only 1 bit 0:Manual 1:Automatic
QSP	1064	1632	Automatic adaptation of dynamic compensation	%	65	0	100	FLOAT	1
Expert	18	1109	Battery undervoltage level at full load	Vdc	42	36	72	FLOAT	0.1
Expert	180	1190	Battery undervoltage duration before turn off	min	3	0	60	FLOAT	1
Expert	20	1110	Restart voltage after batteries undervoltage	Vdc	48	37.9	72	FLOAT	0.1
Expert	188	1194	Battery adaptive low voltage (B.L.O)		0:No	0:No	1:Yes	"BOOL"	1
Expert	190	1195	Max voltage for adaptive low voltage	Vdc	49.9	37.9	72	FLOAT	0.1
Expert	414	1307	Reset voltage for adaptive correction	Vdc	52.8	37.9	72	FLOAT	0.1

Level	Modbus register	Nr	Xtender parameter description	Unit	Default	Min	Max	Format	Increment
Expert	396	1298	Increment step of the adaptive low voltage	Vdc	0.5	0	1.4	FLOAT	0.01
Expert	42	1121	Battery overvoltage level	Vdc	68.2	37.9	74.4	FLOAT	0.1
Expert	44	1122	Restart voltage level after an battery overvoltage	Vdc	64.8	37.9	72	FLOAT	0.1
Expert	80	1140	Floating voltage	Vdc	54.4	37.9	72	FLOAT	0.1
Expert	734	1467	Force phase of floating		S	S	S	"SIGNAL"	
<b>Expert</b>	<b>82</b>	<b>1141</b>	New cycle menu					"MENU"	
Expert	84	1142	Force a new cycle		S	S	S	"SIGNAL"	
Inst.	1016	1608	Use dynamic compensation of battery level (new cycle)		0:No	0:No	1:Yes	"BOOL"	1
Expert	86	1143	Voltage level 1 to start a new cycle	Vdc	49.9	36	72	FLOAT	0.1
Expert	88	1144	Time period under voltage level 1 to start a new cycle	min	30	0	240	FLOAT	1
Expert	90	1145	Voltage level 2 to start a new cycle	Vdc	49.2	36	72	FLOAT	0.1
Expert	92	1146	Time period under voltage level 2 to start a new cycle	sec	60	0	600	FLOAT	2
Expert	98	1149	New cycle priority on absorption and equalization phases		0:No	0:No	1:Yes	"BOOL"	1
Expert	94	1147	Cycling restricted		0:No	0:No	1:Yes	"BOOL"	1
Expert	96	1148	Minimal delay between cycles	hours	3	0	540	FLOAT	1
<b>Expert</b>	<b>702</b>	<b>1451</b>	Absorption phase					"MENU"	
Expert	110	1155	Absorption phase allowed		1:Yes	0:No	1:Yes	"BOOL"	1
Expert	112	1156	Absorption voltage	Vdc	57.6	37.9	72	FLOAT	0.1
Expert	114	1157	Absorption duration	hours	2	0	18	FLOAT	0.25
Expert	116	1158	End of absorption triggered with current		0:No	0:No	1:Yes	"BOOL"	1
Expert	118	1159	Current limit to quit the absorption phase	Adc	4	1	200	FLOAT	1
Expert	120	1160	Maximal frequency of absorption control		0:No	0:No	1:Yes	"BOOL"	1
Expert	122	1161	Minimal delay since last absorption	hours	2	0	540	FLOAT	1
<b>Expert</b>	<b>704</b>	<b>1452</b>	Equalization phase					"MENU"	
Expert	126	1163	Equalization allowed		0:No	0:No	1:Yes	"BOOL"	1
Expert	124	1162	Force equalization		S	S	S	"SIGNAL"	
Expert	382	1291	Equalization before absorption phase		1:Yes	0:No	1:Yes	"BOOL"	1
Expert	380	1290	Equalization current	Adc	60	1	200	FLOAT	1
Expert	128	1164	Equalization voltage	Vdc	62.4	37.9	72	FLOAT	0.1
Expert	130	1165	Equalization duration	hours	0.5	0.2	10	FLOAT	0.25
Expert	132	1166	Number of cycles before an equalization		25	0	100	FLOAT	1

Level	Modbus register	Nr	Xtender parameter description	Unit	Default	Min	Max	Format	Increment
Expert	368	1284	Equalization with fixed interval		0:No	0:No	1:Yes	"BOOL"	1
Expert	370	1285	Weeks between equalizations	weeks	26	1	104	FLOAT	1
Expert	136	1168	End of equalization triggered with current		0:No	0:No	1:Yes	"BOOL"	1
Expert	138	1169	Current threshold to end equalization phase	Adc	4	1	30	FLOAT	1
<b>Expert</b>	<b>706</b>	<b>1453</b>	Reduced floating phase					"MENU"	
Expert	140	1170	Reduced floating allowed		0:No	0:No	1:Yes	"BOOL"	1
Expert	142	1171	Floating duration before reduced floating	days	1	0	31	FLOAT	1
Expert	144	1172	Reduced floating voltage	Vdc	52.8	37.9	72	FLOAT	0.1
<b>Expert</b>	<b>708</b>	<b>1454</b>	Periodic absorption phase					"MENU"	
Expert	146	1173	Periodic absorption allowed		0:No	0:No	1:Yes	"BOOL"	1
Expert	148	1174	Periodic absorption voltage	Vdc	57.6	37.9	72	FLOAT	0.1
Expert	150	1175	Reduced floating duration before periodic absorption	days	7	0	31	FLOAT	1
Expert	152	1176	Periodic absorption duration	hours	0.5	0	10	FLOAT	0.25
<b>Expert</b>	<b>172</b>	<b>1186</b>	<b>INVERTER</b>					"MENU"	
Basic	48	1124	Inverter allowed		1:Yes	0:No	1:Yes	"BOOL"	1
Expert	372	1286	AC Output voltage	Vac	230	110	280	FLOAT	1
Expert	896	1548	AC voltage increase according to battery voltage		0:No	0:No	1:Yes	"BOOL"	1
Expert	920	1560	Max AC voltage increase with battery voltage	Vac	10	4	16	FLOAT	1
Expert	24	1112	Inverter frequency	Hz	50	45	65	FLOAT	0.1
Expert	872	1536	Inverter frequency increase when battery full		0:No	0:No	1:Yes	"BOOL"	1
Expert	898	1549	Inverter frequency increase according to battery voltage		0:No	0:No	1:Yes	"BOOL"	1
Expert	892	1546	Max frequency increase	Hz	4	0	10	FLOAT	0.1
Expert	868	1534	Speed of voltage or frequency change in function of battery		0	-4	3	FLOAT	1
<b>Expert</b>	<b>640</b>	<b>1420</b>	Standby and turn on					"MENU"	
Basic	174	1187	Standby level	%	10	0	100	FLOAT	10
Expert	178	1189	Time delay between standby pulses	sec	0.8	0.2	10	FLOAT	0.2
Expert	176	1188	Standby number of pulses		1	1	10	FLOAT	1
Expert	998	1599	Softstart duration	sec	0	0	1	FLOAT	0.25
Expert	676	1438	Solsafe presence Energy source at AC-Out side		0:No	0:No	1:Yes	"BOOL"	1
QSP	944	1572	Modulator ru_soll		0:No	0:No	1:Yes	"BOOL"	1
<b>Expert</b>	<b>194</b>	<b>1197</b>	<b>AC-IN AND TRANSFER</b>					"MENU"	

Level	Modbus register	Nr	Xtender parameter description	Unit	Default	Min	Max	Format	Increment
Expert	56	1128	Transfer relay allowed		1:Yes	0:No	1:Yes	"BOOL"	1
Expert	960	1580	Delay before closing transfer relay	min	0	0	30	FLOAT	0.25
Basic	52	1126	Smart-Boost allowed		1:Yes	0:No	1:Yes	"BOOL"	1
Inst.	1014	1607	Limitation of the power Boost	%	100	0	100	FLOAT	5
Basic	14	1107	Maximum current of AC source (Input limit)	Aac	32	2	50	FLOAT	1
<b>Expert</b>	<b>742</b>	<b>1471</b>	Max input current modification					"MENU"	
Expert	932	1566	Using a secondary value for the maximum current of the AC source		0:No	0:No	1:Yes	"BOOL"	1
Expert	934	1567	Second maximum current of the AC source (Input limit)	Aac	16	2	50	FLOAT	1
Expert	854	1527	Decrease max input limit current with AC-In voltage		0:No	0:No	1:Yes	"BOOL"	1
Expert	908	1554	Decrease of the max. current of the source with input voltage activated by remote entry		0:No	0:No	1:Yes	"BOOL"	1
Expert	418	1309	AC input low limit voltage to allow charger function	Vac	180	100	230	FLOAT	5
Expert	666	1433	Adaptation range of the input current according to the input voltage	Vac	10	4	30	FLOAT	1
Expert	906	1553	Speed of input limit increase		50	0	100	FLOAT	2
Expert	390	1295	Charge current decrease coef. at voltage limit to turn back in inverter mode	%	100	0	100	FLOAT	5
Expert	672	1436	Overrun AC source current limit without opening the transfer relay (Input limit)		1:Yes	0:No	1:Yes	"BOOL"	1
Basic	904	1552	Type of detection of the grid loss (AC-In)		2:Tolerant	1:Slow	4:Fast	"ENUM"	Only 1 bit 1:Slow 2:Tolerant 4:Fast
Expert	820	1510	Tolerance on detection of AC-input loss (tolerant UPS mode)		100	2	120	FLOAT	2
Expert	198	1199	Input voltage giving an opening of the transfer relay with delay	Vac	200	80	230	FLOAT	5
Expert	196	1198	Time delay before opening of transfer relay	sec	8	0	30	FLOAT	1
Expert	200	1200	Input voltage giving an immediate opening of the transfer relay (UPS)	Vac	180	80	230	FLOAT	5
Inst.	664	1432	Absolute max limit for input voltage	Vac	270	235	290	FLOAT	5
QSP	800	1500	Standby of the charger allowed		1:Yes	0:No	1:Yes	"BOOL"	1
Expert	810	1505	Delta frequency allowed above the standard input frequency	Hz	5	0	35	FLOAT	0.1
Expert	812	1506	Delta frequency allowed under the standard input frequency	Hz	5	0	15	FLOAT	0.1
Expert	814	1507	Duration with frequency error before opening the transfer	sec	2	0	5	FLOAT	1

Level	Modbus register	Nr	Xtender parameter description	Unit	Default	Min	Max	Format	Increment
Expert	950	1575	AC-IN current active filtering (Not in parallel)		0:No	0:No	1:Yes	"BOOL"	1
Inst.	914	1557	Use an energy quota on AC-input		0:No	0:No	1:Yes	"BOOL"	1
Inst.	918	1559	AC-In energy quota	kWh	1	0.5	100	FLOAT	0.5
<b>Expert</b>	<b>202</b>	<b>1201</b>	<b>AUXILIARY CONTACT 1</b>					"MENU"	
Expert	204	1202	Operating mode (AUX 1)		1:Automatic	1:Automatic	8:Manual OFF	"ENUM"	Only 1 bit 1:Automatic 2:Reversed automatic 4:Manual ON 8:Manual OFF
Expert	794	1497	Combination of the events for the auxiliary contact (AUX 1)		0:Any (Function OR)	0:Any (Function OR)	1:All (Function AND)	"ENUM"	Only 1 bit 0:Any (Function OR) 1:All (Function AND)
<b>Expert</b>	<b>206</b>	<b>1203</b>	Temporal restrictions (AUX 1)					"MENU"	
<b>Expert</b>	<b>208</b>	<b>1204</b>	Program 1 (AUX 1)					"MENU"	
Expert	210	1205	Day of the week (AUX 1)		None	0	127	"DAYS of WEEK"	Bit field
Expert	212	1206	Start hour (AUX 1)	Minutes	420=07:00	0=00:00	1440=24:00	"HOUR"	1
Expert	214	1207	End hour (AUX 1)	Minutes	1200=20:00	0=00:00	1440=24:00	"HOUR"	1
<b>Expert</b>	<b>216</b>	<b>1208</b>	Program 2 (AUX 1)					"MENU"	
Expert	218	1209	Day of the week (AUX 1)		None	0	127	"DAYS of WEEK"	Bit field
Expert	220	1210	Start hour (AUX 1)	Minutes	420=07:00	0=00:00	1440=24:00	"HOUR"	1
Expert	222	1211	End hour (AUX 1)	Minutes	1200=20:00	0=00:00	1440=24:00	"HOUR"	1
<b>Expert</b>	<b>224</b>	<b>1212</b>	Program 3 (AUX 1)					"MENU"	
Expert	226	1213	Day of the week (AUX 1)		None	0	127	"DAYS of WEEK"	Bit field
Expert	228	1214	Start hour (AUX 1)	Minutes	420=07:00	0=00:00	1440=24:00	"HOUR"	1
Expert	230	1215	End hour (AUX 1)	Minutes	1200=20:00	0=00:00	1440=24:00	"HOUR"	1
<b>Inst.</b>	<b>232</b>	<b>1216</b>	Program 4 (AUX 1)					"MENU"	
Inst.	234	1217	Day of the week (AUX 1)		None	0	127	"DAYS of WEEK"	Bit field
Inst.	236	1218	Start hour (AUX 1)	Minutes	420=07:00	0=00:00	1440=24:00	"HOUR"	1
Inst.	238	1219	End hour (AUX 1)	Minutes	1200=20:00	0=00:00	1440=24:00	"HOUR"	1
<b>Inst.</b>	<b>240</b>	<b>1220</b>	Program 5 (AUX 1)					"MENU"	



Level	Modbus register	Nr	Xtender parameter description	Unit	Default	Min	Max	Format	Increment
Inst.	242	1221	Day of the week (AUX 1)		None	0	127	"DAYS of WEEK"	Bit field
Inst.	244	1222	Start hour (AUX 1)	Minutes	420=07:00	0=00:00	1440=24:00	"HOUR"	1
Inst.	246	1223	End hour (AUX 1)	Minutes	1200=20:00	0=00:00	1440=24:00	"HOUR"	1
<b>Expert</b>	<b>338</b>	<b>1269</b>	Contact active with a fixed time schedule (AUX 1)					"MENU"	
<b>Expert</b>	<b>340</b>	<b>1270</b>	Program 1 (AUX 1)					"MENU"	
Expert	342	1271	Day of the week (AUX 1)		None	0	127	"DAYS of WEEK"	Bit field
Expert	344	1272	Start hour (AUX 1)	Minutes	420=07:00	0=00:00	1440=24:00	"HOUR"	1
Expert	346	1273	End hour (AUX 1)	Minutes	1200=20:00	0=00:00	1440=24:00	"HOUR"	1
<b>Expert</b>	<b>348</b>	<b>1274</b>	Program 2 (AUX 1)					"MENU"	
Expert	350	1275	Day of the week (AUX 1)		None	0	127	"DAYS of WEEK"	Bit field
Expert	352	1276	Start hour (AUX 1)	Minutes	420=07:00	0=00:00	1440=24:00	"HOUR"	1
Expert	354	1277	End hour (AUX 1)	Minutes	1200=20:00	0=00:00	1440=24:00	"HOUR"	1
<b>Expert</b>	<b>356</b>	<b>1278</b>	Program 3 (AUX 1)					"MENU"	
Expert	358	1279	Day of the week (AUX 1)		None	0	127	"DAYS of WEEK"	Bit field
Expert	360	1280	Start hour (AUX 1)	Minutes	420=07:00	0=00:00	1440=24:00	"HOUR"	1
Expert	362	1281	End hour (AUX 1)	Minutes	1200=20:00	0=00:00	1440=24:00	"HOUR"	1
<b>Expert</b>	<b>710</b>	<b>1455</b>	Contact active on event (AUX 1)					"MENU"	
Expert	250	1225	Xtender is OFF (AUX 1)		0:No	0:No	1:Yes	"BOOL"	1
Expert	836	1518	Xtender ON (AUX 1)		0:No	0:No	1:Yes	"BOOL"	1
Expert	886	1543	Remote entry (AUX 1)		0:No	0:No	1:Yes	"BOOL"	1
Expert	252	1226	Battery undervoltage alarm (AUX 1)		0:No	0:No	1:Yes	"BOOL"	1
Expert	254	1227	Battery overvoltage (AUX 1)		0:No	0:No	1:Yes	"BOOL"	1
Expert	256	1228	Inverter overload (AUX 1)		0:No	0:No	1:Yes	"BOOL"	1
Expert	258	1229	Overtemperature (AUX 1)		0:No	0:No	1:Yes	"BOOL"	1
Expert	840	1520	No overtemperature (AUX 1)		0:No	0:No	1:Yes	"BOOL"	1
Expert	262	1231	Active charger (AUX 1)		0:No	0:No	1:Yes	"BOOL"	1
Expert	264	1232	Active inverter (AUX 1)		0:No	0:No	1:Yes	"BOOL"	1
Expert	266	1233	Active Smart-Boost (AUX 1)		0:No	0:No	1:Yes	"BOOL"	1

Level	Modbus register	Nr	Xtender parameter description	Unit	Default	Min	Max	Format	Increment
Expert	268	1234	AC input presence but with fault (AUX 1)		0:No	0:No	1:Yes	"BOOL"	1
Expert	270	1235	AC input presence (AUX 1)		0:No	0:No	1:Yes	"BOOL"	1
Expert	272	1236	Transfer relay ON (AUX 1)		0:No	0:No	1:Yes	"BOOL"	1
Expert	274	1237	AC out presence (AUX 1)		0:No	0:No	1:Yes	"BOOL"	1
Expert	276	1238	Bulk charge phase (AUX 1)		0:No	0:No	1:Yes	"BOOL"	1
Expert	278	1239	Absorption phase (AUX 1)		0:No	0:No	1:Yes	"BOOL"	1
Expert	280	1240	Equalization phase (AUX 1)		0:No	0:No	1:Yes	"BOOL"	1
Expert	284	1242	Floating (AUX 1)		0:No	0:No	1:Yes	"BOOL"	1
Expert	286	1243	Reduced floating (AUX 1)		0:No	0:No	1:Yes	"BOOL"	1
Expert	288	1244	Periodic absorption (AUX 1)		0:No	0:No	1:Yes	"BOOL"	1
Inst.	1002	1601	AC-In energy quota (AUX 1)		0:No	0:No	1:Yes	"BOOL"	1
<b>Expert</b>	<b>290</b>	<b>1245</b>	Contact active according to battery voltage (AUX 1)					"MENU"	
Expert	376	1288	Use dynamic compensation of battery level (AUX 1)		0:No	0:No	1:Yes	"BOOL"	1
Expert	292	1246	Battery voltage 1 activate (AUX 1)		1:Yes	0:No	1:Yes	"BOOL"	1
Expert	294	1247	Battery voltage 1 (AUX 1)	Vdc	46.8	36	72	FLOAT	0.1
Expert	296	1248	Delay 1 (AUX 1)	min	1	0	60	FLOAT	1
Expert	298	1249	Battery voltage 2 activate (AUX 1)		1:Yes	0:No	1:Yes	"BOOL"	1
Expert	300	1250	Battery voltage 2 (AUX 1)	Vdc	47.8	36	72	FLOAT	0.1
Expert	302	1251	Delay 2 (AUX 1)	min	10	0	60	FLOAT	1
Expert	304	1252	Battery voltage 3 activate (AUX 1)		1:Yes	0:No	1:Yes	"BOOL"	1
Expert	306	1253	Battery voltage 3 (AUX 1)	Vdc	48.5	36	72	FLOAT	0.1
Expert	308	1254	Delay 3 (AUX 1)	min	60	0	60	FLOAT	1
Expert	310	1255	Battery voltage to deactivate (AUX 1)	Vdc	54	36	72	FLOAT	0.1
Expert	312	1256	Delay to deactivate (AUX 1)	min	60	0	480	FLOAT	5
Expert	832	1516	Deactivate if battery in floating phase (AUX 1)		1:Yes	0:No	1:Yes	"BOOL"	1
<b>Expert</b>	<b>314</b>	<b>1257</b>	Contact active with inverter power or Smart-Boost (AUX 1)					"MENU"	
Expert	316	1258	Inverter power level 1 activate (AUX 1)		0:No	0:No	1:Yes	"BOOL"	1
Expert	318	1259	Power level 1 (AUX 1)	% Pnom	120	20	120	FLOAT	10
Expert	320	1260	Time delay 1 (AUX 1)	min	1	0	60	FLOAT	1
QSP	1088	1644	Activated by AUX2 event partial overload		0:No	0:No	1:Yes	"BOOL"	1
Expert	322	1261	Inverter power level 2 activate (AUX 1)		0:No	0:No	1:Yes	"BOOL"	1

Level	Modbus register	Nr	Xtender parameter description	Unit	Default	Min	Max	Format	Increment
Expert	324	1262	Power level 2 (AUX 1)	% Pnom	80	20	120	FLOAT	10
Expert	326	1263	Time delay 2 (AUX 1)	min	5	0	60	FLOAT	1
Expert	328	1264	Inverter power level 3 activate (AUX 1)		0:No	0:No	1:Yes	"BOOL"	1
Expert	330	1265	Power level 3 (AUX 1)	% Pnom	50	20	120	FLOAT	10
Expert	332	1266	Time delay 3 (AUX 1)	min	30	0	60	FLOAT	1
Expert	334	1267	Inverter power level to deactivate (AUX 1)	% Pnom	40	20	120	FLOAT	10
Expert	336	1268	Time delay to deactivate (AUX 1)	min	5	0	60	FLOAT	5
<b>Expert</b>	<b>806</b>	<b>1503</b>	Contact active according to battery temperature (AUX 1) With BSP or BTS					"MENU"	
Expert	692	1446	Contact activated with the temperature of battery (AUX 1)		0:No	0:No	1:Yes	"BOOL"	1
Expert	694	1447	Contact activated over (AUX 1)	°C	3	-10	50	FLOAT	1
Expert	696	1448	Contact deactivated below (AUX 1)	°C	5	-10	50	FLOAT	1
<b>Expert</b>	<b>802</b>	<b>1501</b>	Contact active according to SOC (AUX 1) Only with BSP					"MENU"	
Expert	678	1439	Contact activated with the SOC 1 of battery (AUX 1)		0:No	0:No	1:Yes	"BOOL"	1
Expert	680	1440	Contact activated below SOC 1 (AUX 1)	% SOC	50	0	100	FLOAT	5
Expert	962	1581	Delay 1 (AUX 1)	hours	12	0	99	FLOAT	0.25
Expert	964	1582	Contact activated with the SOC 2 of battery (AUX 1)		0:No	0:No	1:Yes	"BOOL"	1
Expert	966	1583	Contact activated below SOC 2 (AUX 1)	% SOC	30	0	100	FLOAT	5
Expert	968	1584	Delay 2 (AUX 1)	hours	0.2	0	99	FLOAT	0.25
Expert	970	1585	Contact activated with the SOC 3 of battery (AUX 1)		0:No	0:No	1:Yes	"BOOL"	1
Expert	972	1586	Contact activated below SOC 3 (AUX 1)	% SOC	20	0	100	FLOAT	5
Expert	974	1587	Delay 3 (AUX 1)	hours	0	0	99	FLOAT	0.25
Expert	682	1441	Contact deactivated over SOC (AUX 1)	% SOC	90	0	100	FLOAT	5
Expert	976	1588	Delay to deactivate (AUX 1)	hours	0.2	0	10	FLOAT	0.25
Expert	978	1589	Deactivate if battery in floating phase (AUX 1)		0:No	0:No	1:Yes	"BOOL"	1
Expert	824	1512	Security, maximum time of contact (AUX 1)		0:No	0:No	1:Yes	"BOOL"	1
Expert	828	1514	Maximum time of operation of contact (AUX 1)	min	600	10	1200	FLOAT	10
Expert	938	1569	Reset all settings (AUX 1)		S	S	S	"SIGNAL"	
<b>Expert</b>	<b>420</b>	<b>1310</b>	<b>AUXILIARY CONTACT 2</b>					"MENU"	

Level	Modbus register	Nr	Xtender parameter description	Unit	Default	Min	Max	Format	Increment
Expert	422	1311	Operating mode (AUX 2)		2:Reversed automatic	1:Automatic	8:Manual OFF	"ENUM"	Only 1 bit 1:Automatic 2:Reversed automatic 4:Manual ON 8:Manual OFF
Expert	796	1498	Combination of the events for the auxiliary contact (AUX 2)		0:Any (Function OR)	0:Any (Function OR)	1:All (Function AND)	"ENUM"	Only 1 bit 0:Any (Function OR) 1:All (Function AND)
<b>Expert</b>	<b>424</b>	<b>1312</b>	Temporal restrictions (AUX 2)					"MENU"	
<b>Expert</b>	<b>426</b>	<b>1313</b>	Program 1 (AUX 2)					"MENU"	
Expert	428	1314	Day of the week (AUX 2)		None	0	127	"DAYS of WEEK"	Bit field
Expert	430	1315	Start hour (AUX 2)	Minutes	420=07:00	0=00:00	1440=24:00	"HOUR"	1
Expert	432	1316	End hour (AUX 2)	Minutes	1200=20:00	0=00:00	1440=24:00	"HOUR"	1
<b>Expert</b>	<b>434</b>	<b>1317</b>	Program 2 (AUX 2)					"MENU"	
Expert	436	1318	Day of the week (AUX 2)		None	0	127	"DAYS of WEEK"	Bit field
Expert	438	1319	Start hour (AUX 2)	Minutes	420=07:00	0=00:00	1440=24:00	"HOUR"	1
Expert	440	1320	End hour (AUX 2)	Minutes	1200=20:00	0=00:00	1440=24:00	"HOUR"	1
<b>Expert</b>	<b>442</b>	<b>1321</b>	Program 3 (AUX 2)					"MENU"	
Expert	444	1322	Day of the week (AUX 2)		None	0	127	"DAYS of WEEK"	Bit field
Expert	446	1323	Start hour (AUX 2)	Minutes	420=07:00	0=00:00	1440=24:00	"HOUR"	1
Expert	448	1324	End hour (AUX 2)	Minutes	1200=20:00	0=00:00	1440=24:00	"HOUR"	1
<b>Inst.</b>	<b>450</b>	<b>1325</b>	Program 4 (AUX 2)					"MENU"	
Inst.	452	1326	Day of the week (AUX 2)		None	0	127	"DAYS of WEEK"	Bit field
Inst.	454	1327	Start hour (AUX 2)	Minutes	420=07:00	0=00:00	1440=24:00	"HOUR"	1
Inst.	456	1328	End hour (AUX 2)	Minutes	1200=20:00	0=00:00	1440=24:00	"HOUR"	1
<b>Inst.</b>	<b>458</b>	<b>1329</b>	Program 5 (AUX 2)					"MENU"	
Inst.	460	1330	Day of the week (AUX 2)		None	0	127	"DAYS of WEEK"	Bit field
Inst.	462	1331	Start hour (AUX 2)	Minutes	420=07:00	0=00:00	1440=24:00	"HOUR"	1
Inst.	464	1332	End hour (AUX 2)	Minutes	1200=20:00	0=00:00	1440=24:00	"HOUR"	1

Level	Modbus register	Nr	Xtender parameter description	Unit	Default	Min	Max	Format	Increment
Expert	556	1378	Contact active with a fixed time schedule (AUX 2)					"MENU"	
Expert	558	1379	Program 1 (AUX 2)					"MENU"	
Expert	560	1380	Day of the week (AUX 2)		None	0	127	"DAYS of WEEK"	Bit field
Expert	562	1381	Start hour (AUX 2)	Minutes	420=07:00	0=00:00	1440=24:00	"HOUR"	1
Expert	564	1382	End hour (AUX 2)	Minutes	1200=20:00	0=00:00	1440=24:00	"HOUR"	1
Expert	566	1383	Program 2 (AUX 2)					"MENU"	
Expert	568	1384	Day of the week (AUX 2)		None	0	127	"DAYS of WEEK"	Bit field
Expert	570	1385	Start hour (AUX 2)	Minutes	420=07:00	0=00:00	1440=24:00	"HOUR"	1
Expert	572	1386	End hour (AUX 2)	Minutes	1200=20:00	0=00:00	1440=24:00	"HOUR"	1
Expert	574	1387	Program 3 (AUX 2)					"MENU"	
Expert	576	1388	Day of the week (AUX 2)		None	0	127	"DAYS of WEEK"	Bit field
Expert	578	1389	Start hour (AUX 2)	Minutes	420=07:00	0=00:00	1440=24:00	"HOUR"	1
Expert	580	1390	End hour (AUX 2)	Minutes	1200=20:00	0=00:00	1440=24:00	"HOUR"	1
Expert	712	1456	Contact active on event (AUX 2)					"MENU"	
Expert	466	1333	Xtender is OFF (AUX 2)		1:Yes	0:No	1:Yes	"BOOL"	1
Expert	838	1519	Xtender ON (AUX 2)		0:No	0:No	1:Yes	"BOOL"	1
Expert	888	1544	Remote entry (AUX 2)		0:No	0:No	1:Yes	"BOOL"	1
Expert	468	1334	Battery undervoltage alarm (AUX 2)		1:Yes	0:No	1:Yes	"BOOL"	1
Expert	470	1335	Battery overvoltage (AUX 2)		1:Yes	0:No	1:Yes	"BOOL"	1
Expert	472	1336	Inverter overload (AUX 2)		1:Yes	0:No	1:Yes	"BOOL"	1
Expert	474	1337	Overtemperature (AUX 2)		1:Yes	0:No	1:Yes	"BOOL"	1
Expert	842	1521	No overtemperature (AUX 2)		0:No	0:No	1:Yes	"BOOL"	1
Expert	478	1339	Active charger (AUX 2)		0:No	0:No	1:Yes	"BOOL"	1
Expert	480	1340	Active inverter (AUX 2)		0:No	0:No	1:Yes	"BOOL"	1
Expert	482	1341	Active Smart-Boost (AUX 2)		0:No	0:No	1:Yes	"BOOL"	1
Expert	484	1342	AC input presence but with fault (AUX 2)		0:No	0:No	1:Yes	"BOOL"	1
Expert	486	1343	AC input presence (AUX 2)		0:No	0:No	1:Yes	"BOOL"	1
Expert	488	1344	Transfer contact ON (AUX 2)		0:No	0:No	1:Yes	"BOOL"	1
Expert	490	1345	AC out presence (AUX 2)		0:No	0:No	1:Yes	"BOOL"	1

Level	Modbus register	Nr	Xtender parameter description	Unit	Default	Min	Max	Format	Increment
Expert	492	1346	Bulk charge phase (AUX 2)		0:No	0:No	1:Yes	"BOOL"	1
Expert	494	1347	Absorption phase (AUX 2)		0:No	0:No	1:Yes	"BOOL"	1
Expert	496	1348	Equalization phase (AUX 2)		0:No	0:No	1:Yes	"BOOL"	1
Expert	500	1350	Floating (AUX 2)		0:No	0:No	1:Yes	"BOOL"	1
Expert	502	1351	Reduced floating (AUX 2)		0:No	0:No	1:Yes	"BOOL"	1
Expert	504	1352	Periodic absorption (AUX 2)		0:No	0:No	1:Yes	"BOOL"	1
Inst.	1004	1602	AC-In energy quota (AUX 2)		0:No	0:No	1:Yes	"BOOL"	1
QSP	1086	1643	Partial overload		0:No	0:No	1:Yes	"BOOL"	1
<b>Expert</b>	<b>506</b>	<b>1353</b>	Contact active according to battery voltage (AUX 2)					"MENU"	
Expert	508	1354	Use dynamic compensation of battery level (AUX 2)		0:No	0:No	1:Yes	"BOOL"	1
Expert	510	1355	Battery voltage 1 activate (AUX 2)		0:No	0:No	1:Yes	"BOOL"	1
Expert	512	1356	Battery voltage 1 (AUX 2)	Vdc	48	36	72	FLOAT	0.1
Expert	514	1357	Delay 1 (AUX 2)	min	5	0	60	FLOAT	1
Expert	516	1358	Battery voltage 2 activate (AUX 2)		0:No	0:No	1:Yes	"BOOL"	1
Expert	518	1359	Battery voltage 2 (AUX 2)	Vdc	46.1	36	72	FLOAT	0.1
Expert	520	1360	Delay 2 (AUX 2)	min	5	0	60	FLOAT	1
Expert	522	1361	Battery voltage 3 activate (AUX 2)		0:No	0:No	1:Yes	"BOOL"	1
Expert	524	1362	Battery voltage 3 (AUX 2)	Vdc	44.2	36	72	FLOAT	0.1
Expert	526	1363	Delay 3 (AUX 2)	min	5	0	60	FLOAT	1
Expert	528	1364	Battery voltage to deactivate (AUX 2)	Vdc	50.4	36	72	FLOAT	0.1
Expert	530	1365	Delay to deactivate (AUX 2)	min	5	0	480	FLOAT	5
Expert	834	1517	Deactivate if battery in floating phase (AUX 2)		0:No	0:No	1:Yes	"BOOL"	1
<b>Expert</b>	<b>532</b>	<b>1366</b>	Contact active with inverter power or Smart-Boost (AUX 2)					"MENU"	
Expert	534	1367	Inverter power level 1 activate (AUX 2)		0:No	0:No	1:Yes	"BOOL"	1
Expert	536	1368	Power level 1 (AUX 2)	% Pnom	120	20	120	FLOAT	10
Expert	538	1369	Time delay 1 (AUX 2)	min	0	0	60	FLOAT	1
Expert	540	1370	Inverter power level 2 activate (AUX 2)		0:No	0:No	1:Yes	"BOOL"	1
Expert	542	1371	Power level 2 (AUX 2)	% Pnom	80	20	120	FLOAT	10
Expert	544	1372	Time delay 2 (AUX 2)	min	5	0	60	FLOAT	1
Expert	546	1373	Inverter power level 3 activate (AUX 2)		0:No	0:No	1:Yes	"BOOL"	1
Expert	548	1374	Power level 3 (AUX 2)	% Pnom	50	20	120	FLOAT	10

Level	Modbus register	Nr	Xtender parameter description	Unit	Default	Min	Max	Format	Increment
Expert	550	1375	Time delay 3 (AUX 2)	min	30	0	60	FLOAT	1
Expert	552	1376	Inverter power level to deactivate (AUX 2)	% Phom	40	20	120	FLOAT	10
Expert	554	1377	Time delay to deactivate (AUX 2)	min	5	0	60	FLOAT	5
<b>Expert</b>	<b>808</b>	<b>1504</b>	Contact active according to battery temperature (AUX 2) With BSP or BTS					"MENU"	
Expert	714	1457	Contact activated with the temperature of battery (AUX 2)		0:No	0:No	1:Yes	"BOOL"	1
Expert	716	1458	Contact activated over (AUX 2)	°C	3	-10	50	FLOAT	1
Expert	718	1459	Contact deactivated below (AUX 2)	°C	5	-10	50	FLOAT	1
<b>Expert</b>	<b>804</b>	<b>1502</b>	Contact active according to SOC (AUX 2) Only with BSP					"MENU"	
Expert	684	1442	Contact activated with the SOC 1 of battery (AUX 2)		0:No	0:No	1:Yes	"BOOL"	1
Expert	686	1443	Contact activated below SOC 1 (AUX 2)	% SOC	50	0	100	FLOAT	5
Expert	980	1590	Delay 1 (AUX 2)	hours	12	0	99	FLOAT	0.25
Expert	982	1591	Contact activated with the SOC 2 of battery (AUX 2)		0:No	0:No	1:Yes	"BOOL"	1
Expert	984	1592	Contact activated below SOC 2 (AUX 2)	% SOC	30	0	100	FLOAT	5
Expert	986	1593	Delay 2 (AUX 2)	hours	0.2	0	99	FLOAT	0.25
Expert	988	1594	Contact activated with the SOC 3 of battery (AUX 2)		0:No	0:No	1:Yes	"BOOL"	1
Expert	990	1595	Contact activated below SOC 3 (AUX 2)	% SOC	20	0	100	FLOAT	5
Expert	992	1596	Delay 3 (AUX 2)	hours	0	0	99	FLOAT	0.25
Expert	688	1444	Contact deactivated over SOC (AUX 2)	% SOC	90	0	100	FLOAT	5
Expert	994	1597	Delay to deactivate (AUX 2)	hours	0.2	0	10	FLOAT	0.25
Expert	996	1598	Deactivate if battery in floating phase (AUX 2)		0:No	0:No	1:Yes	"BOOL"	1
Expert	826	1513	Security, maximum time of contact (AUX 2)		0:No	0:No	1:Yes	"BOOL"	1
Expert	830	1515	Maximum time of operation of contact (AUX 2)	min	600	10	1200	FLOAT	10
Expert	940	1570	Reset all settings (AUX 2)		S	S	S	"SIGNAL"	
<b>Expert</b>	<b>778</b>	<b>1489</b>	<b>AUXILIARY CONTACTS 1 AND 2 EXTENDED FUNCTIONS</b>					"MENU"	
Expert	782	1491	Generator control active		0:No	0:No	1:Yes	"BOOL"	1
Expert	786	1493	Number of starting attempts		5	0	20	FLOAT	1
Expert	784	1492	Starter pulse duration (with AUX2)	sec	3	1	20	FLOAT	1
Expert	788	1494	Time before a starter pulse	sec	3	1	20	FLOAT	1
Expert	948	1574	Main contact hold/interrupt time	sec	0	0	30	FLOAT	1
<b>Expert</b>	<b>2</b>	<b>1101</b>	<b>SYSTEM</b>					"MENU"	
<b>Expert</b>	<b>874</b>	<b>1537</b>	Remote entry (Remote ON/OFF)					"MENU"	

Level	Modbus register	Nr	Xtender parameter description	Unit	Default	Min	Max	Format	Increment
Expert	890	1545	Remote entry active		1:Open	0:Closed	1:Open	"ENUM"	Only 1 bit 0:Closed 1:Open
Expert	876	1538	Prohibits transfert relay		0:No	0:No	1:Yes	"BOOL"	1
Expert	878	1539	Prohibits inverter		0:No	0:No	1:Yes	"BOOL"	1
Expert	880	1540	Prohibits charger		0:No	0:No	1:Yes	"BOOL"	1
Expert	882	1541	Prohibits Smart-Boost		0:No	0:No	1:Yes	"BOOL"	1
Expert	884	1542	Prohibits grid feeding		0:No	0:No	1:Yes	"BOOL"	1
Expert	932	1566	Using a secondary value for the maximum current of the AC source		0:No	0:No	1:Yes	"BOOL"	1
Expert	934	1567	Second maximum current of the AC source (Input limit)	Aac	16	2	50	FLOAT	1
Expert	908	1554	Decrease of the max. current of the source with input voltage activated by remote entry		0:No	0:No	1:Yes	"BOOL"	1
Expert	952	1576	ON/OFF command		0:No	0:No	1:Yes	"BOOL"	1
Expert	956	1578	Activated by AUX 1 state		0:No	0:No	1:Yes	"BOOL"	1
Expert	958	1579	Prohibits battery priority		0:No	0:No	1:Yes	"BOOL"	1
Inst.	1000	1600	Disable minigrid mode		0:No	0:No	1:Yes	"BOOL"	1
QSP	1080	1640	Clear AUX2 event partial overload		0:No	0:No	1:Yes	"BOOL"	1
Inst.	1094	1647	Prohibits charger using only power from AC-Out		0:No	0:No	1:Yes	"BOOL"	1
Expert	392	1296	Batteries priority as energy source (Not recommended in parallel)		0:No	0:No	1:Yes	"BOOL"	1
Expert	394	1297	Battery priority voltage	Vdc	51.6	37.9	72	FLOAT	0.1
Expert	930	1565	Buzzer alarm duration	min	0	0	60	FLOAT	1
<b>Expert</b>	<b>58</b>	<b>1129</b>	Auto restarts					"MENU"	
Expert	60	1130	After battery undervoltage		1:Yes	0:No	1:Yes	"BOOL"	1
Expert	408	1304	Number of batteries undervoltage allowed before definitive stop		3	1	20	FLOAT	1
Expert	608	1404	Time period for batteries undervoltages counting	sec	0	0	3000	FLOAT	60
Expert	410	1305	Number of batteries critical undervoltage allowed before definitive stop		10	1	20	FLOAT	1
Expert	610	1405	Time period for critical batteries undervoltages counting	sec	10	0	3000	FLOAT	5
Expert	62	1131	After battery overvoltage		1:Yes	0:No	1:Yes	"BOOL"	1
Expert	64	1132	After inverter or Smart-Boost overload		1:Yes	0:No	1:Yes	"BOOL"	1



Level	Modbus register	Nr	Xtender parameter description	Unit	Default	Min	Max	Format	Increment
Expert	866	1533	Delay to restart after an overload	sec	5	2	120	FLOAT	1
Expert	68	1134	After overtemperature		1:Yes	0:No	1:Yes	"BOOL"	1
Expert	22	1111	Autostart to the battery connection		0:No	0:No	1:Yes	"BOOL"	1
<b>Expert</b>	<b>768</b>	<b>1484</b>	System earthing (Earth - Neutral)					"MENU"	
Expert	770	1485	Prohibited ground relay		1:Yes	0:No	1:Yes	"BOOL"	1
Expert	772	1486	Continuous neutral		0:No	0:No	1:Yes	"BOOL"	1
Inst.	1056	1628	Xtender watchdog enabled (SCOM)		0:No	0:No	1:Yes	"BOOL"	1
Inst.	1058	1629	Xtender watchdog delay (SCOM)	sec	60	10	300	FLOAT	10
QSP	1032	1616	Use of functions limited to a number of days		0:No	0:No	1:Yes	"BOOL"	1
QSP	582	1391	Number of days without functionalitie's restrictions	days	0	0	1300	FLOAT	1
QSP	1034	1617	Transfer relay disabled after timeout		0:No	0:No	1:Yes	"BOOL"	1
QSP	1036	1618	Inverter disabled after timeout		1:Yes	0:No	1:Yes	"BOOL"	1
QSP	1038	1619	Charger disabled after timeout		0:No	0:No	1:Yes	"BOOL"	1
QSP	1040	1620	Smart-Boost disabled after timeout		1:Yes	0:No	1:Yes	"BOOL"	1
QSP	1042	1621	Grid feeding disabled after timeout		0:No	0:No	1:Yes	"BOOL"	1
Basic	590	1395	Restore default settings		S	S	S	"SIGNAL"	
Inst.	374	1287	Restore factory settings		S	S	S	"SIGNAL"	
Inst.	900	1550	Parameters saved in flash memory		1:Yes	0:No	1:Yes	"BOOL"	1
Inst.	630	1415	ON of the Xtenders		S	S	S	"SIGNAL"	
Inst.	598	1399	OFF of the Xtenders		S	S	S	"SIGNAL"	
Expert	736	1468	Reset of all the inverters		S	S	S	"SIGNAL"	
<b>Expert</b>	<b>364</b>	<b>1282</b>	<b>MULTI XTENDER SYSTEM</b>					"MENU"	
Expert	366	1283	Integral mode		1:Yes	0:No	1:Yes	"BOOL"	1
Expert	722	1461	Multi inverters allowed		1:Yes	0:No	1:Yes	"BOOL"	1
Expert	724	1462	Multi inverters independents. Need reset {1468}		0:No	0:No	1:Yes	"BOOL"	1
Expert	910	1555	Battery cycle synchronized by the master		1:Yes	0:No	1:Yes	"BOOL"	1
Expert	894	1547	Allow slaves standby in multi-Xtender system		1:Yes	0:No	1:Yes	"BOOL"	1
Expert	942	1571	Splitphase: L2 with 180 degrees phaseshift		0:No	0:No	1:Yes	"BOOL"	1
QSP	916	1558	Separated Batteries		0:No	0:No	1:Yes	"BOOL"	1
Inst.	674	1437	Minigrid compatible		0:No	0:No	1:Yes	"BOOL"	1
Inst.	954	1577	Minigrid with shared battery energy		0:No	0:No	1:Yes	"BOOL"	1

Level	Modbus register	Nr	Xtender parameter description	Unit	Default	Min	Max	Format	Increment
Inst.	912	1556	Is the central inverter in distributed minigrid		0:No	0:No	1:Yes	"BOOL"	1
<b>Expert</b>	<b>844</b>	<b>1522</b>	<b>GRID-FEEDING</b>					"MENU"	
Expert	54	1127	Grid feeding allowed		0:No	0:No	1:Yes	"BOOL"	1
Expert	846	1523	Max grid feeding current	Aac	10	0	50	FLOAT	0.2
Expert	848	1524	Battery voltage target for forced grid feeding	Vdc	48	37.9	72	FLOAT	0.1
Expert	850	1525	Forced grid feeding start time	Minutes	1200=20:00	0=00:00	1440=24:00	"HOUR"	1
Expert	852	1526	Forced grid feeding stop time	Minutes	1200=20:00	0=00:00	1440=24:00	"HOUR"	1
Inst.	1020	1610	Use of the defined phase shift curve for injection		0:No	0:No	1:Yes	"BOOL"	1
Inst.	1044	1622	Cos phi at P = 0%		0: Cos phi 1	-0.1: Inductive 0.90	+0.1: Capacitive 0.90	FLOAT	0.01
Inst.	1046	1623	Cos phi at the power defined by param {1613}		0: Cos phi 1	-0.1: Inductive 0.90	+0.1: Capacitive 0.90	FLOAT	0.01
Inst.	1026	1613	Power of the second cos phi point in % of Pnom	%	50	20	85	FLOAT	5
Inst.	1048	1624	Cos phi at P = 100%		+0.1: Capacitive 0.90	-0.1: Inductive 0.90	+0.1: Capacitive 0.90	FLOAT	0.01
Inst.	1054	1627	ARN4105 frequency control enabled		0:No	0:No	1:Yes	"BOOL"	1
Inst.	1060	1630	Delta from user frequency to start derating	Hz	1	0	3.9	FLOAT	0.1
Inst.	1062	1631	Delta from user frequency to reach 100% derating	Hz	2	0	3.9	FLOAT	0.1
QSP	922	1561	Correction for XTS saturation Reg U		0	-300	300	FLOAT	1
QSP	924	1562	Correction for XTS saturation Reg I		0	-300	300	FLOAT	1
QSP	1096	1648	Imagnet INT level adjustment for correction		0	-300	300	FLOAT	1
QSP	1098	1649	Imagnet ERROR level adjustment for correction		0	-300	300	FLOAT	1

The cos phi parameter range goes from -0.1 (Inductive 0.9) to +0.1 (Capacitive 0.9) by 0.01 steps.

### 1.3 Xtender infos

Modbus register	Nr	Xtender information description	Short desc.	Unit on the RCC	Unit	Format	Related parameter or description
0	3000	Battery voltage	Ubat	Vdc	V	FLOAT	
2	3001	Battery temperature	Tbat	°C	°C no sensor : return ~32767 °C	FLOAT	Value given by the external battery temperature sensor BTS-01

Modbus register	Nr	Xtender information description	Short desc.	Unit on the RCC	Unit	Format	Related parameter or description
4	3002	Temperature compensation of battery voltage	Comp°C	Ctmp	Ctmp	FLOAT	
6	3003	Dynamic compensation of battery voltage	Comp P	Cdyn	Cdyn	FLOAT	
8	3004	Wanted battery charge current	Ibat	Ausr	A	FLOAT	
10	3005	Battery charge current	Ibat (m)	Adc	A	FLOAT	
12	3006	Battery voltage ripple	Ubat ond	Vrip	V	FLOAT	
14	3007	State of charge	SOC	%	%	FLOAT	
16	3008	Low Voltage Disconnect	LVD	LVD	V	FLOAT	
20	3010	Battery cycle phase	Phase		0:Invalid value 1:Bulk 2:Absorpt. 3:Equalise 4:Floating 5:R.float. 6:Per.abs. 7:Mixing 8:Forming	"ENUM"	See parameter {1137}
22	3011	Input voltage	U in	Vac	V	FLOAT	See parameter {1197}
24	3012	Input current	I in	Aac	A	FLOAT	
26	3013	Input power	P in	kVA	kVA	FLOAT	Less accurate than info 3138
34	3017	Input limit value	I Limit Val	ILim	A	FLOAT	
36	3018	Input limite reached	P sharing		0:Off 1:On	"ENUM"	L*, see parameter {1107}
38	3019	Boost active	Boost		0:Off 1:On	"ENUM"	B*, see parameter {1126}
40	3020	State of transfer relay	Transfert		0:Opened 1:Closed	"ENUM"	
42	3021	Output voltage	U out	Vac	V	FLOAT	See parameter {1286}
44	3022	Output current	I out	Aac	A	FLOAT	
46	3023	Output power	P out	kVA	kVA	FLOAT	Less accurate than info 3139
56	3028	Operating state	Mode		0:Invalid value 1:Inverter 2:Charger 3:Boost 4:Injection	"ENUM"	Give the current working mode of the inverter. See {1107} for Boost, {1522} for Injection (grid-feeding), charger and inverter mode are oblivious. Only in CSV file, the value 6 indicate that the xtender is off.
60	3030	State of output relay	Rel out		0:Opened 1:Closed	"ENUM"	

Modbus register	Nr	Xtender information description	Short desc.	Unit on the RCC	Unit	Format	Related parameter or description
62	3031	State of auxiliary relay 1	Aux 1		0:Opened 1:Closed	"ENUM"	See parameter {1201}
64	3032	State of auxiliary relay 2	Aux 2		0:Opened 1:Closed	"ENUM"	See parameter {1201}
90	3045	Nbr. of overloads	n ovld			FLOAT	
92	3046	Nbr. overtemperature	n ovtmp			FLOAT	
94	3047	Nbr. batterie overvoltage	n ovvolt			FLOAT	
98	3049	State of the inverter	XT state		0:Off 1:On	"ENUM"	
100	3050	Number of battery elements	Bat cells			FLOAT	
102	3051	Search mode state	SB state		0:Off 1:On	"ENUM"	See parameter {1187}
108	3054	Relay aux 1 mode	Aux 1		0:Invalid value 1:A 2:I 3:M 4:M 5:G	"ENUM"	0: Invalid value 1: Automatic 2: Reversed automatic 3: Manual ON 4: Manual OFF 5: Coupled for generator start
110	3055	Relay aux 2 mode	Aux 2		0:Invalid value 1:A 2:I 3:M 4:M 5:G	"ENUM"	See info (3055)
112	3056	Lockings flag	Lockings			FLOAT	Bit 0: forbidden inverter {1124} Bit 1: forbidden charger {1125} Bit 2: forbidden boost {1126} Bit 3: forbidden transfert {1128} Bit 4: forbidden injection {1127} Bit 8: forbidden multi {1461} Bit 9: multi independants allowed {1462} Bit 10: standy slave allowed {1547}
148	3074	State of the ground relay	Rel_gnd		0:Opened 1:Closed	"ENUM"	
150	3075	State of the neutral transfer relay	Rel_neutral		0:Opened 1:Closed	"ENUM"	

Modbus register	Nr	Xtender information description	Short desc.	Unit on the RCC	Unit	Format	Related parameter or description
152	3076	Discharge of battery of the previous day	E out YD	kWh	kWh	FLOAT	
156	3078	Discharge of battery of the current day	E out Day	kWh	kWh	FLOAT	
160	3080	Energy AC-In from the previous day	Eac in YD	kWh	kWh	FLOAT	
162	3081	Energy AC-In from the current day	Eac in Day	kWh	kWh	FLOAT	
164	3082	Consumers energy of the previous day	Eac out YD	kWh	kWh	FLOAT	
166	3083	Consumers energy of the current day	Eac out Dy	kWh	kWh	FLOAT	
168	3084	Input frequency	F in	Hz	Hz	FLOAT	Replace info 3014
170	3085	Output frequency	F out	Hz	Hz	FLOAT	Replace info 3024
172	3086	Remote entry state	RME		0:RM EN 0 1:RM EN 1	"ENUM"	
174	3087	Output active power	Pout a	W	W	FLOAT	Less accurate than info 3136
176	3088	Input active power	P in a	W	W	FLOAT	Less accurate than info 3137
178	3089	Defined phase				FLOAT	1=L1, 2=L2, 4=L3
180	3090	Battery voltage (minute min)	Ubat-	Vdc	V	FLOAT	1 minute minimum
182	3091	Battery voltage (minute max)	Ubat+	Vdc	V	FLOAT	1 minute maximum
184	3092	Battery voltage (minute avg)	Ubat	Vdc	V	FLOAT	1 minute average
186	3093	Battery charge current (minute min)	Ibat-	Adc	A	FLOAT	1 minute minimum
188	3094	Battery charge current (minute max)	Ibat+	Adc	A	FLOAT	1 minute maximum
190	3095	Battery charge current (minute avg)	Ibat	Adc	A	FLOAT	1 minute average
192	3096	Output power min (minute min)	Pout-	kVA	kVA	FLOAT	1 minute minimum
194	3097	Output power (minute max)	Pout+	kVA	kVA	FLOAT	1 minute maximum
196	3098	Output power (minute avg)	Pout	kVA	kVA	FLOAT	1 minute average
198	3099	Output active power (minute min)	Pout-a	kW	kW	FLOAT	1 minute minimum
200	3100	Output active power (minute max)	Pout+a	kW	kW	FLOAT	1 minute maximum
202	3101	Output active power (minute avg)	Pout a	kW	kW	FLOAT	1 minute average
204	3102	Electronic temperature 1 (minute min)	Dev1-	°C	°C	FLOAT	1 minute minimum
206	3103	Electronic temperature 1 (minute max)	Dev1+	°C	°C	FLOAT	1 minute maximum
208	3104	Electronic temperature 1 (minute avg)	Dev1	°C	°C	FLOAT	1 minute average
210	3105	Electronic temperature 2 (minute min)	Dev2-	°C	°C	FLOAT	1 minute minimum
212	3106	Electronic temperature 2 (minute max)	Dev2+	°C	°C	FLOAT	1 minute maximum
214	3107	Electronic temperature 2 (minute avg)	Dev2	°C	°C	FLOAT	1 minute average
216	3108	Output frequency (minute min)	Fout-	Hz	Hz	FLOAT	1 minute minimum
218	3109	Output frequency (minute max)	Fout+	Hz	Hz	FLOAT	1 minute maximum
220	3110	Output frequency (minute avg)	Fout	Hz	Hz	FLOAT	1 minute average
222	3111	Input voltage (minute min)	Uin-	Vac	V	FLOAT	1 minute minimum

Modbus register	Nr	Xtender information description	Short desc.	Unit on the RCC	Unit	Format	Related parameter or description
224	3112	Input voltage (minute max)	Uin+	Vac	V	FLOAT	1 minute maximum
226	3113	Input voltage (minute avg)	Uin	Vac	V	FLOAT	1 minute average
228	3114	Input current (minute min)	Iin-	Aac	A	FLOAT	1 minute minimum
230	3115	Input current (minute max)	Iin+	Aac	A	FLOAT	1 minute maximum
232	3116	Input current (minute avg)	Iin	Aac	A	FLOAT	1 minute average
234	3117	Input active power (minute min)	Pin-a	kW	kW	FLOAT	1 minute minimum
236	3118	Input active power (minute max)	Pin+a	kW	kW	FLOAT	1 minute maximum
238	3119	Input active power (minute avg)	Pin a	kW	kW	FLOAT	1 minute average
240	3120	Input frequency (minute min)	Fin-	Hz	Hz	FLOAT	1 minute minimum
242	3121	Input frequency (minute max)	Fin+	Hz	Hz	FLOAT	1 minute maximum
244	3122	Input frequency (minute avg)	Fin	Hz	Hz	FLOAT	1 minute average
248	3124	ID type	Idt			FLOAT	XTH family = 1, XTM family = 256 et XTS family = 512
250	3125	ID Power	Power	VA	VA	FLOAT	
252	3126	ID Uout	Uout	Vac	V	FLOAT	
254	3127	ID batt voltage	Idv	Vdc	V	FLOAT	
256	3128	ID Iout nom	Ionom	Aac	A	FLOAT	
258	3129	ID HW	HW			FLOAT	
260	3130	ID SOFT msb	Smsb			FLOAT	See section "Software version encoding"
262	3131	ID SOFT lsb	Slsb			FLOAT	See section "Software version encoding"
264	3132	ID HW PWR	HWpwr			FLOAT	
266	3133	Parameter number (in code)	pCod			FLOAT	
268	3134	Info user number	iCod			FLOAT	
270	3135	ID SID	SID			FLOAT	
272	3136	Output active power	P out a	kW	kW	FLOAT	More accurate than info 3087
274	3137	Input active power	P in a	kW	kW	FLOAT	More accurate than info 3088
276	3138	Input power	P in	kVA	kVA	FLOAT	More accurate than info 3013
278	3139	Output power	P out	kVA	kVA	FLOAT	More accurate than info 3023
280	3140	System debug 1	DBG1			FLOAT	
282	3141	System debug 2	DBG2			FLOAT	
284	3142	System state machine	SSM			FLOAT	
308	3154	Input frequency	F in	Hz	Hz	FLOAT	
310	3155	Desired AC injection current	Injc	Aac	A	FLOAT	
312	3156	ID FID msb				FLOAT	See section "FID encoding"
314	3157	ID FID lsb				FLOAT	See section "FID encoding"

Modbus register	Nr	Xtender information description	Short desc.	Unit on the RCC	Unit	Format	Related parameter or description
316	3158	Actual freezed current in ARN4105 P(f)		Aac		FLOAT	ARN4105, maximum current that can be injected actually, grid frequency dependance
318	3159	AC injection current, type of limitation ARN4105 P(f)	Injt		0:No limit 1:FreezeOF 2:N_ImaxOF 3:FreezeUF 4:N_ImaxUF 5:N_ImaxST	"ENUM"	ARN4105, current limitation depending on grid frequency : 0 : no limitation 1 : Value was frozen, grid frequency is >= 50.2Hz 2 : Value not frozen but not at maximum, grid frequency is < 50.2Hz 3 : Value was frozen, grid frequency is <=49.8Hz 4 : Value not frozen but not at maximum, grid frequency is >49.8Hz 5 : Value not frozen but not at maximum, grid reconnection
320	3160	Source of limitation of the functions charger or injector	LimSrc		0:Invalid value 1:Ubatt 2:Ubattp 3:Ubatpp 4:Ibatt 5:Pchar 6:UbatInj 7:linj 8:Imax 9:Ilim 10:Ithermal 11:PchNeg 12:ARN f	"ENUM"	Limitation source is : 0: Invalid value 1: U batt (actual phase of charge cycle) 2: U batt peak 3: U batt peak peak 4: I batt ({1138}) 5: P charger 6: U batt injection 7: I injection ({1523}) 8: I max 9: I input limit ({1107}) 10 : I thermal 11 : Pcharger only neg ACout 12 : Charger limited by grid frequency
322	3161	Battery priority active	batPr		0:Off 1:On	"ENUM"	Target voltage for charge/inject is battery priorty (displayed on RCC with "BP") (Only v1.6.x)
324	3162	Forced grid feeding active	InjFo		0:Off 1:On	"ENUM"	Target voltage for charge/inject is forced injection (displayed on RCC with "IF") (Only v1.6.x)
328	3164	Battery voltage target for charger/injection		Vdc		FLOAT	DC voltage référence for charge and injection stage. Higher battery voltage can result in injection and lower battery voltage can result in battery charge if allowed.
330	3165	Allowed charge current in limited charger mode		Aac		FLOAT	AC max current allowed for charging stage to ensure power from Acout.
332	3166	Current on converter output stage DC/AC		Aac		FLOAT	
334	3167	Voltage on converter output stage DC/AC		Vac		FLOAT	

Modbus register	Nr	Xtender information description	Short desc.	Unit on the RCC	Unit	Format	Related parameter or description
336	3168	Over temperature state	OvTempS		0:No Error 1:TR.Alarm 2:TR.Error 3:EL.Error 4:EL.Stop	"ENUM"	Thermal state : 0 = thermal OK 1 = Transformer alarm 2 = Transformer error 4 = Electronique error 8 = Electronique error halted
338	3169	AC injection current limit ARN4105 P(f)	Injm	Aac		FLOAT	Acctual current limit in ARN4105 P(f)

## 1.4 BSP parameters

Level	Modbus register	Nr	BSP parameter description	Unit	Default	Min	Max	Format	Increment
Basic	0	6000	BASIC SETTINGS (BSP)					"MENU"	
Basic	114	6057	Voltage of the system		1:Automatic	1:Automatic	8:48V	"ENUM"	Only 1 bit 1:Automatic 2:12V 4:24V 8:48V
Basic	2	6001	Nominal capacity	Ah	110	20	20000	FLOAT	10
Basic	4	6002	Nominal discharge duration (C-rating)	h	20	1	100	FLOAT	1
Basic	34	6017	Nominal shunt current	A	500	10	10000	FLOAT	10
Basic	36	6018	Nominal shunt voltage	mV	50	10	200	FLOAT	10
Expert	6	6003	Reset of battery history		S	S	S	"SIGNAL"	
Basic	8	6004	Restore default settings		S	S	S	"SIGNAL"	
Inst.	10	6005	Restore factory settings		S	S	S	"SIGNAL"	
Expert	32	6016	ADVANCED SETTINGS (BSP)					"MENU"	
Expert	62	6031	Reset of user counters		S	S	S	"SIGNAL"	
Expert	110	6055	Manufacturer SOC for 0% displayed	%	30	0	60	FLOAT	5
Expert	112	6056	Manufacturer SOC for 100% displayed	%	100	80	100	FLOAT	5
Expert	84	6042	Activate the end of charge synchronization		0:No	0:No	1:Yes	"BOOL"	1
Expert	48	6024	End of charge voltage level	V	52.8	31.9	70.1	FLOAT	0.1
Expert	50	6025	End of charge current level	%cap	2	0	500	FLOAT	1



Level	Modbus register	Nr	BSP parameter description	Unit	Default	Min	Max	Format	Increment
Expert	130	6065	Minimum duration before end of charge	min	5	5	300	FLOAT	5
Expert	96	6048	Temperature correction of the end of charge voltage	mV/°C/cell	0	-8	0	FLOAT	1
Expert	88	6044	Activate the state of charge correction by the open circuit voltage		1:Yes	0:No	1:Yes	"BOOL"	1
Expert	116	6058	Battery charge current centralized regulation activated		0:No	0:No	1:Yes	"BOOL"	1
Expert	118	6059	Max battery charge current	A	60	0	10000	FLOAT	10
Expert	38	6019	Self-discharge rate	%/month	3	0	25	FLOAT	0.1
Expert	40	6020	Nominal temperature	°C	20	0	40	FLOAT	1
Expert	42	6021	Temperature coefficient	%cap/°C	0.5	0	3	FLOAT	0.0999756
Expert	44	6022	Charge efficiency factor	%	90	50	100	FLOAT	1
Expert	46	6023	Peukert's exponent		1.2	1	1.5	FLOAT	0.0100098
Expert	98	6049	Use C20 Capacity as reference value		1:Yes	0:No	1:Yes	"BOOL"	1

## 1.5 BSP infos

Modbus register	Nr	BSP information description	Short desc.	Unit on the RCC	Unit	Format	Related parameter or description
0	7000	Battery voltage	Ubat	Vdc	V	FLOAT	
2	7001	Battery current	Ibat	Adc	Adc	FLOAT	
4	7002	State of Charge	SOC	%	%	FLOAT	
6	7003	Power	Pbat	W	W	FLOAT	
8	7004	Remaining autonomy	Trem		minutes	FLOAT	in discharge, number of minutes before 0 % between -60000 and 0, in charge, always NAN
12	7006	Relative capacity	Crel	%	%	FLOAT	deprecated, return 100 % in version >= 1.5.6
14	7007	Ah charged today	0d<	Ah	Ah	FLOAT	
16	7008	Ah discharged today	0d>	Ah	Ah	FLOAT	
18	7009	Ah charged yesterday	-1d<	Ah	Ah	FLOAT	
20	7010	Ah discharged yesterday	-1d>	Ah	Ah	FLOAT	
22	7011	Total Ah charged	tot<	kAh	kAh	FLOAT	
24	7012	Total Ah discharged	tot>	kAh	kAh	FLOAT	
26	7013	Total time	Ttot	days	days	FLOAT	
34	7017	Custom charge Ah counter	cus<	Ah	Ah	FLOAT	
36	7018	Custom discharge Ah counter	cus>	Ah	Ah	FLOAT	

Modbus register	Nr	BSP information description	Short desc.	Unit on the RCC	Unit	Format	Related parameter or description
38	7019	Custom counter duration	Tcus	h	h	FLOAT	
58	7029	Battery temperature	Tbat	°C	°C	FLOAT	
60	7030	Battery voltage (minute avg)	Ubat	Vdc	V	FLOAT	
62	7031	Battery current (minute avg)	Ibat	Adc	Adc	FLOAT	
64	7032	State of Charge (minute avg)	SOC	%	%	FLOAT	
66	7033	Battery temperature (minute avg)	Tbat	°C	°C	FLOAT	
68	7034	ID type	Idt			FLOAT	BSP500 and BSP1200 = 10241d (0x2801)
70	7035	ID batt voltage	Idv	Vdc	V	FLOAT	
72	7036	ID HW	HW			FLOAT	
74	7037	ID SOFT msb	Smsb			FLOAT	See section "Software version encoding"
76	7038	ID SOFT lsb	Slsb			FLOAT	See section "Software version encoding"
78	7039	Parameter number (in code)	pCod			FLOAT	
80	7040	Info user number	iCod			FLOAT	
82	7041	ID SID	SID			FLOAT	
94	7047	Manufacturer State of Charge	mSOC	%	%	FLOAT	
96	7048	ID FID msb				FLOAT	See section "FID encoding"
98	7049	ID FID lsb				FLOAT	See section "FID encoding"
118	7059	Local daily communication error counter (CAN)	locE			FLOAT	
120	7060	Number of parameters (in flash)	pFsh			FLOAT	

## 1.6 Xcom-CAN BMS parameters

Level	Modbus register	Nr	Xcom-CAN parameter description	Unit	Default	Min	Max	Format	Increment
Basic	120	6060	<b>BASIC SETTINGS (Xcom-CAN BMS)</b>					"MENU"	
Basic	8	6004	Restore default settings		S	S	S	"SIGNAL"	
Inst.	10	6005	Restore factory settings		S	S	S	"SIGNAL"	
Expert	122	6061	<b>ADVANCED SETTINGS (Xcom-CAN BMS)</b>					"MENU"	
Expert	140	6070	SOC level under which battery discharge is stopped	%	5	0	100	FLOAT	1
Expert	124	6062	SOC level for backup	%	100	0	100	FLOAT	1
Expert	126	6063	SOC level for grid feeding	%	100	0	100	FLOAT	1
Expert	142	6071	Use battery priority as energy source when SOC >= SOC for backup (not recommended in parallel)		1:Yes	0:No	1:Yes	"BOOL"	1

Level	Modbus register	Nr	Xcom-CAN parameter description	Unit	Default	Min	Max	Format	Increment
Expert	136	6068	Allow user to define the maximum charge current of the battery		0:No	0:No	1:Yes	"BOOL"	1
Expert	138	6069	Maximum charge current defined by user	A	10	0	10000	FLOAT	1
Expert	132	6066	Manufacturer SOC for 0% displayed	%	0	0	60	FLOAT	5
Expert	134	6067	Manufacturer SOC for 100% displayed	%	100	80	100	FLOAT	5
Expert	128	6064	Use battery current limits instead of recommended values		0:No	0:No	1:Yes	"BOOL"	1
Expert	144	6072	Solar Inverter connected on AC-Out		0:No	0:No	1:Yes	"BOOL"	1
Expert	146	6073	Delta from user frequency to start derating of solar inverter	Hz	1	0	5	FLOAT	0.1
Expert	148	6074	Delta from user frequency to reach 100% derating of solar inverter	Hz	2.7	0	5	FLOAT	0.1

## 1.7 Xcom-CAN BMS infos

Modbus register	Nr	Xcom-CAN information description	Short desc.	Unit on the RCC	Unit	Format	Related parameter or description
0	7000	Battery voltage	Ubat	Vdc	V	FLOAT	
2	7001	Battery current	Ibat	Adc	Adc	FLOAT	
4	7002	State of Charge	SOC	%	%	FLOAT	
6	7003	Power	Pbat	W	W	FLOAT	
14	7007	Ah charged today	0d<	Ah	Ah	FLOAT	
16	7008	Ah discharged today	0d>	Ah	Ah	FLOAT	
18	7009	Ah charged yesterday	-1d<	Ah	Ah	FLOAT	
20	7010	Ah discharged yesterday	-1d>	Ah	Ah	FLOAT	
58	7029	Battery temperature	Tbat	°C	°C	FLOAT	
60	7030	Battery voltage (minute avg)	Ubat	Vdc	V	FLOAT	
62	7031	Battery current (minute avg)	Ibat	Adc	Adc	FLOAT	
64	7032	State of Charge (minute avg)	SOC	%	%	FLOAT	
66	7033	Battery temperature (minute avg)	Tbat	°C	°C	FLOAT	
94	7047	Manufacturer State of Charge	mSOC	%	%	FLOAT	
110	7055	Battery Capacity	bCap	Ah	Ah	FLOAT	
114	7057	State Of Health	SOH	%		FLOAT	
116	7058	High resolution manufacturer State of Charge	hSOC	%		FLOAT	
122	7061	Charge voltage limit	UChL	Vdc	V	FLOAT	
124	7062	Discharge voltage limit	UDiL	Vdc	V	FLOAT	

Modbus register	Nr	Xcom-CAN information description	Short desc.	Unit on the RCC	Unit	Format	Related parameter or description
126	7063	Charge current limit	ICHL	Adc	A	FLOAT	
128	7064	Discharge current limit	IDiL	Adc	A	FLOAT	
130	7065	Recommended charge current	ICHR	Adc	A	FLOAT	
132	7066	Recommended discharge current	IDiR	Adc	A	FLOAT	
134	7067	Manufacturer name	name		0:OTHERS 1:BYD 2:PYLON 3:WECO	"ENUM"	

## 1.8 VarioTrack parameters

Level	Modbus register	Nr	VarioTrack parameter description	Unit	Default	Min	Max	Format	Increment
Basic	0	10000	<b>BASIC SETTINGS</b>					"MENU"	
Expert	108	10054	Block manual programming (dip-switch)		0:No	0:No	1:Yes	"BOOL"	1
Basic	2	10001	Voltage of the system		1:Automatic	1:Automatic	8:48V	"ENUM"	Only 1 bit 1:Automatic 2:12V 4:24V 8:48V
Basic	74	10037	Synchronisation battery cycle with Xtender		1:Yes	0:No	1:Yes	"BOOL"	1
Basic	10	10005	Floating voltage	Vdc	54.4	37.9	68.2	FLOAT	0.1
Basic	18	10009	Absorption voltage	Vdc	57.6	37.9	68.2	FLOAT	0.1
Basic	34	10017	Equalization allowed		0:No	0:No	1:Yes	"BOOL"	1
Basic	42	10021	Equalization voltage	Vdc	62.4	52.1	68.2	FLOAT	0.1
Basic	112	10056	Restore default settings		S	S	S	"SIGNAL"	
Inst.	114	10057	Restore factory settings		S	S	S	"SIGNAL"	
Expert	6	10003	<b>BATTERY MANAGEMENT AND CYCLE</b>					"MENU"	
Basic	74	10037	Synchronisation battery cycle with Xtender		1:Yes	0:No	1:Yes	"BOOL"	1
Expert	4	10002	Battery charge current	Adc	80	0	80	FLOAT	2
Expert	668	10334	Battery undervoltage	Vdc	40	34	68.2	FLOAT	0.1
Expert	72	10036	Temperature compensation	mV/°C/cell	-3	-8	0	FLOAT	1
Expert	8	10004	Floating phase					"MENU"	

Level	Modbus register	Nr	VarioTrack parameter description	Unit	Default	Min	Max	Format	Increment
Basic	10	10005	Floating voltage	Vdc	54.4	37.9	68.2	FLOAT	0.1
Expert	12	10006	Force phase of floating		S	S	S	"SIGNAL"	
<b>Expert</b>	<b>14</b>	<b>10007</b>	Absorption phase					"MENU"	
Expert	16	10008	Absorption phase allowed		1:Yes	0:No	1:Yes	"BOOL"	1
Basic	18	10009	Absorption voltage	Vdc	57.6	37.9	68.2	FLOAT	0.1
Expert	20	10010	Force absorption phase		S	S	S	"SIGNAL"	
Expert	22	10011	Absorption duration	min	120	5	510	FLOAT	5
Expert	24	10012	End of absorption triggered by the current		0:No	0:No	1:Yes	"BOOL"	1
Expert	26	10013	Current threshold to end absorption phase	Adc	10	2	80	FLOAT	2
<b>Expert</b>	<b>32</b>	<b>10016</b>	Equalization phase					"MENU"	
Basic	34	10017	Equalization allowed		0:No	0:No	1:Yes	"BOOL"	1
Expert	36	10018	Force equalization		S	S	S	"SIGNAL"	
Basic	42	10021	Equalization voltage	Vdc	62.4	52.1	68.2	FLOAT	0.1
Expert	40	10020	Equalization current	Adc	80	2	80	FLOAT	2
Expert	44	10022	Equalization duration	min	30	5	510	FLOAT	5
Expert	104	10052	Equalization with fixed interval		1:Yes	0:No	1:Yes	"BOOL"	1
Expert	50	10025	Days between equalizations	days	26	1	365	FLOAT	1
Expert	52	10026	End of equalization triggered by the current		0:No	0:No	1:Yes	"BOOL"	1
Expert	54	10027	Current threshold to end equalization phase	Adc	10	4	30	FLOAT	1
Expert	38	10019	Equalization before absorption phase		1:Yes	0:No	1:Yes	"BOOL"	1
<b>Expert</b>	<b>56</b>	<b>10028</b>	New cycle					"MENU"	
Expert	58	10029	Force a new cycle		S	S	S	"SIGNAL"	
Expert	60	10030	Voltage level 1 to start a new cycle	Vdc	48.8	37.9	68.2	FLOAT	0.1
Expert	62	10031	Time period under voltage level 1 to start a new cycle	min	30	0	240	FLOAT	1
Expert	64	10032	Voltage level 2 to start a new cycle	Vdc	47.2	37.9	68.2	FLOAT	0.1
Expert	66	10033	Time period under voltage level 2 to start a new cycle	min	2	0	240	FLOAT	1
Expert	68	10034	Cycling restricted		1:Yes	0:No	1:Yes	"BOOL"	1
Expert	70	10035	Minimal delay between cycles	hours	1	0	540	FLOAT	1
Expert	170	10085	Battery overvoltage level	Vdc	68.2	37.9	68.2	FLOAT	0.1
Expert	172	10086	Restart voltage level after a battery overvoltage	Vdc	64.8	37.9	68.2	FLOAT	0.1
<b>Expert</b>	<b>76</b>	<b>10038</b>	<b>SYSTEM</b>					"MENU"	

Level	Modbus register	Nr	VarioTrack parameter description	Unit	Default	Min	Max	Format	Increment
Expert	108	10054	Block manual programming (dip-switch)		0:No	0:No	1:Yes	"BOOL"	1
Expert	120	10060	Check Earthing		1:No control	1:No control	8:Floating battery	"ENUM"	Only 1 bit 1:No control 2:Neg bat pole earth 4:Pos bat pole earth 8:Floating battery
Inst.	174	10087	Disabling of the display button		0:No	0:No	1:Yes	"BOOL"	1
Expert	624	10312	Remote entry (Remote ON/OFF)					"MENU"	
Expert	626	10313	Remote entry active		2:Open	1:Closed	4:Edge	"ENUM"	Only 1 bit 1:Closed 2:Open 4:Edge
Expert	628	10314	ON/OFF command		0:No	0:No	1:Yes	"BOOL"	1
Expert	630	10315	Activated by AUX1 state		0:No	0:No	1:Yes	"BOOL"	1
Expert	632	10316	Start equalization		0:No	0:No	1:Yes	"BOOL"	1
Expert	634	10317	Send a message when remote entry changes state		0:No	0:No	1:Yes	"BOOL"	1
Expert	150	10075	Type of MPP tracking		1:P&O	1:P&O	4:Upv fixed	"ENUM"	Only 1 bit 1:P&O 2:OC ratio 4:Upv fixed
Expert	106	10053	Open circuit ratio -> MPP	%	80	1	99	FLOAT	1
Expert	206	10103	PV voltage fixed -> MPP	Vdc	70	0	145	FLOAT	1
QSP	670	10335	Partial shading check		0:No	0:No	1:Yes	"BOOL"	1
QSP	672	10336	Time between checks	min	5	1	30	FLOAT	1
Inst.	684	10342	VarioTrack watchdog enabled (SCOM)		0:No	0:No	1:Yes	"BOOL"	1
Inst.	686	10343	VarioTrack watchdog delay (SCOM)	sec	60	10	300	FLOAT	10
Expert	400	10200	Reset PV energy meter		S	S	S	"SIGNAL"	
QSP	402	10201	Reset total produced PV energy meter		S	S	S	"SIGNAL"	
Expert	86	10043	Reset daily solar production meters		S	S	S	"SIGNAL"	
Expert	88	10044	Reset daily min-max		S	S	S	"SIGNAL"	
Basic	112	10056	Restore default settings		S	S	S	"SIGNAL"	
Inst.	114	10057	Restore factory settings		S	S	S	"SIGNAL"	
Inst.	116	10058	Parameters saved in flash memory		1:Yes	0:No	1:Yes	"BOOL"	1

Level	Modbus register	Nr	VarioTrack parameter description	Unit	Default	Min	Max	Format	Increment
Expert	78	10039	ON of the VarioTrack		S	S	S	"SIGNAL"	
Expert	80	10040	OFF of the VarioTrack		S	S	S	"SIGNAL"	
Expert	102	10051	Reset of all VarioTrack		S	S	S	"SIGNAL"	
<b>Expert</b>	<b>176</b>	<b>10088</b>	<b>AUXILIARY CONTACT 1</b>					"MENU"	
Expert	178	10089	Operating mode (AUX 1)		1:Automatic	1:Automatic	8:Manual OFF	"ENUM"	Only 1 bit 1:Automatic 2:Reversed automatic 4:Manual ON 8:Manual OFF
Expert	180	10090	Combination of the events for the auxiliary contact (AUX 1)		0:Any (Function OR)	0:Any (Function OR)	1:All (Function AND)	"ENUM"	Only 1 bit 0:Any (Function OR) 1:All (Function AND)
<b>Expert</b>	<b>184</b>	<b>10092</b>	Contact activated in night mode (AUX 1)					"MENU"	
Expert	186	10093	Activated in night mode (AUX 1)		0:No	0:No	1:Yes	"BOOL"	1
Expert	188	10094	Delay of activation after entering night mode (AUX 1)	min	1	0	1440	FLOAT	1
Expert	190	10095	Activation time for the auxiliary relay in night mode (AUX 1)	min	1	0	1440	FLOAT	1
<b>Expert</b>	<b>636</b>	<b>10318</b>	Contact active with a fixed time schedule (AUX 1)					"MENU"	
Expert	638	10319	Contact activated with fixed time schedule (AUX 1)		0:No	0:No	1:Yes	"BOOL"	1
Expert	640	10320	Start hour (AUX 1)	Minutes	420=07:00	0=00:00	1440=24:00	"HOUR"	1
Expert	642	10321	End hour (AUX 1)	Minutes	1200=20:00	0=00:00	1440=24:00	"HOUR"	1
<b>Expert</b>	<b>192</b>	<b>10096</b>	Contact active on event (AUX 1)					"MENU"	
Expert	396	10198	VarioTrack is ON (AUX 1)		0:No	0:No	1:Yes	"BOOL"	1
Expert	182	10091	VarioTrack is OFF (AUX 1)		0:No	0:No	1:Yes	"BOOL"	1
Expert	616	10308	Remote entry (AUX 1)		0:No	0:No	1:Yes	"BOOL"	1
Expert	194	10097	Battery undervoltage (AUX 1)		0:No	0:No	1:Yes	"BOOL"	1
Expert	196	10098	Battery overvoltage (AUX 1)		0:No	0:No	1:Yes	"BOOL"	1
Expert	198	10099	Earth fault (AUX 1)		0:No	0:No	1:Yes	"BOOL"	1
Expert	200	10100	PV error (48h without charge) (AUX 1)		0:No	0:No	1:Yes	"BOOL"	1
Expert	204	10102	Overtemperature (AUX 1)		0:No	0:No	1:Yes	"BOOL"	1
Expert	208	10104	Bulk charge phase (AUX 1)		0:No	0:No	1:Yes	"BOOL"	1
Expert	210	10105	Absorption phase (AUX 1)		0:No	0:No	1:Yes	"BOOL"	1
Expert	212	10106	Equalization phase (AUX 1)		0:No	0:No	1:Yes	"BOOL"	1

Level	Modbus register	Nr	VarioTrack parameter description	Unit	Default	Min	Max	Format	Increment
Expert	214	10107	Floating (AUX 1)		0:No	0:No	1:Yes	"BOOL"	1
Expert	216	10108	Reduced floating (AUX 1)		0:No	0:No	1:Yes	"BOOL"	1
Expert	218	10109	Periodic absorption (AUX 1)		0:No	0:No	1:Yes	"BOOL"	1
<b>Expert</b>	<b>220</b>	<b>10110</b>	Contact active according to battery voltage (AUX 1)					"MENU"	
Expert	222	10111	Battery voltage 1 activate (AUX 1)		0:No	0:No	1:Yes	"BOOL"	1
Expert	224	10112	Battery voltage 1 (AUX 1)	Vdc	46.8	36	72	FLOAT	0.1
Expert	226	10113	Delay 1 (AUX 1)	min	1	0	60	FLOAT	1
Expert	228	10114	Battery voltage 2 activate (AUX 1)		0:No	0:No	1:Yes	"BOOL"	1
Expert	230	10115	Battery voltage 2 (AUX 1)	Vdc	47.8	36	72	FLOAT	0.1
Expert	232	10116	Delay 2 (AUX 1)	min	10	0	60	FLOAT	1
Expert	234	10117	Battery voltage 3 activate (AUX 1)		0:No	0:No	1:Yes	"BOOL"	1
Expert	236	10118	Battery voltage 3 (AUX 1)	Vdc	48.5	36	72	FLOAT	0.1
Expert	238	10119	Delay 3 (AUX 1)	min	60	0	60	FLOAT	1
Expert	240	10120	Battery voltage to deactivate (AUX 1)	Vdc	54	36	72	FLOAT	0.1
Expert	242	10121	Delay to deactivate (AUX 1)	min	60	0	480	FLOAT	5
Expert	244	10122	Deactivate if battery in floating phase (AUX 1)		0:No	0:No	1:Yes	"BOOL"	1
<b>Expert</b>	<b>246</b>	<b>10123</b>	Contact active according to battery temperature (AUX 1) With BSP or BTS					"MENU"	
Expert	248	10124	Contact activated with the temperature of battery (AUX 1)		0:No	0:No	1:Yes	"BOOL"	1
Expert	250	10125	Contact activated over (AUX 1)	°C	3	-10	50	FLOAT	1
Expert	252	10126	Contact deactivated below (AUX 1)	°C	5	-10	50	FLOAT	1
Expert	254	10127	Only activated if the battery is not in bulk phase (AUX 1)		0:No	0:No	1:Yes	"BOOL"	1
<b>Expert</b>	<b>256</b>	<b>10128</b>	Contact active according to SOC (AUX 1) Only with BSP					"MENU"	
Expert	258	10129	Contact activated with the SOC 1 of battery (AUX 1)		0:No	0:No	1:Yes	"BOOL"	1
Expert	260	10130	Contact activated below SOC 1 (AUX 1)	% SOC	50	0	100	FLOAT	5
Expert	262	10131	Delay 1 (AUX 1)	hours	12	0	99	FLOAT	0.25
Expert	264	10132	Contact activated with the SOC 2 of battery (AUX 1)		0:No	0:No	1:Yes	"BOOL"	1
Expert	266	10133	Contact activated below SOC 2 (AUX 1)	%	30	0	100	FLOAT	5
Expert	268	10134	Delay 2 (AUX 1)	hours	0.2	0	99	FLOAT	0.25
Expert	270	10135	Contact activated with the SOC 3 of battery (AUX 1)		0:No	0:No	1:Yes	"BOOL"	1
Expert	272	10136	Contact activated below SOC 3 (AUX 1)	%	20	0	100	FLOAT	5
Expert	274	10137	Delay 3 (AUX 1)	hours	0	0	99	FLOAT	0.25



Level	Modbus register	Nr	VarioTrack parameter description	Unit	Default	Min	Max	Format	Increment
Expert	276	10138	Contact deactivated over SOC (AUX 1)	% SOC	90	0	100	FLOAT	5
Expert	278	10139	Delay to deactivate (AUX 1)	hours	0.2	0	10	FLOAT	0.25
Expert	280	10140	Deactivate if battery in floating phase (AUX 1)		0:No	0:No	1:Yes	"BOOL"	1
Expert	282	10141	Reset all settings (AUX 1)		S	S	S	"SIGNAL"	
<b>Expert</b>	<b>284</b>	<b>10142</b>	<b>AUXILIARY CONTACT 2</b>					"MENU"	
Expert	286	10143	Operating mode (AUX 2)		1:Automatic	1:Automatic	8:Manual OFF	"ENUM"	Only 1 bit 1:Automatic 2:Reversed automatic 4:Manual ON 8:Manual OFF
Expert	288	10144	Combination of the events for the auxiliary contact (AUX 2)		0:Any (Function OR)	0:Any (Function OR)	1:All (Function AND)	"ENUM"	Only 1 bit 0:Any (Function OR) 1:All (Function AND)
<b>Expert</b>	<b>292</b>	<b>10146</b>	Contact activated in night mode (AUX 2)					"MENU"	
Expert	294	10147	Activated in night mode (AUX 2)		0:No	0:No	1:Yes	"BOOL"	1
Expert	296	10148	Delay of activation after entering night mode (AUX 2)	min	1	0	1440	FLOAT	1
Expert	298	10149	Activation time for the auxiliary relay in night mode (AUX 2)	min	1	0	1440	FLOAT	1
<b>Expert</b>	<b>644</b>	<b>10322</b>	Contact active with a fixed time schedule (AUX 2)					"MENU"	
Expert	646	10323	Contact activated with fixed time schedule (AUX 2)		0:No	0:No	1:Yes	"BOOL"	1
Expert	648	10324	Start hour (AUX 2)	Minutes	420=07:00	0=00:00	1440=24:00	"HOUR"	1
Expert	650	10325	End hour (AUX 2)	Minutes	1200=20:00	0=00:00	1440=24:00	"HOUR"	1
<b>Expert</b>	<b>300</b>	<b>10150</b>	Contact active on event (AUX 2)					"MENU"	
Expert	398	10199	VarioTrack is ON (AUX 2)		0:No	0:No	1:Yes	"BOOL"	1
Expert	290	10145	VarioTrack is OFF (AUX 2)		0:No	0:No	1:Yes	"BOOL"	1
Expert	618	10309	Remote entry (AUX 2)		0:No	0:No	1:Yes	"BOOL"	1
Expert	302	10151	Battery undervoltage (AUX 2)		0:No	0:No	1:Yes	"BOOL"	1
Expert	304	10152	Battery overvoltage (AUX 2)		0:No	0:No	1:Yes	"BOOL"	1
Expert	306	10153	Earth fault (AUX 2)		0:No	0:No	1:Yes	"BOOL"	1
Expert	308	10154	PV error (48h without charge) (AUX 2)		0:No	0:No	1:Yes	"BOOL"	1
Expert	312	10156	Overtemperature (AUX 2)		0:No	0:No	1:Yes	"BOOL"	1
Expert	316	10158	Bulk charge phase (AUX 2)		0:No	0:No	1:Yes	"BOOL"	1
Expert	318	10159	Absorption phase (AUX 2)		0:No	0:No	1:Yes	"BOOL"	1

Level	Modbus register	Nr	VarioTrack parameter description	Unit	Default	Min	Max	Format	Increment
Expert	320	10160	Equalization phase (AUX 2)		0:No	0:No	1:Yes	"BOOL"	1
Expert	322	10161	Floating (AUX 2)		0:No	0:No	1:Yes	"BOOL"	1
Expert	324	10162	Reduced floating (AUX 2)		0:No	0:No	1:Yes	"BOOL"	1
Expert	326	10163	Periodic absorption (AUX 2)		0:No	0:No	1:Yes	"BOOL"	1
<b>Expert</b>	<b>328</b>	<b>10164</b>	Contact active according to battery voltage (AUX 2)					"MENU"	
Expert	330	10165	Battery voltage 1 activate (AUX 2)		0:No	0:No	1:Yes	"BOOL"	1
Expert	332	10166	Battery voltage 1 (AUX 2)	Vdc	46.8	36	72	FLOAT	0.1
Expert	334	10167	Delay 1 (AUX 2)	min	1	0	60	FLOAT	1
Expert	336	10168	Battery voltage 2 activate (AUX 2)		0:No	0:No	1:Yes	"BOOL"	1
Expert	338	10169	Battery voltage 2 (AUX 2)	Vdc	47.8	36	72	FLOAT	0.1
Expert	340	10170	Delay 2 (AUX 2)	min	10	0	60	FLOAT	1
Expert	342	10171	Battery voltage 3 activate (AUX 2)		0:No	0:No	1:Yes	"BOOL"	1
Expert	344	10172	Battery voltage 3 (AUX 2)	Vdc	48.5	36	72	FLOAT	0.1
Expert	346	10173	Delay 3 (AUX 2)	min	60	0	60	FLOAT	1
Expert	348	10174	Battery voltage to deactivate (AUX 2)	Vdc	54	36	72	FLOAT	0.1
Expert	350	10175	Delay to deactivate (AUX 2)	min	60	0	480	FLOAT	5
Expert	352	10176	Deactivate if battery in floating phase (AUX 2)		0:No	0:No	1:Yes	"BOOL"	1
<b>Expert</b>	<b>354</b>	<b>10177</b>	Contact active according to battery temperature (AUX 2) With BSP or BTS					"MENU"	
Expert	356	10178	Contact activated with the temperature of battery (AUX 2)		0:No	0:No	1:Yes	"BOOL"	1
Expert	358	10179	Contact activated over (AUX 2)	°C	3	-10	50	FLOAT	1
Expert	360	10180	Contact deactivated below (AUX 2)	°C	5	-10	50	FLOAT	1
Expert	362	10181	Only activated if the battery is not in bulk phase (AUX 2)		0:No	0:No	1:Yes	"BOOL"	1
<b>Expert</b>	<b>364</b>	<b>10182</b>	Contact active according to SOC (AUX 2) Only with BSP					"MENU"	
Expert	366	10183	Contact activated with the SOC 1 of battery (AUX 2)		0:No	0:No	1:Yes	"BOOL"	1
Expert	368	10184	Contact activated below SOC 1 (AUX 2)	% SOC	50	0	100	FLOAT	5
Expert	370	10185	Delay 1 (AUX 2)	hours	12	0	99	FLOAT	0.25
Expert	372	10186	Contact activated with the SOC 2 of battery (AUX 2)		0:No	0:No	1:Yes	"BOOL"	1
Expert	374	10187	Contact activated below SOC 2 (AUX 2)	%	30	0	100	FLOAT	5
Expert	376	10188	Delay 2 (AUX 2)	hours	0.2	0	99	FLOAT	0.25
Expert	378	10189	Contact activated with the SOC 3 of battery (AUX 2)		0:No	0:No	1:Yes	"BOOL"	1
Expert	380	10190	Contact activated below SOC 3 (AUX 2)	%	20	0	100	FLOAT	5

Level	Modbus register	Nr	VarioTrack parameter description	Unit	Default	Min	Max	Format	Increment
Expert	382	10191	Delay 3 (AUX 2)	hours	0	0	99	FLOAT	0.25
Expert	384	10192	Contact deactivated over SOC (AUX 2)	% SOC	90	0	100	FLOAT	5
Expert	386	10193	Delay to deactivate (AUX 2)	hours	0.2	0	10	FLOAT	0.25
Expert	388	10194	Deactivate if battery in floating phase (AUX 2)		0:No	0:No	1:Yes	"BOOL"	1
Expert	390	10195	Reset all settings (AUX 2)		S	S	S	"SIGNAL"	
<b>Expert</b>	<b>404</b>	<b>10202</b>	<b>AUXILIARY CONTACT 3</b>					"MENU"	
Expert	406	10203	Operating mode (AUX 3)		1:Automatic	1:Automatic	8:Manual OFF	"ENUM"	Only 1 bit 1:Automatic 2:Reversed automatic 4:Manual ON 8:Manual OFF
Expert	408	10204	Combination of the events for the auxiliary contact (AUX 3)		0:Any (Function OR)	0:Any (Function OR)	1:All (Function AND)	"ENUM"	Only 1 bit 0:Any (Function OR) 1:All (Function AND)
<b>Expert</b>	<b>410</b>	<b>10205</b>	Contact activated in night mode (AUX 3)					"MENU"	
Expert	412	10206	Activated in night mode (AUX 3)		0:No	0:No	1:Yes	"BOOL"	1
Expert	414	10207	Delay of activation after entering night mode (AUX 3)	min	1	0	1440	FLOAT	1
Expert	416	10208	Activation time for the auxiliary relay in night mode (AUX 3)	min	1	0	1440	FLOAT	1
<b>Expert</b>	<b>652</b>	<b>10326</b>	Contact active with a fixed time schedule (AUX 3)					"MENU"	
Expert	654	10327	Contact activated with fixed time schedule (AUX 3)		0:No	0:No	1:Yes	"BOOL"	1
Expert	656	10328	Start hour (AUX 3)	Minutes	420=07:00	0=00:00	1440=24:00	"HOUR"	1
Expert	658	10329	End hour (AUX 3)	Minutes	1200=20:00	0=00:00	1440=24:00	"HOUR"	1
<b>Expert</b>	<b>418</b>	<b>10209</b>	Contact active on event (AUX 3)					"MENU"	
Expert	420	10210	VarioTrack is ON (AUX 3)		0:No	0:No	1:Yes	"BOOL"	1
Expert	422	10211	VarioTrack is OFF (AUX 3)		0:No	0:No	1:Yes	"BOOL"	1
Expert	620	10310	Remote entry (AUX 3)		0:No	0:No	1:Yes	"BOOL"	1
Expert	424	10212	Battery undervoltage (AUX 3)		0:No	0:No	1:Yes	"BOOL"	1
Expert	426	10213	Battery overvoltage (AUX 3)		0:No	0:No	1:Yes	"BOOL"	1
Expert	428	10214	Earth fault (AUX 3)		0:No	0:No	1:Yes	"BOOL"	1
Expert	430	10215	PV error (48h without charge) (AUX 3)		0:No	0:No	1:Yes	"BOOL"	1
Expert	432	10216	Overtemperature (AUX 3)		0:No	0:No	1:Yes	"BOOL"	1
Expert	434	10217	Bulk charge phase (AUX 3)		0:No	0:No	1:Yes	"BOOL"	1

Level	Modbus register	Nr	VarioTrack parameter description	Unit	Default	Min	Max	Format	Increment
Expert	436	10218	Absorption phase (AUX 3)		0:No	0:No	1:Yes	"BOOL"	1
Expert	438	10219	Equalization phase (AUX 3)		0:No	0:No	1:Yes	"BOOL"	1
Expert	440	10220	Floating (AUX 3)		0:No	0:No	1:Yes	"BOOL"	1
Expert	442	10221	Reduced floating (AUX 3)		0:No	0:No	1:Yes	"BOOL"	1
Expert	444	10222	Periodic absorption (AUX 3)		0:No	0:No	1:Yes	"BOOL"	1
<b>Expert</b>	<b>446</b>	<b>10223</b>	Contact active according to battery voltage (AUX 3)					"MENU"	
Expert	448	10224	Battery voltage 1 activate (AUX 3)		0:No	0:No	1:Yes	"BOOL"	1
Expert	450	10225	Battery voltage 1 (AUX 3)	Vdc	46.8	36	72	FLOAT	0.1
Expert	452	10226	Delay 1 (AUX 3)	min	1	0	60	FLOAT	1
Expert	454	10227	Battery voltage 2 activate (AUX 3)		0:No	0:No	1:Yes	"BOOL"	1
Expert	456	10228	Battery voltage 2 (AUX 3)	Vdc	47.8	36	72	FLOAT	0.1
Expert	458	10229	Delay 2 (AUX 3)	min	10	0	60	FLOAT	1
Expert	460	10230	Battery voltage 3 activate (AUX 3)		0:No	0:No	1:Yes	"BOOL"	1
Expert	462	10231	Battery voltage 3 (AUX 3)	Vdc	48.5	36	72	FLOAT	0.1
Expert	464	10232	Delay 3 (AUX 3)	min	60	0	60	FLOAT	1
Expert	466	10233	Battery voltage to deactivate (AUX 3)	Vdc	54	36	72	FLOAT	0.1
Expert	468	10234	Delay to deactivate (AUX 3)	min	60	0	480	FLOAT	5
Expert	470	10235	Deactivate if battery in floating phase (AUX 3)		0:No	0:No	1:Yes	"BOOL"	1
<b>Expert</b>	<b>472</b>	<b>10236</b>	Contact active according to battery temperature (AUX 3) With BSP or BTS					"MENU"	
Expert	474	10237	Contact activated with the temperature of battery (AUX 3)		0:No	0:No	1:Yes	"BOOL"	1
Expert	476	10238	Contact activated over (AUX 3)	°C	3	-10	50	FLOAT	1
Expert	478	10239	Contact deactivated below (AUX 3)	°C	5	-10	50	FLOAT	1
Expert	480	10240	Only activated if the battery is not in bulk phase (AUX 3)		0:No	0:No	1:Yes	"BOOL"	1
<b>Expert</b>	<b>482</b>	<b>10241</b>	Contact active according to SOC (AUX 3) Only with BSP					"MENU"	
Expert	484	10242	Contact activated with the SOC 1 of battery (AUX 3)		0:No	0:No	1:Yes	"BOOL"	1
Expert	486	10243	Contact activated below SOC 1 (AUX 3)	% SOC	50	0	100	FLOAT	5
Expert	488	10244	Delay 1 (AUX 3)	hours	12	0	99	FLOAT	0.25
Expert	490	10245	Contact activated with the SOC 2 of battery (AUX 3)		0:No	0:No	1:Yes	"BOOL"	1
Expert	492	10246	Contact activated below SOC 2 (AUX 3)	%	30	0	100	FLOAT	5
Expert	494	10247	Delay 2 (AUX 3)	hours	0.2	0	99	FLOAT	0.25
Expert	496	10248	Contact activated with the SOC 3 of battery (AUX 3)		0:No	0:No	1:Yes	"BOOL"	1

Level	Modbus register	Nr	VarioTrack parameter description	Unit	Default	Min	Max	Format	Increment
Expert	498	10249	Contact activated below SOC 3 (AUX 3)	%	20	0	100	FLOAT	5
Expert	500	10250	Delay 3 (AUX 3)	hours	0	0	99	FLOAT	0.25
Expert	502	10251	Contact deactivated over SOC (AUX 3)	% SOC	90	0	100	FLOAT	5
Expert	504	10252	Delay to deactivate (AUX 3)	hours	0.2	0	10	FLOAT	0.25
Expert	506	10253	Deactivate if battery in floating phase (AUX 3)		0:No	0:No	1:Yes	"BOOL"	1
Expert	508	10254	Reset all settings (AUX 3)		S	S	S	"SIGNAL"	
<b>Expert</b>	<b>510</b>	<b>10255</b>	<b>AUXILIARY CONTACT 4</b>					"MENU"	
Expert	512	10256	Operating mode (AUX 4)		1:Automatic	1:Automatic	8:Manual OFF	"ENUM"	Only 1 bit 1:Automatic 2:Reversed automatic 4:Manual ON 8:Manual OFF
Expert	514	10257	Combination of the events for the auxiliary contact (AUX 4)		0:Any (Function OR)	0:Any (Function OR)	1:All (Function AND)	"ENUM"	Only 1 bit 0:Any (Function OR) 1:All (Function AND)
<b>Expert</b>	<b>516</b>	<b>10258</b>	Contact activated in night mode (AUX 4)					"MENU"	
Expert	518	10259	Activated in night mode (AUX 4)		0:No	0:No	1:Yes	"BOOL"	1
Expert	520	10260	Delay of activation after entering night mode (AUX 4)	min	1	0	1440	FLOAT	1
Expert	522	10261	Activation time for the auxiliary relay in night mode (AUX 4)	min	1	0	1440	FLOAT	1
<b>Expert</b>	<b>660</b>	<b>10330</b>	Contact active with a fixed time schedule (AUX 4)					"MENU"	
Expert	662	10331	Contact activated with fixed time schedule (AUX 4)		0:No	0:No	1:Yes	"BOOL"	1
Expert	664	10332	Start hour (AUX 4)	Minutes	420=07:00	0=00:00	1440=24:00	"HOUR"	1
Expert	666	10333	End hour (AUX 4)	Minutes	1200=20:00	0=00:00	1440=24:00	"HOUR"	1
<b>Expert</b>	<b>524</b>	<b>10262</b>	Contact active on event (AUX 4)					"MENU"	
Expert	526	10263	VarioTrack is ON (AUX 4)		0:No	0:No	1:Yes	"BOOL"	1
Expert	528	10264	VarioTrack is OFF (AUX 4)		0:No	0:No	1:Yes	"BOOL"	1
Expert	622	10311	Remote entry (AUX 4)		0:No	0:No	1:Yes	"BOOL"	1
Expert	530	10265	Battery undervoltage (AUX 4)		0:No	0:No	1:Yes	"BOOL"	1
Expert	532	10266	Battery overvoltage (AUX 4)		0:No	0:No	1:Yes	"BOOL"	1
Expert	534	10267	Earth fault (AUX 4)		0:No	0:No	1:Yes	"BOOL"	1
Expert	536	10268	PV error (48h without charge) (AUX 4)		0:No	0:No	1:Yes	"BOOL"	1
Expert	538	10269	Overtemperature (AUX 4)		0:No	0:No	1:Yes	"BOOL"	1

Level	Modbus register	Nr	VarioTrack parameter description	Unit	Default	Min	Max	Format	Increment
Expert	540	10270	Bulk charge phase (AUX 4)		0:No	0:No	1:Yes	"BOOL"	1
Expert	542	10271	Absorption phase (AUX 4)		0:No	0:No	1:Yes	"BOOL"	1
Expert	544	10272	Equalization phase (AUX 4)		0:No	0:No	1:Yes	"BOOL"	1
Expert	546	10273	Floating (AUX 4)		0:No	0:No	1:Yes	"BOOL"	1
Expert	548	10274	Reduced floating (AUX 4)		0:No	0:No	1:Yes	"BOOL"	1
Expert	550	10275	Periodic absorption (AUX 4)		0:No	0:No	1:Yes	"BOOL"	1
<b>Expert</b>	<b>552</b>	<b>10276</b>	Contact active according to battery voltage (AUX 4)					"MENU"	
Expert	554	10277	Battery voltage 1 activate (AUX 4)		0:No	0:No	1:Yes	"BOOL"	1
Expert	556	10278	Battery voltage 1 (AUX 4)	Vdc	46.8	36	72	FLOAT	0.1
Expert	558	10279	Delay 1 (AUX 4)	min	1	0	60	FLOAT	1
Expert	560	10280	Battery voltage 2 activate (AUX 4)		0:No	0:No	1:Yes	"BOOL"	1
Expert	562	10281	Battery voltage 2 (AUX 4)	Vdc	47.8	36	72	FLOAT	0.1
Expert	564	10282	Delay 2 (AUX 4)	min	10	0	60	FLOAT	1
Expert	566	10283	Battery voltage 3 activate (AUX 4)		0:No	0:No	1:Yes	"BOOL"	1
Expert	568	10284	Battery voltage 3 (AUX 4)	Vdc	48.5	36	72	FLOAT	0.1
Expert	570	10285	Delay 3 (AUX 4)	min	60	0	60	FLOAT	1
Expert	572	10286	Battery voltage to deactivate (AUX 4)	Vdc	54	36	72	FLOAT	0.1
Expert	574	10287	Delay to deactivate (AUX 4)	min	60	0	480	FLOAT	5
Expert	576	10288	Deactivate if battery in floating phase (AUX 4)		0:No	0:No	1:Yes	"BOOL"	1
<b>Expert</b>	<b>578</b>	<b>10289</b>	Contact active according to battery temperature (AUX 4) With BSP or BTS					"MENU"	
Expert	580	10290	Contact activated with the temperature of battery (AUX 4)		0:No	0:No	1:Yes	"BOOL"	1
Expert	582	10291	Contact activated over (AUX 4)	°C	3	-10	50	FLOAT	1
Expert	584	10292	Contact deactivated below (AUX 4)	°C	5	-10	50	FLOAT	1
Expert	586	10293	Only activated if the battery is not in bulk phase (AUX 4)		0:No	0:No	1:Yes	"BOOL"	1
<b>Expert</b>	<b>588</b>	<b>10294</b>	Contact active according to SOC (AUX 4) Only with BSP					"MENU"	
Expert	590	10295	Contact activated with the SOC 1 of battery (AUX 4)		0:No	0:No	1:Yes	"BOOL"	1
Expert	592	10296	Contact activated below SOC 1 (AUX 4)	% SOC	50	0	100	FLOAT	5
Expert	594	10297	Delay 1 (AUX 4)	hours	12	0	99	FLOAT	0.25
Expert	596	10298	Contact activated with the SOC 2 of battery (AUX 4)		0:No	0:No	1:Yes	"BOOL"	1
Expert	598	10299	Contact activated below SOC 2 (AUX 4)	%	30	0	100	FLOAT	5
Expert	600	10300	Delay 2 (AUX 4)	hours	0.2	0	99	FLOAT	0.25

Level	Modbus register	Nr	VarioTrack parameter description	Unit	Default	Min	Max	Format	Increment
Expert	602	10301	Contact activated with the SOC 3 of battery (AUX 4)		0:No	0:No	1:Yes	"BOOL"	1
Expert	604	10302	Contact activated below SOC 3 (AUX 4)	%	20	0	100	FLOAT	5
Expert	606	10303	Delay 3 (AUX 4)	hours	0	0	99	FLOAT	0.25
Expert	608	10304	Contact deactivated over SOC (AUX 4)	% SOC	90	0	100	FLOAT	5
Expert	610	10305	Delay to deactivate (AUX 4)	hours	0.2	0	10	FLOAT	0.25
Expert	612	10306	Deactivate if battery in floating phase (AUX 4)		0:No	0:No	1:Yes	"BOOL"	1
Expert	614	10307	Reset all settings (AUX 4)		S	S	S	"SIGNAL"	

## 1.9 VarioTrack infos

Modbus register	Nr	VarioTrack information description	Short desc.	Unit on the RCC	Unit	Format	Related parameter or description
0	11000	Battery voltage	Ubat	Vdc	V	FLOAT	
2	11001	Battery current	Ibat	Adc	A	FLOAT	
4	11002	Voltage of the PV generator	Upv	Vdc	V	FLOAT	
6	11003	Current of the PV generator	Ipv	Adc	A	FLOAT	
8	11004	Power of the PV generator	Psol	kW	kW	FLOAT	
10	11005	Battery temperature	Tbat	°C	°C	FLOAT	
12	11006	Production in (Ah) for the current day	Cd	Ah	Ah	FLOAT	
14	11007	Production in (kWh) for the current day	Ed	kWh	kWh	FLOAT	
16	11008	Produced energy resettable counter	kWhR	kWh	kWh	FLOAT	
18	11009	Total produced energy	MWhT	MWh	MWh	FLOAT	
20	11010	Production in (Ah) for the previous day	Cd-1	Ah	Ah	FLOAT	
22	11011	Production in (Wh) for the previous day	Ed-1	kWh	kWh	FLOAT	
24	11012	Number of parameters (in code)	pCod			FLOAT	
26	11013	Number of parameters (in flash)	pFla			FLOAT	
28	11014	Number of infos users	iCod			FLOAT	
30	11015	Model of VarioTrack	Type		0:VT-80 1:VT-65 2:VT-40 3:VT-HV	"ENUM"	

Modbus register	Nr	VarioTrack information description	Short desc.	Unit on the RCC	Unit	Format	Related parameter or description
32	11016	Operating mode	Mode		0:Night 1:StartUp 2:--- 3:Charger 4:--- 5:Security 6:OFF 7:--- 8:Charge 9:Charge V 10:Charge I 11:Charge T 12:Ch. lbsp	"ENUM"	See the VarioTrack user manual for a description of the modes.  Mode 3: is available up to VT code version 1.5.8.  Modes 8: to 11: are available from VT code version 1.5.10.
34	11017	Max PV voltage for the current day	PVmx	Vdc	V	FLOAT	
36	11018	Max battery current of the current day	lbmx	Adc	A	FLOAT	
38	11019	Max power production for the current day	PVxP	kW	kW	FLOAT	
40	11020	Max battery voltage for the current day	Bmax	Vdc	V	FLOAT	
42	11021	Min battery voltage for the current day	Bmin	Vdc	V	FLOAT	
50	11025	Number of irradiation hours for the current day	Sd	h	h	FLOAT	
52	11026	Number of irradiation hours for the previous day	Sd-1	h	h	FLOAT	
68	11034	Type of error	Err		0:No Error 1:BatOverV 2:Earth 3:No Batt 4:OverTemp 5:BatOverV 6:PvOverV 7:Others 8:--- 9:--- 10:--- 11:--- 12:HardErr	"ENUM"	See the VarioTrack user manual for a description of these errors
74	11037	Number of days before next equalization	EqIn	days	days	FLOAT	



Modbus register	Nr	VarioTrack information description	Short desc.	Unit on the RCC	Unit	Format	Related parameter or description
76	11038	Battery cycle phase	Phas		0: Bulk 1: Absorpt. 2: Equalize 3: Floating 4: --- 5: --- 6: R.float. 7: Per.abs. 8: --- 9: --- 10: --- 11: ---	"ENUM"	
78	11039	Battery voltage (minute avg)	UbaM	Vdc	V	FLOAT	
80	11040	Battery current (minute avg)	IbaM	Adc	A	FLOAT	
82	11041	PV voltage (minute avg)	UpvM	Vdc	V	FLOAT	
86	11043	PV power (minute avg)	PsoM	kW	kW	FLOAT	
88	11044	Battery temperature (minute avg)	TbaM	°C	°C	FLOAT	
90	11045	Electronic temperature 1 (minute avg)	Dev1	°C	°C	FLOAT	
92	11046	Electronic temperature 2 (minute avg)	Dev2	°C	°C	FLOAT	
94	11047	ID type	Idt			FLOAT	VT65 and VT80 = 9079d (0x2601)
96	11048	ID batt voltage	Idv	Vdc	V	FLOAT	
98	11049	ID HW	HW			FLOAT	
100	11050	ID SOFT msb	Smsb			FLOAT	See section "Software version encoding"
102	11051	ID SOFT lsb	Slsb			FLOAT	See section "Software version encoding"
104	11052	ID SID	SID			FLOAT	
122	11061	State of auxiliary relay 1	Aux 1		0: Opened 1: Closed	"ENUM"	
124	11062	State of auxiliary relay 2	Aux 2		0: Opened 1: Closed	"ENUM"	
126	11063	Relay aux 1 mode	Aux 1		0: --- 1: A 2: I 3: M 4: M 5: G	"ENUM"	

Modbus register	Nr	VarioTrack information description	Short desc.	Unit on the RCC	Unit	Format	Related parameter or description
128	11064	Relay aux 2 mode	Aux 2		0:--- 1:A 2:I 3:M 4:M 5:G	"ENUM"	
132	11066	Synchronisation state	Sync		0:--- 1:--- 2:--- 3:--- 4:XTslave 5:VTslave 6:--- 7:--- 8:VTmaster 9:Autonom. 10:VSslave 11:VSmaster	"ENUM"	
134	11067	ID FID msb				FLOAT	See section "FID encoding"
136	11068	ID FID lsb				FLOAT	See section "FID encoding"
138	11069	State of the VarioTrack	VT state		0:Off 1:On	"ENUM"	
152	11076	Local daily communication error counter (CAN)	locEr			FLOAT	
154	11077	State of auxiliary relay 3	Aux 3		0:Opened 1:Closed	"ENUM"	
156	11078	State of auxiliary relay 4	Aux 4		0:Opened 1:Closed	"ENUM"	
158	11079	Relay aux 3 mode	Aux 3		0:--- 1:A 2:I 3:M 4:M 5:G	"ENUM"	

Modbus register	Nr	VarioTrack information description	Short desc.	Unit on the RCC	Unit	Format	Related parameter or description
160	11080	Relay aux 4 mode	Aux 4		0:--- 1:A 2:I 3:M 4:M 5:G	"ENUM"	
164	11082	Remote entry state	RME		0:RM EN 0 1:RM EN 1	"ENUM"	

## 1.10 VarioString parameters

Level	Modbus register	Nr	VarioString parameter description	Unit	Default	Min	Max	Format	Increment
Basic	0	14000	<b>BASIC SETTINGS</b>					"MENU"	
Expert	348	14174	Block manual programming (dip-switch)		0:No	0:No	1:Yes	"BOOL"	1
Expert	2	14001	Battery charge current (VS-120)	Adc	120	0	120	FLOAT	2
Expert	434	14217	Battery charge current (VS-70)	Adc	70	0	70	FLOAT	1
Basic	4	14002	Configuration of PV modules (VS-120)		1:Automatic	1:Automatic	8:Parallel	"ENUM"	Only 1 bit 1:Automatic 2:Independent 4:Serial 8:Parallel
Basic	134	14067	Restore default settings		S	S	S	"SIGNAL"	
Inst.	136	14068	Restore factory settings		S	S	S	"SIGNAL"	
Expert	6	14003	<b>BATTERY MANAGEMENT AND CYCLE</b>					"MENU"	
Basic	72	14036	Synchronisation battery cycle with Xtender		1:Yes	0:No	1:Yes	"BOOL"	1
Expert	2	14001	Battery charge current (VS-120)	Adc	120	0	120	FLOAT	2
Expert	434	14217	Battery charge current (VS-70)	Adc	70	0	70	FLOAT	1
Expert	432	14216	Battery undervoltage	Vdc	40	34	68.2	FLOAT	0.1
Expert	70	14035	Temperature compensation	mV/°C/cell	-3	-8	0	FLOAT	1
Expert	8	14004	Floating phase					"MENU"	
Expert	10	14005	Floating voltage	Vdc	54.4	37.9	68.2	FLOAT	0.1
Expert	12	14006	Force phase of floating		S	S	S	"SIGNAL"	

Level	Modbus register	Nr	VarioString parameter description	Unit	Default	Min	Max	Format	Increment
<b>Expert</b>	<b>14</b>	<b>14007</b>	Absorption phase					"MENU"	
Expert	16	14008	Absorption phase allowed		1:Yes	0:No	1:Yes	"BOOL"	1
Expert	18	14009	Absorption voltage	Vdc	57.6	37.9	68.2	FLOAT	0.1
Expert	20	14010	Force absorption phase		S	S	S	"SIGNAL"	
Expert	22	14011	Absorption duration	min	120	5	510	FLOAT	5
Expert	24	14012	End of absorption triggered by the current		0:No	0:No	1:Yes	"BOOL"	1
Expert	26	14013	Current threshold to end absorption phase	Adc	10	2	120	FLOAT	2
<b>Expert</b>	<b>32</b>	<b>14016</b>	Equalization phase					"MENU"	
Expert	34	14017	Equalization allowed		0:No	0:No	1:Yes	"BOOL"	1
Expert	36	14018	Force equalization		S	S	S	"SIGNAL"	
Expert	42	14021	Equalization voltage	Vdc	62.4	52.1	68.2	FLOAT	0.1
Expert	40	14020	Equalization current	Adc	80	2	120	FLOAT	2
Expert	44	14022	Equalization duration	min	30	5	510	FLOAT	5
Expert	46	14023	Equalization with fixed interval		1:Yes	0:No	1:Yes	"BOOL"	1
Expert	48	14024	Days between equalizations	days	26	1	365	FLOAT	1
Expert	50	14025	End of equalization triggered by the current		0:No	0:No	1:Yes	"BOOL"	1
Expert	52	14026	Current threshold to end equalization phase	Adc	10	4	30	FLOAT	1
Expert	38	14019	Equalization before absorption phase		1:Yes	0:No	1:Yes	"BOOL"	1
<b>Expert</b>	<b>54</b>	<b>14027</b>	New cycle					"MENU"	
Expert	56	14028	Force a new cycle		S	S	S	"SIGNAL"	
Expert	58	14029	Voltage level 1 to start a new cycle	Vdc	48.8	37.9	68.2	FLOAT	0.1
Expert	60	14030	Time period under voltage level 1 to start a new cycle	min	30	0	240	FLOAT	1
Expert	62	14031	Voltage level 2 to start a new cycle	Vdc	47.2	37.9	68.2	FLOAT	0.1
Expert	64	14032	Time period under voltage level 2 to start a new cycle	min	2	0	240	FLOAT	1
Expert	66	14033	Cycling restricted		1:Yes	0:No	1:Yes	"BOOL"	1
Expert	68	14034	Minimal delay between cycles	hours	1	0	540	FLOAT	1
Expert	130	14065	Battery overvoltage level	Vdc	68.2	37.9	68.2	FLOAT	0.1
Expert	132	14066	Restart voltage level after a battery overvoltage	Vdc	64.8	37.9	68.2	FLOAT	0.1
<b>Expert</b>	<b>74</b>	<b>14037</b>	<b>SYSTEM</b>					"MENU"	
Expert	348	14174	Block manual programming (dip-switch)		0:No	0:No	1:Yes	"BOOL"	1

Level	Modbus register	Nr	VarioString parameter description	Unit	Default	Min	Max	Format	Increment
Expert	80	14040	Type of battery grounding		1:No control	1:No control	8:Bat floating	"ENUM"	Only 1 bit 1:No control 2:Bat+ grounded 4:Bat- grounded 8:Bat floating
<b>Expert</b>	<b>388</b>	<b>14194</b>	Configuration for VS-120					"MENU"	
Expert	82	14041	Type of PV grounding		1:No control	1:No control	8:PV floating	"ENUM"	Only 1 bit 1:No control 2:PV+ grounded 4:PV- grounded 8:PV floating
Expert	350	14175	Type of PV1 grounding		1:No control	1:No control	8:PV floating	"ENUM"	Only 1 bit 1:No control 2:PV+ grounded 4:PV- grounded 8:PV floating
Expert	84	14042	Type of PV2 grounding		1:No control	1:No control	8:PV floating	"ENUM"	Only 1 bit 1:No control 2:PV+ grounded 4:PV- grounded 8:PV floating
<b>Expert</b>	<b>360</b>	<b>14180</b>	Type of MPPT algorithm					"MENU"	
Expert	86	14043	Type of MPP tracking algorithm PV		8:LSF	1:P&O	8:LSF	"ENUM"	Only 1 bit 1:P&O 2:OC ratio 4:Upv fixed 8:LSF
Expert	88	14044	PV voltage fixed (for PV in series)	Vdc	700	200	900	FLOAT	10
Expert	358	14179	PV voltage fixed (for PV in //)	Vdc	500	100	600	FLOAT	10
Expert	90	14045	Ratio of PV open circuit voltage		0.7	0.5	1	FLOAT	0.010009766
Expert	352	14176	Type of MPP tracking algorithm PV1		8:LSF	1:P&O	8:LSF	"ENUM"	Only 1 bit 1:P&O 2:OC ratio 4:Upv fixed 8:LSF
Expert	354	14177	PV1 voltage fixed	Vdc	500	100	600	FLOAT	10

Level	Modbus register	Nr	VarioString parameter description	Unit	Default	Min	Max	Format	Increment
Expert	356	14178	Ratio of PV1 open circuit voltage		0.7	0.5	1	FLOAT	0.010009766
Expert	92	14046	Type of MPP tracking algorithm PV2		8:LSF	1:P&O	8:LSF	"ENUM"	Only 1 bit 1:P&O 2:OC ratio 4:Upv fixed 8:LSF
Expert	94	14047	PV2 voltage fixed	Vdc	500	100	600	FLOAT	10
Expert	96	14048	Ratio of PV2 open circuit voltage		0.7	0.5	1	FLOAT	0.010009766
Inst.	384	14192	Establishment time (Algo MPPT)	sec	0	0	300	FLOAT	1
Inst.	386	14193	Averaging time (Algo MPPT)	sec	0	0	300	FLOAT	1
Inst.	380	14190	PV wiring type erased from memory		S	S	S	"SIGNAL"	
<b>Expert</b>	<b>390</b>	<b>14195</b>	Configuration for VS-70					"MENU"	
Expert	392	14196	Type of PV grounding		1:No control	1:No control	8:PV floating	"ENUM"	Only 1 bit 1:No control 2:PV+ grounded 4:PV- grounded 8:PV floating
<b>Expert</b>	<b>360</b>	<b>14180</b>	Type of MPPT algorithm					"MENU"	
Expert	394	14197	Type of MPP tracking algorithm PV		8:LSF	1:P&O	8:LSF	"ENUM"	Only 1 bit 1:P&O 2:OC ratio 4:Upv fixed 8:LSF
Expert	396	14198	PV voltage fixed	Vdc	500	100	600	FLOAT	10
Expert	398	14199	Ratio of PV open circuit voltage		0.7	0.5	1	FLOAT	0.010009766
Inst.	384	14192	Establishment time (Algo MPPT)	sec	0	0	300	FLOAT	1
Inst.	386	14193	Averaging time (Algo MPPT)	sec	0	0	300	FLOAT	1
<b>Expert</b>	<b>400</b>	<b>14200</b>	Remote entry (Remote ON/OFF)					"MENU"	
Expert	402	14201	Remote entry active		2:Open	1:Closed	4:Edge	"ENUM"	Only 1 bit 1:Closed 2:Open 4:Edge
Expert	404	14202	ON/OFF command		0:No	0:No	1:Yes	"BOOL"	1
Expert	406	14203	Activated by AUX1 state		0:No	0:No	1:Yes	"BOOL"	1

Level	Modbus register	Nr	VarioString parameter description	Unit	Default	Min	Max	Format	Increment
Expert	408	14204	Start equalization		0:No	0:No	1:Yes	"BOOL"	1
Expert	410	14205	Send a message when remote entry changes state		0:No	0:No	1:Yes	"BOOL"	1
Inst.	436	14218	VarioString watchdog enabled (SCOM)		0:No	0:No	1:Yes	"BOOL"	1
Inst.	438	14219	VarioString watchdog delay (SCOM)	sec	60	10	300	FLOAT	10
Expert	364	14182	Reset PV energy meter		S	S	S	"SIGNAL"	
QSP	366	14183	Reset total produced PV energy meter		S	S	S	"SIGNAL"	
Expert	102	14051	Reset daily solar production meters		S	S	S	"SIGNAL"	
Expert	104	14052	Reset daily min-max		S	S	S	"SIGNAL"	
Basic	134	14067	Restore default settings		S	S	S	"SIGNAL"	
Inst.	136	14068	Restore factory settings		S	S	S	"SIGNAL"	
Inst.	138	14069	Parameters saved in flash memory		1:Yes	0:No	1:Yes	"BOOL"	1
Expert	76	14038	ON of the VarioString		S	S	S	"SIGNAL"	
Expert	78	14039	OFF of the VarioString		S	S	S	"SIGNAL"	
Expert	118	14059	Reset of all VarioString		S	S	S	"SIGNAL"	
<b>Expert</b>	<b>140</b>	<b>14070</b>	<b>AUXILIARY CONTACT 1</b>					"MENU"	
Expert	142	14071	Operating mode (AUX 1)		1:Automatic	1:Automatic	8:Manual OFF	"ENUM"	Only 1 bit 1:Automatic 2:Reversed automatic 4:Manual ON 8:Manual OFF
Expert	144	14072	Combination of the events for the auxiliary contact (AUX 1)		0:Any (Function OR)	0:Any (Function OR)	1:All (Function AND)	"ENUM"	Only 1 bit 0:Any (Function OR) 1:All (Function AND)
<b>Expert</b>	<b>146</b>	<b>14073</b>	Contact activated in night mode (AUX 1)					"MENU"	
Expert	148	14074	Activated in night mode (AUX 1)		0:No	0:No	1:Yes	"BOOL"	1
Expert	150	14075	Delay of activation after entering night mode (AUX 1)	min	1	0	1440	FLOAT	1
Expert	152	14076	Activation time for the auxiliary relay in night mode (AUX 1)	min	1	0	1440	FLOAT	1
<b>Expert</b>	<b>412</b>	<b>14206</b>	Contact active with a fixed time schedule (AUX 1)					"MENU"	
Expert	414	14207	Contact activated with fixed time schedule (AUX 1)		0:No	0:No	1:Yes	"BOOL"	1
Expert	416	14208	Start hour (AUX 1)	Minutes	420=07:00	0=00:00	1440=24:00	"HOUR"	1
Expert	418	14209	End hour (AUX 1)	Minutes	1200=20:00	0=00:00	1440=24:00	"HOUR"	1
<b>Expert</b>	<b>154</b>	<b>14077</b>	Contact active on event (AUX 1)					"MENU"	

Level	Modbus register	Nr	VarioString parameter description	Unit	Default	Min	Max	Format	Increment
Expert	376	14188	VarioString is ON (AUX 1)		0:No	0:No	1:Yes	"BOOL"	1
Expert	156	14078	VarioString is OFF (AUX 1)		0:No	0:No	1:Yes	"BOOL"	1
Expert	428	14214	Remote entry (AUX 1)		0:No	0:No	1:Yes	"BOOL"	1
Expert	158	14079	Battery undervoltage (AUX 1)		0:No	0:No	1:Yes	"BOOL"	1
Expert	160	14080	Battery overvoltage (AUX 1)		0:No	0:No	1:Yes	"BOOL"	1
Expert	162	14081	Earth fault (AUX 1)		0:No	0:No	1:Yes	"BOOL"	1
Expert	164	14082	PV error (48h without charge) (AUX 1)		0:No	0:No	1:Yes	"BOOL"	1
Expert	166	14083	Overtemperature (AUX 1)		0:No	0:No	1:Yes	"BOOL"	1
Expert	168	14084	Bulk charge phase (AUX 1)		0:No	0:No	1:Yes	"BOOL"	1
Expert	170	14085	Absorption phase (AUX 1)		0:No	0:No	1:Yes	"BOOL"	1
Expert	172	14086	Equalization phase (AUX 1)		0:No	0:No	1:Yes	"BOOL"	1
Expert	174	14087	Floating (AUX 1)		0:No	0:No	1:Yes	"BOOL"	1
Expert	176	14088	Reduced floating (AUX 1)		0:No	0:No	1:Yes	"BOOL"	1
Expert	178	14089	Periodic absorption (AUX 1)		0:No	0:No	1:Yes	"BOOL"	1
<b>Expert</b>	<b>180</b>	<b>14090</b>	Contact active according to battery voltage (AUX 1)					"MENU"	
Expert	182	14091	Battery voltage 1 activate (AUX 1)		0:No	0:No	1:Yes	"BOOL"	1
Expert	184	14092	Battery voltage 1 (AUX 1)	Vdc	46.8	36	72	FLOAT	0.1
Expert	186	14093	Delay 1 (AUX 1)	min	1	0	60	FLOAT	1
Expert	188	14094	Battery voltage 2 activate (AUX 1)		0:No	0:No	1:Yes	"BOOL"	1
Expert	190	14095	Battery voltage 2 (AUX 1)	Vdc	47.8	36	72	FLOAT	0.1
Expert	192	14096	Delay 2 (AUX 1)	min	10	0	60	FLOAT	1
Expert	194	14097	Battery voltage 3 activate (AUX 1)		0:No	0:No	1:Yes	"BOOL"	1
Expert	196	14098	Battery voltage 3 (AUX 1)	Vdc	48.5	36	72	FLOAT	0.1
Expert	198	14099	Delay 3 (AUX 1)	min	60	0	60	FLOAT	1
Expert	200	14100	Battery voltage to deactivate (AUX 1)	Vdc	54	36	72	FLOAT	0.1
Expert	202	14101	Delay to deactivate (AUX 1)	min	60	0	480	FLOAT	5
Expert	204	14102	Deactivate if battery in floating phase (AUX 1)		0:No	0:No	1:Yes	"BOOL"	1
<b>Expert</b>	<b>206</b>	<b>14103</b>	Contact active according to battery temperature (AUX 1) With BSP or BTS					"MENU"	
Expert	208	14104	Contact activated with the temperature of battery (AUX 1)		0:No	0:No	1:Yes	"BOOL"	1
Expert	210	14105	Contact activated over (AUX 1)	°C	3	-10	50	FLOAT	1
Expert	212	14106	Contact deactivated below (AUX 1)	°C	5	-10	50	FLOAT	1



Level	Modbus register	Nr	VarioString parameter description	Unit	Default	Min	Max	Format	Increment
Expert	214	14107	Only activated if the battery is not in bulk phase (AUX 1)		0:No	0:No	1:Yes	"BOOL"	1
<b>Expert</b>	<b>216</b>	<b>14108</b>	Contact active according to SOC (AUX 1) Only with BSP					"MENU"	
Expert	218	14109	Contact activated with the SOC 1 of battery (AUX 1)		0:No	0:No	1:Yes	"BOOL"	1
Expert	220	14110	Contact activated below SOC 1 (AUX 1)	% SOC	50	0	100	FLOAT	5
Expert	222	14111	Delay 1 (AUX 1)	hours	12	0	99	FLOAT	0.25
Expert	224	14112	Contact activated with the SOC 2 of battery (AUX 1)		0:No	0:No	1:Yes	"BOOL"	1
Expert	226	14113	Contact activated below SOC 2 (AUX 1)	%	30	0	100	FLOAT	5
Expert	228	14114	Delay 2 (AUX 1)	hours	0.2	0	99	FLOAT	0.25
Expert	230	14115	Contact activated with the SOC 3 of battery (AUX 1)		0:No	0:No	1:Yes	"BOOL"	1
Expert	232	14116	Contact activated below SOC 3 (AUX 1)	%	20	0	100	FLOAT	5
Expert	234	14117	Delay 3 (AUX 1)	hours	0	0	99	FLOAT	0.25
Expert	236	14118	Contact deactivated over SOC (AUX 1)	% SOC	90	0	100	FLOAT	5
Expert	238	14119	Delay to deactivate (AUX 1)	hours	0.2	0	10	FLOAT	0.25
Expert	240	14120	Deactivate if battery in floating phase (AUX 1)		0:No	0:No	1:Yes	"BOOL"	1
Expert	242	14121	Reset all settings (AUX 1)		S	S	S	"SIGNAL"	
<b>Expert</b>	<b>244</b>	<b>14122</b>	<b>AUXILIARY CONTACT 2</b>					"MENU"	
Expert	246	14123	Operating mode (AUX 2)		1:Automatic	1:Automatic	8:Manual OFF	"ENUM"	Only 1 bit 1:Automatic 2:Reversed automatic 4:Manual ON 8:Manual OFF
Expert	248	14124	Combination of the events for the auxiliary contact (AUX 2)		0:Any (Function OR)	0:Any (Function OR)	1:All (Function AND)	"ENUM"	Only 1 bit 0:Any (Function OR) 1:All (Function AND)
<b>Expert</b>	<b>250</b>	<b>14125</b>	Contact activated in night mode (AUX 2)					"MENU"	
Expert	252	14126	Activated in night mode (AUX 2)		0:No	0:No	1:Yes	"BOOL"	1
Expert	254	14127	Delay of activation after entering night mode (AUX 2)	min	1	0	1440	FLOAT	1
Expert	256	14128	Activation time for the auxiliary relay in night mode (AUX 2)	min	1	0	1440	FLOAT	1
<b>Expert</b>	<b>420</b>	<b>14210</b>	Contact active with a fixed time schedule (AUX 2)					"MENU"	
Expert	422	14211	Contact activated with fixed time schedule (AUX 2)		0:No	0:No	1:Yes	"BOOL"	1
Expert	424	14212	Start hour (AUX 2)	Minutes	420=07:00	0=00:00	1440=24:00	"HOUR"	1
Expert	426	14213	End hour (AUX 2)	Minutes	1200=20:00	0=00:00	1440=24:00	"HOUR"	1

Level	Modbus register	Nr	VarioString parameter description	Unit	Default	Min	Max	Format	Increment
<b>Expert</b>	<b>258</b>	<b>14129</b>	Contact active on event (AUX 2)					"MENU"	
Expert	378	14189	VarioString is ON (AUX 2)		0:No	0:No	1:Yes	"BOOL"	1
Expert	260	14130	VarioString is OFF (AUX 2)		0:No	0:No	1:Yes	"BOOL"	1
Expert	430	14215	Remote entry (AUX 2)		0:No	0:No	1:Yes	"BOOL"	1
Expert	262	14131	Battery undervoltage (AUX 2)		0:No	0:No	1:Yes	"BOOL"	1
Expert	264	14132	Battery overvoltage (AUX 2)		0:No	0:No	1:Yes	"BOOL"	1
Expert	266	14133	Earth fault (AUX 2)		0:No	0:No	1:Yes	"BOOL"	1
Expert	268	14134	PV error (48h without charge) (AUX 2)		0:No	0:No	1:Yes	"BOOL"	1
Expert	270	14135	Overtemperature (AUX 2)		0:No	0:No	1:Yes	"BOOL"	1
Expert	272	14136	Bulk charge phase (AUX 2)		0:No	0:No	1:Yes	"BOOL"	1
Expert	274	14137	Absorption phase (AUX 2)		0:No	0:No	1:Yes	"BOOL"	1
Expert	276	14138	Equalization phase (AUX 2)		0:No	0:No	1:Yes	"BOOL"	1
Expert	278	14139	Floating (AUX 2)		0:No	0:No	1:Yes	"BOOL"	1
Expert	280	14140	Reduced floating (AUX 2)		0:No	0:No	1:Yes	"BOOL"	1
Expert	282	14141	Periodic absorption (AUX 2)		0:No	0:No	1:Yes	"BOOL"	1
<b>Expert</b>	<b>284</b>	<b>14142</b>	Contact active according to battery voltage (AUX 2)					"MENU"	
Expert	286	14143	Battery voltage 1 activate (AUX 2)		0:No	0:No	1:Yes	"BOOL"	1
Expert	288	14144	Battery voltage 1 (AUX 2)	Vdc	46.8	36	72	FLOAT	0.1
Expert	290	14145	Delay 1 (AUX 2)	min	1	0	60	FLOAT	1
Expert	292	14146	Battery voltage 2 activate (AUX 2)		0:No	0:No	1:Yes	"BOOL"	1
Expert	294	14147	Battery voltage 2 (AUX 2)	Vdc	47.8	36	72	FLOAT	0.1
Expert	296	14148	Delay 2 (AUX 2)	min	10	0	60	FLOAT	1
Expert	298	14149	Battery voltage 3 activate (AUX 2)		0:No	0:No	1:Yes	"BOOL"	1
Expert	300	14150	Battery voltage 3 (AUX 2)	Vdc	48.5	36	72	FLOAT	0.1
Expert	302	14151	Delay 3 (AUX 2)	min	60	0	60	FLOAT	1
Expert	304	14152	Battery voltage to deactivate (AUX 2)	Vdc	54	36	72	FLOAT	0.1
Expert	306	14153	Delay to deactivate (AUX 2)	min	60	0	480	FLOAT	5
Expert	308	14154	Deactivate if battery in floating phase (AUX 2)		0:No	0:No	1:Yes	"BOOL"	1
<b>Expert</b>	<b>310</b>	<b>14155</b>	Contact active according to battery temperature (AUX 2) With BSP or BTS					"MENU"	
Expert	312	14156	Contact activated with the temperature of battery (AUX 2)		0:No	0:No	1:Yes	"BOOL"	1
Expert	314	14157	Contact activated over (AUX 2)	°C	3	-10	50	FLOAT	1

Level	Modbus register	Nr	VarioString parameter description	Unit	Default	Min	Max	Format	Increment
Expert	316	14158	Contact deactivated below (AUX 2)	°C	5	-10	50	FLOAT	1
Expert	318	14159	Only activated if the battery is not in bulk phase (AUX 2)		0:No	0:No	1:Yes	"BOOL"	1
<b>Expert</b>	<b>320</b>	<b>14160</b>	Contact active according to SOC (AUX 2) Only with BSP					"MENU"	
Expert	322	14161	Contact activated with the SOC 1 of battery (AUX 2)		0:No	0:No	1:Yes	"BOOL"	1
Expert	324	14162	Contact activated below SOC 1 (AUX 2)	% SOC	50	0	100	FLOAT	5
Expert	326	14163	Delay 1 (AUX 2)	hours	12	0	99	FLOAT	0.25
Expert	328	14164	Contact activated with the SOC 2 of battery (AUX 2)		0:No	0:No	1:Yes	"BOOL"	1
Expert	330	14165	Contact activated below SOC 2 (AUX 2)	%	30	0	100	FLOAT	5
Expert	332	14166	Delay 2 (AUX 2)	hours	0.2	0	99	FLOAT	0.25
Expert	334	14167	Contact activated with the SOC 3 of battery (AUX 2)		0:No	0:No	1:Yes	"BOOL"	1
Expert	336	14168	Contact activated below SOC 3 (AUX 2)	%	20	0	100	FLOAT	5
Expert	338	14169	Delay 3 (AUX 2)	hours	0	0	99	FLOAT	0.25
Expert	340	14170	Contact deactivated over SOC (AUX 2)	% SOC	90	0	100	FLOAT	5
Expert	342	14171	Delay to deactivate (AUX 2)	hours	0.2	0	10	FLOAT	0.25
Expert	344	14172	Deactivate if battery in floating phase (AUX 2)		0:No	0:No	1:Yes	"BOOL"	1
Expert	346	14173	Reset all settings (AUX 2)		S	S	S	"SIGNAL"	

## 1.11 VarioString infos

Modbus register	Nr	VarioString information description	Short desc.	Unit on the RCC	Unit	Format	Related parameter or description
0	15000	Battery voltage	Ubat	Vdc	V	FLOAT	
2	15001	Battery current	Ibat	Adc	A	FLOAT	

Modbus register	Nr	VarioString information description	Short desc.	Unit on the RCC	Unit	Format	Related parameter or description
4	15002	Battery cycle phase	Phas		0: Bulk 1: Absorpt. 2: Equalize 3: Floating 4: --- 5: --- 6: R.float. 7: Per.abs. 8: --- 9: --- 10: --- 11: ---	"ENUM"	
6	15003	PV type of wiring	conf		0: Unknown 1: Independ. 2: Series 3: Parallel 4: Error	"ENUM"	
8	15004	PV voltage	Upv	Vdc	V	FLOAT	
10	15005	PV1 voltage	Upv1	Vdc	V	FLOAT	
12	15006	PV2 voltage	Upv2	Vdc	V	FLOAT	
14	15007	PV current	Ipv	Adc	A	FLOAT	
16	15008	PV1 current	Ipv1	Adc	A	FLOAT	
18	15009	PV2 current	Ipv2	Adc	A	FLOAT	
20	15010	PV power	Ppv	kW	kW	FLOAT	
22	15011	PV1 power	Ppv1	kW	kW	FLOAT	
24	15012	PV2 power	Ppv2	kW	kW	FLOAT	

Modbus register	Nr	VarioString information description	Short desc.	Unit on the RCC	Unit	Format	Related parameter or description
26	15013	PV operating mode	Mode		0:Night 1:Security 2:OFF 3:Charge 4:ChargeV 5:Charge I 6:ChargeP 7:Chargepv 8:ChargeT 9:--- 10:Ch.lbsp	"ENUM"	
28	15014	PV1 operating mode	Mod1		0:Night 1:Security 2:OFF 3:Charge 4:ChargeV 5:Charge I 6:ChargeP 7:Chargepv 8:ChargeT 9:--- 10:Ch.lbsp	"ENUM"	
30	15015	PV2 operating mode	Mod2		0:Night 1:Security 2:OFF 3:Charge 4:ChargeV 5:Charge I 6:ChargeP 7:Chargepv 8:ChargeT 9:--- 10:Ch.lbsp	"ENUM"	
32	15016	Production PV in (Ah) for the current day	Cd	Ah	Ah	FLOAT	
34	15017	Production PV in (kWh) for the current day	Ed	kWh	kWh	FLOAT	
36	15018	Production PV1 in (kWh) for the current day	Ed1	kWh	kWh	FLOAT	
38	15019	Production PV2 in (kWh) for the current day	Ed2	kWh	kWh	FLOAT	

Modbus register	Nr	VarioString information description	Short desc.	Unit on the RCC	Unit	Format	Related parameter or description
40	15020	Produced PV energy resettable counter	kWhR	kWh	kWh	FLOAT	
42	15021	Produced PV1 energy resettable counter	kWh1	kWh	kWh	FLOAT	
44	15022	Produced PV2 energy resettable counter	kWh2	kWh	kWh	FLOAT	
46	15023	Total PV produced energy	MWhT	MWh	MWh	FLOAT	
48	15024	Total PV1 produced energy	MWh1	MWh	MWh	FLOAT	
50	15025	Total PV2 produced energy	MWh2	MWh	MWh	FLOAT	
52	15026	Production PV in (Ah) for the previous day	Cd-1	Ah	Ah	FLOAT	
54	15027	Production PV in (Wh) for the previous day	Ed-	kWh	kWh	FLOAT	
56	15028	Production PV1 in (Wh) for the previous day	Ed1-	kWh	kWh	FLOAT	
58	15029	Production PV2 in (Wh) for the previous day	Ed2-	kWh	kWh	FLOAT	
60	15030	Number of irradiation hours for the current day	Sd	h	h	FLOAT	
62	15031	Number of irradiation hours for the previous day	Sd-1	h	h	FLOAT	
64	15032	Battery temperature	Tbat	°C	°C	FLOAT	
66	15033	Max PV voltage for the current day	Upmx	Vdc	V	FLOAT	
68	15034	Max PV1 voltage for the current day	Upm1	Vdc	V	FLOAT	
70	15035	Max PV2 voltage for the current day	Upm2	Vdc	V	FLOAT	
72	15036	Max battery current of the current day	Ibmx	Adc	A	FLOAT	
74	15037	Max PV power for the current day	Ppmx	kW	kW	FLOAT	
76	15038	Max PV1 power for the current day	Ppm1	kW	kW	FLOAT	
78	15039	Max PV2 power for the current day	Ppm2	kW	kW	FLOAT	
80	15040	Max battery voltage for the current day	UbmX	Vdc	V	FLOAT	
82	15041	Min battery voltage for the current day	UbmN	Vdc	V	FLOAT	
84	15042	Time in absorption of the current day	TabS	h	h	FLOAT	
86	15043	BAT- and Earth voltage	BatE	Vdc	V	FLOAT	
88	15044	PV- and Earth voltage	pv-E	Vdc	V	FLOAT	
90	15045	PV1- and Earth voltage	pv1E	Vdc	V	FLOAT	
92	15046	PV2- and Earth voltage	pv2E	Vdc	V	FLOAT	

Modbus register	Nr	VarioString information description	Short desc.	Unit on the RCC	Unit	Format	Related parameter or description
98	15049	Type of error	Err		0:None 1:OverV_B 2:OverV_PV 3:OverV_PV1 4:OverV_PV2 5:OverI_PV 6:OverI_PV1 7:OverI_PV2 8:GroundBat 9:GroundPV 10:GroundPV1 11:GroundPV2 12:OverTemp 13:UnderV_B 14:Cabling 15:Other	"ENUM"	
100	15050	Synchronized with Xtender battery cycle	Sync		0:No 1:Yes	"ENUM"	
102	15051	Synchronisation state	Sync		0:--- 1:--- 2:--- 3:--- 4:XTslave 5:VTslave 6:--- 7:--- 8:VTmaster 9:Autonom 10:VSslave 11:VSmaster	"ENUM"	
104	15052	Number of days before next equalization	EqIn	days	days	FLOAT	
106	15053	Battery set point	Bset	Vdc	V	FLOAT	
108	15054	Battery voltage (minute avg)	Ubat	Vdc	V	FLOAT	
110	15055	Battery voltage (minute max)	Ubat+	Vdc	V	FLOAT	
112	15056	Battery voltage (minute min)	Ubat-	Vdc	V	FLOAT	
114	15057	Battery current (minute avg)	Ibat	Adc	A	FLOAT	
116	15058	PV voltage (minute avg)	Upv	Vdc	V	FLOAT	

Modbus register	Nr	VarioString information description	Short desc.	Unit on the RCC	Unit	Format	Related parameter or description
118	15059	PV1 voltage (minute avg)	Upv1	Vdc	V	FLOAT	
120	15060	PV2 voltage (minute avg)	Upv2	Vdc	V	FLOAT	
122	15061	PV power (minute avg)	Ppv	kW	kW	FLOAT	
124	15062	PV1 power (minute avg)	Ppv1	kW	kW	FLOAT	
126	15063	PV2 power (minute avg)	Ppv2	kW	kW	FLOAT	
128	15064	Battery temperature (minute avg)	Tbat	°C	°C	FLOAT	
130	15065	Electronic temperature 1 (minute avg)	Dev1	°C	°C	FLOAT	
132	15066	Electronic temperature 1 (minute max)	Dev1+	°C	°C	FLOAT	
134	15067	Electronic temperature 1 (minute min)	Dev1-	°C	°C	FLOAT	
136	15068	Electronic temperature 2 (minute avg)	Dev2	°C	°C	FLOAT	
138	15069	Electronic temperature 2 (minute max)	Dev2+	°C	°C	FLOAT	
140	15070	Electronic temperature 2 (minute min)	Dev2-	°C	°C	FLOAT	
142	15071	Number of parameters (in code)	pCod			FLOAT	
144	15072	Number of parameters (in flash)	pFla			FLOAT	
146	15073	Number of infos users	iCod			FLOAT	
148	15074	ID type	Idt			FLOAT	VS120 = 12801d (0x3201), VS70 = 13057d (0x3301)
150	15075	ID bat voltage	Idv	Vdc	V	FLOAT	
152	15076	ID HW	HW			FLOAT	
154	15077	ID SOFT msb	Smsb			FLOAT	See section "Software version encoding"
156	15078	ID SOFT lsb	Slsb			FLOAT	See section "Software version encoding"
158	15079	ID SID	SID			FLOAT	
176	15088	State of auxiliary Aux 1	Aux 1		0:Opened 1:Closed	"ENUM"	
178	15089	State of auxiliary Aux 2	Aux 2		0:Opened 1:Closed	"ENUM"	
180	15090	Relay Aux 1 mode	Aux 1		0:--- 1:A 2:I 3:M 4:M	"ENUM"	
182	15091	Relay Aux 2 mode	Aux 2		0:--- 1:A 2:I 3:M 4:M	"ENUM"	
204	15102	ID FID msb				FLOAT	See section "FID encoding"



Modbus register	Nr	VarioString information description	Short desc.	Unit on the RCC	Unit	Format	Related parameter or description
206	15103	ID FID lsb				FLOAT	See section "FID encoding"
216	15108	State of the VarioString	VS state		0:Off 1:On	"ENUM"	
218	15109	Local daily communication error counter (CAN)	locEr			FLOAT	
222	15111	Remote entry state	RME		0:RM EN 0 1:RM EN 1	"ENUM"	

## 1.12 RCC messages

Level	Nr	Messages
V.O.	0	Warning (000): Battery low
V.O.	1	Warning (001): Battery too high
V.O.	2	Warning (002): Bulk charge too long
V.O.	3	(003): AC-In synchronization in progress
V.O.	4	Warning (004): Input frequency AC-In wrong
V.O.	5	Warning (005): Input frequency AC-In wrong
V.O.	6	Warning (006): Input voltage AC-In too high
V.O.	7	Warning (007): Input voltage AC-In too low
V.O.	8	Halted (008): Inverter overload SC
V.O.	9	Halted (009): Charger short circuit
V.O.	10	(010): System start-up in progress
V.O.	11	Warning (011): AC-In Energy quota
V.O.	12	(012): Use of battery temperature sensor
V.O.	13	(013): Use of additional remote control
V.O.	14	Halted (014): Over temperature EL
V.O.	15	Halted (015): Inverter overload BL
V.O.	16	Warning (016): Fan error detected
V.O.	17	(017): Programing mode
V.O.	18	Warning (018): Excessive battery voltage ripple
V.O.	19	Halted (019): Battery undervoltage
V.O.	20	Halted (020): Battery overvoltage
V.O.	21	(021): Transfer not authorized, AC-Out current is higher than {1107}
V.O.	22	Halted (022): Voltage presence on AC-Out

Level	Nr	Messages
V.O.	23	Halted (023): Phase not defined
V.O.	24	Warning (024): Change the clock battery
V.O.	25	Halted (025): Unknown Command board. Software upgrade needed
V.O.	26	Halted (026): Unknown Power board. Software upgrade needed
V.O.	27	Halted (027): Unknown extension board. Software upgrade needed
V.O.	28	Halted (028): Voltage incompatibility Power - Command
V.O.	29	Halted (029): Voltage incompatibility Ext. - Command
V.O.	30	Halted (030): Power incompatibility Power - Command
V.O.	31	Halted (031): Command board software incompatibility
V.O.	32	Halted (032): Power board software incompatibility
V.O.	33	Halted (033): Extension board software incompatibility
V.O.	34	Halted (034): FID corruption, call factory
V.O.	35	(035): Memory structure modified
V.O.	36	Halted (036): Parameter file lacking
V.O.	37	Warning (037): Message file lack. SW upgrade advised
V.O.	38	Warning (038): Upgrade of the device software advised
V.O.	39	Warning (039): Upgrade of the device software advised
V.O.	40	Warning (040): Upgrade of the device software advised
V.O.	41	Warning (041): Over temperature TR
V.O.	42	Halted (042): Unauthorized energy source at the output
V.O.	43	(043): Start of monthly test
V.O.	44	(044): End of successfully monthly test
V.O.	45	Warning (045): Monthly autonomy test failed
V.O.	46	(046): Start of weekly test
V.O.	47	(047): End of successfully weekly test
V.O.	48	Warning (048): Weekly autonomy test failed
V.O.	49	(049): Transfer opened because AC-In max current exceeded {1107}
V.O.	50	Error (050): Incomplete data transfer
V.O.	51	(051): The update is finished
V.O.	52	(052): Your installation is already updated
V.O.	53	Halted (053): Devices not compatible, software update required
V.O.	54	(054): Please wait. Data transfer in progress
V.O.	55	Error (055): No SD card inserted
V.O.	56	Warning (056): Upgrade of the RCC software advised
V.O.	57	(057): Operation finished successfully

Level	Nr	Messages
V.O.	58	Halted (058): Master synchronization missing
V.O.	59	Halted (059): Inverter overload HW
V.O.	60	Warning (060): Time security 1512 AUX1
V.O.	61	Warning (061): Time security 1513 AUX2
V.O.	62	Warning (062): Genset, no AC-In coming after AUX command
V.O.	63	(063): Save parameter XT
V.O.	64	(064): Save parameter BSP
V.O.	65	(065): Save parameter VarioTrack
V.O.	71	Error (071): Insufficient disk space on SD card
V.O.	72	Halted (072): COM identification incorrect
V.O.	73	(073): Datalogger is enabled on this RCC
V.O.	74	(074): Save parameter Xcom-MS
V.O.	75	(075): MPPT MS address changed successfully
V.O.	76	Error (076): Error during change of MPPT MS address
V.O.	77	Error (077): Wrong MPPT MS DIP Switch position
V.O.	78	(078): SMS or email sent
V.O.	79	Halted (079): More than 9 XTs in the system
V.O.	80	Halted (080): No battery (or reverse polarity)
V.O.	81	Warning (081): Earthing fault
V.O.	82	Halted (082): PV overvoltage
V.O.	83	Warning (083): No solar production in the last 48h
V.O.	84	(084): Equalization performed
V.O.	85	Error (085): Modem not available
V.O.	86	Error (086): Incorrect PIN code, unable to initiate the modem
V.O.	87	Error (087): Insufficient Signal from GSM modem
V.O.	88	Error (088): No connection to GSM network
V.O.	89	Error (089): No Xcom server access
V.O.	90	(090): Xcom server connected
V.O.	91	Warning (091): Update finished. Update software of other RCC/Xcom-232i
V.O.	92	Error (092): More than 4 RCC or Xcom in the system
V.O.	93	Error (093): More than 1 BSP in the system
V.O.	94	Error (094): More than 1 Xcom-MS in the system
V.O.	95	Error (095): More than 15 VarioTrack in the system
V.O.	121	Error (121): Impossible communication with target device
V.O.	122	Error (122): SD card corrupted

Level	Nr	Messages
V.O.	123	Error (123): SD card not formatted
V.O.	124	Error (124): SD card not compatible
V.O.	125	Error (125): SD card format not recognized. Should be FAT
V.O.	126	Error (126): SD card write protected
V.O.	127	Error (127): SD card, file(s) corrupted
V.O.	128	Error (128): SD card file or directory could not be found
V.O.	129	Error (129): SD card has been prematurely removed
V.O.	130	Error (130): Update directory is empty
V.O.	131	(131): The VarioTrack is configured for 12V batteries
V.O.	132	(132): The VarioTrack is configured for 24V batteries
V.O.	133	(133): The VarioTrack is configured for 48V batteries
V.O.	134	(134): Reception level of the GSM signal
V.O.	137	(137): VarioTrack master synchronization lost
V.O.	138	Error (138): XT master synchronization lost
V.O.	139	(139): Synchronized on VarioTrack master
V.O.	140	(140): Synchronized on XT master
V.O.	141	Error (141): More than 1 Xcom-SMS in the system
V.O.	142	Error (142): More than 15 VarioString in the system
V.O.	143	(143): Save parameter Xcom-SMS
V.O.	144	(144): Save parameter VarioString
V.O.	145	Error (145): SIM card blocked, PUK code required
V.O.	146	Error (146): SIM card missing
V.O.	147	Error (147): Install R532 firmware release prior to install an older release
V.O.	148	(148): Datalogger function interrupted (SD card removed)
V.O.	149	Error (149): Parameter setting incomplete
V.O.	150	Error (150): Cabling error between PV and VarioString
V.O.	162	Error (162): Communication loss with RCC or Xcom-232i
V.O.	163	Error (163): Communication loss with Xtender
V.O.	164	Error (164): Communication loss with BSP
V.O.	165	Error (165): Communication loss with Xcom-MS
V.O.	166	Error (166): Communication loss with VarioTrack
V.O.	167	Error (167): Communication loss with VarioString
V.O.	168	(168): Synchronized with VarioString master
V.O.	169	(169): Synchronization with VarioString master lost
V.O.	170	Warning (170): No solar production in the last 48h on PV1

Level	Nr	Messages
V.O.	171	Warning (171): No solar production in the last 48h on PV2
V.O.	172	Error (172): FID change impossible. More than one unit.
V.O.	173	Error (173): Incompatible Xtender. Please contact Studer Innotec SA
V.O.	174	(174): Inaccessible parameter, managed by the Xcom-CAN
V.O.	175	Halted (175): Critical undervoltage
V.O.	176	(176): Calibration setting lost
V.O.	177	(177): An Xtender has started up
V.O.	178	(178): No BSP. Necessary for programming with SOC
V.O.	179	(179): No BTS or BSP. Necessary for programming with temperature
V.O.	180	(180): Command entry activated
V.O.	181	Error (181): Disconnection of BTS
V.O.	182	(182): BTS/BSP battery temperature measurement used by a device
V.O.	183	Halted (183): An Xtender has lost communication with the system
V.O.	184	Error (184): Check phase orientation or circuit breakers state on AC-In
V.O.	185	Warning (185): AC-In voltage level with delay too low
V.O.	186	Halted (186): Critical undervoltage (fast)
V.O.	187	Halted (187): Critical overvoltage (fast)
V.O.	188	(188): CAN stage startup
V.O.	189	Error (189): Incompatible configuration file
V.O.	190	(190): The Xcom-SMS is busy
V.O.	191	(191): Parameter not supported
V.O.	192	(192): Unknown reference
V.O.	193	(193): Invalid value
V.O.	194	(194): Value too low
V.O.	195	(195): Value too high
V.O.	196	(196): Writing error
V.O.	197	(197): Reading error
V.O.	198	(198): User level insufficient
V.O.	199	(199): No data for the report
V.O.	200	Error (200): Memory full
V.O.	202	Warning (202): Battery alarm arrives
V.O.	203	(203): Battery alarm leaves
V.O.	204	Error (204): Battery stop arrives
V.O.	205	(205): Battery stop leaves
V.O.	206	Halted (206): Board hardware incompatibility

Level	Nr	Messages
V.O.	207	(207): AUX1 relay activation
V.O.	208	(208): AUX1 relay deactivation
V.O.	209	(209): AUX2 relay activation
V.O.	210	(210): AUX2 relay deactivation
V.O.	211	(211): Command entry deactivated
V.O.	212	Error (212): VarioTrack software incompatibility. Upgrade needed
V.O.	213	(213): Battery current limitation by the BSP stopped
V.O.	214	Warning (214): Half period RMS voltage limit exceeded, transfer opened
V.O.	215	Warning (215): UPS limit reached, transfer opened
V.O.	216	Warning (216): Scom watchdog caused the reset of Xcom-232i
V.O.	217	Warning (217): CAN problem at Xtender declaration
V.O.	218	Warning (218): CAN problem while writing parameters
V.O.	222	(222): Front ON/OFF button pressed
V.O.	223	(223): Main OFF detected
V.O.	224	(224): Delay before closing transfer relay in progress {1580}
V.O.	225	Error (225): Communication with lithium battery lost
V.O.	226	(226): Communication with lithium battery restored
V.O.	227	Error (227): Overload on high voltage DC side
V.O.	228	Error (228): Startup error
V.O.	229	Error (229): Short-circuit on high voltage DC side