-power in control

CE

PARAMETER LIST



Automatic Genset Controller, AGC-3

- Alarm list
- Parameter list

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1. General information

1.1 Warnings, legal information and safety

1.1.1 Warnings and notes

Throughout this document, a number of warnings and notes with helpful user information will be presented. To ensure that these are noticed, they will be highlighted as follows in order to separate them from the general text.

Warnings

Warnings indicate a potentially dangerous situation, which could result in death, personal injury or damaged equipment, if certain guidelines are not followed.

Notes

Notes provide general information, which will be helpful for the reader to bear in mind.

1.1.2 Legal information and disclaimer

DEIF takes no responsibility for installation or operation of the generator set. If there is any doubt about how to install or operate the engine/generator controlled by the Multi-line 2 unit, the company responsible for the installation or the operation of the set must be contacted.

The Multi-line 2 unit is not to be opened by unauthorised personnel. If opened anyway, the warranty will be lost.

Disclaimer

DEIF A/S reserves the right to change any of the contents of this document without prior notice.

1.1.3 Safety issues

Installing and operating the Multi-line 2 unit may imply work with dangerous currents and voltages. Therefore, the installation should only be carried out by authorised personnel who understand the risks involved in working with live electrical equipment.

Be aware of the hazardous live currents and voltages. Do not touch any AC measurement inputs as this could lead to injury or death.

1.1.4 Electrostatic discharge awareness

Sufficient care must be taken to protect the terminal against static discharges during the installation. Once the unit is installed and connected, these precautions are no longer necessary.

1.1.5 Factory settings

The Multi-line 2 unit is delivered from factory with certain factory settings. These are based on average values and are not necessarily the correct settings for matching the engine/generator set in question. Precautions must be taken to check the settings before running the engine/generator set.

1.2 About the Parameter List

1.2.1 General purpose of the Parameter List

This document is a complete parameter list including all parameters, which means that some of the option parameters included may not be accessible in the system in question.

The document includes a complete standard alarm list and a complete standard parameter list for setup. Therefore, this document is to be used for reference, when information about specific alarms and parameters is needed.

Please make sure to read this document before starting to work with the Multi-line 2 unit and the genset to be controlled. Failure to do this could result in human injury or damage to the equipment.

1.2.2 Intended users

This Parameter List is mainly intended for the person responsible for the unit parameter setup. In most cases, this would be a panel builder designer. Naturally, other users might also find useful information here.

1.2.3 Contents and overall structure

This document is divided into chapters, and in order to make the structure simple and easy to use, each chapter will begin from the top of a new page.

2. Alarm list

2.1 General information about the alarm list

2.1.1 Alarm list features and options

In the following, these abbreviations are used:
G: Generator
GB: Generator breaker
TB: Tie breaker (for mains unit)
MB: Mains breaker
BTB: Bus tie breaker
BA: Busbar A (BTB unit)
BB: Busbar (BTB unit: Busbar B)
N/A: Not available

This chapter includes a complete alarm list, including all possible options. Therefore, this chapter is to be used for reference when specific information about the individual parameters is needed for the unit setup.

The table consists of the following possible adjustments:

Setpoint: The alarm setpoint is adjusted in the setpoint menu. The setting is a percentage of the nominal values.

Delay: The timer setting is the time that must expire from the alarm level is reached until the alarm occurs.

Relay output A: A relay can be activated by output A.

Relay output B: A relay can be activated by output B.

Enable: The alarm can be activated or deactivated. ON means always activated, RUN means that the alarm has run status. This means it is activated when the running signal is present.

Fail class: When the alarm occurs the unit will react depending on the selected fail class.

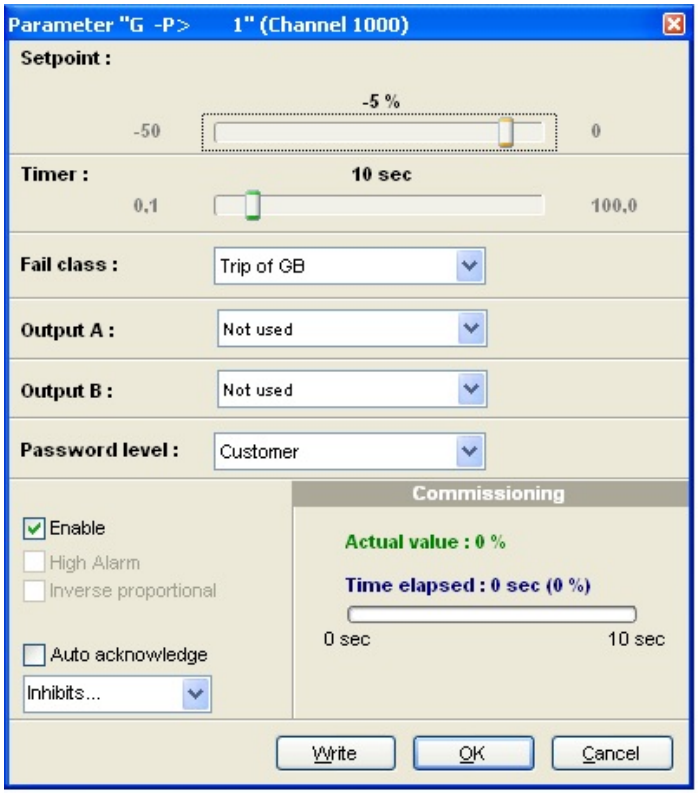
Fail classes are:

Fail class	DG (diesel generator)	Mains unit	BTB (bus tie breaker)
F1	Block	Block	Block
F2	Warning	Warning	Warning
F3	Trip GB	Trip TB	Trip BTB
F4	Trip + Stop	Trip MB	N/A
F5	Shutdown	N/A	N/A
F6	Trip MB	N/A	N/A
F7	Safety stop	N/A	N/A
F8	Trip MB/GB	N/A	N/A

Small differences due to the character of the parameters may exist between the individual tables.

It is also possible to configure the parameters by using the PC utility software. It will be possible to make the same configurations as described above.

By using the PC utility software, extra functionality is available. For all the protections it is possible to make an automatic acknowledgement of the alarm.



2.2 Protection parameters

2.2.1 Reverse power and overcurrent protection

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
1000 Generator reverse power 1							
1001	G –P> 1	Set-point	-200.0% 0.0%	-5.0%		Designer's Reference Handbook	The alarm and fail class are activated when the reverse power has been continuously above the programmed value during the programmed delay.
1002	G –P> 1	Timer	0.1 s 100.0 s	5.0 s			
1003	G –P> 1	Relay output A	Not used Option-dependent	Not used			
1004	G –P> 1	Relay output B	Not used Option-dependent	Not used			
1005	G –P> 1	Enable	OFF ON	ON			
1006	G –P> 1	Fail class	F1…F8	Trip GB (F3)			
1010 Generator reverse power 2							
1011	G –P> 2	Set-point	-200.0% 0.0%	-5.0%		Designer's Reference Handbook	The alarm and fail class are activated when the reverse power has been continuously above the programmed value during the programmed delay.
1012	G –P> 2	Timer	0.1 s 100.0 s	10.0 s			
1013	G –P> 2	Relay output A	Not used Option-dependent	Not used			
1014	G –P> 2	Relay output B	Not used Option-dependent	Not used			
1015	G –P> 2	Enable	OFF ON	ON			
1016	G –P> 2	Fail class	F1…F8	Trip GB (F3)			
1030 Generator overcurrent 1							

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
1031	G I> 1	Set-point	50.0% 200.0%	115.0%		Designer's Reference Handbook	The alarm and fail class are activated when the current has been continuously above the programmed value during the programmed delay.
1032	G I> 1	Timer	0.1 s 3200.0 s	10.0 s			
1033	G I> 1	Relay output A	Not used Option-dependent	Not used			
1034	G I> 1	Relay output B	Not used Option-dependent	Not used			
1035	G I> 1	Enable	OFF ON	ON			
1036	G I> 1	Fail class	F1…F8	Warning (F2)			
1040 Generator overcurrent 2							
1041	G I> 2	Set-point	50.0% 200.0%	120.0%		Designer's Reference Handbook	The alarm and fail class are activated when the current has been continuously above the programmed value during the programmed delay.
1042	G I> 2	Timer	0.1 s 3200.0 s	5.0 s			
1043	G I> 2	Relay output A	Not used Option-dependent	Not used			
1044	G I> 2	Relay output B	Not used Option-dependent	Not used			
1045	G I> 2	Enable	OFF ON	ON			
1046	G I> 2	Fail class	F1…F8	Trip GB (F3)			
1050 Generator overcurrent 3							
1051	G I> 3	Set-point	50.0% 200.0%	115.0%		Designer's Reference Handbook	The alarm and fail class are activated when the current has been continuously above the programmed value during the programmed delay.
1052	G I> 3	Timer	0.1 s 3200.0 s	10.0 s			
1053	G I> 3	Relay output A	Not used Option-dependent	Not used			

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
1054	G I> 3	Relay output B	Not used Option-depend-ent	Not used			
1055	G I> 3	Ena-ble	OFF ON	ON			
1056	G I> 3	Fail class	F1…F8	Trip GB (F3)			
1060 Generator overcurrent 4							
1061	G I> 4	Set-point	50.0% 200.0%	120.0%		Design-er's Ref-erence Hand-book	The alarm and fail class are acti-vated when the current has been continuously above the program-med value during the program-med delay.
1062	G I> 4	Timer	0.1 s 3200.0 s	5.0 s			
1063	G I> 4	Relay output A	Not used Option-depend-ent	Not used			
1064	G I> 4	Relay output B	Not used Option-depend-ent	Not used			
1065	G I> 4	Ena-ble	OFF ON	ON			
1066	G I> 4	Fail class	F1…F8	Trip GB (F3)			
1100 Voltage-dependent overcurrent curve setting							
1101	G Iv > (50%)	Set-point I1	50.0% 200.0%	110.0%	@50% nom. voltage	Design-er's Ref-erence Hand-book	Settings relate to nominal gener-ator current. The condition has to be true i.e. I1<I2<I3<I4<I5<I6. If this is not fulfilled, the worst-case setpoint I1 will be used. Setpoints 3 to 6 include Relay output A and B.
1102	G Iv > (60%)	Set-point I2	50.0% 200.0%	125.0%	@60% nom. voltage		
1103	G Iv > (70%)	Set-point I3	50.0% 200.0%	140.0%	@70% nom. voltage		
1104	G Iv > (80%)	Set-point I4	50.0% 200.0%	155.0%	@80% nom. voltage		
1105	G Iv > (90%)	Set-point I5	50.0% 200.0%	170.0%	@90% nom. voltage		

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
1106	G Iv > (100%)	Set-point I6	50.0% 200.0%	200.0%	@100% nom. voltage		
1110 Voltage-dependent overcurrent alarm							
1110	G Iv >	Set-point	50.0% 200.0%	110.0%		Design-er's Ref-erence Hand-book	The alarm and fail class are acti-vated when the overcurrent has been continuously above the programmed value during the programmed delay. The setpoint value is calculated automatically by the values in menus 1101-1106.
1111	G Iv >	Timer	0.1 s 300.0 s	1.0 s			
1112	G Iv >	Relay output A	Not used Option-depend-ent	Not used			
1113	G Iv >	Relay output B	Not used Option-depend-ent	Not used			
1114	G Iv >	Acti-vate	OFF ON	ON			
1115	G Iv >	Fail class	F1...F8	Trip GB (F3)			
1130 Generator fast overcurrent 1							
1131	G I>> 1	Set-point	150.0% 350.0%	150.0%		Design-er's Ref-erence Hand-book	The alarm settings relate to the nominal current setting. The alarm and fail class are activated when the current has been con-tinuously above the programmed value during the programmed delay.
1132	G I>> 1	Timer	0.0 s 100.0 s	2.0 s			
1133	G I>> 1	Re-play output A	Not used Option-depend-ent	Not used			
1134	G I>> 1	Relay output B	Not used Option-depend-ent	Not used			
1135	G I>> 1	Ena-ble	OFF ON	OFF			
1136	G I>> 1	Fail class	F1...F8	Trip GB (F3)			
1140 Generator fast overcurrent 2							

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
1141	G I>> 2	Set-point	150.0% 350.0%	200%		Designer's Reference Handbook	The alarm and fail class are activated when the current has been continuously above the programmed value during the programmed delay
1142	G I>> 2	Delay	0.0 s 100.0 s	0.5 s			
1143	G I>> 2	Replay output A	Not used Option-dependent	Not used			
1144	G I>> 2	Relay output B	Not used Option-dependent	Not used			
1145	G I>> 2	Enable	OFF ON	OFF			
1146	G I>> 2	Fail class	F1...F8	Trip GB (F3)			

2.2.2 Voltage protections

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
1150 Generator overvoltage 1							
1151	G U> 1	Set-point	100.0% 120.0%	103.0%		Designer's Reference Handbook	The alarm and fail class are activated when the voltage has been continuously above the programmed value during the programmed delay.
1152	G U> 1	Timer	0.1 s 100.0 s	10.0 s			
1153	G U> 1	Relay output A	Not used Option-dep.	Not used			
1154	G U> 1	Relay output B	Not used Option-dep.	Not used			
1155	G U> 1	Enable	OFF ON	OFF			
1156	G U> 1	Fail class	F1…F8	Warning (F2)			
1160 Generator overvoltage 2							
1161	G U> 2	Set-point	100.0% 120.0%	105.0%		Designer's Reference Handbook	The alarm and fail class are activated when the voltage has been continuously above the programmed value during the programmed delay.
1162	G U> 2	Timer	0.1 s 100.0 s	5.0 s			
1163	G U> 2	Relay output A	Not used Option-dep.	Not used			
1164	G U> 2	Relay output B	Not used Option-dep.	Not used			
1165	G U> 2	Enable	OFF ON	OFF			
1166	G U> 2	Fail class	F1…F8	Warning (F2)			
1170 Generator undervoltage 1							
1171	G U< 1	Set-point	40.0% 100.0%	97%		Designer's Reference Handbook	The alarm and fail class are activated when the voltage has been continuously under the programmed value during the programmed delay.
1172	G U< 1	Timer	0.1 s 100.0 s	10.0 s			
1173	G U< 1	Relay output A	Not used Option-dep.	Not used			

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
1174	G U< 1	Relay output B	Not used Option-dep.	Not used			
1175	G U< 1	Enable	OFF ON	OFF			
1176	G U< 1	Fail class	F1…F8	Warning (F2)			
1180 undervoltage 2							
1181	G U< 2	Set-point	40.0% 100.0%	95.0%		Designer's Reference Handbook	The alarm and fail class are activated when the voltage has been continuously under the programmed value during the programmed delay.
1182	G U< 2	Timer	0.1 s 100.0 s	5.0 s			
1183	G U< 2	Relay output A	Not used Option-dep.	Not used			
1184	G U< 2	Relay output B	Not used Option-dep.	Not used			
1185	G U< 2	Enable	OFF ON	OFF			
1186	G U< 2	Fail class	F1…F8	Warning (F2)			
1190 Generator undervoltage 3							
1191	G U< 3	Set-point	40.0% 100.0%	95.0%		Designer's Reference Handbook	The alarm and fail class are activated when the voltage has been continuously under the programmed value during the programmed delay.
1192	G U< 3	Timer	0.1 s 100.0 s	5.0 s			
1193	G U< 3	Relay output A	Not used Option-dep.	Not used			
1194	G U< 3	Relay output B	Not used Option-dep.	Not used			
1195	G U< 3	Enable	OFF ON	OFF			
1196	U< 3	Fail class	F1...F8	Warning (F2)			
1200 Generator voltage trip							

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
1201	G voltage trip	Set-point	Ph-Ph Ph-N	Ph-Ph		Designer's Reference Handbook	Selection between phase-phase or phase-neutral voltage detection. When phase-phase tripping is selected, the voltage alarms relate to the nominal voltage. When phase-neutral tripping is selected, the voltage alarms relate to the nominal voltage divided by √3.

2.2.3 Frequency protections

Frequency settings relate to the nominal frequency setting.

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
1210 Generator overfrequency 1							
1211	G f> 1	Set-point	100.0% 120.0%	103.0%		Designer's Reference Handbook	The alarm and fail class are activated when the frequency has been continuously above the programmed value during the programmed delay. Frequency settings relate to nominal frequency setting.
1212	G f> 1	Timer	0.2 s 100.0 s	10.0 s			
1213	G f> 1	Relay output A	Not used Option-dependent	Not used			
1214	G f> 1	Relay output B	Not used Option-dependent	Not used			
1215	G f> 1	Enable	OFF ON	OFF			
1216	G f> 1	Fail class	F1…F8	Warning (F2)			
1220 Generator overfrequency 2							
1221	G f> 2	Set-point	100.0% 120.0%	105.0%		Designer's Reference Handbook	The alarm and fail class are activated when the frequency has been continuously above the programmed value during the programmed delay.
1222	G f> 2	Timer	0.2 s 100.0 s	5.0 s			
1223	G f> 2	Relay output A	Not used Option-dependent	Not used			
1224	G f> 2	Relay output B	Not used Option-dependent	Not used			
1225	G f> 2	Enable	OFF ON	OFF			
1226	G f> 2	Fail class	F1…F8	Warning (F2)			
1230 Generator overfrequency 3							
1231	G f> 3	Set-point	100.0% 120.0%	105.0%		Designer's Reference Handbook	The alarm and fail class are activated when the frequency has been continuously above the programmed value during the programmed delay.
1232	G f> 3	Timer	0.2 s 100.0 s	5.0 s			

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
1233	G f> 3	Relay output A	Not used Option-dependent	Not used			
1234	G f> 3	Relay output B	Not used Option-dependent	Not used			
1235	G f> 3	Enable	OFF ON	OFF			
1236	G f> 3	Fail class	F1…F8	Warning (F2)			
1240 Generator underfrequency 1							
1241	G f<1	Set-point	80.0% 100.0%	97.0%		Designer's Reference Handbook	The alarm and fail class are activated when the frequency has been continuously under the programmed value during the programmed delay.
1242	G f<1	Timer	0.2 s 100.0 s	10.0 s			
1243	G f<1	Relay output A	Not used Option-dependent	Not used			
1244	G f<1	Relay output B	Not used Option-dependent	Not used			
1245	G f<1	Enable	OFF ON	OFF			
1246	G f<1	Fail class	F1…F8	Warning (F2)			
1250 Generator underfrequency 2							
1251	G f<2	Set-point	80.0% 100.0%	95.0%		Designer's Reference Handbook	The alarm and fail class are activated when the frequency has been continuously under the programmed value during the programmed delay.
1252	G f<2	Timer	0.2 s 100.0 s	5.0 s			
1253	G f<2	Relay output A	Not used Option-dependent	Not used			
1254	G f<2	Relay output B	Not used Option-dependent	Not used			
1255	G f<2	Enable	OFF ON	OFF			
1256	G f<2	Fail class	F1…F8	Warning (F2)			
1260 Generator underfrequency 3							

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
1261	G f<3	Set-point	80.0% 100.0%	95.0%		Designer's Reference Handbook	The alarm and fail class are activated when the frequency has been continuously under the programmed value during the programmed delay.
1262	G f<3	Timer	0.2 s 100.0 s	5.0 s			
1263	G f<3	Relay output A	Not used Option-dependent	Not used			
1264	G f<3	Relay output B	Not used Option-dependent	Not used			
1265	G f<3	Enable	OFF ON	OFF			
1266	G f<3	Fail class	F1…F8	Warning (F2)			

2.2.4 Busbar voltage protections

Voltage settings relate to the nominal voltage setting.

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
1270 Busbar overvoltage 1							
1271	BB U> 1	Set-point	100.0% 120.0%	103.0%		Designer's Reference Handbook	The alarm and fail class are activated when the voltage has been continuously above the programmed value during the programmed delay.
1272	BB U> 1	Timer	0.0 s 99.99 s	10.0 s			
1273	BB U> 1	Relay output A	Not used Option-de-pendent	Not used			
1274	BB U> 1	Relay output B	Not used Option-de-pendent	Not used			
1275	BB U> 1	Enable	OFF ON	OFF			
1276	BB U> 1	Fail class	F1…F8	Warning (F2)			
1280 Busbar overvoltage 2							
1281	BB U> 2	Set-point	100.0% 120.0%	105.0%		Designer's Reference Handbook	The alarm and fail class are activated when the voltage has been continuously above the programmed value during the programmed delay.
1282	BB U> 2	Timer	0.0 s 99.99 s	5.0 s			
1283	BB U> 2	Relay output A	Not used Option-de-pendent	Not used			
1284	BB U> 2	Relay output B	Not used Option-de-pendent	Not used			
1285	BB U> 2	Enable	OFF ON	OFF			
1286	BB U> 2	Fail class	F1…F8	Warning (F2)			
1290 Busbar overvoltage 3							
1291	BB U> 3	Set-point	100.0% 120.0%	105.0%		Designer's Reference Handbook	The alarm and fail class are activated when the voltage has been continuously above the programmed value during the programmed delay.
1292	BB U> 3	Timer	0.0 s 99.99 s	5.0 s			

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
1293	BB U> 3	Relay output A	Not used Option-de-pendent	Not used			
1294	BB U> 3	Relay output B	Not used Option-de-pendent	Not used			
1295	BB U> 3	Enable	OFF ON	OFF			
1296	BB U> 3	Fail class	F1…F8	Warning (F2)			
1300 Busbar undervoltage 1							
1301	BB U< 1	Set-point	40.0% 100.0%	97.0%		Designer's Reference Handbook	The alarm and fail class are activated when the voltage has been continuously under the programmed value during the programmed delay.
1302	BB U< 1	Timer	0.00 s 99.99 s	10.00 s			
1303	BB U< 1	Relay output A	Not used Option-de-pendent	Not used			
1304	BB U< 1	Relay output B	Not used Option-de-pendent	Not used			
1305	BB U< 1	Enable	OFF ON	OFF			
1306	BB U< 1	Fail class	F1…F8	Warning (F2)			
1310 Busbar undervoltage 2							
1311	BB U< 2	Set-point	40.0% 100.0%	95.0%		Designer's Reference Handbook	The alarm and fail class are activated when the voltage has been continuously under the programmed value during the programmed delay.
1312	BB U< 2	Timer	0.00 s 99.99 s	5.0 s			
1313	BB U< 2	Relay output A	Not used Option-de-pendent	Not used			
1314	BB U< 2	Relay output B	Not used Option-de-pendent	Not used			
1315	BB U< 2	Enable	OFF ON	OFF			
1316	BB U< 2	Fail class	F1…F8	Warning (F2)			
1320 Busbar undervoltage 3							

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
1321	BB U< 3	Set-point	40.0% 100.0%	97.0%		Designer's Reference Handbook	The alarm and fail class are activated when the voltage has been continuously under the programmed value during the programmed delay.
1322	BB U< 3	Timer	0.00 s 99.99 s	10.0 s			
1323	BB U< 3	Relay output A	Not used Option-de-pendent	Not used			
1324	BB U< 3	Relay output B	Not used Option-de-pendent	Not used			
1325	BB U< 3	Enable	OFF ON	OFF			
1326	BB U< 3	Fail class	F1…F8	Warning (F2)			
1330 Busbar undervoltage 4							
1331	BB U< 4	Set-point	40.0% 100.0%	95.0%		Designer's Reference Handbook	The alarm and fail class are activated when the voltage has been continuously under the programmed value during the programmed delay.
1332	BB U< 4	Timer	0.00 s 99.99 s	5.0 s			
1333	BB U< 4	Relay output A	Not used Option-dep.	Not used			
1334	BB U< 4	Relay output B	Not used Option-dep.	Not used			
1335	BB U< 4	Enable	OFF ON	OFF			
1336	BB U< 4	Fail class	F1...F8	Warning (F2)			
1340 Busbar voltage trip							
1341	BB volt-age trip	Set-point	Ph-Ph Ph-N	Ph-Ph		Designer's Reference Handbook	Selection between phase-phase or phase-neutral volt-age detection.

2.2.5 Busbar frequency protections

Frequency settings relate to the nominal frequency setting.

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
1350 Busbar overfrequency 1							
1351	BB f> 1	Set-point	100.0% 120.0%	103.0%		Designer's Reference Handbook	The alarm and fail class are activated when the frequency has been continuously above the programmed value during the programmed delay.
1352	BB f> 1	Timer	0.0 s 99.99 s	10.0 s			
1353	BB f> 1	Relay output A	Not used Option-dep.	Not used			
1354	BB f> 1	Relay output B	Not used Option-dep.	Not used			
1355	BB f> 1	Enable	OFF ON	OFF			
1356	BB f> 1	Fail class	F1…F8	Warning (F2)			
1360 Busbar overfrequency 2							
1361	BB f> 2	Set-point	100.0% 120.0%	105.0%		Designer's Reference Handbook	The alarm and fail class are activated when the frequency has been continuously above the programmed value during the programmed delay.
1362	BB f> 2	Timer	0.00 s 99.99 s	5.0 s			
1363	BB f> 2	Relay output A	Not used Option-dep.	Not used			
1364	BB f> 2	Relay output B	Not used Option-dep.	Not used			
1365	BB f> 2	Enable	OFF ON	OFF			
1366	BB f> 2	Fail class	F1…F8	Warning (F2)			
1370 Busbar overfrequency 3							
1371	BB f> 3	Set-point	100.0% 120.0%	105.0%		Designer's Reference Handbook	The alarm and fail class are activated when the frequency has been continuously above the programmed value during the programmed delay.
1372	BB f> 3	Timer	0.00 s 99.99 s	5.0 s			

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
1373	BB f> 3	Relay output A	Not used Option-dep.	Not used			
1374	BB f> 3	Relay output B	Not used Option-dep.	Not used			
1375	BB f> 3	Enable	OFF ON	OFF			
1376	BB f> 3	Fail class	F1…F8	Warning (F2)			
1380 Busbar underfrequency 1							
1381	BB f< 1	Set-point	80.0% 100.0%	97.0%		Designer's Reference Handbook	The alarm and fail class are activated when the frequency has been continuously under the programmed value during the programmed delay.
1382	BB f< 1	Timer	0.00 s 99.99 s	10.0 s			
1383	BB f< 1	Relay output A	Not used Option-dep.	Not used			
1384	BB f< 1	Relay output B	Not used Option-dep.	Not used			
1385	BB f< 1	Enable	OFF ON	OFF			
1386	BB f< 1	Fail class	F1…F8	Warning (F2)			
1390 Busbar underfrequency 2							
1391	BB f< 2	Set-point	80.0% 100.0%	95.0%		Designer's Reference Handbook	The alarm and fail class are activated when the frequency has been continuously under the programmed value during the programmed delay.
1392	BB f< 2	Timer	0.00 s 99.99 s	5.0 s			
1393	BB f< 2	Relay output A	Not used Option-dep.	Not used			
1394	BB f< 2	Relay output B	Not used Option-dep.	Not used			
1395	BB f< 2	Enable	OFF ON	OFF			
1396	BB f< 2	Fail class	F1…F8	Warning (F2)			
1400 Busbar underfrequency 3							

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
1401	BB f< 3	Set-point	80.0% 100.0%	97.0%		Designer's Reference Handbook	The alarm and fail class are activated when the frequency has been continuously under the programmed value during the programmed delay.
1402	BB f< 3	Timer	0.00 s 99.99 s	10.0 s			
1403	BB f< 3	Relay output A	Not used Option-dep.	Not used			
1404	BB f< 3	Relay output B	Not used Option-dep.	Not used			
1405	BB f< 3	Enable	OFF ON	OFF			
1406	BB f< 3	Fail class	F1…F8	Warning (F2)			
1410 Busbar underfrequency 4							
1411	BB f< 4	Set-point	80.0% 100.0%	95.0%		Designer's Reference Handbook	The alarm and fail class are activated when the frequency has been continuously under the programmed value during the programmed delay.
1412	BB f< 4	Timer	0.00 s 99.99 s	5.0 s			
1413	BB f< 4	Relay output A	Not used Option-dep.	Not used			
1414	BB f< 4	Relay output B	Not used Option-dep.	Not used			
1415	BB f< 4	Enable	OFF ON	OFF			
1416	BB f< 4	Fail class	F1...F8	Warning (F2)			

2.2.6 Mains failure protections

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
1420 Df/dt (ROCOF)							
1421	Df/dt (ROCOF)	Set-point	1.5 Hz/s 10.0 Hz/s	5.0 Hz/s		Option A1	The alarm and fail class are activated when the df/dt rate has been continuously above the programmed value during the programmed number of periods (delay).
1422	Df/dt (ROCOF)	Timer	3 periods 20 periods	6 periods			
1423	Df/dt (ROCOF)	Relay output A	Not used Option-dep.	Not used			
1424	Df/dt (ROCOF)	Relay output B	Not used Option-dep.	Not used			
1425	Df/dt (ROCOF)	Enable	OFF ON	OFF			
1426	Df/dt (ROCOF)	Fail class	F1…F8	Trip MB (F6)			
1430 Vector jump							
1431	Vector jump	Set-point	1.0 deg. 90.0 deg.	10.0 deg.		Option A1	The alarm and fail class are activated when a vector jump is detected.
1432	Vector jump	Relay output A	Not used Option-dep.	Not used			
1433	Vector jump	Relay output B	Not used Option-dep.	Not used			
1434	Vector jump	Enable	OFF ON	OFF			
1435	Vector jump	Fail class	F1…F8	Trip MB (F6)			
1440 Busbar positive sequence voltage low							
1471	BB pos seq volt	Set-point	10.0% 110.0%	70.0%		Option A4	The alarm and fail class are activated when the symmetrical (positive sequence) voltage has been continuously below the programmed value during the programmed delay.
1472	BB pos seq volt	Timer	1 period 9 periods	2 periods			

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
1473	BB pos seq volt	Relay output A	Not used Option-dep.	Not used			The timer factory setting is set to 2 periods. This means that the error has to be active in 2 whole periods before the alarm will be tripped. E.g. in a 50 Hz system, the alarm will be activated if the positive sequence is below 70% of U nominal voltage for 40 ms. The alarm will trip the fail class as soon as possible after this delay.
1474	BB pos seq volt	Relay output B	Not used Option-dep.	Not used			
1475	BB pos seq volt	Enable	OFF ON	OFF			
1476	BB pos seq volt	Fail class	F1…F8	Trip MB (F6)			

2.2.7 Overload protections

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
1450 Generator overload 1							
1451	G P> 1	Set-point	-200.0% 200.0%	100.0%		Designer's Reference Handbook	Settings relate to nominal power. The alarm and fail class are activated when the power has been continuously above the programmed value during the programmed delay.
1452	G P> 1	Timer	0.1 s 3200.0 s	10.0 s			
1453	G P> 1	Relay output A	Not used Option-dep.	Not used			
1454	G P> 1	Relay output B	Not used Option-dep.	Not used			
1455	G P> 1	Enable	OFF ON	OFF			
1456	G P> 1	Fail class	F1…F8	Warning (F2)			
1460 Generator overload 2							
1461	G P> 2	Set-point	-200.0% 200.0%	110.0%		Designer's Reference Handbook	The alarm and fail class are activated when the power has been continuously above the programmed value during the programmed delay.
1462	G P> 2	Timer	0.1 s 3200.0 s	5.0 s			
1463	G P> 2	Relay output A	Not used Option-dep.	Not used			
1464	G P> 2	Relay output B	Not used Option-dep.	Not used			
1465	G P> 2	Enable	OFF ON	OFF			
1466	G P> 2	Fail class	F1…F8	Trip GB (F3)			
1470 Generator overload 3							
1471	G P> 3	Set-point	-200.0% 200.0%	100.0%		Designer's Reference Handbook	The alarm and fail class are activated when the power has been continuously above the programmed value during the programmed delay.
1472	G P> 3	Timer	0.1 s 3200.0 s	10.0 s			
1473	G P> 3	Relay output A	Not used Option-dep.	Not used			

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
1474	G P> 3	Relay output B	Not used Option-dep.	Not used			
1475	G P> 3	Enable	OFF ON	OFF			
147	G P> 3	Fail class	F1…F8	Trilp GB (F3)			
1480 Generator overload 4							
1481	G P> 4	Set-point	-200.0% 200.0%	110.0%		Designer's Reference Handbook	The alarm and fail class are activated when the power has been continuously above the programmed value during the programmed delay.
1482	G P> 4	Timer	0.1 s 3200.0 s	5.0 s			
1483	G P> 4	Relay output A	Not used Option-dep.	Not used			
1484	G P> 4	Relay output B	Not used Option-dep.	Not used			
1485	G P> 4	Enable	OFF ON	OFF			
1486	G P> 4	Fail class	F1…F8	Trip GB (F3)			
1490 Generator overload 5							
1491	G P> 5	Set-point	-200.0% 200.0%	100.0%		Designer's Reference Handbook	The alarm and fail class are activated when the power has been continuously above the programmed value during the programmed delay.
1492	G P> 5	Timer	0.1 s 3200.0 s	10.0 s			
1493	G P> 5	Relay output A	Not used Option-dep.	Not used			
1494	G P> 5	Relay output B	Not used Option-dep.	Not used			
1495	G P> 5	Enable	OFF ON	OFF			
1496	G P> 5	Fail class	F1...F8	Trip GB (F3)			

2.2.8 Current unbalance protection

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
1500 Generator unbalanced current							
1501	G Unbalance curr.	Set-point	0.0% 100.0%	30.0%		Designer's Reference Handbook	Settings relate to nominal generator current. The alarm and fail class are activated when the difference between the max. reading and the min. reading of the 3 measured currents has been continuously above the programmed value during the programmed delay.
1502	G Unbalance curr.	Timer	0.1 s 100.0 s	10.0 s			
1503	G Unbalance curr.	Relay output A	Not used Option-dep.	Not used			
1504	G Unbalance curr.	Relay output B	Not used Option-dep.	Not used			
1505	G Unbalance curr.	Enable	OFF ON	OFF			
1506	G Unbalance curr.	Fail class	F1…F8	Trip GB (F3)			

2.2.9 Voltage unbalance protection

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
1510 Generator unbalanced voltage							
1511	G Unbalance volt.	Set-point	0.0% 50.0%	10.0%		Designer's Reference Handbook	Settings relate to nominal voltage. The alarm and fail class are activated when the difference between the max. reading and the min. reading of the 3 measured generator voltages has been continuously above the programmed value during the programmed delay.
1512	G Unbalance volt.	Timer	0.1 s 100.0 s	10.0 s			
1513	G Unbalance volt.	Relay output A	Not used Option-dep.	Not used			
1514	G Unbalance volt.	Relay output B	Not used Option-dep.	Not used			
1515	G Unbalance volt.	Enable	OFF ON	OFF			
1516	G Unbalance volt.	Fail class	F1…F8	Trip GB (F3)			

2.2.10 Reactive power import (loss of excitation) protection

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
1520 Generator reactive power import (loss of excitation)							
1521	G – Q>	Setpoint	0.0% 150.0%	50.0%		Designer's Reference Handbook	Settings relate to nominal power. The alarm and fail class are activated when imported VAr has been continuously above the programmed value during the programmed delay.
1522	G – Q>	Timer	0.1 s 100.0 s	10.0 s			
1523	G–Q>	Relay output A	Not used Option-dep.	Not used			
1524	G – Q>	Relay output B	Not used Option-dep.	Not used			
1525	G – Q>	Enable	OFF ON	OFF			
1526	G – Q>	Fail class	F1…F8	Warning (F2)			

2.2.11 Reactive power export (overexcitation) protection

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
1530 Generator reactive power export (overexcitation)							
1531	Q>	Setpoint	0.0% 100.0%	60.0%		Designer's Reference Handbook	Settings relate to nominal power. The alarm and fail class are activated when exported VAr has been continuously above the programmed value during the programmed delay.
1532	G Q>	Timer	0.1 s 100.0 s	10.0 s			
1533	G Q>	Relay output A	Not used Option-dep.	Not used			
1534	G Q>	Relay output B	Not used Option-dep.	Not used			
1535	G Q>	Enable	OFF ON	OFF			
1536	G Q>	Fail class	F1…F8	Warning (F2)			

2.2.12 Negative sequence

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
1540 Generator negative sequence current							
1541	G neg seq I	Setpoint	1.0% 100.0%	20.0%		Option C2	Settings relate to nominal current. The alarm and fail class are activated when the negative sequence has been continuously above the programmed value during the programmed delay.
1542	G neg seq I	Timer	0.2 s 100.0 s	0.5 s			
1543	G neg seq I	Relay output A	Not used Option-dep.	Not used			
1544	neg seq I	Relay output B	Not used Option-dep.	Not used			
1545	G neg seq I	Enable	OFF ON	OFF			
1546	G neg seq I	Fail class	F1…F8	Trip MB (F6)			
1550 Generator negative sequence voltage							
1551	G neg seq U	Setpoint	1.0% 100.0%	5.0%		Option C2	Settings relate to nominal voltage. The alarm and fail class are activated when the negative sequence has been continuously above the programmed value during the programmed delay.
1552	G neg seq U	Timer	0.2 s 100.0 s	0.5 s			
1553	G neg seq U	Relay output A	Not used Option-dep.	Not used			
1554	G neg seq U	Relay output B	Not used Option-dep.	Not used			
1555	G neg seq U	Enable	OFF ON	OFF			
1556	G neg seq U	Fail class	F1…F8	Trip MB (F6)			
1560 Generator negative sequence selection							
1561	G neg seq select	Setpoint	G/MBA measurement BB measurement	G/MBA measurement		Option C2	Selection between generator or busbar measurement of negative sequence voltage.

2.2.13 Zero sequence

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
1570 Generator zero sequence current							
1571	G zero seq I	Set-point	0.0% 100.0%	20.0%		Option C2	Settings relate to nominal current. The alarm and fail class are activated when the zero sequence has been continuously above the programmed value during the programmed delay.
1572	G zero seq I	Timer	0.2 s 100.0 s	0.5 s			
1573	G zero seq I	Relay output A	Not used Option-dep.	Not used			
1574	G zero seq I	Relay output B	Not used Option-dep.	Not used			
1575	G zero seq I	Enable	OFF ON	OFF			
1576	zero seq I	Fail class	F1…F8	Trip MB (F6)			
1580 Generator zero sequence voltage							
1581	G zero seq U	Set-point	0.0% 100.0%	5.0%		Option C2	Settings relate to nominal voltage. The alarm and fail class are activated when the zero sequence has been continuously above the programmed value during the programmed delay.
1582	G zero seq U	Timer	0.2 s 100.0 s	0.5 s			
1583	G zero seq U	Relay output A	Not used Option-dep.	Not used			
1584	G zero seq U	Relay output B	Not used Option-dep.	Not used			
1585	G zero seq U	Enable	OFF ON	OFF			
1586	G zero seq U	Fail class	F1…F8	Trip MB (F6)			
1590 Generator zero sequence selection							
1591	G zero seq select	Set-point	G/MBA measurement BB measurement	G/MBA measurement		Option C2	Selection between generator or busbar measurement of zero sequence voltage.

2.2.14 Directional overcurrent protection

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
1600 Generator directional overcurrent 1							
1601	G I> direct 1	Set-point	-200.0% 200.0%	120.0%		Option A5	Settings relate to nominal current. The alarm and fail class are activated when the directional current has been continuously above the programmed value during the programmed delay. The current measurement is positive when current is supplied from the mains to the plant. The current measurement is negative when current is being supplied to the mains.
1602	G I> direct 1	Timer	0.0 s 100.0 s	0.1 s			
1603	G I> direct 1	Relay output A	Not used Option-dep.	Not used			
1604	G I> direct 1	Relay output B	Not used Option-dep.	Not used			
1605	G I> direct 1	Enable	OFF ON	OFF			
1606	G I> direct 1	Fail class	F1…F8	Trip MB (F6)			
1610 Generator directional overcurrent 2							
1611	G I> direct 2	Set-point	-200.0% 200.0%	130.0%		Option A5	Settings relate to nominal current. The alarm and fail class are activated when the directional current has been continuously above the programmed value during the programmed delay. The current measurement is positive when current is supplied from the mains to the plant. The current measurement is negative when current is being supplied to the mains.
1612	G I> direct 2	Timer	0.0 s 100.0 s	0.1 s			
1613	G I> direct 2	Relay output A	Not used Option-dep.	Not used			
1614	G I> direct 2	Relay output B	Not used Option-dep.	Not used			
1615	G I> direct 2	Enable	OFF ON	OFF			
1616	G I> direct 2	Fail class	F1…F8	Trip MB (F6)			

2.2.15 Busbar unbalance voltage

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
1620 BB unbalance U							
1621	BB unbalance U	Set-point	0.0% 50.0%	6.0%		Designer's Reference Handbook	Settings relate to average actual voltage. The alarm and fail class are activated when the difference between the max. reading and the min. reading of the 3 measured busbar voltages has been continuously above the programmed value during the programmed delay.
1622	BB unbalance U	Timer	0.1 s 100.0 s	10.0 s			
1623	BB unbalance U	Relay output A	Not used Option-dep.	Not used			
1624	BB unbalance U	Relay output B	Not used Option-dep.	Not used			
1625	BB unbalance U	Enable	OFF ON	OFF			
1626	BB unbalance U	Fail class	F1…F8	Warning (F2)			

2.2.16 Time-dependent undervoltage

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
1630 Time-dependent undervoltage 1 1-3							
1631	Ut < 1	Setting 1	30.0% 120.0%	30.0%		Option A1	Curve setting for time-dependent undervoltage. Settings relate to nominal generator voltage. The condition has to be true i.e. Ut(1)1≤Ut(2)≤Ut(3)≤Ut(4)≤Ut(5)≤Ut(6). If this is not fulfilled, the worst-case set-point Ut(6) will be used.
1632	Ut < 1	Delay 1	0.00 s 20.00 s	0.15 s			
1633	Ut < 1	Setting 2	30.0% 120.0%	70.0%			
1634	Ut < 1	Delay 2	0.00 s 20.00 s	0.15 s			
1635	Ut < 1	Setting 3	30.0% 120.0%	70.0%			
1636	Ut < 1	Delay 3	0.00 s 20.00 s	0.70 s			
1640 Time-dependent undervoltage 1 4-6							
1641	Ut < 1	Setting 4	30.0% 120.0%	90.0%		Option A1	Curve setting for time-dependent undervoltage. Settings relate to nominal generator voltage. The condition has to be true i.e. Ut(1)1≤Ut(2)≤Ut(3)≤Ut(4)≤Ut(5)≤Ut(6). If this is not fulfilled, the worst-case set-point Ut(6) will be used.
1642	Ut < 1	Delay 4	0.00 s 20.00 s	1.50 s			
1643	Ut < 1	Setting 5	30.0% 120.0%	90.0%			
1644	Ut < 1	Delay 5	0.00 s 20.00 s	2.00 s			
1645	Ut < 1	Setting 6	30.0% 120.0%	90.0%			
1646	Ut < 1	Delay 6	0.00 s 20.00 s	3.00 s			
1650 Time-dependent undervoltage 1 activation							
1651	Ut < act 1	Activate	30.0% 120.0%	90%		Option A1	Activate is the voltage value where the function timer starts. Reset is the value where the function timer is reset to 0 ms. Delay is the delay timer for the reset. The relay outputs will activate immediately when the function timer starts.
1652	Ut < act 1	Recovery	30.0% 120.0%	95%			
1653	Ut < act 1	Delay	0.0 s 320.0 s	1.00 s			
1654	Ut < act 1	Relay output A	Not used Option-dep.	Not used			
1655	Ut < act 1	Relay output B	Not used Option-dep.	Not used			

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
1656	Ut < act 1	Enable	OFF ON	OFF			
1660 Time-dependent undervoltage 1							
1661	Ut < 1	Relay output A	Not used Option-dep.	Not used		Option A1	The alarm and fail class is activated instantaneously when the voltage value is under the programmed value curve.
1662	Ut < 1	Relay output B	Not used Option-dep.	Not used			
1663	Ut < 1	Enable	OFF ON	OFF			
1664	Ut < 1	Fail class	F1…F8	Trip MB (F6)			
1670 Time-dependent undervoltage 2 1-3							
1671	Ut < 2	Setting 1	30.0% 120.0%	30.0%		Option A1	Curve setting for time-dependent undervoltage. Settings relate to nominal generator voltage. The condition has to be true i.e. Ut(1)1≤Ut(2)≤Ut(3)≤Ut(4)≤Ut(5)≤Ut(6). If this is not fulfilled, the worst-case set-point Ut(6) will be used.
1672	Ut < 2	Delay 1	0.00 s 20.00 s	0.15 s			
1673	Ut < 2	Setting 2	30.0% 120.0%	70.0%			
1674	Ut < 2	Delay 2	0.00 s 20.00 s	0.15 s			
1675	Ut < 2	Setting 3	30.0% 120.0%	70.0%			
1676	Ut < 2	Delay 3	0.00 s 20.00 s	0.70 s			
1680 Time-dependent undervoltage 2 4-6							
1681	Ut < 2	Setting 4	30.0% 120.0%	90.0%		Option A1	Curve setting for time-dependent undervoltage. Settings relate to nominal generator voltage. The condition has to be true i.e. Ut(1)1≤Ut(2)≤Ut(3)≤Ut(4)≤Ut(5)≤Ut(6). If this is not fulfilled, the worst-case set-point Ut(6) will be used.
1682	Ut < 2	Delay 4	0.00 s 20.00 s	1.50 s			
1683	Ut < 2	Setting 5	30.0% 120.0%	90.0%			
1684	Ut < 2	Delay 5	0.00 s 20.00 s	2.00 s			
1685	Ut < 2	Setting 6	30.0% 120.0%	90.0%			
1686	Ut < 2	Delay 6	0.00 s 20.00 s	3.00 s			
1690 Time-dependent undervoltage 2 activation							

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
1691	Ut < act 2	Acti-vate	30.0% 120.0%	90%		Option A1	Activate is the voltage value where the function timer starts. Reset is the value where the function timer is reset to 0 ms. Delay is the delay timer for the reset. The relay outputs will activate immediately when the function timer starts.
1692	Ut < act 2	Recov-ery	30.0% 120.0%	95%			
1693	Ut < act 2	Delay	0.0 s 320.0 s	1.00 s			
1694	Ut < act 2	Relay output A	Not used Option-dep.	Not used			
1695	Ut < act 2	Relay output B	Not used Option-dep.	Not used			
1696	Ut < act 2	Enable	OFF ON	OFF			
1700 Time-dependent undervoltage 2							
1701	Ut < 2	Relay output A	Not used Option-dep.	Not used		Option A1	The alarm and fail class is activated instantaneously when the voltage value is under the programmed value curve.
1702	Ut < 2	Relay output B	Not used Option-dep.	Not used			
1703	Ut < 2	Enable	OFF ON	OFF			
1704	Ut < 2	Fail class	F1…F8	Trip MB (F6)			

2.2.17 Non-essential load trip (load shedding)

Setting values relate to the nominal setting.

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
1800 NEL 1 overcurrent							
1801	NEL 1 I>	Setpoint	50.0% 200.0%	100.0%		Designer's Reference Handbook	Trip of non-essential load due to overcurrent. This function activates NEL group 1.
1802	NEL 1 I>	Timer	0.1 s 100.0 s	5.0 s			
1803	NEL 1 I>	Enable	OFF ON	OFF			
1810 NEL 2 overcurrent							
1811	NEL 2 I>	Setpoint	50.0% 200.0%	100.0%		Designer's Reference Handbook	Trip of non-essential load due to overcurrent. This function activates NEL group 2.
1812	NEL 2 I>	Timer	0.1 s 100.0 s	8.0 s			
1813	NEL 2 I>	Enable	OFF ON	OFF			
1820 NEL 3 overcurrent							
1821	NEL 3 I>	Setpoint	50.0% 200.0%	100.0%		Designer's Reference Handbook	Trip of non-essential load due to overcurrent. This function activates NEL group 3.
1822	NEL 3 I>	Timer	0.1 s 100.0 s	10.0 s			
1823	NEL 3 I>	Enable	OFF ON	OFF			
1830 NEL 1 busbar underfrequency							
1831	NEL 1 bus f<	Setpoint	70.0% 100.0%	95.0%		Designer's Reference Handbook	Trip of non-essential load due to low frequency. This function activates NEL group 1.
1832	NEL 1 bus f<	Timer	0.1 s 100.0 s	5.0 s			
1835	NEL 1 bus f<	Enable	OFF ON	OFF			
1840 NEL 2 busbar underfrequency							
1841	NEL 2 bus f<	Setpoint	70.0% 100.0%	95.0%		Designer's Reference Handbook	Trip of non-essential load due to low frequency. This function activates NEL group 2.
1842	NEL 2 bus f<	Timer	0.1 s 100.0 s	8.0 s			
1845	NEL 2 bus f<	Enable	OFF ON	OFF			

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
1850 NEL 3 busbar underfrequency							
1851	NEL 3 bus f<	Setpoint	70.0% 100.0%	95.0%		Designer's Reference Handbook	Trip of non-essential load due to low frequency. This function activates NEL group 3.
1852	NEL 3 bus f<	Timer	0.1 s 100.0 s	10.0 s			
1855	NEL 3 bus f<	Enable	OFF ON	OFF			
1860 NEL 1 overload							
1861	NEL 1 P>	Setpoint	10.0% 200.0%	100.0%		Designer's Reference Handbook	Trip of non-essential load due to overload. This function activates NEL group 1.
1862	NEL 1 P>	Timer	0.1 s 100.0 s	5.0 s			
1865	NEL 1 P>	Enable	OFF ON	OFF			
1870 NEL 2 overload							
1871	NEL 2 P>	Setpoint	10.0% 200.0%	100.0%		Designer's Reference Handbook	Trip of non-essential load due to overload. This function activates NEL group 2.
1872	NEL 2 P>	Timer	0.1 s 100.0 s	8.0 s			
1875	NEL 2 P>	Enable	OFF ON	OFF			
1880 NEL 3 overload							
1881	NEL 3 P>	Setpoint	10.0% 200.0%	100.0%		Designer's Reference Handbook	Trip of non-essential load due to overload. This function activates NEL group 3.
1882	NEL 3 P>	Timer	0.1 s 100.0 s	10.0 s			
1885	NEL 3 P>	Enable	OFF ON	OFF			
1890 NEL 1 high overload							
1891	NEL 1 P>>	Setpoint	10.0% 200.0%	110.0%		Designer's Reference Handbook	Trip of non-essential load due to high overload. This function activates NEL group 1.
1892	NEL 1 P>>	Timer	0.1 s 999.9 s	1.0 s			
1895	NEL 1 P>>	Enable	OFF ON	OFF			
1900 NEL 2 high overload							
1901	NEL 2 P>>	Setpoint	10.0% 200.0%	110.0%		Designer's Reference Handbook	Trip of non-essential load due to high overload. This function activates NEL group 2.
1902	NEL 2 P>>	Timer	0.1 s 999.9 s	1.0 s			

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
1905	NEL 2 P>>	Enable	OFF ON	OFF			
1910 NEL 3 high overload							
1911	NEL 3 P>>	Setpoint	10.0% 200.0%	110.0%		Designer's Reference Handbook	Trip of non-essential load due to high overload. This function activates NEL group 3.
1912	NEL 3 P>>	Timer	0.1 s 999.9 s	1.0 s			
1915	NEL 3 P>>	Enable	OFF ON	OFF			

2.2.18 Undervoltage and reactive power low

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
1960 U and Q < 1							
1961	U and Q < 1	Set-point	40.0% 100.0%	85.0%		Option A1	The setting relates to the generator nominal voltage. The condition for trip is that the actual voltage drops below the setting value and the reactive power is ≤ 0 kVAr.
1962	U and Q < 1	Timer	0.1 s 3200.0 s	0.5 s			
1963	U and Q < 1	Relay output A	Option-dep.	Not used			
1964	U and Q < 1	Relay output B	Option-dep.	Not used			
1965	U and Q < 1	Enable	OFF ON	OFF			
1966	U and Q < 1	Fail class	F1…F8	Warning (F2)			
1970 U and Q < 2							
1971	U and Q < 2	Set-point	40.0% 100.0%	85.0%		Option A1	The setting relates to the generator nominal voltage. The condition for trip is that the actual voltage drops below the setting value and the reactive power is ≤ 0 kVAr.
1972	U and Q < 2	Timer	0.1 s 3200.0 s	0.5 s			
1973	U and Q < 2	Relay output A	Option-dep.	Not used			
1974	U and Q < 2	Relay output B	Option-dep.	Not used			
1975	U and Q < 2	Enable	OFF ON	OFF			
1976	U and Q < 2	Fail class	F1…F8	Warning (F2)			
1980 GB/MB external trip							
1981	GB ext. trip	Enable	OFF ON	ON		Designer's Reference Handbook	The generator breaker or the mains breaker has been tripped by an external device.
1982	GB ext. trip	Fail class	F1...F8	Warning (F2)			
1983	MB ext. trip	Enable	OFF ON	ON			

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
1984	MB ext. trip	Fail class	F1...F8	Warning (F2)			

2.3 Control parameters - synchronisation

2.3.1 Synchronisation and breaker alarms

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
2120 Synchronisation window							
2121	Sync window	Set-point	2.0% 20.0%	15.0%		Designer's Reference Handbook	The alarm will activate if the actual voltage deviates from nominal voltage with the set percentage.
2122	Sync window	Timer	0.1 s 2.0 s	0.5 s			
2123	Sync window	Relay output A	Not used Option-dep.	Not used			
2124	Sync window	Relay output B	Not used Option-dep.	Not used			
2125	Sync window	Enable	OFF ON	OFF			
2130 GB/TB/BTB breaker synchronisation failure							
2131	GB/TB/BTB sync failure	Timer	30.0 s 300.0 s	60.0 s		Designer's Reference Handbook	The controller has unsuccessfully tried to synchronise the breaker to the busbar within the time delay.
2132	GB/TB/BTB sync failure	Relay output A	Not used Option-dep.	Not used			
2133	GB/TB/BTB sync failure	Relay output B	Not used Option-dep.	Not used			
2134	GB/TB/BTB sync failure	Enable	OFF ON	ON			
2135	GB/TB/BTB sync failure	Fail class	F1…F8	Block (F1)			
2140 Mains breaker synchronisation failure							
2141	MB sync failure	Timer	30.0 s 300.0 s	60.0 s		Designer's Reference Handbook	The controller has unsuccessfully tried to synchronise the breaker to the busbar within the time delay.
2142	MB sync failure	Relay output A	Not used Option-dep.	Not used			
2143	MB sync failure	Relay output B	Not used Option-dep.	Not used			
2144	MB sync failure	Enable	OFF ON	ON			

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
2145	MB sync failure	Fail class	F1…F8	Warning (F2)			
2150 Phase sequence error							
2151	Phase seq error	Relay output A	Not used Option-dep.	Not used		Designer's Reference Handbook	The controller has detected that the rotation direction of the generator phases is opposite direction as the busbar. Compares phase rotation to expected direction at all times, not only during synchronisation.
2152	Phase seq error	Relay output B	Not used Option-dep.	Not used			
2153	Phase seq error	Fail class	F1…F8	Block (F1)			
2154	Phase rotation	Set-point	L1L2L3 L1L3L2	L1L2L3			
2160 GB/TB/BTB open failure							
2161	GB/TB/BTB open fail	Timer	1.0 s 10.0 s	2.0 s		Designer's Reference Handbook	The breaker open failure will occur if the unit has transmitted a breaker open signal and the breaker feedback has not changed position from ON to OFF within the time delay.
2162	GB/TB/BTB open fail	Relay output A	Not used Option-dep.	Not used			
2163	GB/TB/BTB open fail	Relay output B	Not used Option-dep.	Not used			
2164	GB/TB/BTB open fail	Enable	OFF ON	ON			
2165	GB/TB/BTB open fail	Fail class	F1…F8	Warning (F2)			
2170 GB/TB/BTB breaker close failure							
2171	GB/TB/BTB close fail	Timer	1.0 s 5.0 s	2.0 s		Designer's Reference Handbook	The breaker close failure will occur if the unit has transmitted a breaker close signal and the breaker feedback has not changed position from OFF to ON within the time delay.
2172	GB/TB/BTB close fail	Relay output A	Not used Option-dep.	Not used			
2173	GB/TB/BTB close fail	Relay output B	Not used Option-dep.	Not used			
2174	GB/TB/BTB close fail	Enable	OFF ON	ON			
2175	GB/TB/BTB close fail	Fail class	F1…F8	Warning (F2)			
2180 GB/TB/BTB breaker position failure							

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
2181	GB/TB/BTB pos fail	Timer	1.0 s 5.0 s	1.0 s		Designer's Reference Handbook	This alarm will occur if the breaker feedbacks for ON and OFF are both missing or active for more than the time delay.
2182	GB/TB/BTB pos fail	Relay output A	Not used Option-dep.	Not used			
2183	GB/TB/BTB pos fail	Relay output B	Not used Option-dep.	Not used			
2184	GB/TB/BTB pos fail	Enable	OFF ON	ON			
2185	GB/TB/BTB pos fail	Fail class	F1…F8	Warning (F2)			
2200 MB open failure							
2201	MB open fail	Timer	1.0 s 10.0 s	2.0 s		Designer's Reference Handbook	The breaker open failure will occur if the unit has transmitted a breaker open signal and the breaker feedback has not changed position from ON to OFF within the time delay.
2202	MB open fail	Relay output A	Not used Option-dep.	Not used			
2203	MB open fail	Relay output B	Not used Option-dep.	Not used			
2204	MB open fail	Enable	ON	ON			
2205	MB open fail	Fail class	F1…F8	Warning (F2)			
2210 MB close failure							
2211	MB close fail	Timer	1.0 s 5.0 s	2.0 s		Designer's Reference Handbook	The breaker close failure will occur if the unit has transmitted a breaker close signal and the breaker feedback has not changed position from OFF to ON within the time delay.
2212	MB close fail	Relay output A	Not used Option-dep.	Not used			
2213	MB close fail	Relay output B	Not used Option-dep.	Not used			
2214	MB close fail	Enable	ON	ON			
2215	MB close fail	Fail class	F1…F8	Warning (F2)			
2220 MB position failure							
2221	MB pos fail	Timer	1.0 s 5.0 s	1.0 s		Designer's Reference Handbook	This alarm will occur if the breaker feedbacks for ON and OFF are both missing or active for more than the time delay.
2222	MB pos fail	Relay output A	Not used Option-dep.	Not used			

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
2223	MB pos fail	Relay output B	Not used Option-dep.	Not used			
2224	MB pos fail	Enable	ON	ON			
2225	MB pos fail	Fail class	F1…F8	Warning (F2)			
2270 Close before excitation failure							
2271	Cl.bef.exc.fail	Timer	0.0 s 999.0 s	5.0 s		Designer's Reference Handbook	This alarm will occur if the generator and breaker are not operating within the limits of the Close Before Excitation. The alarm will open the generator breaker and enable the regulation synchronising the generator in a normal way.
2272	Cl.bef.exc.fail	Relay output A	Not used Option-dep.	Not used			
2273	Cl.bef.exc.fail	Relay output B	Not used Option-dep.	Not used			
2274	Cl.bef.exc.fail	Enable	OFF ON	OFF			
2275	Cl.bef.exc.fail	Fail class	F1…F8	Warning (F2)			

2.4 Control parameters - regulation

2.4.1 Regulation alarms

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
2560 Governor regulation fail							
2561	Gov. reg fail	Dead band	1.0% 100.0%	30.0%		Designer's Reference Handbook	The alarm is activated if the difference between the measured value and the setpoint is outside the dead band for longer than the time delay.
2562	Gov. reg fail	Timer	10.0 s 300.0 s	60.0 s			
2563	Gov. reg fail	Relay output A	Not used Option-dep.	Not used			
2564	Gov. reg fail	Relay output B	Not used Option-dep.	Not used			
2565	Gov. reg fail	Fail class	F1…F8	Warning (F2)			
2630 Deload error							
2631	Deload error	Timer	0.0 s 60.0 s	10.0 s		Designer's Reference Handbook	The alarm is activated if the generator fails to deload within the time delay.
2632	Deload error	Relay output A	Not used Option-dep.	Not used			
2633	Deload error	Relay output B	Not used Option-dep.	Not used			
2634	Deload error	Enable	OFF ON	ON			
2635	Deload error	Fail class	F1…F8	Warning (F2)			
2680 AVR regulation failure							
2681	AVR reg. failure	Dead band	1.0% 100.0%	30.0%		Option D1	The alarm is activated if the difference between the measured value and the setpoint is outside the setting "Dead band" for a longer time period than specified in the timer setpoint.
2682	AVR reg. failure	Timer	10.0 s 300.0 s	60.0 s			
1153	AVR reg. failure	Relay output A	Not used Option-dep.	Not used			

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
1154	AVR reg. failure	Relay output B	Not used Option-dep.	Not used			
1155	AVR reg. failure	Fail class	F1…F8	Warning (F2)			

These parameters are used when a digital input is used as protection input or to activate a limit relay.

2.5 Input/output parameters - binary input setup

2.5.1 Digital input 23-27 setup

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
3000 Digital input 23							
3001	Dig. input 23	Timer	0.0 s 100.0 s	10.0 s		Designer's Reference Handbook	The input is configurable and can have different functions in different units. Inputs 24-27 are by default used for breaker feedback. These inputs are only available if no MB or TB is present in the application.
3002	Dig. input 23	Relay output A	Not used Option-dep.	Not used			
3003	Dig. input 23	Relay output B	Not used Option-dep.	Not used			
3004	Dig. input 23	Enable	OFF ON	OFF			
3005	Dig. input 23	Fail class	F1…F8	Warning (F2)			
3006	Dig. input 23	High Alarm	OFF ON	ON			

The same settings apply to inputs 24-27, menus 3010 to 3040.

2.5.2 Digital input 43-55 setup

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
3130 Digital input 43							
3131	Dig. input 43	Timer	0.0 s 100.0 s	10.0 s		Option M12	The input is configurable and can have different functions in different units.
3132	Dig. input 43	Relay output A	Not used Option-dep.	Not used			
3133	Dig. input 43	Relay output B	Not used Option-dep.	Not used			
3134	Dig. input 43	Enable	OFF ON	OFF			
3135	Dig. input 43	Fail class	F1…F8	Warning (F2)			
3136	Dig. input 43	High Alarm	OFF ON	ON			

The same settings apply to inputs 44-55, menus 3140 to 3250.

2.5.3 Digital input 91-97 setup

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
3330 Digital input 91							
3331	Dig. input 91	Timer	0.0 s 100.0 s	10.0 s		Option M13.6	The input is configurable and can have different functions in different units.
3332	Dig. input 91	Relay output A	Not used Option-dep.	Not used			
3333	Dig. input 91	Relay output B	Not used Option-dep.	Not used			
3334	Dig. input 91	Enable	OFF ON	OFF			
3335	Dig. input 91	Fail class	F1…F8	Warning (F2)			
3336	Dig. input 91	High Alarm	OFF ON	ON			

The same settings apply to inputs 92-97, menus 3340 to 3390.

2.5.4 Digital input 102-108 setup

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
3400 Digital input 102							
3401	Wire fail 102	Enable	OFF ON	OFF		Designer's Reference Handbook	The input is configurable and can have different functions in different units. (Only available if multi-input 102 is configured to "binary" in menu 10980).
3402	Dig. input 102	Timer	0.0 s 100.0 s	10.0 s			
3403	Dig. input 102	Relay output A	Not used Option-dep.	Not used			
3404	Dig. input 102	Relay output B	Not used Option-dep.	Not used			
3405	Dig. input 102	Enable	OFF ON	OFF			
3406	Dig. input 102	Fail class	F1…F8	Warning (F2)			
3410 Digital input 105							
3411	Wire fail 105	Enable	OFF ON	OFF		Designer's Reference Handbook	The input is configurable and can have different functions in different units. (Only available if multi-input 105 is configured to "binary" in menu 10990).
3412	Dig. input 105	Timer	0.0 s 100.0 s	10.0 s			
3413	Dig. input 105	Relay output A	Not used Option-dep.	Not used			
3414	Dig. input 105	Relay output B	Not used Option-dep.	Not used			
3415	Dig. input 105	Enable	OFF ON	OFF			
3416	Dig. input 105	Fail class	F1…F8	Warning (F2)			
3420 Digital input 108							

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
3421	Wire fail 108	Enable	OFF ON	OFF		Designer's Reference Handbook	The input is configurable and can have different functions in different units. (Only available if multi-input 108 is configured to "binary" in menu 11000).
3422	Dig. input 108	Timer	0.0 s 100.0 s	10.0 s			
3423	Dig. input 108	Relay output A	Not used Option-dep.	Not used			
3424	Dig. input 108	Relay output B	Not used Option-dep.	Not used			
3425	Dig. input 108	Enable	OFF ON	OFF			
3426	Dig. input 108	Fail class	F1…F8	Warning (F2)			

2.5.5 Digital input 112-117 setup

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
3430 Digital input 112							
3431	Dig. input 112	Timer	0.0 s 100.0 s	10.0 s		Designer's Reference Handbook	The input is configurable and can have different functions in different units.
3432	Dig. input 112	Relay output A	Not used Option-dep.	Not used			
3433	Dig. input 112	Relay output B	Not used Option-dep.	Not used			
3434	Dig. input 112	Enable	OFF ON	OFF			
3435	Dig. input 112	Fail class	F1…F8	Warning (F2)			
3436	Dig. input 112	High Alarm	OFF ON	ON			

The same settings apply to inputs 113-117, menus 3440 to 3480.

2.5.6 Emergency stop

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
3490 Emergency stop							
3491	Emer. stop	Timer	0.0 s 60.0 s	0.0 s		Designer's Reference Handbook	Emergency stop input is intended for a normally closed contact.
3492	Emer. stop	Relay output A	Not used Option-dependent	Not used			
3493	Emer. stop	Relay output B	Not used Option-dependent	Not used			
3494	Emer. stop	Enable	OFF ON	ON			
3495	Emer. stop	Fail class	F1…F8	Shut-down (F5)			

2.5.7 Digital input 127-133 setup

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
3500 Digital input 127							
3501	Dig. input 127	Timer	0.0 s 100.0 s	10.0 s		Option M13.8	The input is configurable and can have different functions in different units.
3502	Dig. input 127	Relay output A	Not used Option-dep.	Not used			
3503	Dig. input 127	Relay output B	Not used Option-dep.	Not used			
3504	Dig. input 127	Enable	OFF ON	OFF			
3505	Dig. input 127	Fail class	F1…F8	Warning (F2)			
3506	Dig. input 127	High Alarm	OFF ON	ON			

The same settings apply to inputs 128-133, menus 3510 to 3560.

2.6 Input/output parameters - analogue input setup

2.6.1 Analogue input setup (option M15.6)

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
4000 4-20 mA 91.1							
4001	4-20 mA 91.1	Setpoint	4 mA 20 mA	10 mA		Option M15.6: 4 x 4-20 mA inputs	Configurable analogue input.
4002	4-20 mA 91.1	Timer	0.0 s 600.0 s	120.0 s			
4003	4-20 mA 91.1	Relay output A	Not used Option-dep.	Not used			
4004	4-20 mA 91.1	Relay output B	Not used Option-dep.	Not used			
4005	4-20 mA 91.1	Enable	OFF ON	OFF			
4006	4-20 mA 91.1	Fail class	F1…F8	Warning (F2)			
4010 4-20 mA 91.2							
4011	4-20 mA 91.2	Setpoint	4 mA 20 mA	10 mA		Option M15.6: 4 x 4-20 mA inputs	Configurable analogue input.
4012	4-20 mA 91.2	Timer	0.0 s 600.0 s	120.0 s			
4013	4-20 mA 91.2	Relay output A	Not used Option-dep.	Not used			
4014	4-20 mA 91.2	Relay output B	Not used Option-dep.	Not used			
4015	4-20 mA 91.2	Enable	OFF ON	OFF			
4016	4-20 mA 91.2	Fail class	F1…F8	Warning (F2)			
4020 Wire fail 4-20 mA 91							
4021	W. fail ana 91	Relay output A	Not used Option-dep.	Not used		Option M15.6: 4 x 4-20 mA inputs	The wire fault will detect if the current drops below 2 mA or exceeds 22 mA. In both cases the alarm will be activated.
4022	W. fail ana 91	Relay output B	Not used Option-dep.	Not used			

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
4023	W. fail ana 91	Enable	OFF ON	OFF			
4024	W. fail ana 91	Fail class	F1…F8	Warning (F2)			
4030 4-20 mA 93.1							
4031	4-20 mA 93.1	Setpoint	4 mA 20 mA	10 mA		Option M15.6: 4 x 4-20 mA inputs	Configurable analogue input.
4032	4-20 mA 93.1	Timer	0.0 s 600.0 s	120.0 s			
4033	4-20 mA 93.1	Relay output A	Not used Option-dep.	Not used			
4034	4-20 mA 93.1	Relay output B	Not used Option-dep.	Not used			
4035	4-20 mA 93.1	Enable	OFF ON	OFF			
4036	4-20 mA 93.1	Fail class	F1…F8	Warning (F2)			
4040 4-20 mA 93.2							
4041	4-20 mA 93.2	Setpoint	4 mA 20 mA	10 mA		Option M15.6: 4 x 4-20 mA inputs	Configurable analogue input.
4042	4-20 mA 93.2	Timer	0.0 s 600.0 s	120.0 s			
4043	4-20 mA 93.2	Relay output A	Not used Option-dep.	Not used			
4044	4-20 mA 93.2	Relay output B	Not used Option-dep.	Not used			
4045	4-20 mA 93.2	Enable	OFF ON	OFF			
4046	4-20 mA 93.2	Fail class	F1…F8	Warning (F2)			
4050 Wire fail 4-20 mA 93							
4051	W. fail ana 93	Relay output A	Not used Option-dep.	Not used		Option M15.6: 4 x 4-20 mA inputs	The wire fault will detect if the current drops below 2 mA or exceeds 22 mA. In both cases the alarm will be activated.
4052	W. fail ana 93	Relay output B	Not used Option-dep.	Not used			

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
4053	W. fail ana 93	Enable	OFF ON	OFF			
4054	W. fail ana 93	Fail class	F1…F8	Warning (F2)			
4060 4-20 mA 95.1							
4061	4-20 mA 95.1	Setpoint	4 mA 20 mA	10 mA		Option M15.6: 4 x 4-20 mA inputs	Configurable analogue input.
4062	4-20 mA 95.1	Timer	0.0 s 600.0 s	120.0 s			
4063	4-20 mA 95.1	Relay output A	Not used Option-dep.	Not used			
4064	4-20 mA 95.1	Relay output B	Not used Option-dep.	Not used			
4065	4-20 mA 95.1	Enable	OFF ON	OFF			
4066	4-20 mA 95.1	Fail class	F1…F8	Warning (F2)			
4070 4-20 mA 95.2							
4071	4-20 mA 95.2	Setpoint	4 mA 20 mA	10 mA		Option M15.6: 4 x 4-20 mA inputs	Configurable analogue input.
4072	4-20 mA 95.2	Timer	0.0 s 600.0 s	120.0 s			
4073	4-20 mA 95.2	Relay output A	Not used Option-dep.	Not used			
4074	4-20 mA 95.2	Relay output B	Not used Option-dep.	Not used			
4075	4-20 mA 95.2	Enable	OFF ON	OFF			
4076	4-20 mA 95.2	Fail class	F1…F8	Warning (F2)			
4080 Wire fail 4-20 mA 95							
4081	W. fail ana 95	Relay output A	Not used Option-dep.	Not used		Option M15.6: 4 x 4-20 mA inputs	The wire fault will detect if the current drops below 2 mA or exceeds 22 mA. In both cases the alarm will be activated.
4082	W. fail ana 95	Relay output B	Not used Option-dep.	Not used			

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
4083	W. fail ana 95	Enable	OFF ON	OFF			
4084	W. fail ana 95	Fail class	F1…F8	Warning			
4090 4-20 mA 97.1							
4091	4-20 mA 97.1	Setpoint	4 mA 20 mA	10 mA		Option M15.6: 4 x 4-20 mA inputs	Configurable analogue input.
4092	4-20 mA 97.1	Timer	0.0 s 600.0 s	120.0 s			
4093	4-20 mA 97.1	Relay output A	Not used Option-dep.	Not used			
4094	4-20 mA 97.1	Relay output B	Not used Option-dep.	Not used			
4095	4-20 mA 97.1	Enable	OFF ON	OFF			
4096	4-20 mA 97.1	Fail class	F1…F8	Warning (F2)			
4100 4-20 mA 97.2							
4101	4-20 mA 97.2	Setpoint	4 mA 20 mA	10 mA		Option M15.6: 4 x 4-20 mA inputs	Configurable analogue input.
4102	4-20 mA 97.2	Timer	0.0 s 600.0 s	120.0 s			
4103	4-20 mA 97.2	Relay output A	Not used Option-dep.	Not used			
4104	4-20 mA 97.2	Relay output B	Not used Option-dep.	Not used			
4105	4-20 mA 97.2	Enable	OFF ON	OFF			
4106	4-20 mA 97.2	Fail class	F1…F8	Warning (F2)			
4110 Wire fail 4-20 mA 97							
4111	W. fail ana 97	Relay output A	Not used Option-dep.	Not used		Option M15.6: 4 x 4-20 mA inputs	The wire fault will detect if the current drops below 2 mA or exceeds 22 mA. In both cases the alarm will be activated.
4112	W. fail ana 97	Relay output B	Not used Option-dep.	Not used			

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
4113	W. fail ana 97	Enable	OFF ON	OFF			
4114	W. fail ana 97	Fail class	F1…F8	Warning (F2)			

2.7 Input/output parameters - multi-functional analogue input setup

2.7.1 Multi-input no. 102

The available menus for multi-input no. 102 depend on the input type configured in the PC utility software (menu 10980).

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
4120 4-20 mA 102.1							
4121	4-20 mA 102.1	Setpoint	4 mA 20 mA	10 mA		Designer's Reference Handbook	The multi-input 102 has been configured as 4-20 mA.
4122	4-20 mA 102.1	Timer	0.0 s 999.0 s	120.0 s			
4123	4-20 mA 102.1	Relay output A	Not used Option-dep.	Not used			
4124	4-20 mA 102.1	Relay output B	Not used Option-dep.	Not used			
4125	4-20 mA 102.1	Enable	OFF ON	OFF			
4126	4-20 mA 102.1	Fail class	F1…F8	Warning (F2)			
4130 4-20 mA 102.2							
4131	4-20 mA 102.2	Setpoint	4 mA 20 mA	10 mA		Designer's Reference Handbook	The multi-input 102 has been configured as 4-20 mA.
4132	4-20 mA 102.2	Timer	0.0 s 999.0 s	120.0 s			
4133	4-20 mA 102.2	Relay output A	Not used Option-dep.	Not used			
4134	4-20 mA 102.2	Relay output B	Not used Option-dep.	Not used			
4135	4-20 mA 102.2	Enable	OFF ON	OFF			
4136	4-20 mA 102.2	Fail class	F1…F8	Warning (F2)			
4140 V DC 102.1							
4141	V DC 102.1	Setpoint	0.0V DC 40.0V DC	20.0V DC		Designer's Reference Handbook	The multi-input 102 has been configured as V DC.

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
4142	V DC 102.1	Timer	0.2 s 999.0 s	10.0 s			
4143	V DC 102.1	Relay output A	Not used Option-dep.	Not used			
4144	V DC 102.1	Relay output B	Not used Option-dep.	Not used			
4145	V DC 102.1	Enable	OFF ON	OFF			
4146	V DC 102.1	Fail class	F1…F8	Warning (F2)			
4150 V DC 102.2							
4151	V DC 102.2	Setpoint	0.0V DC 40.0V DC	20.0V DC		Designer's Reference Handbook	The multi-input 102 has been configured as V DC.
4152	V DC 102.2	Timer	0.2 s 999.0 s	10.0 s			
4153	V DC 102.2	Relay output A	Not used Option-dep.	Not used			
4154	V DC 102.2	Relay output B	Not used Option-dep.	Not used			
4155	V DC 102.2	Enable	OFF ON	OFF			
4156	V DC 102.2	Fail class	F1…F8	Warning (F2)			
4160 Pt100 102.1							
4161	PT 102.1	Setpoint	-49 482	80		Designer's Reference Handbook	The multi-input 102 has been configured as Pt100. Pt100 setpoint can be in deg. C or Fahrenheit, dependent on the unit selection (menu 10970).
4162	PT 102.1	Timer	0.0 s 999.0 s	5.0 s			
4163	PT 102.1	Relay output A	Not used Option-dep.	Not used			
4164	PT 102.1	Relay output B	Not used Option-dep.	Not used			
4165	PT 102.1	Enable	OFF ON	OFF			

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
4166	PT 102.1	Fail class	F1…F8	Warning (F2)			
4170 Pt100 102.2							
4171	PT 102.2	Setpoint	-49 482	80		Designer's Reference Handbook	The multi-input 102 has been configured as Pt100. Pt100 setpoint can be in deg. C or Fahrenheit, dependent on the unit selection (menu 10970).
4172	PT 102.2	Timer	0.0 s 999.0 s	10.0 s			
4173	PT 102.2	Relay output A	Not used Option-dep.	Not used			
4174	PT 102.2	Relay output B	Not used Option-dep.	Not used			
4175	PT 102.2	Enable	OFF ON	OFF			
4176	PT 102.2	Fail class	F1…F8	Warning (F2)			
4180 VDO oil 102.1							
4181	VDO oil 102.1	Setpoint	0.0 145.0	4.0		Designer's Reference Handbook	The multi-input 102 has been configured as VDO oil pressure. Oil pressure setpoint can be in Bar or PSI, dependent on the unit selection (menu 10970).
4182	VDO oil 102.1	Timer	0.0 s 999.0 s	5.0 s			
4183	VDO oil 102.1	Relay output A	Not used Option-dep.	Not used			
4184	VDO oil 102.1	Relay output B	Not used Option-dep.	Not used			
4185	VDO oil 102.1	Enable	OFF ON	OFF			
4186	VDO oil 102.1	Fail class	F1…F8	Warning (F2)			
4190 VDO oil 102.2							
4191	VDO oil 102.2	Setpoint	0.0 145.0	5.0		Designer's Reference Handbook	The multi-input 102 has been configured as VDO oil pressure. Oil pressure setpoint can be in Bar or PSI, dependent on the unit selection (menu 10970).
4192	VDO oil 102.2	Timer	0.0 s 999.0 s	5.0 s			
4193	VDO oil 102.2	Relay output A	Not used Option-dep.	Not used			

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
4194	VDO oil 102.2	Relay output B	Not used Option-dep.	Not used			
4195	VDO oil 102.2	Enable	OFF ON	OFF			
4196	VDO oil 102.2	Fail class	F1…F8	Warning (F2)			
4200 VDO water 102.1							
4201	VDO water 102.1	Setpoint	-49 482	100		Designer's Reference Handbook	The multi-input 102 has been configured as VDO water temperature. Water temperature setpoint can be in deg. C or F, dependent on the unit selection (menu 10970).
4202	VDO water 102.1	Timer	0.0 s 999.0 s	5.0 s			
4203	VDO water 102.1	Relay output A	Not used Option-dep.	Not used			
4204	VDO water 102.1	Relay output B	Not used Option-dep.	Not used			
4205	VDO water 102.1	Enable	OFF ON	OFF			
4206	VDO water 102.1	Fail class	F1…F8	Warning (F2)			
4210 VDO water 102.2							
4211	VDO water 102.2	Setpoint	-49 482	110		Designer's Reference Handbook	The multi-input 102 has been configured as VDO water temperature. Water temperature setpoint can be in deg. C or F, dependent on the unit selection (menu 10970).
4212	VDO water 102.2	Timer	0.0 s 999.0 s	5.0 s			
4213	VDO water 102.2	Relay output A	Not used Option-dep.	Not used			
4214	VDO water 102.2	Relay output B	Not used Option-dep.	Not used			
4215	VDO water 102.2	Enable	OFF ON	OFF			

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
4216	VDO water 102.2	Fail class	F1…F8	Warning (F2)			
4220 VDO fuel level 102.1							
4221	VDO fuel 102.1	Setpoint	0% 100%	10%		Designer's Reference Handbook	The multi-input 102 has been configured as VDO fuel level.
4222	VDO fuel 102.1	Timer	0.0 s 999.0 s	10.0 s			
4223	VDO fuel 102.1	Relay output A	Not used Option-dep.	Not used			
4224	VDO fuel 102.1	Relay output B	Not used Option-dep.	Not used			
4225	VDO fuel 102.1	Enable	OFF ON	OFF			
4226	VDO fuel 102.1	Fail class	F1…F8	Warning (F2)			
4230 VDO fuel level 102.2							
4231	VDO fuel 102.2	Setpoint	0% 100%	5%		Designer's Reference Handbook	The multi-input 102 has been configured as VDO fuel level.
4232	VDO fuel 102.2	Timer	0.0 s 999.0 s	10.0 s			
4233	VDO fuel 102.2	Relay output A	Not used Option-dep.	Not used			
4234	VDO fuel 102.2	Relay output B	Not used Option-dep.	Not used			
4235	VDO fuel 102.2	Enable	OFF ON	OFF			
4236	VDO fuel 102.2	Fail class	F1…F8	Warning (F2)			
4240 Wire fail 102							

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
4241	W. fail 102	Relay output A	Not used Option-dep.	Not used		Designer's Reference Handbook	The wire break fault detection is activated.
4242	W. fail 102	Relay output B	Not used Option-dep.	Not used			
4243	W. fail 102	Enable	OFF ON	OFF			
4244	W. fail 102	Fail class	F1…F8	Warning (F2)			

2.7.2 Multi-input no. 105

The available menus for multi-input no. 105 depend on the input type configured in the PC utility software (menu 10990).

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
4250 4-20 mA 105.1							
4251	4-20 mA 105.1	Setpoint	4 mA 20 mA	10 mA		Designer's Reference Handbook	The multi-input 105 has been configured as 4-20 mA.
4252	4-20 mA 105.1	Timer	0.0 s 999.0 s	120.0 s			
4253	4-20 mA 105.1	Relay output A	Not used Option-dep.	Not used			
4254	4-20 mA 105.1	Relay output B	Not used Option-dep.	Not used			
4255	4-20 mA 105.1	Enable	OFF ON	OFF			
4256	4-20 mA 105.1	Fail class	F1…F8	Warning (F2)			
4260 4-20 mA 105.2							
4261	4-20 mA 105.2	Setpoint	4 mA 20 mA	10 mA		Designer's Reference Handbook	The multi-input 105 has been configured as 4-20 mA.
4262	4-20 mA 105.2	Timer	0.0 s 999.0 s	120.0 s			
4263	4-20 mA 105.2	Relay output A	Not used Option-dep.	Not used			
4264	4-20 mA 105.2	Relay output B	Not used Option-dep.	Not used			
4265	4-20 mA 105.2	Enable	OFF ON	OFF			
4266	4-20 mA 105.2	Fail class	F1…F8	Warning (F2)			
4270 V DC 105.1							
4271	V DC 105.1	Setpoint	0.0V DC 40.0V DC	20.0V DC		Designer's Reference Handbook	The multi-input 105 has been configured as V DC.
4272	V DC 105.1	Timer	0.2 s 999.0 s	10.0 s			

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
4273	V DC 105.1	Relay output A	Not used Option-dep.	Not used			
4274	V DC 105.1	Relay output B	Not used Option-dep.	Not used			
4275	V DC 105.1	Enable	OFF ON	OFF			
4276	V DC 105.1	Fail class	F1…F8	Warning (F2)			
4280 V DC 105.2							
4281	V DC 105.2	Setpoint	0.0V DC 40.0V DC	20.0V DC		Designer's Reference Handbook	The multi-input 105 has been configured as V DC.
4282	V DC 105.2	Timer	0.2 s 999.0 s	10.0 s			
4283	V DC 105.2	Relay output A	Not used Option-dep.	Not used			
4284	V DC 105.2	Relay output B	Not used Option-dep.	Not used			
4285	V DC 105.2	Enable	OFF ON	OFF			
4286	V DC 105.2	Fail class	F1…F8	Warning (F2)			
4290 Pt100 105.1							
4291	PT 105.1	Setpoint	-49 482	80		Designer's Reference Handbook	The multi-input 105 has been configured as Pt100. Pt100 setpoint can be in deg. C or F, dependent on the unit selection (menu 10970).
4292	PT 105.1	Timer	0.0 s 999.0 s	5.0 s			
4293	PT 105.1	Relay output A	Not used Option-dep.	Not used			
4294	PT 105.1	Relay output B	Not used Option-dep.	Not used			
4295	PT 105.1	Enable	OFF ON	OFF			
4296	PT 105.1	Fail class	F1…F8	Warning (F2)			
4300 Pt100 105.2							

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
4301	PT 105.2	Setpoint	-49 482	80		Designer's Reference Handbook	The multi-input 105 has been configured as Pt100. Pt100 setpoint can be in deg. C or F, dependent on the unit selection (menu 10970).
4302	PT 105.2	Timer	0.0 s 999.0 s	10.0 s			
4303	PT 105.2	Relay output A	Not used Option-dep.	Not used			
4304	PT 105.2	Relay output B	Not used Option-dep.	Not used			
4305	PT 105.2	Enable	OFF ON	OFF			
4306	PT 105.2	Fail class	F1…F8	Warning (F2)			
4310 VDO oil 105.1							
4311	VDO oil 105.1	Setpoint	0.0 145.0	4.0		Designer's Reference Handbook	The multi-input 105 has been configured as VDO oil pressure. Oil pressure setpoint can be in Bar or PSI, dependent on the unit selection (menu 10970).
4312	VDO oil 105.1	Timer	0.0 s 999.0 s	5.0 s			
4313	VDO oil 105.1	Relay output A	Not used Option-dep.	Not used			
4314	VDO oil 105.1	Relay output B	Not used Option-dep.	Not used			
4315	VDO oil 105.1	Enable	OFF ON	OFF			
4316	VDO oil 105.1	Fail class	F1…F8	Warning (F2)			
4320 VDO oil 105.2							
4321	VDO oil 105.2	Setpoint	0.0 145.0	5.0		Designer's Reference Handbook	The multi-input 105 has been configured as VDO oil pressure. Oil pressure setpoint can be in Bar or PSI, dependent on the unit selection (menu 10970).
4322	VDO oil 105.2	Timer	0.0 s 999.0 s	5.0 s			
4323	VDO oil 105.2	Relay output A	Not used Option-dep.	Not used			
4324	VDO oil 105.2	Relay output B	Not used Option-dep.	Not used			
4325	VDO oil 105.2	Enable	OFF ON	OFF			

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
4326	VDO oil 105.2	Fail class	F1…F8	Warning (F2)			
4330 VDO water 105.1							
4331	VDO water 105.1	Setpoint	-49 482	100		Designer's Reference Handbook	The multi-input 105 has been configured as VDO water temperature. Water temperature setpoint can be in deg. C or F, dependent on the unit selection (menu 10970).
4332	VDO water 105.1	Timer	0.0 s 999.0 s	5.0 s			
4333	VDO water 105.1	Relay output A	Not used Option-dep.	Not used			
4334	VDO water 105.1	Relay output B	Not used Option-dep.	Not used			
4335	VDO water 105.1	Enable	OFF ON	OFF			
4336	VDO water 105.1	Fail class	F1…F8	Warning (F2)			
4340 VDO water 105.2							
4341	VDO water 105.2	Setpoint	-49 482	110		Designer's Reference Handbook	The multi-input 105 has been configured as VDO water temperature. Water temperature setpoint can be in deg. C or F, dependent on the unit selection (menu 10970).
4342	VDO water 105.2	Timer	0.0 s 999.0 s	5.0 s			
4343	VDO water 105.2	Relay output A	Not used Option-dep.	Not used			
4344	VDO water 105.2	Relay output B	Not used Option-dep.	Not used			
4345	VDO water 105.2	Enable	OFF ON	OFF			
4346	VDO water 105.2	Fail class	F1…F8	Warning (F2)			
4350 VDO fuel level 105.1							

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
4351	VDO fuel 105.1	Setpoint	0% 100%	10%		Designer's Reference Handbook	The multi-input 105 has been configured as VDO fuel level.
4352	VDO fuel 105.1	Timer	0.0 s 999.0 s	10.0 s			
4353	VDO fuel 105.1	Relay output A	Not used Option-dep.	Not used			
4354	VDO fuel 105.1	Relay output B	Not used Option-dep.	Not used			
4535	VDO fuel 105.1	Enable	OFF ON	OFF			
4356	VDO fuel 105.1	Fail class	F1…F8	Warning (F2)			
4360 VDO fuel level 105.2							
4361	VDO fuel 105.2	Setpoint	0% 100%	5%		Designer's Reference Handbook	The multi-input 105 has been configured as VDO fuel level.
4362	VDO fuel 105.2	Timer	0.0 s 999.0 s	10.0 s			
4363	VDO fuel 105.2	Relay output A	Not used Option-dep.	Not used			
4364	VDO fuel 105.2	Relay output B	Not used Option-dep.	Not used			
4365	VDO fuel 105.2	Enable	OFF ON	OFF			
4366	VDO fuel 105.2	Fail class	F1…F8	Warning (F2)			
4370 Wire fail 105							
4371	W. fail 105	Relay output A	Not used Option-dep.	Not used		Designer's Reference Handbook	The wire break fault detection is activated.

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
4372	W. fail 105	Relay output B	Not used Option-dep.	Not used			
4373	W. fail 105	Enable	OFF ON	OFF			
4374	W. fail 105	Fail class	F1…F8	Warning (F2)			

2.7.3 Multi-input no. 108

The available menus for multi-input no. 108 depend on the input type configured in the PC utility software (menu 11000).

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
4380 4-20 mA 108.1							
4381	4-20 mA 108.1	Setpoint	4 mA 20 mA	10 mA		Designer's Reference Handbook	The multi-input 108 has been configured as 4-20 mA.
4382	4-20 mA 108.1	Timer	0.0 s 999.0 s	120.0 s			
4383	4-20 mA 108.1	Relay output A	Not used Option-dep.	Not used			
4384	4-20 mA 108.1	Relay output B	Not used Option-dep.	Not used			
4385	4-20 mA 108.1	Enable	OFF ON	OFF			
4386	4-20 mA 108.1	Fail class	F1…F8	Warning (F2)			
4390 4-20 mA 108.2							
4391	4-20 mA 108.2	Setpoint	4 mA 20 mA	10 mA		Designer's Reference Handbook	The multi-input 108 has been configured as 4-20 mA.
4392	4-20 mA 108.2	Timer	0.0 s 999.0 s	120.0 s			
4393	4-20 mA 108.2	Relay output A	Not used Option-dep.	Not used			
4394	4-20 mA 108.2	Relay output B	Not used Option-dep.	Not used			
4395	4-20 mA 108.2	Enable	OFF ON	OFF			
4396	4-20 mA 108.2	Fail class	F1…F8	Warning (F2)			
4400 V DC 108.1							
4401	V DC 108.1	Setpoint	0.0V DC 40.0V DC	20.0V DC		Designer's Reference Handbook	The multi-input 108 has been configured as V DC.
4402	V DC 108.1	Timer	0.2 s 999.0 s	10.0 s			

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
4403	V DC 108.1	Relay output A	Not used Option-dep.	Not used			
4404	V DC 108.1	Relay output B	Not used Option-dep.	Not used			
4405	V DC 108.1	Enable	OFF ON	OFF			
4406	V DC 108.1	Fail class	F1…F8	Warning (F2)			
4410 V DC 108.2							
4411	V DC 108.2	Setpoint	0.0V DC 40.0V DC	20.0V DC		Designer's Reference Handbook	The multi-input 108 has been configured as V DC.
4412	V DC 108.2	Timer	0.2 s 999.0 s	10.0 s			
4413	V DC 108.2	Relay output A	Not used Option-dep.	Not used			
4414	V DC 108.2	Relay output B	Not used Option-dep.	Not used			
4415	V DC 108.2	Enable	OFF ON	OFF			
4416	V DC 108.2	Fail class	F1…F8	Warning (F2)			
4420 Pt100 108.1							
4421	PT 108.1	Setpoint	-49 482	80		Designer's Reference Handbook	The multi-input 108 has been configured as Pt100. Pt100 setpoint can be in deg. C or F, dependent on the unit selection (menu 10970).
4422	PT 108.1	Timer	0.0 s 999.0 s	5.0 s			
4423	PT 108.1	Relay output A	Not used Option-dep.	Not used			
4424	PT 108.1	Relay output B	Not used Option-dep.	Not used			
4425	PT 108.1	Enable	OFF ON	OFF			
4426	PT 108.1	Fail class	F1…F8	Warning (F2)			
4430 Pt100 108.2							

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
4431	PT 108.2	Setpoint	-49 482	80		Designer's Reference Handbook	The multi-input 108 has been configured as Pt100. Pt100 setpoint can be in deg. C or F, dependent on the unit selection (menu 10970).
4432	PT 108.2	Timer	0.0 s 999.0 s	10.0 s			
4433	PT 108.2	Relay output A	Not used Option-dep.	Not used			
4434	PT 108.2	Relay output B	Not used Option-dep.	Not used			
4435	PT 108.2	Enable	OFF ON	OFF			
4436	PT 108.2	Fail class	F1…F8	Warning (F2)			
4440 VDO oil 108.1							
4441	VDO oil 108.1	Setpoint	0.0 145.0	4.0		Designer's Reference Handbook	The multi-input 108 has been configured as VDO oil pressure. Oil pressure setpoint can be in Bar or PSI, dependent on the unit selection (menu 10970).
4442	VDO oil 108.1	Timer	0.0 s 999.0 s	5.0 s			
4443	VDO oil 108.1	Relay output A	Not used Option-dep.	Not used			
4444	VDO oil 108.1	Relay output B	Not used Option-dep.	Not used			
4445	VDO oil 108.1	Enable	OFF ON	OFF			
4446	VDO oil 108.1	Fail class	F1…F8	Warning (F2)			
4450 VDO oil 108.2							
4451	VDO oil 108.2	Setpoint	0.0 145.0	5.0		Designer's Reference Handbook	The multi-input 108 has been configured as VDO oil pressure. Oil pressure setpoint can be in Bar or PSI, dependent on the unit selection (menu 10970).
4452	VDO oil 108.2	Timer	0.0 s 999.0 s	5.0 s			
4453	VDO oil 108.2	Relay output A	Not used Option-dep.	Not used			
4454	VDO oil 108.2	Relay output B	Not used Option-dep.	Not used			
4455	VDO oil 108.2	Enable	OFF ON	OFF			

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
4456	VDO oil 108.2	Fail class	F1…F8	Warning (F2)			
4460 VDO water 108.1							
4461	VDO water 108.1	Setpoint	-49 482	100		Designer's Reference Handbook	The multi-input 108 has been configured as VDO water temperature. Water temperature setpoint can be in deg. C or F, dependent on the unit selection (menu 10970).
4462	VDO water 108.1	Timer	0.0 s 999.0 s	5.0 s			
4463	VDO water 108.1	Relay output A	Not used Option-dep.	Not used			
4464	VDO water 108.1	Relay output B	Not used Option-dep.	Not used			
4465	VDO water 108.1	Enable	OFF ON	OFF			
4466	VDO water 108.1	Fail class	F1…F8	Warning (F2)			
4470 VDO water 108.2							
4471	VDO water 108.2	Setpoint	-49 482	110		Designer's Reference Handbook	The multi-input 108 has been configured as VDO water temperature. Water temperature setpoint can be in deg. C or F, dependent on the unit selection (menu 10970).
4472	VDO water 108.2	Timer	0.0 s 999.0 s	5.0 s			
4473	VDO water 108.2	Relay output A	Not used Option-dep.	Not used			
4474	VDO water 108.2	Relay output B	Not used Option-dep.	Not used			
4475	VDO water 108.2	Enable	OFF ON	OFF			
4476	VDO water 108.2	Fail class	F1…F8	Warning (F2)			
4480 VDO fuel level 108.1							

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
4481	VDO fuel 108.1	Setpoint	0% 100%	10%		Designer's Reference Handbook	The multi-input 108 has been configured as VDO fuel level.
4482	VDO fuel 108.1	Timer	0.0 s 999.0 s	10.0 s			
4483	VDO fuel 108.1	Relay output A	Not used Option-dep.	Not used			
4484	VDO fuel 108.1	Relay output B	Not used Option-dep.	Not used			
4485	VDO fuel 108.1	Enable	OFF ON	OFF			
4486	VDO fuel 108.1	Fail class	F1…F8	Warning (F2)			
4490 VDO fuel level 108.2							
4491	VDO fuel 108.2	Setpoint	0% 100%	5%		Designer's Reference Handbook	The multi-input 108 has been configured as VDO fuel level.
4492	VDO fuel 108.2	Timer	0.0 s 999.0 s	10.0 s			
4493	VDO fuel 108.2	Relay output A	Not used Option-dep.	Not used			
4494	VDO fuel 108.2	Relay output B	Not used Option-dep.	Not used			
4495	VDO fuel 108.2	Enable	OFF ON	OFF			
4496	VDO fuel 108.2	Fail class	F1…F8	Warning (F2)			
4500 Wire fail 108							
4501	W. fail 108	Relay output A	Not used Option-dep.	Not used		Designer's Reference Handbook	The wire break fault detection is activated.

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
4502	W. fail 108	Relay output B	Not used Option-dep.	Not used			
4503	W. fail 108	Enable	OFF ON	OFF			
4504	W. fail 108	Fail class	F1…F8	Warning (F2)			

2.7.4 Speed and running feedback setup

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
4510 Overspeed 1							
4511	Over-speed 1	Set-point	100.0% 150.0%	110.0%		Designer's Reference Handbook	The setpoint in percentage relates to nominal RPM.
4512	Over-speed 1	Timer	0.0 s 100.0 s	5.0 s			
4513	Over-speed 1	Relay output A	Not used Option-dep.	Not used			
4514	Over-speed 1	Relay output B	Not used Option-dep.	Not used			
4515	Over-speed 1	Enable	OFF ON	OFF			
4516	Over-speed 1	Fail class	F1…F8	Warning (F2)			
4520 Overspeed 2							
4521	Over-speed 2	Set-point	100.0% 150.0%	120.0%		Designer's Reference Handbook	The setpoint in percentage relates to nominal RPM.
4522	Over-speed 2	Timer	0.0 s 100.0 s	1.0 s			
4523	Over-speed 2	Relay output A	Not used Option-dep.	Not used			
4524	Over-speed 2	Relay output B	Not used Option-dep.	Not used			
4525	Over-speed 2	Enable	OFF ON	OFF			
4526	Over-speed 2	Fail class	F1…F8	Shut-down (F5)			
4530 Crank failure							
4531	Crank failure	Set-point	1 RPM 400 RPM	50 RPM		Designer's Reference Handbook	If MPU is chosen as the primary running feedback, this alarm will be raised if the specified rpm is not reached before the delay has expired.
4532	Crank failure	Timer	0.0 s 20.0 s	2.0 s			
4533	Crank failure	Relay output A	Not used Option-dep.	Not used			

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
4534	Crank failure	Relay output B	Not used Option-dep.	Not used			
4535	Crank failure	Enable	OFF ON	OFF			
4536	Crank failure	Fail class	F1…F8	Warning (F2)			
4540 Running feedback failure							
4541	Run feedb. fail	Timer	0.0 s 20.0 s	2.0 s		Designer's Reference Handbook	If running is detected on the frequency (secondary), but the primary running feedback, e.g. digital input, has not detected running, this alarm will be raised after the adjusted delay time.
4542	Run feedb. fail	Relay output A	Not used Option-dep.	Not used			
4543	Run feedb. fail	Relay output B	Not used Option-dep.	Not used			
4544	Run feedb. fail	Enable	ON	ON			
4545	Run feedb. fail	Fail class	F1…F8	Warning (F2)			
4550 Magnetic pickup wirebreak							
4551	MPU wire-break	Relay output A	Not used Option-dep.	Not used		Designer's Reference Handbook	The wirebreak monitoring is only active when the engine is at standstill.
4552	MPU wire-break	Relay output B	Not used Option-dep.	Not used			
4553	MPU wire-break	Enable	OFF ON	OFF			
4554	MPU wire-break	Fail class	F1…F8	Warning (F2)			
4560 Hz/Voltage failure							
4561	Hz/V failure	Timer	1.0 s 99.0 s	30.0 s		Designer's Reference Handbook	If the frequency and voltage are not within the limits after the running feedback is received, this alarm will be raised when the delay time has expired.
4562	Hz/V failure	Relay output A	Not used Option-dep.	Not used			

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
4563	Hz/V failure	Relay output B	Not used Option-dep.	Not used			
4564	Hz/V failure	Enable	OFF ON	ON			
4565	Hz/V failure	Fail class	F1…F8	Shut-down (F5)			
4570 Start failure							
4571	Start failure	Relay output A	Not used Option-dep.	Not used		Designer's Reference Handbook	The start failure alarm occurs if the genset has not started after the number of start attempts.
4572	Start failure	Relay output B	Not used Option-dep.	Not used			
4573	Start failure	Fail class	F1…F8	Block (F1)			
4580 Stop failure							
4581	Stop failure	Timer	10.0 s 120.0 s	30.0 s		Designer's Reference Handbook	A stop failure alarm will appear if the primary running feedback or the generator voltage and frequency are still present after the delay time has expired.
4582	Stop failure	Relay output A	Not used Option-dep.	Not used			
4583	Stop failure	Relay output B	Not used Option-dep.	Not used			
4584	Stop failure	Enable	OFF ON	ON			
4585	Stop failure	Fail class	F1…F8	Shut-down (F5)			
4590 Underspeed 1							
4591	Underspeed	Set-point	50.0% 100.0%	90.0%		Designer's Reference Handbook	The setpoint in percentage relates to nominal RPM.
4592	Underspeed	Timer	0.0 s 100.0 s	5.0 s			
4593	Underspeed	Relay output A	Not used Option-dep.	Not used			
4594	Underspeed	Relay output B	Not used Option-dep.	Not used			

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
4595	Under-speed	Enable	OFF ON	OFF			
4596	Under-speed	Fail class	F1...F8	Warning (F2)			

2.7.5 Analogue input setup (option M15.8)

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
4800 4-20 mA 127.1							
4801	4-20 mA 127.1	Setpoint	4 mA 20 mA	10 mA		Option: 4 x 4-20 mA inputs (M15.8)	Configurable analogue input.
4802	4-20 mA 127.1	Timer	0.0 s 600.0 s	120.0 s			
4803	4-20 mA 127.1	Relay output A	Not used Option-dep.	Not used			
4804	4-20 mA 127.1	Relay output B	Not used Option-dep.	Not used			
4805	4-20 mA 127.1	Enable	OFF ON	OFF			
4806	4-20 mA 127.1	Fail class	F1…F8	Warning (F2)			
4810 4-20 mA 127.2							
4811	4-20 mA 127.2	Setpoint	4 mA 20 mA	10 mA		Option: 4 x 4-20 mA inputs (M15.8)	Configurable analogue input.
4812	4-20 mA 127.2	Timer	0.0 s 600.0 s	120.0 s			
4813	4-20 mA 127.2	Relay output A	Not used Option-dep.	Not used			
4814	4-20 mA 127.2	Relay output B	Not used Option-dep.	Not used			
4815	4-20 mA 127.2	Enable	OFF ON	OFF			
4816	4-20 mA 127.2	Fail class	F1…F8	Warning (F2)			
4820 wire fail 4-20 mA 127							
4821	W. fail ana 127	Relay output A	Not used Option-dep.	Not used		Option: 4 x 4-20 mA inputs (M15.8)	The wire fault will detect if the current drops below 2 mA or exceeds 22 mA. In both cases the alarm will be activated.
4822	W. fail ana 127	Relay output B	Not used Option-dep.	Not used			
4823	W. fail ana 127	Enable	OFF ON	OFF			

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
4824	W. fail ana 127	Fail class	F1…F8	Warning (F2)			
4830 4-20 mA 129.1							
4831	4-20 mA 129.1	Setpoint	4 mA 20 mA	10 mA		Option: 4 x 4-20 mA inputs (M15.8)	Configurable analogue input.
4832	4-20 mA 129.1	Timer	0.0 s 600.0 s	120.0 s			
4833	4-20 mA 129.1	Relay output A	Not used Option-dep.	Not used			
4834	4-20 mA 129.1	Relay output B	Not used Option-dep.	Not used			
4835	4-20 mA 129.1	Enable	OFF ON	OFF			
4836	4-20 mA 129.1	Fail class	F1…F8	Warning (F2)			
4840 4-20 mA 129.2							
4841	4-20 mA 129.2	Setpoint	4 mA 20 mA	10 mA		Option: 4 x 4-20 mA inputs (M15.8)	Configurable analogue input.
4842	4-20 mA 129.2	Timer	0.0 s 600.0 s	120.0 s			
4843	4-20 mA 129.2	Relay output A	Not used Option-dep.	Not used			
4844	4-20 mA 129.2	Relay output B	Not used Option-dep.	Not used			
4845	4-20 mA 129.2	Enable	OFF ON	OFF			
4846	4-20 mA 129.2	Fail class	F1…F8	Warning (F2)			
4850 Wire fail 4-20 mA 129.2							
4851	W. fail ana 129	Relay output A	Not used Option-dep.	Not used		Option: 4 x 4-20 mA inputs (M15.8)	The wire fault will detect if the current drops below 2 mA or exceeds 22 mA. In both cases the alarm will be activated.
4852	W. fail ana 129	Relay output B	Not used Option-dep.	Not used			
4853	W. fail ana 129	Enable	OFF ON	OFF			

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
4854	W. fail ana 129	Fail class	F1…F8	Warning (F2)			
4860 4-20 mA 131.1							
4861	4-20 mA 131.1	Setpoint	4 mA 20 mA	10 mA		Option: 4 x 4-20 mA inputs (M15.8)	Configurable analogue input.
4862	4-20 mA 131.1	Timer	0.0 s 600.0 s	120.0 s			
4863	4-20 mA 131.1	Relay output A	Not used Option-dep.	Not used			
4864	4-20 mA 131.1	Relay output B	Not used Option-dep.	Not used			
4865	4-20 mA 131.1	Enable	OFF ON	OFF			
4866	4-20 mA 131.1	Fail class	F1…F8	Warning (F2)			
4870 4-20 mA 131.2							
4871	4-20 mA 131.2	Setpoint	4 mA 20 mA	10 mA		Option: 4 x 4-20 mA inputs (M15.8)	Configurable analogue input.
4872	4-20 mA 131.2	Timer	0.0 s 600.0 s	120.0 s			
4873	4-20 mA 131.2	Relay output A	Not used Option-dep.	Not used			
4874	4-20 mA 131.2	Relay output B	Not used Option-dep.	Not used			
4875	4-20 mA 131.2	Enable	OFF ON	OFF			
4876	4-20 mA 131.2	Fail class	F1…F8	Warning (F2)			
4880 Wire fail 4-20 mA 131							
4881	W. fail ana 131	Relay output A	Not used Option-dep.	Not used		Option: 4 x 4-20 mA inputs (M15.8)	The wire fault will detect if the current drops below 2 mA or exceeds 22 mA. In both cases the alarm will be activated.
4882	W. fail ana 131	Relay output B	Not used Option-dep.	Not used			
4883	W. fail ana 131	Enable	OFF ON	OFF			

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
4884	W. fail ana 131	Fail class	F1…F8	Warning (F2)			
4890 4-20 mA 133.1							
4891	4-20 mA 133.1	Setpoint	4 mA 20 mA	10 mA		Option: 4 x 4-20 mA inputs (M15.8)	Configurable analogue input.
4892	4-20 mA 133.1	Timer	0.0 s 600.0 s	120.0 s			
4893	4-20 mA 133.1	Relay output A	Not used Option-dep.	Not used			
4894	4-20 mA 133.1	Relay output B	Not used Option-dep.	Not used			
4895	4-20 mA 133.1	Enable	OFF ON	OFF			
4896	4-20 mA 133.1	Fail class	F1…F8	Warning (F2)			
4900 4-20 mA 133.2							
4901	4-20 mA 133.2	Setpoint	4 mA 20 mA	10 mA		Option: 4 x 4-20 mA inputs (M15.8)	Configurable analogue input.
4902	4-20 mA 133.2	Timer	0.0 s 600.0 s	120.0 s			
4903	4-20 mA 133.2	Relay output A	Not used Option-dep.	Not used			
4904	4-20 mA 133.2	Relay output B	Not used Option-dep.	Not used			
4905	4-20 mA 133.2	Enable	OFF ON	OFF			
4906	4-20 mA 133.2	Fail class	F1…F8	Warning (F2)			
4910 Wire fail 4-20 mA 133							
4911	W. fail ana 133	Relay output A	Not used Option-dep.	Not used		Option: 4 x 4-20 mA inputs (M15.8)	The wire fault will detect if the current drops below 2 mA or exceeds 22 mA. In both cases the alarm will be activated.
4912	W. fail ana 133	Relay output B	Not used Option-dep.	Not used			
4913	W. fail ana 133	Enable	OFF ON	OFF			

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
4914	W. fail ana 133	Fail class	F1…F8	Warning (F2)			

2.7.6 Aux. supply setup

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
4960 U< auxiliary power supply terminal 1							
4961	U< aux. term. 1	Setpoint	8.0V DC 32.0V DC	18.0V DC		Designer's Reference Handbook	The power supply on terminal 1 and 2 has been continuously below the adjusted setpoint during the programmed delay.
4962	U< aux. term. 1	Timer	0.0 s 999.0 s	1.0 s			
4963	U< aux. term. 1	Relay output A	Not used Option-dep.	Not used			
4964	U< aux. term. 1	Relay output B	Not used Option-dep.	Not used			
4965	U< aux. term. 1	Enable	OFF ON	ON			
4966	U< aux. term. 1	Fail class	F1…F8	Warning (F2)			
4970 U> auxiliary power supply terminal 1							
4971	U> aux. term. 1	Setpoint	12.0V DC 36.0V DC	30.0V DC		Designer's Reference Handbook	The power supply on terminal 1 and 2 has been continuously above the adjusted setpoint during the programmed delay.
4972	U> aux. term. 1	Timer	0.0 s 999.0 s	1.0 s			
4973	U> aux. term. 1	Relay output A	Not used Option-dep.	Not used			
4974	U> aux. term. 1	Relay output B	Not used Option-dep.	Not used			
4975	U> aux. term. 1	Enable	OFF ON	ON			
4976	U> aux. term. 1	Fail class	F1…F8	Warning (F2)			
4980 U< auxiliary power supply terminal 98							
4981	U> aux. term. 98	Setpoint	8.0V DC 32.0V DC	18.0V DC		Designer's Reference Handbook	The power supply on terminal 98 and 99 has been continuously below the adjusted setpoint during the programmed delay.
4982	U> aux. term. 98	Timer	0.0 s 999.0 s	1.0 s			
4983	U> aux. term. 98	Relay output A	Not used Option-dep.	Not used			

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
4984	U> aux. term. 98	Relay output B	Not used Option-dep.	Not used			
4985	U> aux. term. 98	Enable	OFF ON	ON			
4986	U> aux. term. 98	Fail class	F1…F8	Warning (F2)			
4990 U> auxiliary power supply terminal 98							
4991	U> aux. term. 98	Setpoint	12.0V DC 36.0V DC	30.0V DC		Designer's Reference Handbook	The power supply on terminal 98 and 99 has been continuously above the adjusted set-point during the programmed delay.
4992	U> aux. term. 98	Timer	0.0 s 999.0 s	1.0 s			
4993	U> aux. term. 98	Relay output A	Not used Option-dep.	Not used			
4994	U> aux. term. 98	Relay output B	Not used Option-dep.	Not used			
4995	U> aux. term. 98	Enable	OFF ON	ON			
4996	U> aux. term. 98	Fail class	F1…F8	Warning (F2)			

2.8 System parameters - general setup

2.8.1 Stop coil wirebreak and internal communication alarms

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
6270 Stop coil wirebreak							
6271	Stop coil wirebreak	Relay output A	Not used Option-dep.	Not used		Designer's Reference Handbook	The wirebreak monitoring is only active when the stop coil output is deactivated.
6272	Stop coil wirebreak	Relay output B	Not used Option-dep.	Not used			
6273	Stop coil wirebreak	Enable	OFF ON	OFF			
6274	Stop coil wirebreak	Fail class	F1…F8	Warning (F2)			
6280 Internal communication fail							
6281	Int. comm. fail	Relay output A	Not used Option-dep.	Not used		Designer's Reference Handbook	This is the alarm for communication fail between the main processor and the engine interface processor.
6282	Int. comm. fail	Relay output B	Not used Option-dep.	Not used			
6283	Int. comm. fail	Fail class	F1…F8	Warning (F2)			

2.8.2 Engine heater failure

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
6330 Engine heater 1							
6331	Engine heater 1	Setpoint	10 deg 250 deg	30 deg		Designer's Reference Handbook	
6332	Engine heater 1	Timer	1.0 s 300.0 s	10.0 s			
6333	Engine heater 1	Relay output A	Not used Option-dep.	Not used			
6334	Engine heater 1	Relay output B	Not used Option-dep.	Not used			
6335	Engine heater 1	Enable	OFF ON	OFF			
6336	Engine heater 1	Fail class	F1…F8	Warning (F2)			

2.8.3 Battery tests

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
6410 Battery test							
6411	Battery test	Setpoint	8.0 V 32.0 V	18.0 V		Designer's Reference Handbook	If the battery voltage drops below setpoint during crank test the alarm activates.
6412	Battery test	Timer	1 s 300 s	20 s			
6413	Battery test	Type	Power supply Multi-input 102 Multi-input 105 Multi-input 108 Power supply 98/99	Power supply			
6414	Battery test	Relay output A	Not used Option-dep.	Not used			
6415	Battery test	Enable	OFF ON	OFF			
6416	Battery test	Fail class	F1…F8	Warning (F2)			
6420 Auto battery test							
6421	Auto batt test	Enable	On Off	Off		Designer's Reference Handbook	Automatic battery test time setting.
6422	Auto batt test	Day	Monday Sunday	Monday			
6423	Auto batt test	Hours	0 h 23 h	10h			
6424	Auto batt test	Week	1 52	52			
6425	Auto batt test	Relay output A	Not used Option-dep.	Not used			
6430 Battery asymmetry							

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
6431	Batt. asymmetry	T1	Power supply Multi-input 102 Multi-input 105 Multi-input 108 Power supply 98/99	Multi-input 105		Designer's Reference Handbook	Battery asymmetry input selections.
6432	Batt. asymmetry	RF1	Power supply Multi-input 102 Multi-input 105 Multi-input 108 Power supply 98/99	Power supply			
6433	Batt. asymmetry	T2	Power supply Multi-input 102 Multi-input 105 Multi-input 108 Power supply 98/99	Multi-input 108			
6434	Batt. asymmetry	RF2	Power supply Multi-input 102 Multi-input 105 Multi-input 108 Power supply 98/99	Multi-input 102			
6440 Battery asymmetry 1							
6441	Battery asym 1	Setpoint	0.1 V 15.0 V	1.0 V		Designer's Reference Handbook	If the battery voltage asymmetry between the single batteries exceeds the setting, the alarm will activate.
6442	Battery asym 1	Timer	0.0 s 10.0 s	1.0 s			

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
6443	Battery asym 1	Relay output A	Not used Option-dep.	Not used			
6444	Battery asym 1	Relay output B	Not used Option-dep.	Not used			
6445	Battery asym 1	Enable	OFF ON	OFF			
6450 Battery asymmetry 2							
6451	Battery asym 2	Setpoint	0.1 V 15.0 V	1.0 V		Designer's Reference Handbook	If the battery voltage asymmetry between the single batteries exceeds the setting, the alarm will activate.
6452	Battery asym 2	Timer	0.0 s 10.0 s	1.0 s			
6453	Battery asym 2	Relay output A	Not used Option-dep.	Not used			
6454	Battery asym 2	Relay output B	Not used Option-dep.	Not used			
6455	Battery asym 2	Enable	OFF ON	OFF			

2.8.4 Max. ventilation

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
6470 Max vent 1							
6471	Max vent 1	Setpoint	20 deg 250 deg	95 deg		Designer's Reference Handbook	If the cooling fans fail to operate and the coolant temperature exceeds the setting, the alarm will activate.
6472	Max vent 1	Timer	0.0 s 60.0 s	1.0 s			
6473	Max vent 1	Relay output A	Not used Option-dep.	Not used			
6474	Max vent 1	Relay output B	Not used Option-dep.	Not used			
6475	Max vent 1	Enable	OFF ON	OFF			
6476	Max vent 1	Fail class	F1…F8	Warning (F2)			
6480 Max vent 2							
6481	Max vent 2	Setpoint	20 deg 250 deg	98 deg		Designer's Reference Handbook	If the cooling fans fail to operate and the coolant temperature exceeds the setting, the alarm will activate.
6482	Max vent 2	Timer	0.0 s 60.0 s	1.0 s			
6483	Max vent 2	Relay output A	Not used Option-dep.	Not used			
6484	Max vent 2	Relay output B	Not used Option-dep.	Not used			
6485	Max vent 2	Enable	OFF ON	OFF			
6486	Max vent 2	Fail class	F1…F8	Shut-down (F5)			

2.8.5 Switchboard error - Block and Stop

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
6500 Block switchboard error							
6501	Blk. swbd error	Timer	0.0 s 999.0 s	10.0 s		Designer's Reference Handbook	If the binary input "switchboard error" activates, a stopped generator will be blocked for start. Parameter 6502: OFF: only AMF start is affected ON: All starts are affected.
6502	Blk. swbd error	Parallel	ON OFF	OFF			
6503	Blk. swbd error	Relay output A	Not used Option-dep.	Not used			
6504	Blk. swbd error	Relay output B	Not used Option-dep.	Not used			
6505	Blk. swbd error	Enable	OFF ON	OFF			
6506	Blk. swbd error	Fail class	F1…F8	Warning (F2)			
6510 Stop switchboard error							
6511	Stp. swbd error	Timer	0.0 s 999.0 s	1.0 s		Designer's Reference Handbook	If the binary input "switchboard error" activates, the generator will be stopped.
6512	Stp. swbd error	Relay output A	Not used Option-dep.	Not used			
6513	Stp. swbd error	Relay output B	Not used Option-dep.	Not used			
6514	Stp. swbd error	Enable	OFF ON	OFF			
6515	Stp. swbd error	Fail class	F1…F8	Shut-down (F5)			

2.8.6 Switchboard error - Not in auto

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Descrip-tion
6540 Not in auto							
6541	Not in auto	Timer	10.0 s 900.0 s	300.0 s		Designer's Reference Handbook	
6542	Not in auto	Relay output A	Not used Option-dep.	Not used			
6543	Not in auto	Relay output B	Not used Option-dep.	Not used			
6544	Not in auto	Enable	OFF ON	OFF			
6545	Not in auto	Fail class	F1…F8	Warning (F2)			

2.9 System parameters - communication

2.9.1 External communication error

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
7520 External communication error							
7521	Ext. comm. error	Delay	1.0 s 100.0 s	10.0 s		Option: Modbus (H2) Profibus (H3)	Supervision of the external communication line. The alarm will occur when there has not been any communication during the time delay.
7522	Ext. comm. error	Relay output A	Not used Option-dep.	Not used			
7523	Ext. comm. error	Relay output B	Not used Option-dep.	Not used			
7524	Ext. comm. error	Enable	OFF ON	OFF			
7525	Ext. comm. error	Fail class	F1…F8	Warning (F2)			
7530 Internal communication ID							
						Designer's Reference Handbook	The mode decides the reaction of the power management system in case of different errors on the CAN communication lines. Mode: - Manual - Semi auto - No mode change
7532	Int. comm. ID	CAN fail. mode	Manual Semi auto No mode change	Manual			
7533	Int. comm. ID	Missing all units	F1…F8	Warning (F2)			
7534	Int. comm. ID	Fatal CAN error	F1…F8	Warning (F2)			
7535	Int. comm. ID	Any DG missing	F1…F8	Warning (F2)			
7536	Int. comm. ID	Any mains missing	F1…F8	Warning (F2)			

2.9.2 Engine interface communication alarms

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
7570 EI comm. error							
7571	EI comm. error	Timer	0.0 s 100.0 s	0.0 s		Option: J1939 and MTU ADEC/ MDEC (H5) Cummins Modbus (H6) J1939 (H7)	Supervision of the EIC communication line. The alarm will occur when there has not been any communication during the time delay.
7572	EI comm. error	Relay output A	Not used Option-dep.	Not used			
7573	EI comm. error	Relay output B	Not used Option-dep.	Not used			
7574	EI comm. error	Enable	OFF ON	ON			
7575	EI comm. error	Fail class	F1…F8	Warning (F2)			
7580 EIC warning							
7581	EIC warning	Timer	0.0 s 100.0 s	0.0 s		Option: J1939 and MTU ADEC/ MDEC (H5) Cummins Modbus (H6) J1939 (H7)	
7582	EIC warning	Relay output A	Not used Option-dep.	Not used			
7583	EIC warning	Relay output B	Not used Option-dep.	Not used			
7584	EIC warning	Enable	OFF ON	ON			
7585	EIC warning	Fail class	F1…F8	Warning (F2)			
7590 EIC shutdown							
7591	EIC shutdown	Timer	0.0 s 100.0 s	0.0 s		Option: J1939 and MTU ADEC/ MDEC (H5) Cummins Modbus (H6) J1939 (H7)	
7592	EIC shutdown	Relay output A	Not used Option-dep.	Not used			
7593	EIC shutdown	Relay output B	Not used Option-dep.	Not used			
7594	EIC shutdown	Enable	OFF ON	OFF			
7595	EIC shutdown	Fail class	F1…F8	Shutdown (F5)			
7600 EIC overspeed							
7601	EIC overspeed	Setpoint	100.0% 150.0%	110.0%		Option:	

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Descrip-tion
7602	EIC over-speed	Timer	0.0 s 100.0 s	5.0 s		J1939 and MTU ADEC/ MDEC (H5) Cummins Modbus (H6) J1939 (H7)	
7603	EIC over-speed	Relay output A	Not used Option-dep.	Not used			
7604	EIC over-speed	Relay output B	Not used Option-dep.	Not used			
7605	EIC over-speed	Enable	OFF ON	OFF			
7606	EIC over-speed	Fail class	F1…F8	Warning (F2)			
7610 EIC coolant temp. 1							
7611	EIC coolant t. 1	Setpoint	-40 deg 410 deg	100 deg		Option: J1939 and MTU ADEC/ MDEC (H5) Cummins Modbus (H6) J1939 (H7)	
7612	EIC coolant t. 1	Timer	0.0 s 100.0 s	5.0 s			
7613	EIC coolant t. 1	Relay output A	Not used Option-dep.	Not used			
7614	EIC coolant t. 1	Relay output B	Not used Option-dep.	Not used			
7615	EIC coolant t. 1	Enable	OFF ON	OFF			
7616	EIC coolant t. 1	Fail class	F1…F8	Warning (F2)			
7620 EIC coolant temp. 2							
7621	EIC coolant t. 2	Setpoint	-40 deg 410 deg	110 deg		Option: J1939 and MTU ADEC/ MDEC (H5) Cummins Modbus (H6) J1939 (H7)	
7622	EIC coolant t. 2	Timer	0.0 s 100.0 s	5.0 s			
7623	EIC coolant t. 2	Relay output A	Not used Option-dep.	Not used			
7624	EIC coolant t. 2	Relay output B	Not used Option-dep.	Not used			
7625	EIC coolant t. 2	Enable	OFF ON	OFF			
7626	EIC coolant t. 2	Fail class	F1…F8	Warning (F2)			
7630 EIC oil pressure 1							
7631	EIC oil press. 1	Setpoint	0.0 bar 145.0 bar	2.0 bar		Option: J1939 and MTU ADEC/ MDEC (H5) Cummins Modbus (H6) J1939 (H7)	
7632	EIC oil press. 1	Timer	0.0 s 100.0 s	5.0 s			

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Descrip-tion
7633	EIC oil press. 1	Relay output A	Not used Option-dep.	Not used			
7634	EIC oil press. 1	Relay output B	Not used Option-dep.	Not used			
7635	EIC oil press. 1	Enable	OFF ON	OFF			
7636	EIC oil press. 1	Fail class	F1…F8	Warning (F2)			
7640 EIC oil pressure 2							
7641	EIC oil press. 2	Setpoint	0.0 bar 145.0 bar	1.0 bar		Option: J1939 and MTU ADEC/ MDEC (H5) Cummins Modbus (H6) J1939 (H7)	
7642	EIC oil press. 2	Timer	0.0 s 100.0 s	5.0 s			
7643	EIC oil press. 2	Relay output A	Not used Option-dep.	Not used			
7644	EIC oil press. 2	Relay output B	Not used Option-dep.	Not used			
7645	EIC oil press. 2	Enable	OFF ON	OFF			
7646	EIC oil press. 2	Fail class	F1…F8	Shutdown (F5)			
7650 EIC oil temp 1							
7651	EIC oil temp. 1	Setpoint	0 deg 410 deg	40 deg		Option: J1939 and MTU ADEC/ MDEC (H5) Cummins Modbus (H6) J1939 (H7)	
7652	EIC oil temp. 1	Timer	0.0 s 100.0 s	5.0 s			
7653	EIC oil temp. 1	Relay output A	Not used Option-dep.	Not used			
7654	EIC oil temp. 1	Relay output B	Not used Option-dep.	Not used			
7655	EIC oil temp. 1	Enable	OFF ON	OFF			
7656	EIC oil temp. 1	Fail class	F1…F8	Warning (F2)			
7660 EIC oil temp 2							
7661	EIC oil temp. 2	Setpoint	0 deg 410 deg	50 deg		Option: J1939 and MTU ADEC/ MDEC (H5) Cummins Modbus (H6) J1939 (H7)	
7662	EIC oil temp. 2	Timer	0.0 s 100.0 s	5.0 s			
7663	EIC oil temp. 2	Relay output A	Not used Option-dep.	Not used			

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Descrip-tion
7664	EIC oil temp. 2	Relay output B	Not used Option-dep.	Not used			
7665	EIC oil temp. 2	Enable	OFF ON	OFF			
7666	EIC oil temp. 2	Fail class	F1…F8	Shutdown (F5)			

2.9.3 Power management communication error

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
7870 Any BTB missing/appl hazard							
7871	Any BTB missing	Fail class	F1…F8	Warning (F2)		Designer's Reference Handbook	The "Any BTB missing" alarm is activated if the communication to any BTB unit failed. The application hazard alarm is activated if different applications are installed in the controllers.
7872	Appl hazard	Enable	ON OFF	ON			
7873	Appl hazard	Fail class	F1…F8	Warning (F2)			

2.9.4 Internal CAN communication error

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
7930 CAN1 communication error							
7931	CAN1 com error	Timer	10.0 s 600.0 s	10.0 s		Option: External I/O modules (H8.2)	If both options H8.x are present, an error on any of these will activate the alarm.
7932	CAN1 com error	Relay output A	Not used Option-dep.	Not used			
7933	CAN1 com error	Relay output B	Not used Option-dep.	Not used			
7934	CAN1 com error	Enable	OFF ON	ON			
7935	CAN1 com error	Fail class	F1…F8	Warning (F2)			
7940 CAN2 comm error							
7941	CAN2 comm error	Timer	10.0 s 600.0 s	10.0 s		Option: External I/O modules (H8.2)	If both options H8.x are present, an error on any of these will activate the alarm.
7942	CAN2 comm error	Relay output A	Not used Option-dep.	Not used			
7943	CAN2 comm error	Relay output B	Not used Option-dep.	Not used			
7944	CAN2 comm error	Enable	OFF ON	ON			
7945	CAN2 comm error	Fail class	F1…F8	Warning (F2)			

2.10 External I/O parameters

2.10.1 External I/O alarm setup

The alarms based on external I/O modules can only be configured using the PC utility software.

2.10.2 Analogue inputs

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Descrip-tion
12000 Ext. Ain 1.1							
	Ext. Ain 1.1	Setpoint	0 10	10		Option: External I/O modules (H8.x)	
	Ext. Ain 1.1	Timer	0.0 s 600.0 s	10.0 s			
	Ext. Ain 1.1	Fail class	F1…F8	Warning (F2)			
	Ext. Ain 1.1	Relay output A	Not used Option-dep.	Not used			
	Ext. Ain 1.1	Relay output B	Not used Option-dep.	Not used			
	Ext. Ain 1.1	Enable	OFF ON	OFF			
12010 Ext. Ain 1.2							
	Ext. Ain 1.2	Setpoint	0 10	10		Option: External I/O modules (H8.x)	
	Ext. Ain 1.2	Timer	0.0 s 600.0 s	10.0 s			
	Ext. Ain 1.2	Fail class	F1…F8	Warning (F2)			
	Ext. Ain 1.2	Relay output A	Not used Option-dep.	Not used			
	Ext. Ain 1.2	Relay output B	Not used Option-dep.	Not used			
	Ext. Ain 1.2	Enable	OFF ON	OFF			

The same settings apply to external analogue inputs 2-8, menus 12030-12220.

2.10.3 External analogue input scale

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
12230 4-20 mA Ext in 1 scale							
	4-20 mA Ext in 1 scale	Setpoint	No decimal Two decimal	One decimal		Option: External I/O modules (H8.x)	Selecting "Enable" and writing the new setpoint will scale the associated min., max. and value automatically.
	4-20 mA Ext in 1 scale	Enable	OFF ON	OFF			

2.10.4 Digital inputs

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
12540 Ext. dig. in 1							
	Ext. dig. in 1	Timer	0.0 s 100.0 s	10.0 s		Option: External I/O modules (H8.x)	
	Ext. dig. in 1	Fail class	F1…F8	Warning (F2)			
	Ext. dig. in 1	Relay output A	Not used Option-dep.	Not used			
	Ext. dig. in 1	Relay output B	Not used Option-dep.	Not used			
	Ext. dig. in 1	Enable	OFF ON	OFF			
	Ext. dig. in 1	High alarm	OFF ON	ON			

The same settings apply to external digital inputs 2-16, menus 12550-12690.

3. Parameter list

3.1 General information about the parameter list

3.1.1 Parameter list settings

The parameter list contains settings for regulators and other non-alarm related settings.

3.2 Control parameters - synchronisation

3.2.1 Synchronisation

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
2000 Sync type							
2001	Sync. type	Type	Dynamic sync Static sync	Dynamic sync		Designer's Reference Handbook	Static sync aims at a frequency difference of 0 Hz. Dynamic sync aims at a frequency difference (midpoint between setting 2021 dfMax. and 2022 dfMin.). OFF = dynamic sync, ON = static sync.
2020 Dynamic sync							
2021	Dynamic sync	dfMax	0.0 Hz 0.5 Hz	0.3 Hz		Designer's Reference Handbook	Menu 2020 is only applicable if "Dynamic sync." is chosen in menu 2001.
2022	Dynamic sync	dfMin	-0.5 Hz 0.3 Hz	0.0 Hz			
2023	Dynamic sync	dUMax	2% 10%	5%			
2024	Dynamic sync	Sync t. GB/BTB/ TB	40 ms 300 ms	50 ms			
2025	Dynamic sync	Sync t. MB	40 ms 300 ms	50 ms			
2030 Static sync							
2031	Static sync	dfMax	0.00 Hz 0.50 Hz	0.10 Hz		Designer's Reference Handbook	Menu 2030 is only applicable if "Static sync" is chosen in menu 2001.
2032	Static sync	dUMax	2% 10%	5%			
2033	Static sync	Close window	0.1 deg 20.0 deg	10.0 deg			
2034	Static sync	Timer	0.1 s 99.0 s	1.0 s			
2035	Static sync	GB sync. type	Breaker Infinite sync.	Breaker			
2036	Static sync	MB sync. type	Breaker Infinite sync.	Breaker			
2040 Frequency synchronisation control analogue							

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
2041	f sync	f Kp	0.00 60.00	0.50		Option E1, E2, EF2, EF4, EF5	PID controller for dynamic sync. This menu is only applicable if “analogue” or “PWM” or “EIC” is selected in menu 2780.
2042	f sync	f Ti	0.00 s 60.00 s	5.00 s			
2043	f sync	f Td	0.00 s 2.00 s	0.00 s			
2050 Frequency synchronisation control relay							
2051	f sync	Kp	0 100	10		Designer’s Reference Handbook	This menu is only applicable if “relay” is selected in menu 2780.
2060 Phase sync analogue							
2061	Phase sync	Phase Kp	0.00 60.00	0.50		Designer’s Reference Handbook	PID controller for static sync. This menu is only applicable if “analogue” or “PWM” or “EIC” is selected in menu 2780.
2062	Phase sync	Phase Ti	0.00 s 60.00 s	5.00 s			
2063	Phase sync	Phase Td	0.00 s 2.00 s	0.00 s			
2070 Phase control relay							
2071	Phase	Kp	0 100	10		Designer’s Reference Handbook	This menu is only applicable if “relay” is selected in menu 2780.
2110 Synchronisation blackout							
2111	Sync blackout	dfMax	0.0 Hz 5.0 Hz	3.0 Hz		Designer’s Reference Handbook	Settings are accepted limits for closing of the breaker, referring to nominal frequency and voltage.
2112	Sync blackout	dUMax	2% 10%	5%			
2240 Separate synchronisation relay							
2241	Sep sync relay	Relay output A	Not used Option-dep.	Not used		Designer’s Reference Handbook	The output activates during synchronisation and thereby a separate synchronising unit can be activated.
2242	Sep sync relay	Relay output B	Not used Option-dep.	Not used			
2250 Close before excitation							
2251	Close bef. exc.	Setpoint	0 rpm 4000 rpm	400 rpm		Designer’s Reference Handbook	If set ON the function will close the breaker at the selected speed. The relay output is used for the excitation ON signal. Remember to set the selected relay in “Limit” mode.
2252	Close bef. exc.	Timer	0.0 s 999.0 s	5.0 s			
2253	Close bef. exc.	Relay output A	Not used Option-dep.	Not used			

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
2554	Close bef. exc.	Enable	OFF ON	OFF			
2260 Breaker sequence							
2261	Breaker seq.	Break	Close GB Close GB +TB	Close GB		Designer's Reference Handbook	The sequence is used for the closed before excitation function. The excitation will be activated at the selected speed in menu 2263.
2262	Breaker seq.	Timer	0.0 s 999.0 s	5.0 s			
2263	Breaker seq.	RpmOK	0 rpm 4000 rpm	1450 rpm			

3.3 Control parameters - regulation

3.3.1 Regulation

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
2510 Frequency control analogue							
2511	f control	f Kp	0.00 60.00	0.50		Designer's Reference Handbook	PID controller for frequency control. This menu is only applicable if "analogue" is selected in menu 2781.
2512	f control	f Ti	0.00 s 60.00 s	5.00 s			
2513	f control	f Td	0.00 s 2.00 s	0.00 s			
2530 Power control analogue							
2531	P control	P Kp	0.00 60.00	0.50		Designer's Reference Handbook	PID controller for power control. This menu is only applicable if "analogue" is selected in menu 2781.
2532	P control	P Ti	0.00 s 60.00 s	5.00 s			
2533	P control	P Td	0.00 s 2.00 s	0.00 s			
2540 Power load sharing control analogue							
2541	P LS control	P LS Kp	0.00 60.00	0.50		Designer's Reference Handbook	PID controller for load sharing control. This menu is only applicable if "analogue" is selected in menu 2781.
2542	P LS control	P LS Ti	0.00 s 60.00 s	5.00 s			
2543	P LS control	P LS Td	0.00 s 2.00 s	0.00 s			
2550 Analogue governor offset							
2551	Analogue GOV	Offset	0% 100%	50%		Designer's Reference Handbook	PID controller for power control. This menu is only applicable if "analogue" is selected in menu 2781.
2570 Frequency control relay output							
2571	f control relay	Dead band	0.2% 10.0%	1.0%		Designer's Reference Handbook	This menu is only applicable if "relay" is selected in menu 2781.
2572	f control relay	Kp	0 100	10			
2580 Power control relay output							
2581	P control relay	Dead band	0.2% 10.0%	2.0%		Designer's Reference Handbook	This menu is only applicable if "relay" is selected in menu 2781.

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
2582	P control relay	Kp	0 100	10			
2590 Load sharing control relay output							
2591	LS ctrl. relay	f dead band	0.2% 10.0%	1.0%		Designer's Reference Handbook	This menu is only applicable if "relay" is selected in menu 2781.
2592	LS ctrl. relay	LS Kp	0 100	10			
2593	LS ctrl. relay	P dead band	0.2% 10.0%	2.0%			
2594	LS ctrl. relay	P weight	0.0% 100.0%	10.0%			
2600 Relay control							
2601	Relay control	GOV ON time	10 ms 6500 ms	500 ms		Designer's Reference Handbook	This menu is only applicable if "relay" is selected in menu 2781. NOTE: In the PC utility software, settings 2603/2604 are found under menu 2602. Output A is increase and output B is decrease.
2602	Relay control	GOV period time	50 ms 32500 ms	2500 ms			
2603	Relay control	Relay output A (Increase relay)	Not used Option-dep.	Not used			
2604	Relay control	Relay output B (Decrease relay)	Not used Option-dep.	Not used			
2610 Power ramp up							
2611	Power ramp up	Speed	0.1%/s 20.0%/s	2.0%/s		Designer's Reference Handbook	The delay point determines when the generator will make a temporary stop ramping up after closing of the generator breaker to preheat the engine before commencing load taking. If the delay function is not needed, set this time to 0. Power % settings relate to nominal generator power.
2612	Power ramp up	Delay point	1% 100%	10%			
2613	Power ramp up	Delay time	0 s 9900 s	10 s			
2614	Power ramp up	Load/ steps	OFF ON	OFF			
2615	Power ramp up	Steps	0 100	1			
2620 Power ramp down							
2621	Power ramp down	Speed	0.1%/s 20.0%/s	10.0%/s		Designer's Reference Handbook	The breaker open point determines when the "open breaker" relay output is activated to open the generator

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
2623	Power ramp down	Breaker open point	1% 20%	5%			breaker before reaching 0 kW. Power % settings relate to nominal generator power.
2640 Voltage control analogue							
2641	U control	U Kp	0.00 60.00	0.50		Option: AVR control (D1)	PID controller for voltage control. This menu is only applicable if analogue output is selected in menu 2782.
2642	U control	U Ti	0.00 s 60.00 s	5.00 s			
2643	U control	U Td	0.00 s 2.00 s	0.00 s			
2650 Reactive power control analogue							
2651	Q control	Q Kp	0.00 60.00	0.50		Option: AVR control (D1)	PID controller for reactive power control. The reactive power control is used for power factor as well as reactive power control. This menu is only applicable if analogue output is selected in menu 2782.
2652	Q control	Q Ti	0.00 s 60.00 s	5.00 s			
2653	Q control	Q Td	0.00 s 2.00 s	0.00 s			
2660 Reactive power load sharing control analogue							
2661	Q load sh. ctrl	Q LS Kp	0.00 60.00	0.50		Option: AVR control (D1)	The VAr (Q) load sharing is based on a mix of voltage and VAr control. The setting 2664 is setting the impact of the VAr controller over the voltage controller. This menu is only applicable if analogue output is selected in menu 2782.
2662	Q load sh. ctrl	Q LS Ti	0.00 s 60.00 s	5.00 s			
2663	Q load sh. ctrl	Q LS Td	0.00 s 2.00 s	0.00 s			
2664	Q load sh. ctrl	Q weight	0.0% 100.0%	10.0%			
2670 Analogue AVR output offset							
2671	Analogue AVR	Offset	0% 100%	50%		Option: AVR control (D1)	Setting 2671 sets the offset of the analogue output when starting the generator. This menu is only applicable if analogue output is selected in menu 2782.
2690 Voltage control relay							
2691	U control	U dead band	0.0% 10.0%	2.0%		Option: AVR control (D1)	PI controller for voltage control. This menu is only applicable if "relay" is selected in menu 2782.
2692	U control	U Kp	0 100	10			
2700 Reactive power control relay							

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
2701	Q control	Q dead band	0.0% 10.0%	2.0%		Option: AVR control (D1)	PI controller for reactive power control. The reactive power control is used for power factor as well as reactive power control. This menu is only applicable if "relay" is selected in menu 2782.
2702	Q control	Q Kp	0 100	10			
2710 Reactive power load sharing control relay							
2711	Q load sh. ctrl	U dead band	0.0% 10.0%	1.0%		Option: AVR control (D1)	The VAr (Q) load sharing is based on a mix of voltage and VAr control. The setting 2664 is setting the impact of the VAr controller over the voltage controller. This menu is only applicable if "relay" is selected in menu 2782.
2712	Q load sh. ctrl	U Kp	0 100	10			
2713	Q load sh. ctrl	Q dead band	0.0% 10.0%	2.0%			
2714	Q load sh. ctrl	Q weight	0.0% 100.0%	10.0%			
2720 Relay control setup (AVR)							
2721	Relay control	AVR ON time t_N	10 ms 3000 ms	100 ms		Option: AVR control (D1)	Relay outputs for voltage/ VAr/power factor control. This menu is only applicable if "relay" is selected in menu 2782.
2722	Relay control	AVR per time t_P	50 ms 15000 ms	500 ms			
2723	Relay control	Relay output A (U increase)	Not used Option-dep.	Not used			
2724	Relay control	Relay output B (U decrease)	Not used Option-dep.	Not used			
2740 Delay regulation							
2741	Delay reg.	Timer	0 s 9900 s	0 s		Designer's Reference Handbook	Delay regulation is the waiting time before synchronising after the engine has started. It is used if the engine needs to stabilise after start before attempting to synchronise.
2742	Delay reg.	Relay output A	Not used Option-dep.	Not used			
2743	Delay reg.	Relay output B	Not used Option-dep.	Not used			
2744	Delay reg.	Enable	OFF ON	OFF			
2760 Overlap							

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
2761	Overlap	Setpoint	OFF ON	OFF		Designer's Reference Handbook	If set ON the generator and mains breaker will never both be closed for a longer time period than the selected.
2762	Overlap	Timer	0.10 s 99.90 s	0.30 s			
2770 EIC speed control							
2771	Scania control	Droop	0.0% 25.0%	0.0%	Only applicable if "Scania" is selected in menu 7561.	Option: J1939 (H5 or H7)	Setting of speed control via engine communication interface.
2772	Scania control	rpm	User 1500 RPM 1800 RPM Low idle	User			
2773	Cummins Gain	Kp	0.00 10.00	5.00	Only applicable when "Cummins" is selected in menu 7561.		
2780 Regulator output							
2781	Reg. output	GOV	Relay EIC	Relay	Inverse output can be set in this parameter	Designer's Reference Handbook	Selection of the speed output: Relay, analogue or engine interface communication. Analogue and EIC are option-dependent.
2782	Reg. output	AVR	Relay Analogue	Relay	Inverse output can be set in this parameter	Option: AVR control (D1)	Generator voltage control based on relay or analogue output signals. Analogue selection is only available if option E1, E2, EF2, EF4 or F2 is present.
2950 Base load							
2951	Base load	Power set	10% 120%	90%		Designer's Reference Handbook	Setting and enabling of base load running. Note: Base load is only possible in semi auto mode.
2952	Base load	Enable	OFF ON	OFF			

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
2953	Base load	Return mode	Semi auto mode Auto mode	Auto mode			Menu 2953 specifies what mode to return to after base load is completed.

3.4 Control parameters - output setup

3.4.1 Digital output setup

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
5000 Relay 05							
5001	Relay 05	Function	Alarm relay ND Alarm relay NE	Horn relay		Designer's Reference Handbook	Function selections: - Alarm relay ND - Limit relay - Horn relay - Alarm relay NE
5002	Relay 05	OFF delay	0.0 s 999.9 s	5.0 s			
5010 Relay 08							
5011	Relay 08	Function	Alarm relay ND Alarm relay NE	Alarm relay ND		Designer's Reference Handbook	Function selections: - Alarm relay ND - Limit relay - Horn relay - Alarm relay NE This relay is only available if no mains breaker is controlled by the AGC.
5012	Relay 08	OFF delay	0.0 s 999.9 s	5.0 s			
5020 Relay 11							
5021	Relay 11	Function	Alarm relay ND Alarm relay NE	Alarm relay ND		Designer's Reference Handbook	Function selections: - Alarm relay ND - Limit relay - Horn relay - Alarm relay NE This relay is only available if no mains breaker is controlled by the AGC.
5022	Relay 11	OFF delay	0.0 s 999.9 s	5.0 s			
5030 Relay 14							
5031	Relay 14	Function	Alarm relay ND Alarm relay NE	Alarm relay ND		Designer's Reference Handbook	Function selections: - Alarm relay ND - Limit relay - Horn relay - Alarm relay NE This relay is only available if no generator breaker is controlled by the AGC.
5032	Relay 14	OFF delay	0.0 s 999.9 s	5.0 s			
5040 Relay 17							
5041	Relay 17	Function	Alarm relay ND Alarm relay NE	Alarm relay ND		Option G4 and G5	Function selections: - Alarm relay ND - Limit relay - Horn relay - Alarm relay NE

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
5042	Relay 17	OFF delay	0.0 s 999.9 s	5.0 s			This relay is only available if no generator breaker is controlled by the AGC.
5050 Relay 20							
5051	Relay 20	Function	Alarm relay ND Alarm relay NE	Alarm relay ND		Designer's Reference Handbook	Function selections: - Alarm relay ND - Limit relay - Horn relay - Alarm relay NE This relay is only available if "Relay" is selected in menu 5271.
5052	Relay 20	OFF delay	0.0 s 999.9 s	5.0 s			
5060 Relay 21							
5061	Relay 21	Function	Alarm relay ND Alarm relay NE	Alarm relay ND		Designer's Reference Handbook	Function selections: - Alarm relay ND - Limit relay - Horn relay - Alarm relay NE This relay is only available if "Relay" is selected in menu 5272.
5062	Relay 21	OFF delay	0.0 s 999.9 s	5.0 s			
5070 Relay 29							
5071	Relay 29	Function	Alarm relay ND Alarm relay NE	Alarm relay ND		Option M14.2	Function selections: - Alarm relay ND - Limit relay - Horn relay - Alarm relay NE
5072	Relay 29	OFF delay	0.0 s 999.9 s	5.0 s			
5080 Relay 31							
5081	Relay 31	Function	Alarm relay ND Alarm relay NE	Alarm relay ND		Option M14.2	Function selections: - Alarm relay ND - Limit relay - Horn relay - Alarm relay NE
5082	Relay 31	OFF delay	0.0 s 999.9 s	5.0 s			
5090 Relay 33							
5091	Relay 33	Function	Alarm relay ND Alarm relay NE	Alarm relay ND		Option M14.2	Function selections: - Alarm relay ND - Limit relay - Horn relay - Alarm relay NE
5092	Relay 33	OFF delay	0.0 s 999.9 s	5.0 s			
5100 Relay 35							

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
5101	Relay 35	Function	Alarm relay ND Alarm relay NE	Alarm relay ND		Option M14.2	Function selections: - Alarm relay ND - Limit relay - Horn relay - Alarm relay NE
5102	Relay 35	OFF delay	0.0 s 999.9 s	5.0 s			
5110 Relay 57							
5111	Relay 57	Function	Alarm relay ND Alarm relay NE	Alarm relay ND		Option M12	Function selections: - Alarm relay ND - Limit relay - Horn relay - Alarm relay NE
5112	Relay 57	OFF delay	0.0 s 999.9 s	5.0 s			
5120 Relay 59							
5121	Relay 59	Function	Alarm relay ND Alarm relay NE	Alarm relay ND		Option M12	Function selections: - Alarm relay ND - Limit relay - Horn relay - Alarm relay NE
5122	Relay 59	OFF delay	0.0 s 999.9 s	5.0 s			
5130 Relay 61							
5131	Relay 61	Function	Alarm relay ND Alarm relay NE	Alarm relay ND		Option M12	Function selections: - Alarm relay ND - Limit relay - Horn relay - Alarm relay NE
5132	Relay 61	OFF delay	0.0 s 999.9 s	5.0 s			
5140 Relay 63							
5141	Relay 63	Function	Alarm relay ND Alarm relay NE	Alarm relay ND		Option M12	Function selections: - Alarm relay ND - Limit relay - Horn relay - Alarm relay NE
5142	Relay 63	OFF delay	0.0 s 999.9 s	5.0 s			
5150 Relay 65							
5151	Relay 65	Function	Alarm relay ND Alarm relay NE	Alarm relay ND		Designer's Reference Handbook	Used for governor UP command if "Relay" is selected in menu 2781. Function selections: - Alarm relay ND - Limit relay - Horn relay - Alarm relay NE
5152	Relay 65	OFF delay	0.0 s 999.9 s	5.0 s			

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
5160 Relay 67							
5161	Relay 67	Function	Alarm relay ND Alarm relay NE	Alarm relay ND		Designer's Reference Handbook	Used for governor DOWN command if "Relay" is selected in menu 2781. Function selections: - Alarm relay ND - Limit relay - Horn relay - Alarm relay NE
5162	Relay 67	OFF delay	0.0 s 999.9 s	0.0 s			
5170 Relay 69							
5171	Relay 69	Function	Alarm relay ND Alarm relay NE	Alarm relay ND		Designer's Reference Handbook	Used for AVR UP command if "Relay" is selected in menu 2782. Function selections: - Alarm relay ND - Limit relay - Horn relay - Alarm relay NE
5172	Relay 69	OFF delay	0.0 s 999.9 s	5.0 s			
5180 Relay 71							
5181	Relay 71	Function	Alarm relay ND Alarm relay NE	Alarm relay ND		Designer's Reference Handbook	Used for AVR DOWN command if "Relay" is selected in menu 2782. Function selections: - Alarm relay ND - Limit relay - Horn relay - Alarm relay NE
5182	Relay 71	OFF delay	0.0 s 999.9 s	5.0 s			
5190 Relay 90							
5191	Relay 90	Function	Alarm relay ND Alarm relay NE	Alarm relay ND		Option M14.6: 4 x relay output, slot 6	Function selections: - Alarm relay ND - Limit relay - Horn relay - Alarm relay NE
5192	Relay 90	OFF delay	0.0 s 999.9 s	5.0 s			
5200 Relay 92							
5201	Relay 92	Function	Alarm relay ND Alarm relay NE	Alarm relay ND		Option M14.6: 4 x relay output, slot 6	Function selections: - Alarm relay ND - Limit relay - Horn relay - Alarm relay NE
5202	Relay 92	OFF delay	0.0 s 999.9 s	5.0 s			
5210 Relay 94							

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
5211	Relay 94	Function	Alarm relay ND Alarm relay NE	Alarm relay ND		Option M14.6: 4 x relay output, slot 6	Function selections: - Alarm relay ND - Limit relay - Horn relay - Alarm relay NE
5212	Relay 94	OFF delay	0.0 s 999.9 s	5.0 s			
5220 Relay 96							
5221	Relay 96	Function	Alarm relay ND Alarm relay NE	Alarm relay ND		Option M14.6: 4 x relay output, slot 6	Function selections: - Alarm relay ND - Limit relay - Horn relay - Alarm relay NE
5222	Relay 96	OFF delay	0.0 s 999.9 s	5.0 s			
5230 Relay 126							
5231	Relay 126	Function	Alarm relay ND Alarm relay NE	Alarm relay ND		Option M14.8: 4 x relay output, slot 8	Function selections: - Alarm relay ND - Limit relay - Horn relay - Alarm relay NE
5232	Relay 126	OFF delay	0.0 s 999.9 s	5.0 s			
5240 Relay 128							
5241	Relay 128	Function	Alarm relay ND Alarm relay NE	Alarm relay ND		Option M14.8: 4 x relay output, slot 8	Function selections: - Alarm relay ND - Limit relay - Horn relay - Alarm relay NE
5242	Relay 128	OFF delay	0.0 s 999.9 s	5.0 s			
5250 Relay 130							
5251	Relay 130	Function	Alarm relay ND Alarm relay NE	Alarm relay ND		Option M14.8: 4 x relay output, slot 8	Function selections: - Alarm relay ND - Limit relay - Horn relay - Alarm relay NE
5252	Relay 130	OFF delay	0.0 s 999.9 s	5.0 s			
5260 Relay 132							
5261	Relay 132	Function	Alarm relay ND Alarm relay NE	Alarm relay ND		Option M14.8: 4 x relay output, slot 8	Function selections: - Alarm relay ND - Limit relay - Horn relay - Alarm relay NE
5262	Relay 132	OFF delay	0.0 s 999.9 s	5.0 s			
5270 Transistor output setup							

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
5271	Transistor 20	T20	kWh pulse Relay	kWh pulse		Designer's Reference Handbook	The transistor outputs on terminals 21 and 22 can be configured as relay outputs or pulse signals. If "Relay" is selected, the relays 20 and 21 will be available. If set to "Relay", external relays are needed due to limited current output. Max. 10 mA.
5272	Transistor 21	T21	kVArh pulse Relay	kVArh pulse			

3.5 Control parameters - analogue output

3.5.1 Analogue output limits

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
5720 PWM 68 limits							
5721	PWM 68 limits	Min.	0% 50%	10%		Option: PWM output (EF5)	For Caterpillar engines.
5722	PWM 68 limits	Max.	50% 100%	90%			
5780 Aout 66 limits							
5781	AOut 66 limits	Min.	-25/0 mA 10 mA	-20/0 mA		Option: 2 x analogue outputs (E1/E2)	Min. range and factory setting value is option-dependent.
5782	AOut 66 limits	Max.	10 mA 25 mA	20 mA			
5790 Aout 71 limits							
5791	AOut 71 limits	Min.	-25/0 mA 10 mA	-20/0 mA		Option: 2 x analogue outputs (E1/E2)	Min. range and factory setting value is option-dependent.
5792	AOut 71 limits	Max.	10 mA 25 mA	20 mA			
5800 Aout 91 limits							
5801	AOut 91 limits	Min.	0 mA 10 mA	0 mA		Option: 2 x analogue outputs (F1)	Min. range and factory setting value is option-dependent.
5802	AOut 91 limits	Max.	10 mA 20 mA	20 mA			
5810 Aout 95 limits							
5811	AOut 95 limits	Min.	0 mA 10 mA	0 mA		Option: 2 x analogue outputs (F1)	Min. range and factory setting value is option-dependent.
5812	AOut 95 limits	Max.	10 mA 20 mA	20 mA			

3.6 Control parameters - transducer outputs

3.6.1 Transducer outputs

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
5820 P output 1							
5821	P output 1	Transducer A	Disabled Option-dep.	Disabled		Option: Analogue outputs (E2 or F1 or EF2)	Setpoint selections for all transducer outputs: - Disabled - 0-20 mA - 4-20 mA - 0-10 V - -10-0-10 V
5822	P output 1	Transducer B	Disabled Option-dep.	Disabled			
5823	P output 1	Setpoint	Disabled -10-0-10 V	Disabled			
5824	P output 1	Max. value	0 kW 20000 kW	500 kW			
5825	P output 1	Min. value	-9999 kW 20000 kW	0 kW			
5830 P output 2							
5831	P output 2	Transducer A	Disabled Option-dep.	Disabled		Option: Analogue outputs (E2 or F1 or EF2)	
5832	P output 2	Transducer B	Disabled Option-dep.	Disabled			
5833	P output 2	Setpoint	Disabled -10-0-10 V	Disabled			
5834	P output 2	Max. value	0 kW 20000 kW	500 kW			
5835	P output 2	Min. value	-9999 kW 20000 kW	0 kW			
5840 P output 3							
5841	P output 3	Transducer A	Disabled Option-dep.	Disabled		Option: Analogue outputs (E2 or F1 or EF2)	
5842	P output 3	Transducer B	Disabled Option-dep.	Disabled			
5843	P output 3	Setpoint	Disabled -10-0-10 V	Disabled			
5844	P output 3	Max. value	0 kW 20000 kW	500 kW			
5845	P output 3	Min. value	-9999 kW 20000 kW	0 kW			
5850 S output							
5851	S output	Transducer A	Disabled Option-dep.	Disabled		Option: Analogue outputs (E2 or F1 or EF2)	

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
5852	S output	Transducer B	Disabled Option-dep.	Disabled			
5853	S output	Setpoint	Disabled -10-0-10 V	Disabled			
5854	S output	Max. value	0 kVA 20000 kVA	600 kVA			
5855	S output	Min. value	-9999 kVA 20000 kVA	0 kVA			
5860 Q output							
5861	Q output	Transducer A	Disabled Option-dep.	Disabled		Option: Analogue outputs (E2 or F1 or EF2)	
5862	Q output	Transducer B	Disabled Option-dep.	Disabled			
5863	Q output	Setpoint	Disabled -10-0-10 V	Disabled			
5864	Q output	Max. value	0 kVAr 16000 kVAr	400 kVAr			
5865	Q output	Min. value	8000 kVA 16000 kVA	0 kVAr			
5870 PF output							
5871	PF output	Transducer A	Disabled Option-dep.	Disabled		Option: Analogue outputs (E2 or F1 or EF2)	Positive value means inductive. Negative value means capacitive.
5872	PF output	Transducer B	Disabled Option-dep.	Disabled			
5873	PF output	Setpoint	Disabled -10-0-10 V	Disabled			
5874	PF output	Max. value	0.50 0.99	0.80			
5875	PF output	Min. value	-0.99 -0.50	-0.80			
5880 f output							
5881	F output	Transducer A	Disabled Option-dep.	Disabled		Option: Analogue outputs (E2 or F1 or EF2)	
5882	F output	Transducer B	Disabled Option-dep.	Disabled			
5883	F output	Setpoint	Disabled -10-0-10 V	Disabled			
5884	F output	Max. value	0.0 Hz 70.0 Hz	55.0 Hz			
5885	F output	Min. value	0.0 Hz 70.0 Hz	45.0 Hz			

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
5890 U output							
5891	U output	Transducer A	Disabled Option-dep.	Disabled		Option: Analogue outputs (E2 or F1 or EF2)	The voltage output represents L1-L2 voltage.
5892	U output	Transducer B	Disabled Option-dep.	Disabled			
5893	U output	Setpoint	Disabled -10-0-10 V	Disabled			
5894	U output	Max. value	0 V 28000 V	500 V			
5895	U output	Min. value	0 V 28000 V	0 V			
5900 I output							
5901	I output	Transducer A	Disabled Option-dep.	Disabled		Option: Analogue outputs (E2 or F1 or EF2)	The current output represents L1 current.
5902	I output	Transducer B	Disabled Option-dep.	Disabled			
5903	I output	Setpoint	Disabled -10-0-10 V	Disabled			
5904	I output	Max. value	0 A 9000 A	1000 A			
5905	I output	Min. value	0 A 9000 A	0 A			
5910 U BB output							
5911	U BB output	Transducer A	Disabled Option-dep.	Disabled		Option: Analogue outputs (E2 or F1 or EF2)	The voltage output represents L1-L2 voltage.
5912	U BB output	Transducer B	Disabled Option-dep.	Disabled			
5913	U BB output	Setpoint	Disabled -10-0-10 V	Disabled			
5914	U BB output	Max. value	0 V 28000 V	500 V			
5915	U BB output	Min. value	0 V 28000 V	0 V			
5920 f BB output							
5921	F BB output	Transducer A	Disabled Option-dep.	Disabled		Option: Analogue outputs (E2 or F1 or EF2)	
5922	F BB output	Transducer B	Disabled Option-dep.	Disabled			
5923	F BB output	Setpoint	Disabled -10-0-10 V	Disabled			

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
5924	F BB output	Max. value	0.0 Hz 70.0 Hz	55.0 Hz			
5925	F BB output	Min. value	0.0 Hz 70.0 Hz	45.0 Hz			
5930 Multi-input 102							
5931	Multi-input 102	Transducer A	Disabled Option-dep.	Disabled		Option: Analogue outputs (E2 or F1 or EF2)	
5932	Multi-input 102	Transducer B	Disabled Option-dep.	Disabled			
5933	Multi-input 102	Setpoint	Disabled -10-0-10 V	Disabled			
5934	Multi-input 102	Max. value	0 28000	500			
5935	Multi-input 102	Min. value	0 28000	0			
5940 Multi-input 105							
5941	Multi-input 105	Transducer A	Disabled Option-dep.	Disabled		Option: Analogue outputs (E2 or F1 or EF2)	
5942	Multi-input 105	Transducer B	Disabled Option-dep.	Disabled			
5943	Multi-input 105	Setpoint	Disabled -10-0-10 V	Disabled			
5944	Multi-input 105	Max. value	0 28000	500			
5945	Multi-input 105	Min. value	0 28000	0			
5950 Multi-input 108							
5951	Multi-input 108	Transducer A	Disabled Option-dep.	Disabled		Option: Analogue outputs (E2 or F1 or EF2)	
5952	Multi-input 108	Transducer B	Disabled Option-dep.	Disabled			
5953	Multi-input 108	Setpoint	Disabled -10-0-10 V	Disabled			
5954	Multi-input 108	Max. value	0 28000	500			
5955	Multi-input 108	Min. value	0 28000	0			
5960 P total consumed							
5961	P total consumed	Transducer A	Disabled Option-dep.	Disabled		Option: Analogue outputs (E2 or F1 or EF2)	

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
5962	P total consumed	Transducer B	Disabled Option-dep.	Disabled			
5963	P total consumed	Setpoint	Disabled -10-0-10 V	Disabled			
5964	P total consumed	Max. value	0 kW 20000 kW	500 kW			
5965	P total consumed	Min. value	-9999 kW 20000 kW	0 kW			
5970 P total available							
5971	P total available	Transducer A	Disabled Option-dep.	Disabled		Option: Analogue outputs (E2 or F1 or EF2)	
5972	P total available	Transducer B	Disabled Option-dep.	Disabled			
5973	P total available	Setpoint	Disabled -10-0-10 V	Disabled			
5974	P total available	Max. value	0 kW 20000 kW	500 kW			
5975	P total available	Min. value	-9999 kW 20000 kW	0 kW			

3.7 Control parameters - analogue regulator output selection

3.7.1 Regulator output selection

These menus are used to select which analogue output to use for governor/AVR (option D1) control.

No.	Setting		Available settings	Factory setting	Notes	Ref.	Description
5980 Governor output							
5981	Governor output	Transducer A	Disabled Transducer 66 Transducer 71	Disabled		Option: Analogue governor output (E1/EF)	
5990 AVR output							
5991	AVR output	Transducer A	Disabled Transducer 66 Transducer 71	Disabled		Option: Analogue AVR output (E1/EF and D1)	

3.8 System parameters

These menus include parameters for the system setup

3.9 System parameters - general setup

3.9.1 General setup

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
6000 Nominal settings 1							
6001	Nom. set-tings	Frequen-cy	48.0 Hz 62.0 Hz	50.0 Hz		Designer's Reference Handbook	The selection of nominal settings to be used is set in menu 6006. A binary input or selection in M-logic can also be used.
6002	Nom. set-tings	Power	10 kW 20000 kW	480 kW			
6003	Nom. set-tings	Current	0 A 9000 A	867 A			
6004	Nom. set-tings	Voltage	100 V 25000 V	400 V			
6005	Nom. set-tings	RPM	100 RPM 4000 RPM	1500 RPM			
6006	Nom. set-tings	Setting	1 4	1			
6010 Nominal settings 2							
6011	Nom. set-tings 2	Frequen-cy	48.0 Hz 62.0 Hz	50.0 Hz		Designer's Reference Handbook	
6012	Nom. set-tings 2	Power	10 kW 20000 kW	230 kW			
6013	Nom. set-tings 2	Current	0 A 9000 A	345 A			
6014	Nom. set-tings 2	Voltage	100 V 25000 V	480 V			
6015	Nom. set-tings 2	RPM	100 RPM 4000 RPM	1500 RPM			
6020 Nominal settings 3							
6021	Nom. set-tings 3	Frequen-cy	48.0 Hz 62.0 Hz	60.0 Hz		Designer's Reference Handbook	
6022	Nom. set-tings 3	Power	10 kW 20000 kW	230 kW			
6023	Nom. set-tings 3	Current	0 A 9000 A	345 A			
6024	Nom. set-tings 3	Voltage	100 V 25000 V	480 V			
6025	Nom. set-tings 3	RPM	100 RPM 4000 RPM	1800 RPM			
6030 Nominal settings 4							

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
6031	Nom. settings 4	Frequency	48.0 Hz 62.0 Hz	60.0 Hz		Designer's Reference Handbook	
6032	Nom. settings 4	Power	10 kW 20000 kW	230 kW			
6033	Nom. settings 4	Current	0 A 9000 A	345 A			
6034	Nom. settings 4	Voltage	100 V 25000 V	480 V			
6035	Nom. settings 4	RPM	100 RPM 4000 RPM	1800 RPM			
6040 Generator transformer							
6041	G transformer	U primary	100 V 25000 V	400 V		Designer's Reference Handbook	If no voltage transformer is present, the primary and secondary side values are set to generator nominal value.
6042	G transformer	U secondary	100 V 690 V	400 V			
6043	G transformer	I primary	5 A 9000 A	1000 A			
6044	G transformer	I secondary	1 A 5 A	5 A			
6050 Busbar settings							
6051	BB transformer	U primary	100 V 25000 V	400 V		Designer's Reference Handbook	If no voltage transformer is present, the primary and secondary side values are set to generator nominal value.
6052	BB transformer	U secondary	100 V 690 V	400 V			
6070 Genset mode							
6071	Genset mode		Island Power management			Designer's Reference Handbook	Selections are: -Island -Auto Mains Failure -Peak Shaving -Fixed power -Mains power export -Load takeover -Power management (option G5) -Remote maintenance -Plant management (option G7)
6080 Language							

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
6081	Language		English Language 11	English		Designer's Reference Handbook	The master language is English. Additionally, 11 different languages can be configured with the PC utility software.

3.9.2 Counters and timers

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
6090 Date and time							
6091	Date and time	Year	2001 2100	2008		Designer's Reference Handbook	Used to set up the clock in the unit. Only available from the display.
6092	Date and time	Month	1 12	1			
6093	Date and time	Date	1 31	1			
6094	Date and time	Week day	1 7	1			
6095	Date and time	Hour	0 23	3			
6096	Date and time	Minute	0 59	5			
6100 Counters							
6101	Counters	Running hour	0 hrs 999 hrs	0 hrs		Designer's Reference Handbook	Setting 6105 resets the kWh counter to 0. It automatically reverts to OFF after being set ON.
6102	Counters	Running, th. hours	0 th. hrs 999 th. hrs	0 th. hrs			
6103	Counters	GB/TB/ BTB operations	0 20000	0			
6104	Counters	MB operations	0 20000	0			
6105	Counters	kWh	OFF ON	OFF			
6106	Counters	Start attempts	0 20000	0			
6110 Service timer 1							
6111	Service timer 1	Enable	OFF ON	ON		Designer's Reference Handbook	The timer is reset by enabling menu 6116. The menu automatically goes OFF.
6112	Service timer 1	Running hours	0 hrs 9000 hrs	500 hrs			
6113	Service timer 1	Days	1 days 1000 days	365 days			
6114	Service timer 1	Fail class	F1...F8	F2 (Warning)			

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
6115	Service timer 1	Output A	Not used Option-dep.	Not used			
6116	Service timer 1	Reset	OFF ON	OFF			
6120 Service timer 2							
6121	Service timer 2	Enable	OFF ON	ON		Designer's Reference Handbook	The timer is reset by enabling menu 6126. The menu automatically goes OFF.
6122	Service timer 2	Running hours	0 hrs 9000 hrs	500 hrs			
6123	Service timer 2	Days	1 days 1000 days	365 days			
6124	Service timer 2	Fail class	F1...F8	F2 (Warning)			
6125	Service timer 2	Relay output A	Not used Option-dep.	Not used			
6126	Service timer 2	Reset	OFF ON	OFF			

3.9.3 Alarm horn

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
6130 Alarm horn							
6131	Alarm horn	ON time	0.0 sec 990.0 sec	20.0 sec		Designer’s Reference Handbook	If the setting is adjusted to 0 s, the horn relay will be activated continuously until the alarm is acknowledged.

3.9.4 Run coil setup

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
6150 Run coil setup							
6151	Run coil setup	ON time	0.0 sec 600.0 sec	1.0 sec		Designer's Reference Handbook	
6152	Run coil setup	Type	Pulse Continuous	Pulse		Designer's Reference Handbook	Pulse: reset for each start attempt. Continuous: high throughout all start attempts.

3.9.5 Running, start and stop

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
6160 Run status							
6161	Run status	Timer	0.0 s 300.0 s	5.0 s		Designer's Reference Handbook	If a relay output is used, the relay in question must be set to "limit".
6162	Run status	Relay output A	Not used Option-dep.	Not used			
6163	Run status	Relay output B	Not used Option-dep.	Not used			
6164	Run status	Enable	OFF ON	OFF			
6170 Running detection							
6171	Running detect.	No. of teeth	0 teeth 500 teeth	0 teeth		Designer's Reference Handbook	If menu 6171 is set to 0, the magnetic pickup input is not active. Available running detection types: - Binary input - MPU input - Frequency - EIC (engine communication) If menu 6175 is set to 0.0, the oil pressure running detection is OFF.
6172	Running detect.	Type	Binary input EIC	Frequency			
6173	Running detect.	Running RPM	0 RPM 4000 RPM	1000 RPM			
6174	Running detect.	Remove starter	1 RPM 2000 RPM	400 RPM			
6175	Running detect.	Pressure level	0.0 bar 150.0 bar	0.0 bar			
6180 Starter							
6181	Starter	Start prepare	0.0 s 600.0 s	5.0 s		Designer's Reference Handbook	Menu 6185 and 6186 relate to using oil pressure as running feedback. If menu 6186 is set to 0.0, the oil pressure running feedback is disregarded.
6182	Starter	Ext. prepare	0.0 s 600.0 s	0.0 s			
6183	Starter	Start ON time	1.0 s 180.0 s	5.0 s			
6184	Starter	Start OFF time	1.0 s 99.0 s	5.0 s			
6185	Starter	Input type	Multi-input 102 Multi-input 108	Multi-input 102			

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
6186	Starter	Setpoint	0.0 bar 300.0 bar	0.0 bar			
6190 Start attempts							
6191	Start attempts	Setpoint	1 10	3		Designer's Reference Handbook	Number of start attempts.
6200 Shutdown override							
6201	Shutdown override	Attempts	1 10	7		Designer's Reference Handbook	Shutdown override turns all shutdowns into warnings. Only exception is overspeed and emergency stop.
6202	Shutdown override	Cooling down	0 s 9900 s	240 s			
6203	Shutdown override	Enable	OFF ON	OFF			
6210 Stop							
6211	Stop	Cooling down	0.0 s 9900.0 s	240.0 s		Designer's Reference Handbook	The extended stop timer starts when the running feedback disappears. During the delay time it is not possible to start the engine.
6212	Stop	Extended stop	1.0 s 99.0 s	5.0 s			
6213	Stop	TYPE	Multi-input 102 EIC	Multi-input 102			
6214	Stop	Setpoint	0 deg. 482 deg.	0 deg.			
6220 Hz/V OK							
6221	HZ/V OK	Timer	1.0 s 99.0 s	5.0 s		Designer's Reference Handbook	The voltage and frequency have to be continuously within the limits during the delay timer before the breaker can be closed.

3.9.6 Breaker control

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
6230 Gen/Mains/Tie/Bus tie breaker control							
6231	GB/MB/TB/ BTB control	Close de-lay	0.0 s 30.0 s	2.0 s		Designer's Reference Handbook	Menu 6232 is for compact breakers (need to charge spring before closing).
6232	GB/MB/TB/ BTB control	Load time	0.0 s 30.0 s	0.0 s			

3.9.7 Power derate

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
6260 Power derate							
6261	Power derate	Input	Multi-inp. 102 EIC	Multi-inp. 102		Designer's Reference Handbook	The derate function lowers the max. power of the generator set based on e.g. water temperature. Input: - Multi-input 102 - Multi-input 105 - Multi-input 108 - M-logic - EIC
6262	Power derate	Start derate	0 units 20000 units	16 units			
6263	Power derate	Derate slope	0.1 %/unit 100.0 %/ unit	5.0 %/ unit			
6264	Power derate	Pro-portion-al	OFF ON	OFF			
6265	Power derate	Enable	OFF ON	OFF			
6266	Power derate	Limit	0.0% 100.0%	80.0%			

3.9.8 Idle start

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
6290 Idle running							
6291	Idle start	Start timer	0.0 sec. 59940.0 sec.	18000.0 sec.		Designer's Reference Handbook	
6292	Idle start	Enable start	OFF ON	OFF			
6293	Idle stop	Stop timer	0.0 sec. 59940.0 sec.	18000.0 sec.			
6294	Idle stop	Enable stop	OFF ON	OFF			
6295	Idle active	Relay output A	Not used Option-dep.	Not used			
6296	Idle active	Enable	OFF ON	OFF			

3.9.9 Engine heater

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
6320 Engine heater							
6321	Engine heater	Setpoint	20 deg. 250 deg.	40 deg.		Designer's Reference Handbook	Heater function for standstill. Type: - Multi-input 102 - Multi-input 105 - Multi-input 108 - EIC
6322	Engine heater	Relay output A	Not used Option-dep.	Not used			
6323	Engine heater	Type	Multi-inp 102 EIC	Multi-inp 102			
6324	Engine heater	Hysteresis	1 deg. 70 deg.	3 deg.			
6325	Engine heater	Enable	OFF ON	OFF			

3.9.10 Analogue load sharing lines output

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
6380 Load share out							
6381	Load share out	Setpoint	1.0 V 5.0 V	4.0 V		Option G3 Analogue load sharing	Adjustment of the analogue load sharing line max. value.
6390 Load share type							
6391	Load share type	Setpoint	Adjustable Selco T4800 Cummins PCC			Option G3 Analogue load sharing	Selection between selectable load sharing line max. value (setting 6381) or adaptation to Selco T4800 load sharing line. Cummins PCC.

3.9.11 Master clock

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
6400 Master clock							
6401	Master clock	Start hour	0 h 23 h	8 h		Designer's Reference Handbook	Compensation for frequency variation related clock time in the system.
6402	Master clock	Stop hour	0 h 23 h	8 h			
6403	Master clock	Difference	1 s 999 s	20 s			
6404	Master clock	Compensation	0.1 Hz 1.0 Hz	0.1 Hz			
6405	Master clock	Enable	OFF ON	OFF			

3.9.12 Cooling ventilation

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
6460 Max. ventilation							
6461	Max. ventilation	Setpoint	20 deg. 250 deg.	90 deg.		Designer's Reference Handbook	Ventilation fan control.
6462	Max. ventilation	Relay output A	Not used Option-dep.	Not used			
6463	Max. ventilation	Hysteresis	1 deg. 70 deg.	5 deg.			
6464	Max. ventilation	Enable	OFF ON	OFF			

3.9.13 Summer/winter time

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
6490 Summer/winter time							
6491	Sum/win time	Enable	OFF ON	OFF		Designer's Reference Handbook	The summer/winter time change follows the mainland Europe rules.

3.9.14 Fuel transfer pump logic

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
6550 Fuel pump logic							
6551	Fuel pump logic	Setpoint start	0% 100%	20%		Designer's Reference Handbook	Type: - Multi-input 102 - Multi-input 105 - Multi-input 108
6552	Fuel pump logic	Setpoint stop	0% 100%	80%			
6553	Fuel pump logic	Fill check time	0.1 s 300.0 s	60.0 s			
6554	Fuel pump logic	Relay output A	Not used Option-dep.	Not used			
6555	Fuel pump logic	Setpoint	Multi-inp 102 Multi-inp 108	Multi-inp 102			
6556	Fuel pump logic	Fail class	F1…F8	Warning (F2)			

3.9.15 Alarm jump

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
6900 Alarm jump							
6901	Alarm jump	Enable	OFF ON	ON		Designer's Reference Handbook	Selection of jump to alarm list view on the display if an alarm appears (ON), or stay at present view (OFF).

3.10 System parameters - mains setup

3.10.1 Mains setup

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
7000 Mains power							
7001	Mains power	Day	-20000 kW 20000 kW	750 kW		Designer's Reference Handbook	Menu 7000 is for peak shaving/ mains power export modes. Set values in the AGC mains unit. Menu 7001/7002 must be a positive value for mains power export or peak shaving mode. Menu 7001/7002 must be a negative value for mains power import.
7002	Mains power	Night	-20000 kW 20000 kW	1000 kW			
7003	Mains power	Transducer max	0 kW 20000 kW	0 kW			
7004	Mains power	Transducer min	-20000 kW 0 kW	0 kW			
7010 Daytime period							
7011	Daytime period	Start hour	0 h 23 h	8 h		Designer's Reference Handbook	Menu 7010 is for peak shaving/ mains power export modes. The period outside the daytime period is defined as the night period.
7012	Daytime period	Start minute	0 min 59 min	0 min			
7013	Daytime period	Stop hour	0 h 23 h	16 h			
7014	Daytime period	Stop period	0 min 59 min	0 min			
7020 Start generator							
7021	Start generator	Setpoint	5% 100%	80%		Designer's Reference Handbook	Menu 7020 is for peak shaving/ mains power export modes. The setpoint refers to the menu 7000 mains power setting.
7022	Start generator	Timer	0.0 s 990.0 s	10.0 s			
7023	Start generator	Minimum load	0% 100%	5%			
7030 Stop generator							
7031	Stop generator	Setpoint	0% 80%	60%		Designer's Reference Handbook	Menu 7030 is for peak shaving/ mains power export modes.

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
7032	Stop generator	Timer	0.0 s 990.0 s	30.0 s			The setpoint refers to the menu 7000 mains power setting.

3.10.2 Test

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
7040 Test running							
7041	Test	Setpoint	1% 100%	80%		Designer's Reference Handbook	Available test types: - Simple (engine run only) - Load (parallel to mains) - Full (disconnects mains)
7042	Test	Test time	0.0 sec. 59940.0 sec.	300.0 sec.			
7043	Test	Return mode	Semi-auto mode Auto mode	Auto mode			
7044	Test	Test type	Simple test Full test	Simple test			

3.10.3 Controller settings

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
7050 Fixed power settings							
7051	Fixed power settings	Power	0% 100%	100%		Designer's Reference Handbook	Fixed power parallel with mains settings.
7052	Fixed power settings	Power factor	0.60 1.00	0.90			
7053	Fixed power settings	Power factor	Inductive Capacitive	Inductive			

3.10.4 Mains failure

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
7060 U Mains Failure							
7061	U Mains failure	Fail. delay	0.5 s 990.0 s	5.0 s		Designer's Reference Handbook	Menus 7063 and 7064 relate to nominal settings. Menu 7066 refers to the mean value of the measured voltage.
7062	U Mains failure	Mains OK delay	10 s 9900 s	60 s			
7063	U Mains failure	U<	80% 100%	90%			
7064	U Mains failure	U>	100% 120%	110%			
7065	U Mains failure	Mains fail. control	Start eng. + open MB Start engine	Start eng. + open MB			
7066	U Mains failure	U unbalance	2% 100%	100%			
7070 f Mains Failure							
7071	f Mains failure	Fail. delay	0.5 s 990.0 s	5.0 s		Designer's Reference Handbook	Menus 7073 and 7074 relate to nominal settings.
7072	f Mains failure	Mains OK delay	10 s 9900 s	60 s			
7073	f Mains failure	f<	80.0% 100.0%	95.0%			
7074	f Mains failure	f>	100.0% 120.0%	105.0%			
7080 MB control							
7081	MB control	Mode shift	OFF ON	OFF		Designer's Reference Handbook	Mode shift allows switching to AMF mode.
7082	MB control	MB close delay	0.0 s 30.0 s	0.5 s			
7083	MB control	Back sync.	OFF ON	OFF			
7084	MB control	Sync to Mains	OFF ON	ON			
7085	MB control	Load time	0.0 s 30.0 s	0.0 s			

3.10.5 Y1(X1) droop curve

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Descrip-tion
7120 Y1(x1) Dead band							
7121	Y1(x1) Dead band	Dead band low	0.00% 99.99%	0.40%		Designer's Reference Handbook	
7122	Y1(x1) Dead band	Dead band high	0.00% 99.99%	0.50%			
7123	Y1(x1) Dead band	Hysterese low	0.00% 99.99%	0.50%			
7124	Y1(x1) Dead band	Hysterese high	0.00% 99.99%	0.50%			
7130 P(x1) Slope							
7131	P(x1) Slope	MIN	0 kW 20000 kW	200 kW		Designer's Reference Handbook	
7132	P(x1) Slope	MAX	0 kW 20000 kW	480 kW			
7133	P(x1) Slope	Slope low	-20000 kW 20000 kW	50 kW			
7134	P(x1) Slope	Slope high	-20000 kW 20000 kW	-50 kW			
7140 Droop curve 1							
7141	Droop curve 1	P(x1)	P(x1) P(x1)	P(x1)		Designer's Reference Handbook	
7142	Droop curve 1	X1	f f	f			
7143	Droop curve 1	Enable	OFF ON	OFF			

3.10.6 Y2(X2) droop curve

No.	Setting		Min. Max.	Factory set-ting	Notes	Ref.	Descrip-tion
7150 Y2(x2) Dead band							
7151	Y2(x2) Dead band	Dead band low	0.00% 99.99%	2.00%		Option D1	
7152	Y2(x2) Dead band	Dead band high	0.00% 99.99%	2.00%			
7153	Y2(x2) Dead band	Hysterese low	0.00% 99.99%	2.10%			
7154	Y2(x2) Dead band	Hysterese high	0.00% 99.99%	2.10%			
7160 Q(x2) Slope							
7161	Q(x2) Slope	MIN	0 kVAr 20000 kVAr	200 kVAr		Option D1	
7162	Q(x2) Slope	MAX	0 kVAr 20000 kVAr	480 kVAr			
7163	Q(x2) Slope	Slope low	-20000 kVAr 20000 kVAr	50 kVAr			
7164	Q(x2) Slope	Slope high	-20000 kVAr 20000 kVAr	-50 kVAr			
7170 Cosphi(x2) Slope							
7171	Cosphi(x2) Slope	MIN	0.60 1.00	0.80		Option D1	
7172	Cosphi(x2) Slope	I/C	Inductive Capacitive	Inductive			
7173	Cosphi(x2) Slope	MAX	0.60 1.00	1.00			
7174	Cosphi(x2) Slope	I/C	Inductive Capacitive	Inductive			
7175	Cosphi(x2) Slope	Slope low	-1.000 1.000	-0.005			
7176	Cosphi(x2) Slope	Slope high	-1.000 1.000	0.005			
7180 Droop curve 2							
7181	Droop curve 2	Cosphi(x2)	Cosphi(x2) Q(x2)	Cosphi(x2)		Option D1	
7182	Droop curve 2	X2	U P	U			
7183	Droop curve 2	Enable	OFF ON	OFF			

3.11 System parameters - external communication

3.11.1 External communication

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
7500 Communication control							
7501	Comm. control	Power	OFF ON	OFF		Option H2 or H3: Modbus or Profibus	These settings must be ON if commands are to be sent via Modbus communication. When enabled, the Modbus values will overrule external and internal settings. Voltage, power factor and reactive power control requires AVR control (option D1).
7502	Comm. control	Frequency	OFF ON	OFF			
7503	Comm. control	Voltage	OFF ON	OFF			
7504	Comm. control	Cosphi	OFF ON	OFF			
7505	Comm. control	Reactive power	OFF ON	OFF			
7510 External communication							
7511	Ext. communication	ID	1 247	1		Option H2 or H3: Modbus or Profibus	The mode ASCII is used for modem communication (ASCII: 7 data bit, RTU: 8 data bit).
7512	Ext. communication	Baud rate	9600 19200	9600		Option H2: Modbus	
7513	Ext. communication	Mode	RTU ASCII	RTU		Option H2: Modbus	

3.12 System parameters - power management internal communication

3.12.1 Power management internal communication

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
7530 Internal communication ID							
7531	Int. comm. ID	ID	1 16	1		Designer's Reference Handbook	

3.13 System parameters - engine interface communication

3.13.1 Engine interface communication

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
7560 Engine I/F							
7561	Engine I/F	Engine type	OFF Cummins QSX15 Cummins QSK23/45/60/78 Cummins QST30	OFF		Option: Cummins Modbus (H6)	The setting affects the displayed data, but not the Modbus data (option H2).
7561	Engine I/F	Engine type	OFF DDEC EMR JDEC Iveco Perkins Caterpillar Volvo Penta Volvo Penta EMS 2 Scania EMS Scania EMS 2 MDEC 2000/4000 M.302 MDEC 2000/4000 M.303 MTU ADEC Cummins Generic J1939	OFF		Option: J1939/ MTU ADEC/ MTU MDEC (H5) J1939 (H7)	MTU MDEC is only available in option H5. Please choose MDEC 2000/4000 M.303 when M.201 or M.304 is required. Menu 7562 is only applicable when MTU ADEC is selected as engine type. Menu 7563 is for enabling the EIC commands transmission. Menu 7564: When set to “ON”, up to 19 extra views (of 3 lines) are added to the 15 original V1 views (of 3 lines). These extra views are displaying all the present engine com. values broadcasted on this CAN communication when this function is set to “ON”.
7562	CANopen ID	Node ID	0 16	6			
7563	EIC Controls	Enable	OFF ON	ON			
7564	EIC Auto view	Enable	OFF ON	OFF			

3.14 System parameters - external I/O communication setup

3.14.1 External I/O communication setup

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
7950 KL320x config							
7951	KL320x config	Module 1	Pt100 (2/3-wire) 10-1200 Ω (2-wire)			Option: External I/O modules (H8)	Selection for analogue modules. The selections for KL 3202/3204 cannot be changed. After changing module type, the parameter list in the PC USW must be uploaded again.
7952	KL320x config	Module 2					
7953	KL320x config	Module 3					
7954	KL320x config	Module 4					
7970 CAN 1							
7971	CAN 1	Type	OFF Beckhoff	OFF		Option: External I/O modules (H8)	This menu is only activated if option H8.2 is activated. After changing type, the parameter list in the PC USW must be uploaded again. Menu 7974 is for reestablishing communication after a fault/disconnection.
7972	CAN 1	Baud	50k 125k 250k	125k			
7973	CAN 1	ID	1 to 64	1			
7974	CAN 1	Reset	OFF ON	OFF			
7980 CAN 2							
7981	CAN 2	Type	OFF Beckhoff	OFF		Option: External I/O modules (H8)	This menu is only activated if option H8.8 is activated. After changing type, the parameter list in the PC USW must be uploaded again. Menu 7984 is for reestablishing communication after a fault/disconnection.
7982	CAN 2	Baud	50k 125k 250k	125k			
7983	CAN 2	ID	1 to 64	1			
7984	CAN 2	Reset	OFF ON	OFF			

3.14.2 Event printer

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
7990 Event printer							
7991	Event printer	Enable	OFF ON	OFF			Enable this when the printer is connected to the service port.
7992	Event printer	Print add data	OFF ON	OFF			Enable this if additional data is to be printed for every event; additional data such as power, voltage, etc.
7993	Event printer	Event records	1 150	5			This counter is the number of events that will be printed with additional data, when the digital input "Print event log" is activated.
7994	Event printer	Log type select	Event Battery	Event			Log types: Event Alarm Battery
7995	Event printer	Auto status	0 min 990 min	0 min			Time interval between the automatic status prints. If auto status is set to 0, the auto print is disabled.

3.15 System parameters - power management setup

3.15.1 Power management setup

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
8000 Load-dependent start							
8001	Load-dep. start	P set-point	1 kW 20000 kW	100 kW		Designer's Reference Handbook	
8002	Load-dep. start	S set-point	1 kVA 20000 kVA	100 kVA			
8003	Load-dep. start	% set-point	1% 100%	90%			
8004	Load-dep. start	Timer	0.0 s 990.0 s	10.0 s			
8005	Load-dep. start	Min. load	0 kW 20000 kW	20 kW			
8010 Load-dependent stop							
8011	Load-dep. stop	P set-point	1 kW 20000 kW	200 kW		Designer's Reference Handbook	Menu 8015 set to "ON" will block the load-dependent stop if a heavy consumer is connected.
8012	Load-dep. stop	S set-point	1 kVA 20000 kVA	200 kVA			
8013	Load-dep. stop	% set-point	1% 100%	70%			
8014	Load-dep. stop	Timer	5.0 s 990.0 s	30.0 s			
8015	Load-dep. stop	Select	Blocked ON Blocked OFF	Blocked ON			
8020 PM config							
8021	PM config	Enable	Remote Local	Remote		Designer's Reference Handbook	Remote and local decide if the start/stop command of the plant is given Remote (digital input) or Local (from the display). Update is used to define if the change of a running mode will affect all AGCs connected on the power management CAN line or only the local unit where the running mode is changed.
8022	PM config	Update	Update local Update all	Update all			
8030 Priority selection							

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
8031	Priority select.	Priority	Manual abs. Running hours rel.	Manual abs.		Option G4 and G5	Priorities available: - Manual absolute - Running hours absolute - Fuel optimisation - Manual relative - Running hours relative
8080 Priority (1-5)							
8081	Priority 1	ID	1 16	1		Option G4 and G5	Menu 8086 is only applicable if “Manual” is selected in menu 8031. Menu 8086 resets itself to OFF automatically once the new settings have been transmitted.
8082	Priority 2	ID	1 16	2			
8083	Priority 3	ID	1 16	3			
8084	Priority 4	ID	1 16	4			
8085	Priority 5	ID	1 16	5			
8086	Transmit new priority	Enable	ON OFF	OFF			
8090 Priority (6-11)							
8091	Priority 6	ID	1 16	6		Option G4 and G5	
8092	Priority 7	ID	1 16	7			
8093	Priority 8	ID	1 16	8			
8094	Priority 9	ID	1 16	9			
8095	Priority 10	ID	1 16	10			
8096	Priority 11	ID	1 16	11			
8100 Priority (12-16)							
8101	Priority 12	ID	1 16	12		Option G4 and G5	
8102	Priority 13	ID	1 16	13			
8103	Priority 14	ID	1 16	14			
8104	Priority 15	ID	1 16	15			

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
8105	Priority 16	ID	1 16	16			
8110 Running hours							
8111	Running hours	Priority Update	1 hrs 20000 hrs	175 hrs		Designer's Reference Handbook	If menu 8113 is set "ON", the relative running hour counters in the units will be reset to 0 hours.
8112	Running hours	Type	Absolute Relative	Absolute			
8113	Running hours	Reset	OFF ON	OFF			
8120 Ground relay							
8121	Ground relay	Output A	Not used Option-dep.	Not used		Designer's Reference Handbook	Selection of relay output for start point grounding.
8122	Ground relay	Output B	Not used Option-dep.	Not used			
8123	Ground relay	Enable	OFF ON	OFF			
8140 Stop non-connected DGs							
8141	Stop non-con. DGs	Delay	10.0 s 600.0 s	60.0 s		Option G5	Stop timer for non-connected gensets.
8170 Fuel optimise							
8171	Fuel optimise	Setpoint	30% 100%	80%		Option G5	
8172	Fuel optimise	Swap setpoint	10 kW 20000 kW	200 kW			
8173	Fuel optimise	Timer	0.0 s 999.0 s	10.0 s			
8174	Fuel optimise	Hours	1 hrs 20000 hrs	175 hrs			
8175	Fuel optimise	Enable hour	OFF ON	OFF			
8180 Mains config.							
8181	Mb failure start	Enable	OFF ON	OFF		Option G5	Only available in AGC mains unit. Auto switch selections: -OFF -Static section -Dynamic section -All sections
8182	Parallel	Enable	OFF ON	OFF			
8183	No break transfer	Enable	OFF ON	OFF			
8184	Auto switch	Select	OFF All sections	OFF			

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
8185	Run type	Select	Run all mains Run one mains	Run one mains			
8186	Run type	ID to run	17 32	17			
8190 Tie breaker							
8191	Tie breaker	TB open point	0 kW 20000 kW	50 kW		Option G5	Only available in AGC mains unit.
8192	Tie breaker	Power Capacity	1 kW 20000 kW	50 kW			
8193	Tie breaker	P. cap. Overrule	5.0 s 999.9 s	30.0 s			
8194	Tie breaker	P cap. Overrule	OFF ON	OFF			
8195	Tie breaker	Load time	0.0 s 30.0 s	0.0 s			
8200 Heavy consumer 1							
8201	Heavy consumer 1	Req. value	10 kVA 9999 kVA	500 kVA		Option G5	Only available in AGC DG units.
8202	Heavy consumer 1	Nom. power	10 kW 9999 kW	400 kW			
8203	Heavy consumer 1	Load type	Fixed load Variable load	Fixed load			
8210 Heavy consumer 2							
8211	Heavy consumer 2	Req. value	10 kVA 9999 kVA	500 kVA		Option G5	Only available in AGC DG units.
8212	Heavy consumer 2	Nom. power	10 kW 9999 kW	400 kW			
8213	Heavy consumer 2	Load type	Fixed load Variable load	Fixed load			
8220 Available power 1							
8221	Avail. power 1	Setpoint	10 kW 20000 kW	1000 kW		Option G5	The setting can be used for conditional connection of load groups. The relay(s) used must be set to “Limit” mode.
8222	Avail. power 1	Timer	1.0 s 999.9 s	10.0 s			
8223	Avail. power 1	Relay output A	Not used Option-dep.	Not used			

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
8224	Avail. power 1	Relay output B	Not used Option-dep.	Not used			
8225	Avail. power 1	Enable	OFF ON	OFF			
8230 Available power 2							
8231	Avail. power 2	Setpoint	10 kW 20000 kW	1000 kW		Option G5	The setting can be used for conditional connection of load groups. The relay(s) used must be set to “Limit” mode.
8232	Avail. power 2	Timer	2.0 s 999.9 s	10.0 s			
8233	Avail. power 2	Relay output A	Not used Option-dep.	Not used			
8234	Avail. power 2	Relay output B	Not used Option-dep.	Not used			
8235	Avail. power 2	Enable	OFF ON	OFF			
8240 Available power 3							
8241	Avail. power 3	Setpoint	10 kW 20000 kW	1000 kW		Option G5	The setting can be used for conditional connection of load groups. The relay(s) used must be set to “Limit” mode.
8242	Avail. power 3	Timer	3.0 s 999.9 s	10.0 s			
8243	Avail. power 3	Relay output A	Not used Option-dep.	Not used			
8244	Avail. power 3	Relay output B	Not used Option-dep.	Not used			
8245	Avail. power 3	Enable	OFF ON	OFF			
8250 Available power 4							
8251	Avail. power 4	Setpoint	10 kW 20000 kW	1000 kW		Option G5	The setting can be used for conditional connection of load groups. The relay(s) used must be set to “Limit” mode.
8252	Avail. power 4	Timer	4.0 s 999.9 s	10.0 s			
8253	Avail. power 4	Relay output A	Not used Option-dep.	Not used			
8254	Avail. power 4	Relay output B	Not used Option-dep.	Not used			

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
8255	Avail. power 4	Enable	OFF ON	OFF			
8260 Available power 5							
8261	Avail. power 5	Setpoint	10 kW 20000 kW	1000 kW		Option G5	The setting can be used for conditional connection of load groups. The relay(s) used must be set to “Limit” mode.
8262	Avail. power 5	Timer	5.0 s 999.9 s	10.0 s			
8263	Avail. power 5	Relay output A	Not used Option-dep.	Not used			
8264	Avail. power 5	Relay output B	Not used Option-dep.	Not used			
8265	Avail. power 5	Enable	OFF ON	OFF			
8270 TB power							
8271	TB power	Transducer max.	0 kW 20000 kW	0 kW		Option G5	AGC mains only: If the TB needs to be deloaded before opening, a power transducer must be connected to multi-input 105.
8272	TB power	Transducer min.	-20000 kW 0 kW	0 kW			
8280 Asymmetric load sharing							
8281	Asymmetric LS	Setpoint	1% 100%	80%		Option G5	Please refer to the option G4/G5 manual.
8282	Asymmetric LS	Enable	OFF ON	OFF			
8880 Load-dependent start/stop calc.							
8881	Start/stop calc.	S1	kW kVA	kW		Option G5	These settings are used to decide how the load-dependent start and stop commands in the power management system should be calculated.
8882	Start/stop calc.	S2	Value Percentage	Value			
8920 Secured mode							
8921	Secured mode	Sec	Secured mode OFF Secured mode ON	Secured mode OFF		Option G5	Multi-start setpoint 1 and 2: - Auto calculation - 1 DG - 2 DG - 3 DG - 4 DG - 5 DG

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
8922	Multi-start setpoint 1	Setpoint 1	Auto calculation Start 16 DG	Auto calculation			- 6 DG - 7 DG - 8 DG - 9 DG - 10 DG - 11 DG - 12 DG - 13 DG - 14 DG - 15 DG - 16 DG Minimum number of running DGs: 1-16 DGs. Multi-start configuration: Selects between setpoint 1 and 2.
8923	Multi-start setpoint 1	Run 1	Minimum number run. 1-16	1			
8924	Multi-start config.	Select	Multi-start set 1 Multi-start set 2	Multi-start set 1			
8925	Multi-start setpoint 2	Setpoint 2	Auto calculation Start 16 DG	Start 16 DG			
8926	Multi-start setpoint 2	Run 2	Minimum number run. 1-16	1			
8930 Heavy consumer 1 variable load							
8931	HC 1 VAR load	Type	Multi-in 102 Multi-in 108	Multi-in 102			Type: - Multi-input 102 - Multi-input 105 - Multi-input 108 The function is only available in AGC DG units.
8932	HC 1 VAR load	Setpoint min.	0 mA 10 mA	0 mA			
8933	HC 1 VAR load	Setpoint max.	10 mA 20 mA	20 mA			
8940 Heavy consumer 2 variable load							
8941	HC 2 VAR load	Type	Multi-in 102 Multi-in 108	Multi-in 105			Type: - Multi-input 102 - Multi-input 105 - Multi-input 108 The function is only available in AGC DG units.
8942	HC 2 VAR load	Setpoint min.	0 mA 10 mA	0 mA			
8943	HC 2 VAR load	Setpoint max.	10 mA 20 mA	20 mA			

3.16 System parameters - jump menus

3.16.1 Jump menus

A number of menus can only be entered using the jump menu:

3.16.2 9000 Software version

Information about the application software version downloaded to the unit. Please check this before contacting DEIF regarding service and support matters. Option N: "W1" displays the IP address and Subnet mask, and "W2" displays the Gateway address and software image version.

3.16.3 9010 Display character test

Shows a test print of the character set in the display.

3.16.4 9020 Service port

The service port can be set up to use the ASCII communication. The ASCII communication is used when the utility software is connected through a modem.

Selection "0" must be used for cable connection between the AGC and the PC.
Selection "1" must be used for modem connection between the AGC and the PC.

3.16.5 9070 M4 SW version

Information about the software version in the engine I/F PCB placed in slot 8.

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
9100 Application							
9100	Applica-tion	Applica-tion	DG unit BTB unit	DG unit		Designer's Reference Handbook	This setting is only accessible using the JUMP' button on the display. Available selections: - DG unit (diesel generator) - Mains unit (mains connec-tion) - BTB unit (bus tie breaker)

The unit will return to factory settings if menu 9100 is changed!

No.	Setting		Min. Max.	Facto-ry set-ting	Notes	Ref.	Description
911x Password							
9116	User pass-word	Set-ting	0 32000	2000		Designer's Reference Handbook	It is recommended to change the password levels of the user, service and master password if access to parameter settings must be restric-ted.
9117	Service pass-word	Set-ting	0 32000	2001			
9118	Master pass-word	Set-ting	0 32000	2002			

3.16.6 9120 Service menu

The service menu can only be entered using the "JUMP" push-button. This menu is used in service situa-tions.

In the alarm selection you can see all the alarm timers and their remaining time if they are counting.

The input and output selections show the present status of the inputs and outputs. E.g. mode inputs, relay outputs and load sharing lines.

No.	Setting		Description
912x Service menu			
	Service menu	Timers	Shows remaining alarm delay time
	Service menu	Digital inputs	Shows digital input status
	Service menu	Digital outputs	Shows digital output status
	Service menu	Miscellaneous	Shows misc. information

3.16.7 9130 AC config.

This menu is used to choose the AC configuration.

No.	Setting		Description
9130 AC config.			
9130	AC config.	Setting	Selections: - 3 phase L1L2L3 - 2 phase L1L3 - 2 phase L1L2 - 1 phase L1

Phase angles:
L1L2L3: 120 degrees with neutral.
L1L3: 180 degrees (split phase, neutral in the centre).
L1L2: 120 degrees with neutral.
L1: Single phase with phase-neutral.

3.16.8 9140 Angle compensation BB/G

This menu is used to compensate the transformer phase angle when the generator and busbar measurements are made on each side of a transformer.

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
9140 Angle comp. BB/G							
9140	Angle comp. BB/G	Angle	-45.0 deg. 45.0 deg.	0.0		Designer's Reference Handbook	

No.	Setting		Description
9150 Backlight dim			
9150	Backlight dim		Sets the light intensity for the display.

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
9160 User-defined application							
9160	Application		Appl 1 Appl 4	Appl. 1		Designer's Reference Handbook	The 4 different applications available make it possible to shift between different plant types.

3.16.9 9170 Internal CAN protocol

This menu is used to make it possible to interface to AGC units using application SW version 3.20.x or earlier.

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
9170 Internal CAN protocol							
9170	Application	Application	Protocol 1 Protocol 2	Protocol 2		Designer's Reference Handbook	

3.16.10 9180 Quick setup (AGC mains)

This menu makes it possible to set up the power management application without using the "Application configuration" tool in the PC utility software.

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
9180 Quick setup							
9181	Quick setup	Mode	OFF Setup stand-alone Setup plant	OFF			When using this menu, it will not be possible to design applications with AGC bus tie units.
9182	Quick setup	CAN	OFF CAN A CAN B CAN A+B	CAN A			
9183	Quick setup	MB	Pulse No MB Continuous Compact	Pulse			
9184	Quick setup	GB	Pulse Continuous Compact	Pulse			
9185	Quick setup	Mains	Mains present No mains present	Mains present			
9186	Quick setup	Plant type	Standard Single DG	Standard			

3.16.11 9190 Application broadcast

This menu makes it possible to broadcast an application between all AGC units connected on the CAN A or CAN B line.

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
9190 Application broadcast							
9191	Application broadcast	Enable	OFF Broadcast Broadcast + activate	OFF			
9192	Application broadcast	Application	Application 1 Application 2 Application 3 Application 4	Application 1			

3.17 System parameters - command timers

3.17.1 Command timers

There are eight identical command timers in the unit, but only command timer 1 is displayed. The setup of the command timers can only be accessed through the “Parameters” in the PC utility software.

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
10000 Start/stop command 1							
10001	Start/stop cmd. 1	Setpoint	START STOP	STOP		Designer’s Reference Handbook	
10002	Start/stop cmd. 1	Enable	ON OFF	OFF			
10010 Cmd. 1 day(s)							
10011	Cmd. 1 days	Setpoint	MO MO-TU-WE-TH-FR-SA-SU	MO-TU-WE-TH-FR-SA-SU		Designer’s Reference Handbook	Selections are: MO TU WE TH FR SA SU MO-TU-WE-TH MO-TU-WE-TH-FR SA-SU MO-TU-WE-TH-FR-SA-SU
10020 Cmd. 1 hour							
10021	Cmd. 1 hour	Setpoint	0 23	10		Designer’s Reference Handbook	
10030 Cmd. 1 min							
10031	Cmd. 1 min	Setpoint	0 59	0		Designer’s Reference Handbook	

The activation/deactivation of the command timers must be accessed from the M-logic user interface in the PC utility software.

3.18 System parameters - utility software

3.18.1 GSM settings

GSM settings are only accessible in the utility software.

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Descrip-tion
10320 GSM Pin code							
	GSM Pin code	Function	0 9999	1933		Designer's Reference Handbook	
10330 Telephone no. 1							
10330	Telephone 1	Function	0 99999999999	12345678903		Designer's Reference Handbook	

Telephone numbers 2-5 are available in menus 10340-10373.

3.18.2 Passwords

Password settings are only accessible in the utility software.

No.	Setting	Min. Max.	Factory setting	Notes	Ref.	Description
10390 Password language page						
10390	Passw. lang. page	None Customer	None		Designer's Reference Handbook	Selections are: - None - Master - Service - Customer
10400 Password log page						
10400	Passw. log page	None Customer	None		Designer's Reference Handbook	Selections are: - None - Master - Service - Customer
10410 Password control page						
10410	Passw. control page	None Customer	None		Designer's Reference Handbook	Selections are: - None - Master - Service - Customer

3.19 System parameters - VDO inputs

3.19.1 VDO 102

VDO 102 settings are only accessible in the utility software.

No.	Setting	Min. Max.	Factory setting	Notes	Ref.	Description
10460 VDO 1 type						
10460	VDO 1 type	Sensor type 1 Configurable VDO	Sensor type 1		Designer's Reference Handbook	Selections are: -Sensor type 1 -Sensor type 2 -Sensor type 3 -Configurable VDO
10470 VDO 1 input setpoint 1						
10470	VDO 1 inp. setp. 1	0 Ohm 1800 Ohm	10 Ohm		Designer's Reference Handbook	Configurable VDO curve.
10480 VDO 1 output setpoint 1						
10480	VDO 1 outp. setp. 1	-49 482	40		Designer's Reference Handbook	Configurable VDO curve.
10490 VDO 1 input setpoint 2						
10490	VDO 1 inp. setp. 2	0 Ohm 1800 Ohm	44.9 Ohm		Designer's Reference Handbook	Configurable VDO curve.
10500 VDO 1 output setpoint 2						
10500	VDO 1 outp. setp. 2	-49 482	50		Designer's Reference Handbook	Configurable VDO curve.
10510 VDO 1 input setpoint 3						
10510	VDO 1 inp. setp. 3	0 Ohm 1800 Ohm	81 Ohm		Designer's Reference Handbook	Configurable VDO curve.
10520 VDO 1 output setpoint 3						
10520	VDO 1 outp. setp. 3	-49 482	60		Designer's Reference Handbook	Configurable VDO curve.
10530 VDO 1 input setpoint 4						
10530	VDO 1 inp. setp. 4	0 Ohm 1800 Ohm	134.7 Ohm		Designer's Reference Handbook	Configurable VDO curve.
10540 VDO 1 output setpoint 4						
10540	VDO 1 outp. setp. 4	-49 482	80		Designer's Reference Handbook	Configurable VDO curve.
10550 VDO 1 input setpoint 5						
10550	VDO 1 inp. setp. 5	0 Ohm 1800 Ohm	184 Ohm		Designer's Reference Handbook	Configurable VDO curve.

No.	Setting	Min. Max.	Factory setting	Notes	Ref.	Description
10560 VDO 1 output setpoint 5						
10560	VDO 1 outp. setp. 5	-49 482	100		Designer's Reference Handbook	Configurable VDO curve.
10570 VDO 1 input setpoint 6						
10570	VDO 1 inp. setp. 6	0 Ohm 1800 Ohm	200 Ohm		Designer's Reference Handbook	Configurable VDO curve.
10580 VDO 1 output setpoint 6						
10580	VDO 1 outp. setp. 6	-49 482	110		Designer's Reference Handbook	Configurable VDO curve.
10590 VDO 1 input setpoint 7						
10590	VDO 1 inp. setp. 7	0 Ohm 1800 Ohm	210 Ohm		Designer's Reference Handbook	Configurable VDO curve.
10600 VDO 1 output setpoint 7						
10600	VDO 1 outp. setp. 7	-49 482	115		Designer's Reference Handbook	Configurable VDO curve.
10610 VDO 1 input setpoint 8						
10610	VDO 1 inp. setp. 8	0 Ohm 1800 Ohm	220 Ohm		Designer's Reference Handbook	Configurable VDO curve.
10620 VDO 1 output setpoint 8						
10620	VDO 1 outp. setp. 8	-49 482	120		Designer's Reference Handbook	Configurable VDO curve.

3.19.2 VDO 105

VDO 105 settings are only accessible in the utility software.

Menus 10630-10790 equal the settings for VDO 102 (10460-10620).

3.19.3 VDO 108

VDO 108 settings are only accessible in the utility software.

Menus 10800-10960 equal the settings for VDO 102 (10460-10620).

3.19.4 Multi-input selections

No.	Setting	Min. Max.	Factory setting	Notes	Ref.	Description
10970 Engineering units						
10970	Engineering units	Bar/Celsius Psi/Fahrenheit	Bar/Celsius			
10980 Multi-input configuration 102						
10980	Multi-inp. conf. 102	4-20 mA Binary	0-40V DC			Possible selections: 4-20 mA 0-40V DC Pt100 Pt1000 VDO oil pressure VDO water temp VDO fuel level Binary
10990 Multi-input configuration 105						
10990	Multi-inp. conf. 105	4-20 mA Binary	0-40V DC			Possible selections: 4-20 mA 0-40V DC Pt100 Pt1000 VDO oil pressure VDO water temp VDO fuel level Binary
11000 Multi-input configurable 108						
11000	Multi-inp. conf. 108	4-20 mA Binary	0-40V DC			Possible selections: 4-20 mA 0-40V DC Pt100 Pt1000 VDO oil pressure VDO water temp VDO fuel level Binary

3.19.5 4-20 mA input scaling

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
11010 4-20 mA input scale 102							
	4-20 mA input scale 102	Setpoint	No decimal Two decimal	No decimal			Selecting "Enable" and writing the new setpoint will scale the associated min., max. and value automatically.
	4-20 mA input scale 102	Enable	OFF ON	OFF			

The same settings apply to menus 11020-11110.

3.20 System parameters - external digital outputs

3.20.1 External digital outputs

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
12790 Ext. dig. out 1							
	Ext. dig. out 1	Function	Alarm relay ND Limit Alarm relay NE	Alarm relay ND		Option: External I/O modules (H8)	
	Ext. dig. out 1	OFF delay	0.0 s 999.9 s	5.0 s			

The same settings apply to menus 12800-12940.

3.20.2 External module status

No.	Setting	Min. Max.	Notes	Ref.	Description
12950	Ext module 0 STATUS	-32768 32767		Option: External I/O modules (H8)	This is a number read in the external module and displayed in the USW only. Please refer to option H8 description for details.

The same settings apply to menus 12951-12983 (external modules 1 to 33).

3.20.3 13000 SuperVision

The following menus define the data used for the "SuperVision" page in the utility software.

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
13000 Fuel consumption							
13000	F. cons. 0% load	Setpoint	0 l/h 3000 l/h	2 l/h			Menu 13005 activates display of the expected fuel rate in the utility software SuperVision page.
13001	F. cons. 50% load	Setpoint	0 l/h 3000 l/h	114.8 l/h			
13002	F. cons. optimum load	Setpoint	0 l/h 3000 l/h	168.7 l/h			
13003	F. cons. 100% load	Setpoint	0 l/h 3000 l/h	228.5 l/h			
13004	Optimum load	Setpoint	51% 99%	75%			
13005	Fuel rate expected	Enable	OFF ON	OFF			

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
13010 Oil pressure, coolant temp, fuel level input							
13010	Oil press. input	Setpoint	Multi-in 102 Auto detection	Auto detection			Selections are: - Multi-input 102 - Multi-input 105 - Multi-input 108 - Auto detection
13011	Cool water input	Setpoint	Multi-in 102 Auto detection	Auto detection			
13012	Fuel level input	Setpoint	Multi-in 102 Auto detection	Auto detection			