DEIF

-power in control

CE

MULTI-LINE 2
PARAMETER LIST

Generator Protection Unit, GPU-3
Generator Protection Unit, GPU-3 Gas
Paralleling and Protection Unit, PPU-3

- Alarm list
- Parameter list

DEIF A/S · Frisenborgvej 33 · DK-7800 Skive
Tel.: +45 9614 9614 · Fax: +45 9614 9615
info@deif.com · www.deif.com

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This document is valid for the following products:

GPU/PPU	Software version 3.09.X or later.

1. About this document

This chapter includes general user information about this handbook concerning the general purpose, the intended users and the overall contents and structure.

General purpose

This document is the complete parameter list for DEIF's Multi-line units with software version 3. The document includes all parameters, which means that some of the option parameters included may not be accessible in the system in question.

Intended users

The 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.

Contents/overall structure

The Parameter List is divided into chapters and in order to make the structure of the document simple and easy to use, each chapter will begin from the top of a new page. The following will outline the contents of each of the chapters.

About this document

This first chapter includes general information about this handbook as a document. It deals with the general purpose and the intended users of the Parameter List. Furthermore, it outlines the overall contents and structure of the document.

Warnings and legal information

The second chapter includes information about general legal issues and safety precautions relevant in the handling of DEIF products. Furthermore, this chapter will introduce the note and warning symbols, which will be used throughout the handbook.

Alarm list

This chapter includes a complete standard alarm list for setup. Therefore, this chapter is to be used for reference, when information about specific alarms is needed.

Parameter list

This chapter includes a complete standard parameter list for setup. Therefore, this chapter is to be used for reference, when information about specific parameters is needed.

2. Warnings and legal information

This chapter includes important information about general legal issues relevant in the handling of DEIF products. Furthermore, some overall safety precautions will be introduced and recommended. Finally, the highlighted notes and warnings, which will be used throughout this handbook, are presented.

Legal information and responsibility

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

The units are not to be opened by unauthorised personnel. If opened anyway, the warranty will be lost.

Electrostatic discharge awareness

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

Safety issues

Installing the unit implies 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.

Definitions

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

Notes

The notes provide general information which will be helpful for the reader to bear in mind.

Warnings

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

3. Alarm list

In the following, these abbreviations are used:
G: Generator
GB: Generator breaker
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:

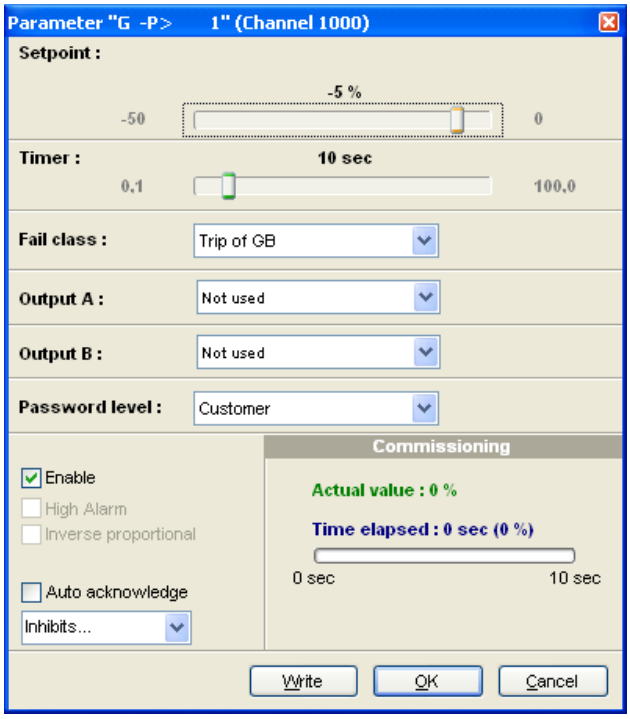
Fail class	Function
F1	Block
F2	Warning
F3	Trip GB
F4	Trip + stop
F5	Shutdown
F6	Safety stop

The fail class “Safety stop” is only available for PPU.

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.



Reverse power protection

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
1000 G reverse power 1							
1001	G –P> 1	Setpoint	-110.0% 0.0%	-8.0%		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	Delay	0.1 s 300.0 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...F6	Trip GB (F3)			
1010 G reverse power 2							
1011	G –P> 2	Setpoint	-110.0% 0.0%	-15.0%		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	Delay	0.1 s 300.0 s	2.0 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...F6	Trip GB (F3)			
1020 G reverse power characteristic							
1021	G –P> 1 Char.	Char. 1	Definite Inverse			Designer's Reference Handbook	Selection of trip charateristics for reverse power protections (1000 and 1010)
1022	G –P> 2 Char.	Char. 2	Definite Inverse				

Overcurrent protection

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
1030 G overcurrent 1							
1031	G I> 1	Setpoint	50.0% 200.0%	100.0%		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	Delay	0.1 s 3200.0 s	20.0 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...F6	Warning (F2)			
1040 G overcurrent 2							
1041	G I> 2	Setpoint	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	Delay	0.1 s 3200.0 s	10.0 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...F6	Trip GB (F3)			
1050 G overcurrent 3							
1051	G I> 3	Setpoint	50.0% 200.0%	130.0%		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	Delay	0.1 s 3200.0 s	3.0 s			
1053	G I> 3	Relay output A	Not used Option-dependent	Not used			
1054	G I> 3	Relay output B	Not used Option-dependent	Not used			
1055	G I> 3	Enable	OFF ON	ON			
1056	G I> 3	Fail class	F1...F6	Trip GB (F3)			
1060 G overcurrent 4							
1061	G I> 4	Setpoint	50.0% 200.0%	140.0%		Designer's Reference	The alarm and fail class are activated when the

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
1062	G I> 4	Delay	0.1 s 3200.0 s	1.0 s		Handbook	current has been continuously above the programmed value during the programmed delay.
1063	G I> 4	Relay output A	Not used Option-dependent	Not used			
1064	G I> 4	Relay output B	Not used Option-dependent	Not used			
1065	G I> 4	Enable	OFF ON	ON			
1066	G I> 4	Fail class	F1...F6	Trip GB (F3)			
1080 G inverse time overcurrent curve setting							
1081	G I> inv. type	Type	IEC Inverse Custom	IEC Inverse		Designer's Reference Handbook	Available curve types: - IEC Inverse - IEC Very inverse - IEC Extremely inv. - IEEE Moderately inv. - IEEE Very inverse - IEEE Extremely inv. - Custom
1082	G I> inv. limit	Setpoint	50.0% 200.0%	110.0%			
1083	G I> inv. TMS	Setpoint	0.01 10.0	1.0			
1084	G I> inv. k	Setpoint	0.001 s 32.000 s	0.140 s			
1085	G I> inv. c	Setpoint	0.000 s 32.000 s	0.000 s			
1086	G I> inv. a	Setpoint	0.001 32.000 s	0.020 s			
1090 G inverse time overcurrent alarm							
1091	G I> inv.	Relay output A	Not used Option-dependent	Not used		Designer's Reference Handbook	
1092	G I> inv.	Relay output B	Not used Option-dependent	Not used			
1093	G I> inv.	Enable	OFF ON	OFF			
1094	G I> inv.	Fail class	F1...F6	Trip GB (F3)			
1100 Voltage-dependent overcurrent curve setting							
1101	G Iv> (50%)	Setpoint I1	50.0% 200.0%	110.0%	@50% nom. voltage	Designer's Reference Handbook	Settings relate to nominal generator 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.
1102	G Iv> (60%)	Setpoint I2	50.0% 200.0%	125.0%	@60% nom. voltage		
1103	G Iv> (70%)	Setpoint I3	50.0% 200.0%	140.0%	@70% nom. voltage		
1104	G Iv> (80%)	Setpoint I4	50.0% 200.0%	155.0%	@80% nom. voltage		
1105	G Iv> (90%)	Setpoint I5	50.0% 200.0%	170.0%	@90% nom. voltage		

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
1106	G Iv> (100%)	Setpoint I6	50.0% 200.0%	200.0%	@100 % nom. voltage		
1110 Voltage-dependent overcurrent alarm							
1111	G Iv >	Timer	0.1 s 3200.0 s	1.0 s		Designer's Reference Handbook	The alarm and fail class are activated when the overcurrent has been continuously above the programmed value during the programmed delay. Values are set in parameters 1101-1106.
1112	G Iv >	Relay A	Not used Option-dependent	Not used			
1113	G Iv >	Relay B	Not used Option-dependent	Not used			
1114	G Iv >	Activate	OFF ON	ON			
1115	G Iv >	Fail class	F1...F6	Trip GB (F3)			
1130 G fast overcurrent 1							
1131	G I>> 1	Setpoint	150.0% 350.0%	200.0%		Designer's Reference Handbook	The alarm settings relate to the nominal current setting. The alarm and fail class are activated when the current has been continuously above the programmed value during the programmed delay.
1132	G I>> 1	Delay	0.00 s 320.00 s	0.00 s			
1133	G I>> 1	Relay output A	Not used Option-dependent	Not used			
1134	G I>> 1	Relay output B	Not used Option-dependent	Not used			
1135	G I>> 1	Enable	OFF ON	OFF			
1136	G I>> 1	Fail class	F1...F6	Trip GB (F3)			
1140 G fast overcurrent 2							
1141	G I>> 2	Setpoint	150.0% 350.0%	300.0%		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.
1142	G I>> 2	Delay	0.00 s 320.00 s	0.00 s			
1143	G I>> 2	Relay 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...F6	Trip GB (F3)			

Voltage protections

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
1150 G overvoltage 1							
1151	G U> 1	Setpoint	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. Setpoint relates to the nominal voltage setting.
1152	G U> 1	Timer	0.1 s 3200.0 s	5.0 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	ON			
1156	G U> 1	Fail class	F1...F6	Warning (F2)			
1160 G overvoltage 2							
1161	G U> 2	Setpoint	100.0% 120.0%	115.0%		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. Setpoint relates to the nominal voltage setting.
1162	G U> 2	Timer	0.1 s 3200.0 s	1.0 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	ON			
1166	G U> 2	Fail class	F1...F6	Block (F1)			
1170 G undervoltage 1							
1171	G U< 1	Setpoint	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. Setpoint relates to the nominal voltage setting.
1172	G U< 1	Timer	0.1 s 3200.0 s	5.0 s			
1173	G U< 1	Relay output A	Not used Option-dep.	Not used			
1174	G U< 1	Relay output B	Not used Option-dep.	Not used			
1175	G U< 1	Enable	OFF ON	ON			
1176	G U< 1	Fail class	F1...F6	Warning (F2)			
1180 G undervoltage 2							
1181	G U< 2	Setpoint	40.0% 100.0%	80.0%		Designer's Reference	The alarm and fail class are activated when the

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
1182	G U< 2	Timer	0.1 s 3200.0 s	3.0 s		Handbook	voltage has been continuously under the programmed value during the programmed delay. Setpoint relates to the nominal voltage setting.
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	ON			
1186	G U< 2	Fail class	F1...F6	Trip GB (F3)			
1190 G undervoltage 3							
1191	G U< 3	Setpoint	40.0% 100.0%	70.0%		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. Setpoint relates to the nominal voltage setting.
1192	G U< 3	Timer	0.1 s 3200.0 s	1.0 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	G U< 3	Fail class	F1...F6	Trip GB (F3)			

Frequency protections

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
1210 G overfrequency 1							
1211	G f> 1	Setpoint	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. Frequency settings relate to nominal frequency setting.
1212	G f> 1	Timer	0.2 s 3200.0 s	3.0 s			
1213	G f> 1	Relay output A	Not used Option-dep.	Not used			
1214	G f> 1	Relay output B	Not used Option-dep.	Not used			
1215	G f> 1	Enable	OFF ON	ON			
1216	G f> 1	Fail class	F1...F6	Warning (F2)			
1220 G overfrequency 2							
1221	G f> 2	Setpoint	100.0% 120.0%	107.0%		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	3.0 s			
1223	G f> 2	Relay output A	Not used Option-dep.	Not used			
1224	G f> 2	Relay output B	Not used Option-dep.	Not used			
1225	G f> 2	Enable	OFF ON	ON			
1226	G f> 2	Fail class	F1...F6	Block (F1)			
1230 G overfrequency 3							
1231	G f> 3	Setpoint	100.0% 120.0%	110.0%		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 3200.0 s	1.0 s			
1233	G f> 3	Relay output A	Not used Option-dep.	Not used			
1234	G f> 3	Relay output B	Not used Option-dep.	Not used			
1235	G f> 3	Enable	OFF ON	OFF			
1236	G f> 3	Fail class	F1...F6	Block (F1)			
1240 G underfrequency 1							
1241	G f< 1	Setpoint	80.0% 100.0%	95.0%		Designer's Reference	The alarm and fail class are activated when the

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
1242	G f< 1	Timer	0.2 s 3200.0 s	5.0 s		Handbook	frequency has been continuously under the programmed value during the programmed delay.
1243	G f< 1	Relay output A	Not used Option-dep.	Not used			
1244	G f< 1	Relay output B	Not used Option-dep.	Not used			
1245	G f< 1	Enable	OFF ON	ON			
1246	G f< 1	Fail class	F1...F6	Warning (F2)			
1250 G underfrequency 2							
1251	G f< 2	Setpoint	80.0% 100.0%	93.0%		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 3200.0 s	3.0 s			
1253	G f< 2	Relay output A	Not used Option-dep.	Not used			
1254	G f< 2	Relay output B	Not used Option-dep.	Not used			
1255	G f< 2	Enable	OFF ON	ON			
1256	G f< 2	Fail class	F1...F6	Block (F1)			
1260 G underfrequency 3							
1261	G f< 3	Setpoint	80.0% 100.0%	90.0%		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 3200.0 s	1.0 s			
1263	G f< 3	Relay output A	Not used Option-dep.	Not used			
1264	G f< 3	Relay output B	Not used Option-dep.	Not used			
1265	G f< 3	Enable	OFF ON	OFF			
1266	G f< 3	Fail class	F1...F6	Block (F1)			

Busbar voltage protections

No.	Setting			Min. Max.	Factory setting	Notes	Ref.	Description
1270 Busbar overvoltage 1								
1271	BB U>	1	Setpoint	100.0% 120.0%	110.0%		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. Setpoint relates to the nominal BB voltage setting.
1272	BB U>	1	Timer	0.00 s 320.00 s	5.00 s			
1273	BB U>	1	Relay output A	Not used Option-dep.	Not used			
1274	BB U>	1	Relay output B	Not used Option-dep.	Not used			
1275	BB U>	1	Enable	OFF ON	ON			
1276	BB U>	1	Fail class	F1...F6	Warning (F2)			
1280 Busbar overvoltage 2								
1281	BB U>	2	Setpoint	100.0% 120.0%	120.0%		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. Setpoint relates to the nominal BB voltage setting.
1282	BB U>	2	Timer	0.00 s 320.00 s	3.00 s			
1283	BB U>	2	Relay output A	Not used Option-dep.	Not used			
1284	BB U>	2	Relay output B	Not used Option-dep.	Not used			
1285	BB U>	2	Enable	OFF ON	ON			
1286	BB U>	2	Fail class	F1...F6	Trip GB (F3)			
1290 Busbar overvoltage 3								
1291	BB U>	3	Setpoint	100.0% 120.0%	120.0%		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. Setpoint relates to the nominal BB voltage setting.
1292	BB U>	3	Timer	0.00 s 320.00 s	1.00 s			
1293	BB U>	3	Relay output A	Not used Option-dep.	Not used			
1294	BB U>	3	Relay output B	Not used Option-dep.	Not used			
1295	BB U>	3	Enable	OFF ON	OFF			
1296	BB U>	3	Fail class	F1...F6	Trip GB (F3)			
1300 Busbar undervoltage 1								
1301	BB U<	1	Setpoint	40.0% 100.0%	95.0%		Designer's Reference	The alarm and fail class are activated when the

No.	Setting			Min. Max.	Factory setting	Notes	Ref.	Description
1302	BB U<	1	Timer	0.00 s 320.00 s	5.00 s		Handbook	voltage has been continuously under the programmed value during the programmed delay. Setpoint relates to the nominal BB voltage setting.
1303	BB U<	1	Relay output A	Not used Option-dep.	Not used			
1304	BB U<	1	Relay output B	Not used Option-dep.	Not used			
1305	BB U<	1	Enable	OFF ON	ON			
1306	BB U<	1	Fail class	F1...F6	Warning (F2)			
1310 Busbar undervoltage 2								
1311	BB U<	2	Setpoint	40.0% 100.0%	80.0%		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. Setpoint relates to the nominal BB voltage setting.
1312	BB U<	2	Timer	0.00 s 320.00 s	3.00 s			
1313	BB U<	2	Relay output A	Not used Option-dep.	Not used			
1314	BB U<	2	Relay output B	Not used Option-dep.	Not used			
1315	BB U<	2	Enable	OFF ON	ON			
1316	BB U<	2	Fail class	F1...F6	Warning (F2)			
1320 Busbar undervoltage 3								
1321	BB U<	3	Setpoint	40.0% 100.0%	70.0%		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. Setpoint relates to the nominal BB voltage setting.
1322	BB U<	3	Timer	0.00 s 320.00 s	2.00 s			
1323	BB U<	3	Relay output A	Not used Option-dep.	Not used			
1324	BB U<	3	Relay output B	Not used Option-dep.	Not used			
1325	BB U<	3	Enable	OFF ON	OFF			
1326	BB U<	3	Fail class	F1...F6	Trip GB (F3)			
1330 Busbar undervoltage 4								
1331	BB U<	4	Setpoint	40.0% 100.0%	60.0%		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. Setpoint relates to the
1332	BB U<	4	Timer	0.00 s 320.00 s	1.00 s			
1333	BB U<	4	Relay output A	Not used Option-dep.	Not used			

No.	Setting			Min. Max.	Factory setting	Notes	Ref.	Description
1334	BB U<	4	Relay output B	Not used Option-dep.	Not used			nominal BB voltage setting.
1335	BB U<	4	Enable	OFF ON	OFF			
1336	BB U<	4	Fail class	F1...F6	Trip GB (F3)			

Busbar frequency protections

No.	Setting			Min. Max.	Factory setting	Notes	Ref.	Description
1350 Busbar overfrequency 1								
1351	BB f>	1	Setpoint	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. Setpoint relates to the nominal frequency setting.
1352	BB f>	1	Timer	0.00 s 320.00 s	5.00 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	ON			
1356	BB f>	1	Fail class	F1...F6	Warning (F2)			
1360 Busbar overfrequency 2								
1361	BB f>	2	Setpoint	100.0% 120.0%	110.0%		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. Setpoint relates to the nominal frequency setting.
1362	BB f>	2	Timer	0.00 s 320.00 s	3.00 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	ON			
1366	BB f>	2	Fail class	F1...F6	Trip GB (F3)			
1370 Busbar overfrequency 3								
1371	BB f>	3	Setpoint	100.0% 120.0%	120.0%		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. Setpoint relates to the nominal frequency setting.
1372	BB f>	3	Timer	0.00 s 320.00 s	3.00 s			
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...F6	Trip GB (F3)			
1380 Busbar underfrequency 1								
1381	BB f<	1	Setpoint	80.0% 100.0%	96.0%		Designer's Reference	The alarm and fail class are activated when the

No.	Setting			Min. Max.	Factory setting	Notes	Ref.	Description
1382	BB f<	1	Timer	0.00 s 320.00 s	5.00 s		Handbook	frequency has been continuously under the programmed value during the programmed delay. Setpoint relates to the nominal frequency setting.
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	ON			
1386	BB f<	1	Fail class	F1...F6	Warning (F2)			
1390 Busbar underfrequency 2								
1391	BB f<	2	Setpoint	80.0% 100.0%	93.0%		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. Setpoint relates to the nominal frequency setting.
1392	BB f<	2	Timer	0.00 s 320.00 s	3.00 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	ON			
1396	BB f<	2	Fail class	F1...F6	Trip GB (F3)			
1400 Busbar underfrequency 3								
1401	BB f<	3	Setpoint	80.0% 100.0%	92.0%		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. Setpoint relates to the nominal frequency setting.
1402	BB f<	3	Timer	0.00 s 320.00 s	1.00 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...F6	Trip GB (F3)			
1410 Busbar underfrequency 4								
1411	BB f<	4	Setpoint	80.0% 100.0%	90.0%		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 320.00 s	3.00 s			
1413	BB f<	4	Relay output A	Not used Option-dep.	Not used			

No.	Setting			Min. Max.	Factory setting	Notes	Ref.	Description
1414	BB f<	4	Relay output B	Not used Option-dep.	Not used			Setpoint relates to the nominal frequency setting.
1415	BB f<	4	Enable	OFF ON	OFF			
1416	BB f<	4	Fail class	F1...F6	Trip GB (F3)			

Mains failure protections

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
1420 Df/dt (ROCOF)							
1421	Df/dt (ROCOF)	Setpoint	0.1Hz/s 10.0Hz/s	5.0Hz/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 per. 20 per.	6 per.			
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...F6	Trip GB (F3)			
1430 Vector jump							
1431	Vector jump	Setpoint	1.0 deg. 90.0 deg.	10.0 deg.		Option A1	The alarm and fail class are activated when a vector jump is detected. The type selection (menu 1436) decides whether a vector jump should be present on one phase (individual phases) or all phases to be 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...F6	Trip GB (F3)			
1436	Vector jump	Type	Individual phases All phases	Individual			
1440 Busbar positive sequence voltage low							
1441	BB pos seq volt	Setpoint	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. 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
1442	BB pos seq volt	Timer	1 per. 9 per.	2 per.			
1443	BB pos seq volt	Relay output A	Not used Option-dep.	Not used			
1444	BB pos seq volt	Relay output B	Not used Option-dep.	Not used			
1445	BB pos seq volt	Enable	OFF ON	OFF			

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
1446	BB pos seq volt	Fail class	F1...F6	Trip GB (F3)			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.

Overload protections

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
1450 G overload 1							
1451	G P> 1	Setpoint	-200.0% 200.0%	95.0%		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. Setpoint relates to the nominal power setting.
1452	G P> 1	Timer	0.1 s 3200.0 s	20.0 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	ON			
1456	G P> 1	Fail class	F1...F6	Warning (F2)			
1460 G overload 2							
1461	G P> 2	Setpoint	-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. Setpoint relates to the nominal power setting.
1462	G P> 2	Timer	0.1 s 3200.0 s	10.0 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	ON			
1466	G P> 2	Fail class	F1...F6	Trip GB (F3)			
1470 G overload 3							
1471	G P> 3	Setpoint	-200.0% 200.0%	115.0%		Designer's Reference Handbook	The alarm and fail class are activated when the power has been continuously above the
1472	G P> 3	Timer	0.1 s 3200.0 s	5.0 s			

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
1473	G P> 3	Relay output A	Not used Option-dep.	Not used			programmed value during the programmed delay. Setpoint relates to the nominal power setting.
1474	G P> 3	Relay output B	Not used Option-dep.	Not used			
1475	G P> 3	Enable	OFF ON	OFF			
1476	G P> 3	Fail class	F1...F6	Trip GB (F3)			
1480 G overload 4							
1481	G P> 4	Setpoint	-200.0% 200.0%	120.0%		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. Setpoint relates to the nominal power setting.
1482	G P> 4	Timer	0.1 s 3200.0 s	3.0 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...F6	Trip GB (F3)			
1490 G overload 5							
1491	G P> 5	Setpoint	-200.0% 200.0%	130.0%		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. Setpoint relates to the nominal power setting.
1492	G P> 5	Timer	0.1 s 3200.0 s	1.0 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...F6	Trip GB (F3)			

Current unbalance protection

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
1500 G unbalance I 1							
1501	G unbalance I 1	Setpoint	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 I 1	Timer	0.1 s 3200.0 s	10.0 s			
1503	G unbalance I 1	Relay output A	Not used Option-dep.	Not used			
1504	G unbalance I 1	Relay output B	Not used Option-dep.	Not used			
1505	G unbalance I 1	Enable	OFF ON	ON			
1506	G unbalance I 1	Fail class	F1...F6	Trip GB (F3)			
1710 G unbalance I 2							
1711	G unbalance I 2	Setpoint	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 three measured currents has been continuously above the programmed value during the programmed delay.
1712	G unbalance I 2	Timer	0.1 s 3200.0 s	10.0 s			
1713	G unbalance I 2	Relay output A	Not used Option-dep.	Not used			
1714	G unbalance I 2	Relay output B	Not used Option-dep.	Not used			
1715	G unbalance I 2	Enable	OFF ON	ON			
1716	G unbalance I 2	Fail class	F1...F6	Trip GB (F3)			

Voltage unbalance protection

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
1510 G unbalance U							
1511	G unbalance U	Setpoint	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 U	Timer	0.1 s 3200.0 s	10.0 s			
1513	G unbalance U	Relay output A	Not used Option-dep.	Not used			
1514	G unbalance U	Relay output B	Not used Option-dep.	Not used			
1515	G unbalance U	Enable	OFF ON	ON			
1516	G unbalance U	Fail class	F1...F6	Warning (F2)			

Reactive power import (loss of excitation) protection

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
1520 G 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 3200.0 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	ON			
1526	G –Q>	Fail class	F1...F6	Trip GB (F3)			

Reactive power export (overexcitation) protection

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
1530 G reactive power export (overexcitation)							
1531	G Q>	Setpoint	0.0% 100.0%	75.0%		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 3200.0 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	ON			
1536	G Q>	Fail class	F1...F6	Trip GB (F3)			

Negative sequence

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
1540 G 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 3200.0 s	0.5 s			
1543	G neg seq I	Relay output A	Not used Option-dep.	Not used			
1544	G 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...F6	Trip GB (F3)			
1550 G 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 3200.0 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...F6	Trip GB (F3)			

Zero sequence

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
1570 G zero sequence current							
1571	G zero seq I	Setpoint	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 3200.0 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	G zero seq I	Fail class	F1...F6	Trip GB (F3)			
1580 G zero sequence voltage							
1581	G zero seq U	Setpoint	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 3200.0 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...F6	Trip GB (F3)			

Directional overcurrent protection

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
1600 G directional overcurrent 1							
1601	G I> direct 1	Setpoint	-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 3200.0 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...F6	Trip GB (F3)			
1610 G directional overcurrent 2							
1611	G I> direct 2	Setpoint	-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 3200.0 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...F6	Trip GB (F3)			

Busbar unbalance voltage

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
1620 BB unbalance U							
1621	BB unbalance U	Setpoint	0.0% 50.0%	10.0%		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 3200.0 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...F6	Warning (F2)			

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%	70.0%		Option A1	Curve setting for time-dependent under-voltage. 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 setpoint 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	0.40 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%	80.0%		Option A1	Curve setting for time-dependent under-voltage. 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 setpoint Ut(6) will be used.
1642	Ut < 1	Delay 4	0.00 s 20.00 s	1.10 s			
1643	Ut < 1	Setting 5	30.0% 120.0%	90.0%			
1644	Ut < 1	Delay 5	0.00 s 20.00 s	1.50 s			
1645	Ut < 1	Setting 6	30.0% 120.0%	90.0%			
1646	Ut < 1	Delay 6	0.00 s 20.00 s	2.00 s			
1650 Time-dependent undervoltage 1 activation							
1651	Ut < act 1	Activate	0.0% 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	Reset	0.0% 120.0%	95%			
1653	Ut < act 1	Delay	0.0 s 320.0 s	1.0 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			
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

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
1662	Ut < 1	Relay output B	Not used Option-dep.	Not used			the voltage value is under the programmed value curve.
1663	Ut < 1	Enable	OFF ON	OFF			
1664	Ut < 1	Fail class	F1...F6	Trip GB (F3)			
1670 Time-dependent undervoltage 2 1-3							
1671	Ut < 2	Setting 1	30.0% 120.0%	70.0%		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 setpoint 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	0.40 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%	80.0%		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 setpoint Ut(6) will be used.
1682	Ut < 2	Delay 4	0.00 s 20.00 s	1.10 s			
1683	Ut < 2	Setting 5	30.0% 120.0%	90.0%			
1684	Ut < 2	Delay 5	0.00 s 20.00 s	1.50 s			
1685	Ut < 2	Setting 6	30.0% 120.0%	90.0%			
1686	Ut < 2	Delay 6	0.00 s 20.00 s	2.00 s			
1690 Time-dependent undervoltage 2 activation							
1691	Ut < act 2	Activate	0.0% 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 output will activate immediately when the function timer starts.
1692	Ut < act 2	Reset	0.0% 120.0%	95%			
1693	Ut < act 2	Delay	0.0 s 320.0 s	1.0 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							

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
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...F6	Trip GB (F3)			

Power-dependent reactive power

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
1740 G P dep. reactive power import 1-3							
1741	G P dep Q< 1-3	Q1	0.0% 100.0%	20.0%		Option C2	Curve setting for import of reactive power (capacitive running). Settings relate to nominal generator power. The condition has to be true i.e. P1<P2<P3<P4<P5<P6. If this is not fulfilled, the worst-case setpoint P6 will be used.
1742	G P dep Q< 1-3	P1	0.0% 100.0%	0.0%			
1743	G P dep Q< 1-3	Q2	0.0% 100.0%	22.0%			
1744	G P dep Q< 1-3	P2	0.0% 100.0%	7.0%			
1745	G P dep Q< 1-3	Q3	0.0% 100.0%	27.0%			
1746	G P dep Q< 1-3	P3	0.0% 100.0%	12.0%			
1750 G P dep. reactive power import 4-6							
1751	G P dep Q< 4-6	Q4	0.0% 100.0%	18.0%		Option C2	Curve setting for import of reactive power (capacitive running). Settings relate to nominal generator power. The condition has to be true i.e. P1<P2<P3<P4<P5<P6. If this is not fulfilled, the worst-case setpoint P6 will be used.
1752	G P dep Q< 4-6	P4	0.0% 100.0%	55.0%			
1753	G P dep Q< 4-6	Q5	0.0% 100.0%	21.0%			
1754	G P dep Q< 4-6	P5	0.0% 100.0%	97.0%			
1755	G P dep Q< 4-6	Q6	0.0% 100.0%	1.0%			
1756	G P dep Q< 4-6	P6	0.0% 100.0%	100.0%			
1760 G Pdep. reactive power import							
1761	G Pdep. Q<	Timer	0.1 s 300.0 s	1.0 s		Option C2	The alarm and fail class are activated when the VAr import value has been continuously over the programmed value during the programmed delay.
1762	G Pdep. Q<	Relay output A	Not used Option-dep.	Not used			
1763	G Pdep. Q<	Relay output B	Not used Option-dep.	Not used			
1764	G Pdep. Q<	Enable	OFF ON	OFF			
1765	G Pdep. Q<	Fail class	F1...F6	Trip GB (F3)			
1770 G P dep. reactive power export 1-3							
1771	G P dep Q> 1-3	Q1	0.0% 100.0%	88.0%		Option C2	Curve setting for export of reactive power (inductive running). Settings relate to nominal generator
1772	G P dep Q> 1-3	P1	0.0% 100.0%	0.0%			
1773	G P dep Q> 1-3	Q2	0.0% 100.0%	86.0%			

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
1774	G P dep Q> 1-3	P2	0.0% 100.0%	24.0%			power. The condition has to be true i.e. P1<P2<P3<P4<P5<P6. If this is not fulfilled, the worst-case setpoint P6 will be used.
1775	G P dep Q> 1-3	Q3	0.0% 100.0%	77.0%			
1776	G P dep Q> 1-3	P3	0.0% 100.0%	53.0%			
1780 G P dep. reactive power export 4-6							
1781	G P dep Q> 4-6	Q4	0.0% 100.0%	60.0%		Option C2	Curve setting for export of reactive power (inductive running). Settings relate to nominal generator power. The condition has to be true i.e. P1<P2<P3<P4<P5<P6. If this is not fulfilled, the worst-case setpoint P6 will be used.
1782	G P dep Q> 4-6	P4	0.0% 100.0%	80.0%			
1783	G P dep Q> 4-6	Q5	0.0% 100.0%	33.0%			
1784	G P dep Q> 4-6	P5	0.0% 100.0%	95.0%			
1785	G P dep Q> 4-6	Q6	0.0% 100.0%	1.0%			
1786	G P dep Q> 4-6	P6	0.0% 100.0%	100.0%			
1790 G Pdep. reactive power export							
1791	G Pdep. Q>	Timer	0.1 s 300.0 s	1.0 s		Option C2	The alarm and fail class are activated when the VAr export value has been continuously over the programmed value during the programmed delay.
1792	G Pdep. Q>	Relay output A	Not used Option-dep.	Not used			
1793	G Pdep. Q>	Relay output B	Not used Option-dep.	Not used			
1794	G Pdep. Q>	Enable	OFF ON	OFF			
1795	G Pdep. Q>	Fail class	F1...F6	Trip GB (F3)			

Non-essential load trip (load shedding)

Setting values relate to the generator 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 3200.0 s	5.0 s			
1803	NEL 1 I>	Relay output A	Not used Option-dep.	Not used			
1804	NEL 1 I>	Relay output B	Not used Option-dep.	Not used			
1805	NEL 1 I>	Enable	OFF ON	OFF			
1806	NEL 1 I>	Fail class	F1...F6	Warning (F2)			
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 3200.0 s	8.0 s			
1813	NEL 2 I>	Relay output A	Not used Option-dep.	Not used			
1814	NEL 2 I>	Relay output B	Not used Option-dep.	Not used			
1815	NEL 2 I>	Enable	OFF ON	OFF			
1816	NEL 2 I>	Fail class	F1...F6	Warning (F2)			
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 3200.0 s	10.0 s			
1823	NEL 3 I>	Relay output A	Not used Option-dep.	Not used			
1824	NEL 3 I>	Relay output B	Not used Option-dep.	Not used			
1825	NEL 3 I>	Enable	OFF ON	OFF			
1826	NEL 3 I>	Fail class	F1...F6	Warning (F2)			

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
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 3200.0 s	5.0 s			
1833	NEL 1 bus f<	Relay output A	Not used Option-dep.	Not used			
1834	NEL 1 bus f<	Relay output B	Not used Option-dep.	Not used			
1835	NEL 1 bus f<	Enable	OFF ON	OFF			
1836	NEL 1 bus f<	Fail class	F1...F6	Warning (F2)			
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 3200.0 s	8.0 s			
1843	NEL 2 bus f<	Relay output A	Not used Option-dep.	Not used			
1844	NEL 2 bus f<	Relay output B	Not used Option-dep.	Not used			
1845	NEL 2 bus f<	Enable	OFF ON	OFF			
1846	NEL 2 bus f<	Fail class	F1...F6	Warning (F2)			
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 3200.0 s	10.0 s			
1853	NEL 3 bus f<	Relay output A	Not used Option-dep.	Not used			
1854	NEL 3 bus f<	Relay output B	Not used Option-dep.	Not used			
1855	NEL 3 bus f<	Enable	OFF ON	OFF			
1856	NEL 3 bus f<	Fail class	F1...F6	Warning (F2)			
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 3200.0 s	5.0 s			

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
1863	NEL 1 P>	Relay output A	Not used Option-dep.	Not used			
1864	NEL 1 P>	Relay output B	Not used Option-dep.	Not used			
1865	NEL 1 P>	Enable	OFF ON	OFF			
1866	NEL 1 P>	Fail class	F1...F6	Warning (F2)			
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 3200.0 s	8.0 s			
1873	NEL 2 P>	Relay output A	Not used Option-dep.	Not used			
1874	NEL 2 P>	Relay output B	Not used Option-dep.	Not used			
1875	NEL 2 P>	Enable	OFF ON	OFF			
1876	NEL 2 P>	Fail class	F1...F6	Warning (F2)			
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 3200.0 s	10.0 s			
1883	NEL 3 P>	Relay output A	Not used Option-dep.	Not used			
1884	NEL 3 P>	Relay output B	Not used Option-dep.	Not used			
1885	NEL 3 P>	Enable	OFF ON	OFF			
1886	NEL 3 P>	Fail class	F1...F6	Warning (F2)			
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 3200.0 s	1.0 s			
1893	NEL 1 P>>	Relay output A	Not used Option-dep.	Not used			
1894	NEL 1 P>>	Relay output B	Not used Option-dep.	Not used			

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
1895	NEL 1 P>>	Enable	OFF ON	OFF			
1896	NEL 1 P>>	Fail class	F1...F6	Warning (F2)			
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 3200.0 s	1.0 s			
1903	NEL 2 P>>	Relay output A	Not used Option-dep.	Not used			
1904	NEL 2 P>>	Relay output B	Not used Option-dep.	Not used			
1905	NEL 2 P>>	Enable	OFF ON	OFF			
1906	NEL 2 P>>	Fail class	F1...F6	Warning (F2)			
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 3200.0 s	1.0 s			
1913	NEL 3 P>>	Relay output A	Not used Option-dep.	Not used			
1914	NEL 3 P>>	Relay output B	Not used Option-dep.	Not used			
1915	NEL 3 P>>	Enable	OFF ON	OFF			
1916	NEL 3 P>>	Fail class	F1...F6	Warning (F2)			

Undervoltage and reactive power low

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
1960 U and Q < 1							
1961	U and Q < 1	Setpoint	70.0% 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** that the reactive power is ≤ 0 kVAr.
1962	U and Q < 1	Delay	0.0 s 10.0 s	0.5 s			
1963	U and Q < 1	Relay output A	Not used Option-dep.	Not used			
1964	U and Q < 1	Relay output B	Not used Option-dep.	Not used			
1965	U and Q < 1	Enable	OFF ON	OFF			
1966	U and Q < 1	Fail class	F1...F6	Warning (F2)			
1970 U and Q < 2							
1971	U and Q < 2	Setpoint	70.0% 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** that the reactive power is ≤ 0 kVAr.
1972	U and Q < 2	Delay	1.0 s 10.0 s	0.5 s			
1973	U and Q < 2	Relay output A	Not used Option-dep.	Not used			
1974	U and Q < 2	Relay output B	Not used Option-dep.	Not used			
1975	U and Q < 2	Enable	OFF ON	OFF			
1976	U and Q < 2	Fail class	F1...F6	Warning (F2)			

Generator breaker external trip

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
1980 GB external trip							
1981	GB ext. trip	Enable	OFF ON	ON		Designer's Reference Handbook GPU: Option G2	The generator breaker has been tripped by an external device.
1982	GB ext. trip	Relay output A	Not used Option-dep.	Not used			
1983	GB ext. trip	Relay output B	Not used Option-dep.	Not used			
1984	GB ext. trip	Fail class	F1...F6	Warning (F2)			

Synchronisation and breaker alarms

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
2120 Synchronisation window							
2121	Sync window	Setpoint	2.0% 20.0%	15%		Designer's Reference Handbook GPU: Option G2	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 synchronisation failure							
2131	GB sync failure	Delay	30.0 s 300.0 s	60.0 s		Designer's Reference Handbook GPU: Option G2	GB: Generator breaker. The controller has unsuccessfully tried to synchronise the breaker to the busbar within the time delay.
2132	GB sync failure	Relay output A	Not used Option-dep.	Not used			
2133	GB sync failure	Relay output B	Not used Option-dep.	Not used			
2134	GB sync failure	Enable	OFF ON	ON			
2135	GB sync failure	Fail class	F1...F6	Warning (F2)			
2150 Phase sequence error							
2151	Phase seq error	Relay output A	Not used Option-dep.	Not used		Designer's Reference Handbook GPU: Option G2	During synchronisation the controller has detected that the rotation direction of the generator phases is opposite direction as the busbar.
2152	Phase seq error	Relay output B	Not used Option-dep.	Not used			
2153	Phase seq error	Fail class	F1...F6	Block (F1)			
2160 GB open failure							
2161	GB open fail	Delay	1.0 s 5.0 s	2.0 s		Designer's Reference Handbook GPU: Option G2	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.
2162	GB open fail	Relay output A	Not used Option-dep.	Not used			
2163	GB open fail	Relay output B	Not used Option-dep.	Not used			
2164	GB open fail	Enable	N/A	ON			
2165	GB open fail	Fail class	F1...F6	Warning (F2)			

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
2170 GB close failure							
2171	GB close fail	Delay	1.0 s 5.0 s	2.0 s		Designer's Reference Handbook GPU: Option G2	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.
2172	GB close fail	Relay output A	Not used Option-dep.	Not used			
2173	GB close fail	Relay output B	Not used Option-dep.	Not used			
2174	GB close fail	Enable	N/A	ON			
2175	GB close fail	Fail class	F1...F6	Warning (F2)			
2180 GB position failure							
2181	GB pos fail	Delay	1.0 s 5.0 s	1.0 s		Designer's Reference Handbook GPU: Option G2	This alarm will occur if the GB feedbacks for ON and OFF are either missing or both activated.
2182	GB pos fail	Relay output A	Not used Option-dep.	Not used			
2183	GB pos fail	Relay output B	Not used Option-dep.	Not used			
2184	GB pos fail	Enable	N/A	ON			
2185	GB pos fail	Fail class	F1...F6	Warning (F2)			
2190 Vector mismatch							
2191	Vector mismatch	Setpoint	1 deg. 120 deg.	20 deg.		Designer's Reference Handbook GPU: Option G2	This alarm will occur during synchronisation if the angle between the generator and BB vectors L2 and L3 deviates more than the setpoint and longer than the delay. The measurement of L2 and L3 is done with the condition BBL1 = GL1 to get the absolute angles.
2192	Vector mismatch	Delay	1.0 s 60.0 s	10.0 s			
2193	Vector mismatch	Relay output A	Not used Option-dep.	Not used			
2194	Vector mismatch	Relay output B	Not used Option-dep.	Not used			
2195	Vector mismatch	Enable	OFF ON	ON			
2196	Vector mismatch	Fail class	F1...F6	Block (F1)			

BTB position failure

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
2320 BTB A position failure							
2321	BTB A pos. fail	Delay	1.0 s 5.0 s	1.0 s		Option G9 GPU: Not available	This alarm occurs when BTB feedback is not present, both feedbacks are present or if only one of the feedbacks is configured.
2322	BTB A pos. fail	Relay output A	Not used Option-dep.	Not used			
2323	BTB A pos. fail	Relay output B	Not used Option-dep.	Not used			
2324	BTB A pos. fail	Enable	OFF ON	ON			
2325	BTB A pos. fail	Fail class	F1...F6	Warning (F2)			
2330 BTB B position failure							
2331	BTB B pos. fail	Delay	1.0 s 5.0 s	1.0 s		Option G9 GPU: Not available	This alarm occurs when BTB feedback is not present, both feedbacks are present or if only one of the feedbacks is configured.
2332	BTB B pos. fail	Relay output A	Not used Option-dep.	Not used			
2333	BTB B pos. fail	Relay output B	Not used Option-dep.	Not used			
2334	BTB B pos. fail	Enable	OFF ON	ON			
2335	BTB B pos. fail	Fail class	F1...F6	Warning (F2)			
2340 BTB C position failure							
2341	BTB C pos. fail	Delay	1.0 s 5.0 s	1.0 s		Option G9 GPU: Not available	This alarm occurs when BTB feedback is not present, both feedbacks are present or if only one of the feedbacks is configured.
2342	BTB C pos. fail	Relay output A	Not used Option-dep.	Not used			
2343	BTB C pos. fail	Relay output B	Not used Option-dep.	Not used			
2344	BTB C pos. fail	Enable	OFF ON	ON			
2345	BTB C pos. fail	Fail class	F1...F6	Warning (F2)			
2350 BTB D position failure							
2351	BTB D pos. fail	Delay	1.0 s 5.0 s	1.0 s		Option G9 GPU: Not available	This alarm occurs when BTB feedback is not present, both feedbacks are present or if only one of the feedbacks is configured.
2352	BTB D pos. fail	Relay output A	Not used Option-dep.	Not used			
2353	BTB D pos. fail	Relay output B	Not used Option-dep.	Not used			

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
2354	BTB D pos. fail	Enable	OFF ON	ON			
2355	BTB D pos. fail	Fail class	F1...F6	Warning (F2)			

Regulation alarms

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
2560 Governor regulation fail							
2561	Gov. reg fail	Deadband	1.0% 100.0%	30.0%		Designer's Reference Handbook GPU: Option G2	The alarm is activated, if the difference between the measured value and the setpoint is outside the deadband for a longer time period than specified by the delay setpoint.
2562	Gov. reg fail	Delay	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...F6	Warning (F2)			
2630 Deload error							
2631	Deload error	Delay	0.0 s 60.0 s	10.0 s		Designer's Reference Handbook GPU: Not available	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...F6	Warning (F2)			
2680 AVR regulation failure							
2681	AVR reg. failure	Deadband	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 'Deadband' for a longer time period than specified in the timer setpoint.
2682	AVR reg. failure	Delay	10.0 s 300.0 s	60.0 s			
2683	AVR reg. failure	Relay output A	Not used Option-dep.	Not used			
2684	AVR reg. failure	Relay output B	Not used Option-dep.	Not used			
2685	AVR reg. failure	Fail class	F1...F6	Warning (F2)			
2730 GOV mode undefined							
2731	GOV mode undef.	Delay	0.1 s 3200.0 s	1.0 s		Designer's Reference Handbook GPU: Not available	This alarm is activated in case no or more than one GOV mode input is active when the GB is closed.
2732	GOV mode undef.	Relay output A	Not used Option-dep.	Not used			
2733	GOV mode undef.	Relay output B	Not used Option-dep.	Not used			

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
2734	GOV mode undef.	Enable	N/A	ON			
2735	GOV mode undef.	Fail class	F1...F6	Warning (F2)			
2750 AVR mode undefined							
2751	AVR mode undef.	Delay	0.1 s 3200.0 s	1.0 s		Option D1 GPU: Not available	This alarm is activated in case no or more than one AVR mode input is active when the GB is closed.
2752	AVR mode undef.	Relay output A	Not used Option-dep.	Not used			
2753	AVR mode undef.	Relay output B	Not used Option-dep.	Not used			
2754	AVR mode undef.	Enable	N/A	ON			
2755	AVR mode undef.	Fail class	F1...F6	Warning (F2)			

Load sharing supervision

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
2960 Active load sharing failure							
2961	P loadsh. fail	Setpoint	2.0% 30.0%	15.0%		Option G9 GPU: Not available	Supervision of the active load sharing between the generators.
2962	P loadsh. fail	Delay	5.0 s 999.0 s	30.0 s			
2963	P loadsh. fail	Relay output A	Not used Option-dep.	Not used			
2964	P loadsh. fail	Relay output B	Not used Option-dep.	Not used			
2965	P loadsh. fail	Enable	OFF ON	ON			
2966	P loadsh. fail	Fail class	F1...F6	Warning (F2)			
2970 Reactive load sharing failure							
2971	Q loadsh. fail	Setpoint	2.0% 30.0%	15.0%		Option G9 GPU: Not available	Supervision of the reactive load sharing between the generators.
2972	Q loadsh. fail	Delay	5.0 s 999.0 s	30.0 s			
2973	Q loadsh. fail	Relay output A	Not used Option-dep.	Not used			
2974	Q loadsh. fail	Relay output B	Not used Option-dep.	Not used			
2975	Q loadsh. fail	Enable	OFF ON	ON			
2976	Q loadsh. fail	Fail class	F1...F6	Warning (F2)			

Digital input 23-25

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

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
3000 Digital input 23							
3001	Dig. input 23	Delay	0.0 s 3200.0 s	1.0 s		Designer's Reference Handbook	The input is configurable and can have different functions in different units.
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...F6	Warning (F2)			
3006	Dig. input 23	N/X	N/O N/C	N/O			

The same settings apply to inputs 24-25, settings 3010 to 3020.

Digital input 26-27

Digital input 26 and 27 are only configurable for GPU.

3030 Digital input 26							
3031	Dig. input 26	Delay	0.0 s 3200.0 s	1.0 s		Designer's Reference Handbook	The input is configurable and can have different functions in different units. Option G2: Menu not available
3032	Dig. input 26	Relay output A	Not used Option-dep.	Not used			
3033	Dig. input 26	Relay output B	Not used Option-dep.	Not used			
3034	Dig. input 26	Enable	OFF ON	OFF			
3035	Dig. input 26	Fail class	F1...F6	Warning (F2)			
3036	Dig. input 26	N/X	N/O N/C	N/O			
3040 Digital input 27							
3041	Dig. input 27	Delay	0.0 s 3200.0 s	1.0 s		Designer's Reference Handbook	The input is configurable and can have different functions in different units.
3042	Dig. input 27	Relay output A	Not used Option-dep.	Not used			
3043	Dig. input 27	Relay output B	Not used Option-dep.	Not used			

3044	Dig. input 27	Enable	OFF ON	OFF			Option G2: Menu not available
3045	Dig. input 27	Fail class	F1...F6	Warning (F2)			
3046	Dig. input 27	N/X	N/O N/C	N/O			

Digital input 43-55

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
3130 Digital input 43							
3131	Dig. input 43	Delay	0.0 s 3200.0 s	1.0 s		Designer's Reference Handbook GPU: 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...F6	Warning (F2)			
3136	Dig. input 43	N/X	N/O N/C	N/O			

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

Digital input 91-97

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
3330 Digital input 91							
3331	Dig. input 91	Delay	0.0 s 3200.0 s	1.0 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...F6	Warning (F2)			
3336	Dig. input 91	N/O - N/C	N/O N/C	N/O			

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

Digital input 102-108

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
3400 Digital input 102							
3401	Wire fail 102	Enable	OFF ON	OFF		Option M4	The input is configurable and can have different functions in different units. (Only available if multi-input 102 is configured to 'digital').
3402	Dig. input 102	Delay	0.0 s 3200.0 s	1.0 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...F6	Warning (F2)			
3410 Digital input 105							
3411	Wire fail 105	Enable	OFF ON	OFF		Option M4	The input is configurable and can have different functions in different units. (Only available if multi-input 105 is configured to 'digital').
3412	Dig. input 105	Delay	0.0 s 3200.0 s	1.0 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...F6	Warning (F2)			
3420 Digital input 108							
3421	Wire fail 108	Enable	OFF ON	OFF		Option M4	The input is configurable and can have different functions in different units. (Only available if multi-input 108 is configured to 'digital').
3422	Dig. input 108	Delay	0.0 s 3200.0 s	1.0 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...F6	Warning (F2)			

Digital input 112-117

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
3430 Digital input 112							
3431	Dig. input 112	Delay	0.0 s 3200.0 s	1.0 s		Option M4	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...F6	Warning (F2)			
3436	Dig. input 112	N/X	N/O N/C	N/O			

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

Emergency stop

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
3490 Emergency stop							
3491	Emer. stop	Delay	0.0 s 3200.0 s	0.0 s		Option M4	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...F6	Shutdown (F5)			

Digital input 127-133

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
3500 Digital input 127							
3501	Dig. input 127	Delay	0.0 s 3200.0 s	1.0 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...F6	Warning (F2)			
3506	Dig. input 127	N/X	N/O N/C	N/O			

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

Analogue input alarms 91-97

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	Configurable analogue input.
4002	4-20 mA 91.1	Delay	0.0 s 3200.0 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...F6	Warning (F2)			
4010 4-20 mA 91.2							
4011	4-20 mA 91.2	Setpoint	4 mA 20 mA	10 mA		Option M15.6	Configurable analogue input.
4012	4-20 mA 91.2	Delay	0.0 s 3200.0 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...F6	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	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			
4023	W. fail ana 91	Enable	OFF ON	OFF			
4024	W. fail ana 91	Fail class	F1...F6	Warning (F2)			
4030 4-20 mA 93.1							
4031	4-20 mA 93.1	Setpoint	4 mA 20 mA	10 mA		Option M15.6	Configurable analogue input.
4032	4-20 mA 93.1	Delay	0.0 s 3200.0 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			

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
4036	4-20 mA 93.1	Fail class	F1...F6	Warning (F2)			
4040 4-20 mA 93.2							
4041	4-20 mA 93.2	Setpoint	4 mA 20 mA	10 mA		Option M15.6	Configurable analogue input.
4042	4-20 mA 93.2	Delay	0.0 s 3200.0 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...F6	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	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			
4053	W. fail ana 93	Enable	OFF ON	OFF			
4054	W. fail ana 93	Fail class	F1...F6	Warning (F2)			
4060 4-20 mA 95.1							
4061	4-20 mA 95.1	Setpoint	4 mA 20 mA	10 mA		Option M15.6	Configurable analogue input.
4062	4-20 mA 95.1	Delay	0.0 s 3200.0 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...F6	Warning (F2)			
4070 4-20 mA 95.2							
4071	4-20 mA 95.2	Setpoint	4 mA 20 mA	10 mA		Option M15.6	Configurable analogue input.
4072	4-20 mA 95.2	Delay	0.0 s 3200.0 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...F6	Warning (F2)			

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
4080 Wire fail 4-20 mA 95							
4081	W. fail ana 95	Relay output A	Not used Option-dep.	Not used		Option M15.6	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			
4083	W. fail ana 95	Enable	OFF ON	OFF			
4084	W. fail ana 95	Fail class	F1...F6	Warning (F2)			
4090 4-20 mA 97.1							
4091	4-20 mA 97.1	Setpoint	4 mA 20 mA	10 mA		Option M15.6	Configurable analogue input.
4092	4-20 mA 97.1	Delay	0.0 s 3200.0 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...F6	Warning (F2)			
4100 4-20 mA 97.2							
4101	4-20 mA 97.2	Setpoint	4 mA 20 mA	10 mA		Option M15.6	Configurable analogue input.
4102	4-20 mA 97.2	Delay	0.0 s 3200.0 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...F6	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	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			
4113	W. fail ana 97	Enable	OFF ON	OFF			
4114	W. fail ana 97	Fail class	F1...F6	Warning (F2)			

Multi-functional analogue input

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		Option M4	The multi-input 102 has been configured as 4-20 mA.
4122	4-20 mA 102.1	Delay	0.0 s 3200.0 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...F6	Warning (F2)			
4130 4-20 mA 102.2							
4131	4-20 mA 102.2	Setpoint	4 mA 20 mA	10 mA		Option M4	The multi-input 102 has been configured as 4-20 mA.
4132	4-20 mA 102.2	Delay	0.0 s 3200.0 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...F6	Warning (F2)			
4140 V DC 102.1							
4141	V DC 102.1	Setpoint	0.0V DC 40.0V DC	20.0V DC		Option M4	The multi-input 102 has been configured as V DC.
4142	V DC 102.1	Delay	0.2 s 3200.0 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...F6	Warning (F2)			
4150 V DC 102.2							
4151	V DC 102.2	Setpoint	0.0V DC 40.0V DC	20.0V DC		Option M4	The multi-input 102 has been configured as V

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
4152	V DC 102.2	Delay	0.2 s 3200.0 s	10.0 s			DC.
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...F6	Warning (F2)			
4160 Pt100 102.1							
4161	Pt 102.1	Setpoint	-49 482	80		Option M4	The multi-input 102 has been configured as Pt100. Pt100 setpoint can be in deg. C or Fahrenheit, dependent on the unit selection (setting 10970).
4162	Pt 102.1	Delay	0.0 s 3200.0 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			
4166	Pt 102.1	Fail class	F1...F6	Warning (F2)			
4170 Pt100 102.2							
4171	Pt 102.2	Setpoint	-49 482	80		Option M4	The multi-input 102 has been configured as Pt100. Pt100 setpoint can be in deg. C or Fahrenheit, dependent on the unit selection (setting 10970).
4172	Pt 102.2	Delay	0.0 s 3200.0 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...F6	Warning (F2)			
4180 VDO oil 102.1							
4181	VDO oil 102.1	Setpoint	0.0 145.0	4.0		Option M4	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 (setting 10970).
4182	VDO oil 102.1	Delay	0.0 s 3200.0 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...F6	Warning (F2)			
4190 VDO oil 102.2							

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
4191	VDO oil 102.2	Setpoint	0.0 145.0	5.0		Option M4	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 (setting 10970).
4192	VDO oil 102.2	Delay	0.0 s 3200.0 s	5.0 s			
4193	VDO oil 102.2	Relay output A	Not used Option-dep.	Not used			
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...F6	Warning (F2)			
4200 VDO water 102.1							
4201	VDO water 102.1	Setpoint	-49 482	100		Option M4	The multi-input 102 has been configured as VDO water temperature. Water temperature setpoint can be in deg. C or Fahrenheit, dependent on the unit selection (setting 10970).
4202	VDO water 102.1	Delay	0.0 s 3200.0 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...F6	Warning (F2)			
4210 VDO water 102.2							
4211	VDO water 102.2	Setpoint	-49 482	110		Option M4	The multi-input 102 has been configured as VDO water temperature. Water temperature setpoint can be in deg. C or Fahrenheit, dependent on the unit selection (setting 10970).
4212	VDO water 102.2	Delay	0.0 s 3200.0 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			
4216	VDO water 102.2	Fail class	F1...F6	Warning (F2)			
4220 VDO fuel level 102.1							
4221	VDO fuel 102.1	Setpoint	0% 100%	10%		Option M4	The multi-input 102 has been configured as VDO fuel level.
4222	VDO fuel 102.1	Delay	0.0 s 3200.0 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...F6	Warning (F2)			

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
4230 VDO fuel level 102.2							
4231	VDO fuel 102.2	Setpoint	0% 100%	5%		Option M4	The multi-input 102 has been configured as VDO fuel level.
4232	VDO fuel 102.2	Delay	0.0 s 3200.0 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...F6	Warning (F2)			
4240 Wire fail 102							
4241	W. fail 102	Relay output A	Not used Option-dep.	Not used		Option M4	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...F6	Warning (F2)			

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		Option M4	The multi-input 105 has been configured as 4-20 mA.
4252	4-20 mA 105.1	Delay	0.0 s 3200.0 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...F6	Warning (F2)			
4260 4-20 mA 105.2							
4261	4-20 mA 105.2	Setpoint	4 mA 20 mA	10 mA		Option M4	The multi-input 105 has been configured as 4-20 mA.
4262	4-20 mA 105.2	Delay	0.0 s 3200.0 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...F6	Warning (F2)			
4270 V DC 105.1							
4271	V DC 105.1	Setpoint	0.0V DC 40.0V DC	20.0V DC		Option M4	The multi-input 105 has been configured as V DC.
4272	V DC 105.1	Delay	0.2 s 3200.0 s	10.0 s			
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...F6	Warning (F2)			
4280 V DC 105.2							
4281	V DC 105.2	Setpoint	0.0V DC 40.0V DC	20.0V DC		Option M4	The multi-input 105 has been configured as V DC.
4282	V DC 105.2	Delay	0.2 s 3200.0 s	10.0 s			

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
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...F6	Warning (F2)			
4290 Pt100 105.1							
4291	Pt 105.1	Setpoint	-49 482	80		Option M4	The multi-input 105 has been configured as Pt100. Pt100 setpoint can be in deg. C or Fahrenheit, dependent on the unit selection (setting 10970).
4292	Pt 105.1	Delay	0.0 s 3200.0 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...F6	Warning (F2)			
4300 Pt100 105.2							
4301	Pt 105.2	Setpoint	-49 482	80		Option M4	The multi-input 105 has been configured as Pt100. Pt100 setpoint can be in deg. C or Fahrenheit, dependent on the unit selection (setting 10970).
4302	Pt 105.2	Delay	0.0 s 3200.0 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...F6	Warning (F2)			
4310 VDO oil 105.1							
4311	VDO oil 105.1	Setpoint	0.0 145.0	4.0		Option M4	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 (setting 10970).
4312	VDO oil 105.1	Delay	0.0 s 3200.0 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...F6	Warning (F2)			
4320 VDO oil 105.2							
4321	VDO oil 105.2	Setpoint	0.0 145.0	5.0		Option M4	The multi-input 105 has been configured as

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
4322	VDO oil 105.2	Delay	0.0 s 3200.0 s	5.0 s			VDO oil pressure. Oil pressure setpoint can be in Bar or PSI, dependent on the unit selection (setting 10970).
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			
4326	VDO oil 105.2	Fail class	F1...F6	Warning (F2)			
4330 VDO water 105.1							
4331	VDO water 105.1	Setpoint	-49 482	100		Option M4	The multi-input 105 has been configured as VDO water temperature. Water temperature setpoint can be in deg. C or Fahrenheit, dependent on the unit selection (setting 10970).
4332	VDO water 105.1	Delay	0.0 s 3200.0 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...F6	Warning (F2)			
4340 VDO water 105.2							
4341	VDO water 105.2	Setpoint	-49 482	110		Option M4	The multi-input 105 has been configured as VDO water temperature. Water temperature setpoint can be in deg. C or Fahrenheit, dependent on the unit selection (setting 10970).
4342	VDO water 105.2	Delay	0.0 s 3200.0 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...F6	Warning (F2)			
4350 VDO fuel level 105.1							
4351	VDO fuel 105.1	Setpoint	0% 100%	10%		Option M4	The multi-input 105 has been configured as VDO fuel level.
4352	VDO fuel 105.1	Delay	0.0 s 3200.0 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...F6	Warning (F2)			
4360 VDO fuel level 105.2							

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
4361	VDO fuel 105.2	Setpoint	0% 100%	5%		Option M4	The multi-input 105 has been configured as VDO fuel level.
4362	VDO fuel 105.2	Delay	0.0 s 3200.0 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...F6	Warning (F2)			
4370 Wire fail 105							
4371	W. fail 105	Relay output A	Not used Option-dep.	Not used		Option M4	The wire break fault detection is activated.
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...F6	Warning (F2)			

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		Option M4	The multi-input 108 has been configured as 4-20 mA.
4382	4-20 mA 108.1	Delay	0.0 s 3200.0 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...F6	Warning (F2)			
4390 4-20 mA 108.2							
4391	4-20 mA 108.2	Setpoint	4 mA 20 mA	10 mA		Option M4	The multi-input 108 has been configured as 4-20 mA.
4392	4-20 mA 108.2	Delay	0.0 s 3200.0 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...F6	Warning (F2)			
4400 V DC 108.1							
4401	V DC 108.1	Setpoint	0.0V DC 40.0V DC	20.0V DC		Option M4	The multi-input 108 has been configured as V DC.
4402	V DC 108.1	Delay	0.2 s 3200.0 s	10.0 s			
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...F6	Warning (F2)			
4410 V DC 108.2							
4411	V DC 108.2	Setpoint	0.0V DC 40.0V DC	20.0V DC		Option M4	The multi-input 108 has been configured as V DC.
4412	V DC 108.2	Delay	0.2 s 3200.0 s	10.0 s			

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
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...F6	Warning (F2)			
4420 Pt100 108.1							
4421	Pt 108.1	Setpoint	-49 482	80		Option M4	The multi-input 108 has been configured as Pt100. Pt100 setpoint can be in deg. C or Fahrenheit, dependent on the unit selection (setting 10970).
4422	Pt 108.1	Delay	0.0 s 3200.0 s	5.0 s			
4423	Pt108.1	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...F6	Warning (F2)			
4430 Pt100 108.2							
4431	Pt 108.2	Setpoint	-49 482	80		Option M4	The multi-input 108 has been configured as Pt100. Pt100 setpoint can be in deg. C or Fahrenheit, dependent on the unit selection (setting 10970).
4432	Pt 108.2	Delay	0.0 s 3200.0 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...F6	Warning (F2)			
4440 VDO oil 108.1							
4441	VDO oil 108.1	Setpoint	0.0 145.0	4.0		Option M4	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 (setting 10970).
4442	VDO oil 108.1	Delay	0.0 s 3200.0 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...F6	Warning (F2)			
4450 VDO oil 108.2							
4451	VDO oil 108.2	Setpoint	0.0 145.0	5.0		Option M4	The multi-input 108 has been configured as

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
4452	VDO oil 108.2	Delay	0.0 s 3200.0 s	5.0 s			VDO oil pressure. Oil pressure setpoint can be in Bar or PSI, dependent on the unit selection (setting 10970).
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			
4456	VDO oil 108.2	Fail class	F1...F6	Warning (F2)			
4460 VDO water 108.1							
4461	VDO water 108.1	Setpoint	-49 482	100		Option M4	The multi-input 108 has been configured as VDO water temperature. Water temperature setpoint can be in deg. C or Fahrenheit, dependent on the unit selection (setting 10970).
4462	VDO water 108.1	Delay	0.0 s 3200.0 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...F6	Warning (F2)			
4470 VDO water 108.2							
4471	VDO water 108.2	Setpoint	-49 482	110		Option M4	The multi-input 108 has been configured as VDO water temperature. Water temperature setpoint can be in deg. C or Fahrenheit, dependent on the unit selection (setting 10970).
4472	VDO water 108.2	Delay	0.0 s 3200.0 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...F6	Warning (F2)			
4480 VDO fuel level 108.1							
4481	VDO fuel 108.1	Setpoint	0% 100%	10%		Option M4	The multi-input 108 has been configured as VDO fuel level.
4482	VDO fuel 108.1	Delay	0.0 s 3200.0 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...F6	Warning (F2)			
4490 VDO fuel level 108.2							

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
4491	VDO fuel 108.2	Setpoint	0% 100%	5%		Option M4	The multi-input 108 has been configured as VDO fuel level.
4492	VDO fuel 108.2	Delay	0.0 s 3200.0 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...F6	Warning (F2)			
4500 Wire fail 108							
4501	W. fail 108	Relay output A	Not used Option-dep.	Not used		Option M4	The wire break fault detection is activated.
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...F6	Warning (F2)			

Speed and running feedback alarm

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
4510 Overspeed 1							
4511	Overspeed 1	Setpoint	100.0% 150.0%	110.0%		Option M4	The setpoint in percentage relates to nominal RPM.
4512	Overspeed 1	Delay	0.0 s 3200.0 s	5.0 s			
4513	Overspeed 1	Relay output A	Not used Option-dep.	Not used			
4514	Overspeed 1	Relay output B	Not used Option-dep.	Not used			
4515	Overspeed 1	Enable	OFF ON	ON			
4516	Overspeed 1	Fail class	F1...F6	Warning (F2)			
4520 Overspeed 2							
4521	Overspeed 2	Setpoint	100.0% 150.0%	115.0%		Option M4	The setpoint in percentage relates to nominal RPM.
4522	Overspeed 2	Delay	0.0 s 3200.0 s	1.0 s			
4523	Overspeed 2	Relay output A	Not used Option-dep.	Not used			
4524	Overspeed 2	Relay output B	Not used Option-dep.	Not used			
4525	Overspeed 2	Enable	OFF ON	ON			
4526	Overspeed 2	Fail class	F1...F6	Shutdown (F5)			
4530 Crank failure							
4531	Crank failure	Setpoint	1 RPM 400 RPM	50 RPM		Option M4	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	Delay	0.0 s 3200.0 s	2.0 s			
4533	Crank failure	Relay output A	Not used Option-dep.	Not used			
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...F6	Warning (F2)			
4540 Running feedback failure							
4541	Run feedb. fail	Delay	0.0 s 3200.0 s	2.0 s		Option M4	If running is detected on the frequency (secondary), but the primary running feedback, e.g. digital input, has not detected
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			

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
4544	Run feedb. fail	Enable	OFF ON	ON			running, this alarm will be raised after the adjusted delay time.
4545	Run feedb. fail	Fail class	F1...F6	Warning (F2)			
4550 Magnetic pickup wirebreak							
4551	MPU wirebreak	Relay output A	Not used Option-dep.	Not used		Option M4	The wire break monitoring is only active when the engine is at standstill.
4552	MPU wirebreak	Relay output B	Not used Option-dep.	Not used			
4553	MPU wirebreak	Enable	OFF ON	OFF			
4554	MPU wirebreak	Fail class	F1...F6	Warning (F2)			
4560 Hz/voltage failure							
4561	Hz/V failure	Delay	1.0 s 3200.0 s	30.0 s		Option M4	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			
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...F6	Block (F1)			
4570 Start failure							
4571	Start failure	Relay output A	Not used Option-dep.	Not used		Option M4	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...F6	Block (F1)			
4580 Stop failure							
4581	Stop failure	Delay	10.0 s 3200.0 s	30.0 s		Option M4	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...F6	Shutdown (F5)			
4590 Underspeed 1							
4591	Underspeed 1	Setpoint	50.0% 100.0%	90.0%		Option M4	An alarm will appear if the speed measured with the MPU is below the setpoint longer than the delay. If menu 6171 'Number
4592	Underspeed 1	Delay	0.0 s 3200.0 s	5.0 s			
4593	Underspeed 1	Relay output A	Not used Option-dep.	Not used			

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
4594	Underspeed 1	Relay output B	Not used Option-dep.	Not used			of teeth' is set to zero, this alarm is deactivated.
4595	Underspeed 1	Enable	OFF ON	OFF			
4596	Underspeed 1	Fail class	F1...F6	Warning (F2)			

Differential measurement

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
4600 Analogue input selection							
4601	Delta ana1 inpA		Option-dependent	Option-dependent		Designer's Reference Handbook	These settings are used to select which analogue values to use for the three delta analogue alarms.
4602	Delta ana1 inpB		Option-dependent	Option-dependent			
4603	Delta ana2 inpA		Option-dependent	Option-dependent			
4604	Delta ana2 inpB		Option-dependent	Option-dependent			
4605	Delta ana3 inpA		Option-dependent	Option-dependent			
4606	Delta ana3 inpB		Option-dependent	Option-dependent			
4610 Delta analogue 1.1							
4611	Delta Ana1.1	Setpoint	-9999 9999	10		Designer's Reference Handbook	Delta analogue alarm no. 1 level 1.
4612	Delta Ana1.1	Timer	0.0 s 999.0 s	5.0 s			
4613	Delta Ana1.1	Relay output A	Not used Option-dep.	Not used			
4614	Delta Ana1.1	Relay output B	Not used Option-dep.	Not used			
4615	Delta Ana1.1	Enable	OFF ON	OFF			
4616	Delta Ana1.1	Fail class	F1...F6	Warning (F2)			
4620 Delta analogue 1.2							
4621	Delta Ana1.2	Setpoint	-9999 9999	10		Designer's Reference Handbook	Delta analogue alarm no. 1 level 2.
4622	Delta Ana1.2	Timer	0.0 s 999.0 s	5.0 s			
4623	Delta Ana1.2	Relay output A	Not used Option-dep.	Not used			
4624	Delta Ana1.2	Relay output B	Not used Option-dep.	Not used			
4625	Delta Ana1.2	Enable	OFF ON	OFF			
4626	Delta Ana1.2	Fail class	F1...F6	Warning (F2)			
4630 Delta analogue 2.1							
4631	Delta Ana2.1	Setpoint	-9999 9999	10		Designer's Reference Handbook	Delta analogue alarm no. 2 level 1.
4632	Delta Ana2.1	Timer	0.0 s 999.0 s	5.0 s			
4633	Delta Ana2.1	Relay output A	Not used Option-dep.	Not used			

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
4634	Delta Ana2.1	Relay output B	Not used Option-dep.	Not used			
4635	Delta Ana2.1	Enable	OFF ON	OFF			
4636	Delta Ana2.1	Fail class	F1...F6	Warning (F2)			
4640 Delta analogue 2.2							
4641	Delta Ana2.2	Setpoint	-9999 9999	10		Designer's Reference Handbook	Delta analogue alarm no. 2 level 2.
4642	Delta Ana2.2	Timer	0.0 s 999.0 s	5.0 s			
4643	Delta Ana2.2	Relay output A	Not used Option-dep.	Not used			
4644	Delta Ana2.2	Relay output B	Not used Option-dep.	Not used			
4645	Delta Ana2.2	Enable	OFF ON	OFF			
4646	Delta Ana2.2	Fail class	F1...F6	Warning (F2)			
4650 Delta analogue 3.1							
4651	Delta Ana3.1	Setpoint	-9999 9999	10		Designer's Reference Handbook	Delta analogue alarm no. 3 level 1.
4652	Delta Ana3.1	Timer	0.0 s 999.0 s	5.0 s			
4653	Delta Ana3.1	Relay output A	Not used Option-dep.	Not used			
4654	Delta Ana3.1	Relay output B	Not used Option-dep.	Not used			
4655	Delta Ana3.1	Enable	OFF ON	OFF			
4656	Delta Ana3.1	Fail class	F1...F6	Warning (F2)			
4660 Delta analogue 3.2							
4661	Delta Ana3.2	Setpoint	-9999 9999	10		Designer's Reference Handbook	Delta analogue alarm no. 3 level 2.
4662	Delta Ana3.2	Timer	0.0 s 999.0 s	5.0 s			
4663	Delta Ana3.2	Relay output A	Not used Option-dep.	Not used			
4664	Delta Ana3.2	Relay output B	Not used Option-dep.	Not used			
4665	Delta Ana3.2	Enable	OFF ON	OFF			
4666	Delta Ana3.2	Fail class	F1...F6	Warning (F2)			

Analogue input alarms 127-133

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 M15.8	Configurable analogue input.
4802	4-20 mA 127.1	Delay	0.0 s 3200.0 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...F6	Warning (F2)			
4810 4-20 mA 127.2							
4811	4-20 mA 127.2	Setpoint	4 mA 20 mA	10 mA		Option M15.8	Configurable analogue input.
4812	4-20 mA 127.2	Delay	0.0 s 3200.0 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...F6	Warning (F2)			
4820 wire fail 4-20 mA 127							
4821	W. fail ana 127	Relay output A	Not used Option-dep.	Not used		Option 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			
4824	W. fail ana 127	Fail class	F1...F6	Warning (F2)			
4830 4-20 mA 129.1							
4831	4-20 mA 129.1	Setpoint	4 mA 20 mA	10 mA		Option M15.8	Configurable analogue input.
4832	4-20 mA 129.1	Delay	0.0 s 3200.0 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			

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
4836	4-20 mA 129.1	Fail class	F1...F6	Warning (F2)			
4840 4-20 mA 129.2							
4841	4-20 mA 129.2	Setpoint	4 mA 20 mA	10 mA		Option M15.8	Configurable analogue input.
4842	4-20 mA 129.2	Delay	0.0 s 3200.0 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...F6	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 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			
4854	W. fail ana 129	Fail class	F1...F6	Warning (F2)			
4860 4-20 mA 131.1							
4861	4-20 mA 131.1	Setpoint	4 mA 20 mA	10 mA		Option M15.8	Configurable analogue input.
4862	4-20 mA 131.1	Delay	0.0 s 3200.0 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...F6	Warning (F2)			
4870 4-20 mA 131.2							
4871	4-20 mA 131.2	Setpoint	4 mA 20 mA	10 mA		Option M15.8	Configurable analogue input.
4872	4-20 mA 131.2	Delay	0.0 s 3200.0 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...F6	Warning (F2)			

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
4880 Wire fail 4-20 mA 131							
4881	W. fail ana 131	Relay output A	Not used Option-dep.	Not used		Option 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			
4884	W. fail ana 131	Fail class	F1...F6	Warning (F2)			
4890 4-20 mA 133.1							
4891	4-20 mA 133.1	Setpoint	4 mA 20 mA	10 mA		Option M15.8	Configurable analogue input.
4892	4-20 mA 133.1	Delay	0.0 s 3200.0 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...F6	Warning (F2)			
4900 4-20 mA 133.2							
4901	4-20 mA 133.2	Setpoint	4 mA 20 mA	10 mA		Option M15.8	Configurable analogue input.
4902	4-20 mA 133.2	Delay	0.0 s 3200.0 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...F6	Warning (F2)			
4910 Wire fail 4-20 mA 133							
4911	W. fail ana 133	Relay output A	Not used Option-dep.	Not used		Option 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			
4914	W. fail ana 133	Fail class	F1...F6	Warning (F2)			

Aux. supply

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 terminals 1 and 2 has been continuously below the adjusted setpoint until the delay timer has expired.
4962	U< aux. term. 1	Delay	0.0 s 3200.0 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...F6	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 terminals 1 and 2 has been continuously above the adjusted setpoint until the delay timer has expired.
4972	U> aux. term. 1	Delay	0.0 s 3200.0 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...F6	Warning (F2)			
4980 U< auxiliary power supply terminal 98							
4981	U< aux. term. 98	Setpoint	8.0V DC 32.0V DC	18.0V DC		Option M4	The power supply on terminals 98 and 99 has been continuously below the adjusted setpoint until the delay timer has expired.
4982	U< aux. term. 98	Delay	0.0 s 3200.0 s	1.0 s			
4983	U< aux. term. 98	Relay output A	Not used Option-dep.	Not used			
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...F6	Warning (F2)			
4990 U> auxiliary power supply terminal 98							
4991	U> aux. term. 98	Setpoint	8.0V DC 32.0V DC	30.0V DC		Option M4	The power supply on terminals 98 and 99 has been continuously above the adjusted setpoint until the delay timer has expired.
4992	U> aux. term. 98	Delay	0.0 s 3200.0 s	1.0 s			
4993	U> aux. term. 98	Relay output A	Not used Option-dep.	Not used			

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
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...F6	Warning (F2)			

Stop coil wire break and internal communication alarms

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
6270 Stop coil wire break							
6271	Stop coil wire break	Relay output A	Not used Option-dep.	Not used		Option M4	The wire break monitoring is only active when the stop coil output is deactivated.
6272	Stop coil wire break	Relay output B	Not used Option-dep.	Not used			
6273	Stop coil wire break	Enable	OFF ON	OFF			
6274	Stop coil wire break	Fail class	F1...F6	Warning (F2)			
6280 Internal communication fail							
6281	Int. comm. fail	Relay output A	Not used Option-dep.	Not used		Option M4	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...F6	Warning (F2)			

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.		Option M4	Engine temperature has been continuously below the adjusted setpoint until the timer has expired.
6332	Engine heater 1	Timer	0.0 s 3200.0 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...F6	Warning (F2)			

Not in remote

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
6370 Not in remote							
6371	Not in remote	Timer	10.0 s 900.0 s	1.0 s		Designer's Reference Handbook GPU: Option G2 or M4	The unit has not been switched into remote mode from local mode within the allowed time.
6372	Not in remote	Relay output A	Not used Option-dep.	Not used			
6373	Not in remote	Relay output B	Not used Option-dep.	Not used			
6374	Not in remote	Enable	OFF ON	OFF			
6375	Not in remote	Fail class	F1...F6	Warning (F2)			

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		Option M4	If the battery voltage drops below the setpoint during crank test, the alarm is activated.
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			
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...F6	Warning (F2)			
6420 Auto battery test							
6421	Auto batt test	Enable	On Off	Off		Option M4	Automatic battery test time setting.
6422	Auto batt test	Day	Monday Sunday	Monday			
6423	Auto batt test	Hours	0 h 23 h	10 h			
6424	Auto batt test	Week	1 52	52			
6425	Auto batt test	Relay	Start relay Option-dep.	Start relay			
6430 Battery asymmetry							
6431	Batt. asymmetry	T1	Power supply Multi-input 102 Multi-input 105 Multi-input 108	Multi-input 105		Option M4	Battery asymmetry input selections.
6432	Batt. asymmetry	RF1	Power supply Multi-input 102 Multi-input 105 Multi-input 108	Power supply			
6433	Batt. asymmetry	T2	Power supply Multi-input 102 Multi-input 105 Multi-input 108	Multi-input 108			

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
6434	Batt. asymmetry	RF2	Power supply Multi-input 102 Multi-input 105 Multi-input 108	Multi-input 102			
6440 Battery asymmetry 1							
6441	Battery asym 1	Setpoint	0.1 V 15.0 V	1.0 V		Option M4	If the battery voltage asymmetry between the single batteries exceeds the setting, the alarm will be activated.
6442	Battery asym 1	Timer	0.0 s 10.0 s	1.0 s			
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		Option M4	If the battery voltage asymmetry between the single batteries exceeds the setting, the alarm will be activated.
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			

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.		Option M4	If the cooling fans fail to operate and the coolant temperature exceeds the setting, the alarm will be activated.
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...F6	Warning (F2)			
6480 Max vent 2							
6481	Max vent 2	Setpoint	20 deg. 250 deg.	98 deg.		Option M4	If the cooling fans fail to operate and the coolant temperature exceeds the setting, the alarm will be activated.
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...F6	Shutdown (F5)			

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...F6	Warning (F2)			

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...F6	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...F6	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	ON			
7595	EIC Shutdown	Fail class	F1...F6	Shutdown (F5)			
7600 EIC Overspeed							
7601	EIC Overspeed	Setpoint	100.0% 150.0%	110.0%		Option: J1939 and MTU ADEC/ MDEC (H5) Cummins Modbus (H6) J1939 (H7)	
7602	EIC Overspeed	Timer	0.0 s 100.0 s	5.0 s			
7603	EIC Overspeed	Relay output A	Not used Option-dep.	Not used			
7604	EIC Overspeed	Relay output B	Not used Option-dep.	Not used			
7605	EIC Overspeed	Enable	OFF ON	ON			
7606	EIC Overspeed	Fail class	F1...F6	Warning (F2)			

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
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	ON			
7616	EIC Coolant t. 1	Fail class	F1...F6	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	ON			
7626	EIC Coolant t. 2	Fail class	F1...F6	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			
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	ON			
7636	EIC Oil press. 1	Fail class	F1...F6	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	ON			

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
7646	EIC Oil press. 2	Fail class	F1...F6	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	ON			
7656	EIC Oil temp. 1	Fail class	F1...F6	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			
7664	EIC Oil temp. 2	Relay output B	Not used Option-dep.	Not used			
7665	EIC Oil temp. 2	Enable	OFF ON	ON			
7666	EIC Oil temp. 2	Fail class	F1...F6	Shutdown (F5)			
7670 EIC Coolant level 1							
7671	EIC Coolant L.1	Setpoint	0% 100%	20%		Option: J1939 and MTU ADEC/ MDEC (H5) Cummins Modbus (H6) J1939 (H7)	
7672	EIC Coolant L.1	Timer	0.0 s 100.0 s	5.0 s			
7673	EIC Coolant L.1	Relay output A	Not used Option-dep.	Not used			
7674	EIC Coolant L.1	Relay output B	Not used Option-dep.	Not used			
7675	EIC Coolant L.1	Enable	OFF ON	OFF			
7676	EIC Coolant L.1	Fail class	F1…F6	Warning (F2)			
7680 EIC Coolant level 2							
7681	EIC Coolant L.2	Setpoint	0% 100%	10%		Option: J1939 and MTU ADEC/ MDEC (H5) Cummins Modbus (H6) J1939 (H7)	
7682	EIC Coolant L.2	Timer	0.0 s 100.0 s	5.0 s			
7683	EIC Coolant L.2	Relay output A	Not used Option-dep.	Not used			
7684	EIC Coolant L.2	Relay output B	Not used Option-dep.	Not used			

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
7685	EIC Coolant L.2	Enable	OFF ON	OFF			
7686	EIC Coolant L.2	Fail class	F1…F6	Shutdown (F5)			

CANshare supervision

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
7860 CAN ID missing							
7861	CAN ID missing	Delay	1.0 s 3200.0 s	1.0 s		Option G9 GPU: Not available	Supervision of the CANshare communication. In case this alarm is activated, the unit is forced into the mode selected in menu 7865.
7862	CAN ID missing	Relay output A	Not used Option-dep.	Not used			
7863	CAN ID missing	Relay output B	Not used Option-dep.	Not used			
7864	CAN ID missing	Fail class	F1…F6	Warning (F2)			
7865	CAN fail mode	Mode	Manual SWBD	Manual SWBD No mode change Force analogue LS			

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
Duplicate CAN ID							
N/A	Duplicate CAN ID	Delay	0.1 s	0.1 s		Option G9 GPU: Not available	Supervision of duplicate CANbus IDs on the CANshare line. When activated the unit is forced into the mode selected in menu 7865. This alarm is not configurable.
N/A	Duplicate CAN ID	Fail class	Warning	Warning			

Internal CAN communication error

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
7930 CAN1 communication error							
7931	CAN1 com error	Delay	2.0 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	OFF			
7935	CAN1 com error	Fail class	F1...F6	Block (F1)			
7940 CAN2 communication error							
7941	CAN2 comm error	Delay	2.0 s 600.0 s	10.0 s		Option: External I/O modules (H8.8)	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	OFF			
7945	CAN2 comm error	Fail class	F1...F6	Block (F1)			

External I/O alarm setup

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

Analogue inputs

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
12000 Ext. Ain 1.1							
12000	Ext. Ain 1.1	Setpoint	-3100 3100	10		Option: External I/O modules (H8.x)	
	Ext. Ain 1.1	Delay	0.1 s 600.0 s	10.0 s			
	Ext. Ain 1.1	Fail class	F1...F6	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							
12010	Ext. Ain 1.2	Setpoint	-3100 3100	10		Option: External I/O modules (H8.x)	
	Ext. Ain 1.2	Delay	0.1 s 600.0 s	10.0 s			
	Ext. Ain 1.2	Fail class	F1...F6	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 order for external analogue inputs 2-8, settings 12030-12220.

Digital inputs

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
12540 Ext. dig. in 1							
12540	Ext. dig. in 1	Delay	1.0 s 600.0 s	10.0 s		Option: External I/O modules (H8.x)	
	Ext. dig. in 1	Fail class	F1...F6	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	N/X	N/O N/C	N/O			

The same order for external digital inputs 2-16, settings 12550-12690.

4. Parameter list

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

Protections

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
1200 Calc. method							
1201	G voltage trip	GU	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.
1202	BB voltage trip	BBU	Ph-Ph Ph-N	Ph-Ph			
1203	G unbalance I	IUNB	Nominal Average				
1560 G negative sequence selection							
1561	G neg seq select	Setpoint	G measurement BB measurement	G measurement		Option C2	Selection between generator or busbar measurement of negative sequence voltage.
1590 G zero sequence selection							
1591	G zero seq select	Setpoint	G measurement BB measurement	G measurement		Option C2	Selection between generator or busbar measurement of zero sequence voltage.

Synchronisation

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
2000 Sync. type							
2001	Sync. type	Type	Static Dynamic	Dynamic		Designer's Reference Handbook GPU: Option G2	Static sync. aims at a frequency difference of 0 Hz. Dynamic sync. aims at a frequency difference with a setpoint calculated as the midpoint between setting 2021 dfMax. and 2022 dfMin.
2010 Asynchronous sync.							
2011	Async. sync.	Max. slip	-10.0% 10.0%	1.0%		Option M4	Setting 2010 is only available if 'Asynchronous' is selected in setting 6361.
2012	Async. sync.	Min. slip	-10.0% 10.0%	0.0%			
2020 Synchronisation							
2021	Synchronisation	dfMax.	0.0Hz 0.5Hz	0.3 Hz		Designer's Reference Handbook GPU: Option G2	Setting 2020 is only available if 'Dynamic sync.' is selected in setting 2001.
2022	Synchronisation	dfMin.	-0.5Hz 0.3Hz	0.0 Hz			
2023	Synchronisation	dUMax.	2% 10%	5%			
2024	Synchronisation	Sync t. GB	40 ms 300 ms	50 ms			
2025	Synchronisation	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 GPU: Option G2	Setting 2030 is only available if 'Static sync.' is selected in setting 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.	Delay	0.1 s 99.0 s	1.0 s			
2040 Frequency synchronisation control analogue							
2041	f sync. control	f Kp	0.00 60.00	2.50		Option E1, E2, EF2, EF4, EF5	PID controller for dynamic sync. This setting is only available if 'analogue' or 'PWM' or 'EIC' is selected in setting 2780.
2042	f sync. control	f Ti	0.00 s 60.00 s	2.50 s			
2043	f sync. control	f Td	0.00 s 2.00 s	0.00 s			
2050 Frequency synchronisation control relay							

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
2051	f sync ctrl rel	Kp	0 100	10		Designer's Reference Handbook GPU: Option G2	This setting is only available if 'relay' is selected in setting 2780.
2060 Phase synchronisation control analogue							
2061	Phase control	Phase Kp	0.00 60.00	2.50		Option E1, E2, EF2, EF4, EF5	PID controller for static sync. This setting is only available if 'analogue' or 'PWM' or 'EIC' is selected in setting 2780.
2062	Phase control	Phase Ti	0.00 s 60.00 s	2.50 s			
2063	Phase control	Phase Td	0.00 s 2.00 s	0.00 s			
2070 Phase control relay							
2071	Phase ctrl rel.	Kp	0 100	10		Designer's Reference Handbook GPU: Option G2	This setting is only available if 'relay' is selected in setting 2780.
2080 RPM synchronisation control analogue							
2081	RPM sync ctrl	Kp	0.00 60.00	2.50		Option E1, E2, EF2, EF4, EF5	PID controller for dynamic sync. This setting is only available if 'analogue' or 'PWM' or 'EIC' is selected in setting 2780.
2082	RPM sync ctrl	Ti	0.00 s 60.00 s	2.50 s			
2083	RPM sync ctrl	Td	0.00 s 2.00 s	0.00 s			
2090 RPM synchronisation control relay							
2091	RPM sync relay	Kp	0.00 60.00	10		Option M4	PID controller for dynamic sync. This setting is only available if 'analogue' or 'PWM' or 'EIC' is selected in setting 2780.
2110 Synchronisation blackout							
2111	Sync. blackout	dfMax.	0.0 Hz 5.0 Hz	3.0 Hz		Designer's Reference Handbook GPU: Option G2	Settings are accepted limits for closing of the breaker, referring to nominal frequency and voltage. Menu 2113: Enables the unit to close GB on a dead bus.
2112	Sync. blackout	dUMax.	2% 10%	5%			
2113	Sync. blackout	Enable	ON OFF	OFF			
2240 Separate synchronisation relay							
2241	Sep sync relay	Relay GB	Not used Option-dep.	Not used		Designer's Reference Handbook GPU: Option G2	The output activates during synchronisation and thereby a separate synchronising unit can be activated.

Regulation

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
2500 Regulation modes active							
2501	Reg. modes act.	Modes	Sync Sync+GOV+AVR	Sync+GOV+AVR		Designer's Reference Handbook GPU: Not available	
2510 Frequency control analogue							
2511	f control	f Kp	0.00 60.00	2.50		Option E1, E2, EF2, EF4, EF5	PID controller for frequency control. This menu is only available if 'analogue' is selected in menu 2781.
2512	f control	f Ti	0.00 s 60.00 s	2.50 s			
2513	f control	f Td	0.00 s 2.00 s	0.00 s			
2514	f control	f droop	0.0% 10.0%	4.0%			
2530 Power control analogue							
2531	P control	P Kp	0.00 60.00	2.50		Option E1, E2, EF2, EF4, EF5 GPU: Not available	PID controller for power control. This menu is only available if 'analogue' is selected in menu 2781.
2532	P control	P Ti	0.00 s 60.00 s	2.50 s			
2533	P control	P Td	0.00 s 2.00 s	0.00 s			
2540 Power load sharing control analogue							
2541	P LS ctrl	f Kp	0.00 60.00	2.50		Option E1, E2, EF2, EF4, EF5 GPU: Not available	PID controller for load sharing control. This menu is only available if 'analogue' is selected in menu 2781.
2542	P LS ctrl	f Ti	0.00 s 60.00 s	2.50 s			
2543	P LS ctrl	f Td	0.00 s 2.00 s	0.00 s			
2544	P LS ctrl	P weight	0.0% 100.0%	15.0%			
2550 GOV out offset							
2551	Analogue GOV	Offset	0% 100%	50%		Option E1, E2, EF2, EF4, EF5	PID controller for power control. This menu is only available if 'analogue' is selected in menu 2781.
2552	GOV out offset	Manual slope	0.0%/s 100.0%/s	1.0%/s			
2570 Frequency control relay							
2571	f control relay	Deadband	0.2% 10.0%	1.0%		Designer's Reference Handbook	This menu is only available if 'relay' is selected in menu 2781.
2572	f control relay	Kp	0 100	10			

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
2573	f control relay	Droop	0.0% 10.0%	4.0%		GPU: Option G2	
2580 Power control relay							
2581	P control relay	Deadband	0.2% 10.0%	2.0%		Designer's Reference Handbook GPU: Not available	This menu is only available if 'relay' is selected in menu 2781.
2582	P control relay	Kp	0 100	10			
2590 Load sharing control relay							
2591	P LS ctrl rel	f deadband	0.2% 10.0%	1.0%		Designer's Reference Handbook GPU: Not available	This menu is only available if 'relay' is selected in menu 2781.
2592	P LS ctrl rel	f Kp	0 100	10			
2593	P LS ctrl rel	P deadband	0.2% 10.0%	2.0%			
2594	P LS ctrl rel	P weight	0.0% 100.0%	15.0%			
2600 Relay control							
2601	Relay control	GOV ON time	10 ms 6500 ms	200 ms		Designer's Reference Handbook GPU: Option G2	This menu is only available if 'relay' is selected in menu 2781. Menu 2605: When set to 'ON' the GOV up relay is activated for the duration of the setting in 2601.
2602	Relay control	GOV period time	50 ms 32500 ms	1500 ms			
2603	Relay control	Increase relay	Not used Option-dep.	65			
2604	Relay control	Decrease relay	Not used Option-dep.	67			
2605	Relay control	GOV ON time test	ON OFF	OFF			
2610 Power ramp up							
2611	Power ramp up	Speed	0.1%/s 20.0%/s	2.0%/s		Designer's Reference Handbook GPU: Not available	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 share	OFF ON	OFF			
2615	Power ramp up	Steps	0 100	1			
2616	Power ramp up 2	Speed	0.1% 20.0%	0.1%			
2620 Power ramp down							
2621	Power ramp down	Speed	0.1%/s 20.0%/s	10.0%/s		Designer's Reference	The breaker open point determines

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
2622	Power ramp down	Breaker open point	1% 20%	5%		Handbook GPU: Not available	when the 'open breaker' relay output is activated to open the generator breaker before reaching 0 kW. Power % settings relate to nominal generator power. 2623: during deload in load sharing mode the breaker will be opened in case the frequency deviation from nominal exceeds this setting.
2623	Breaker open df	Breaker open frequency deviation	0.1 Hz 10.0 Hz	1.0 Hz			
2624	Power ramp down 2	Speed	0.1%/s 20.0%/s	0.1%/s			Slope of ramp 2 when ramping down (not used for deload).
2625	Auto ramp Sele.		ON OFF	ON			Activate or deactivate automatic selection of secondary ramp.
2626	BTB deload	Enable	ON OFF	OFF			Enabling this parameter allows the PPU-3 to be used as a controller on a bus tie breaker.
2640 Voltage control analogue							
2641	U control	U Kp	0.00 60.00	2.50		Option: AVR control (D1)	PID controller for voltage control. This menu is only available if analogue output is selected in menu 2782.
2642	U control	U Ti	0.00 s 60.00 s	2.50 s			
2643	U control	U Td	0.00 s 2.00 s	0.00 s			
2644	U control	U droop	0.0% 10.0%	4.0%			
2650 Reactive power control analogue							
2651	Q control	Q Kp	0.00 60.00	2.50		Option: AVR control (D1) GPU: Not available	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 available if analogue output is selected in menu 2782.
2652	Q control	Q Ti	0.00 s 60.00 s	2.50 s			
2653	Q control	Q Td	0.00 s 2.00 s	0.00 s			

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
2660 Reactive power load sharing control analogue							
2661	Q LS ctrl	U Kp	0.00 60.00	2.50		Option: AVR control (D1) GPU: Not available	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 available if analogue output is selected in menu 2782.
2662	Q LS ctrl	U Ti	0.00 s 60.00 s	2.50 s			
2663	Q LS ctrl	U Td	0.00 s 2.00 s	0.00 s			
2664	Q LS ctrl	Q weight	0.0% 100.0%	15.0%			
2670 AVR out offset							
2671	AVR out offset	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 available if analogue output is selected in menu 2782.
2690 Voltage control relay							
2691	U control	U deadband	0.0% 10.0%	2.0%		Option: AVR control (D1)	PI controller for voltage control. This menu is only available if 'relay' is selected in menu 2782.
2692	U control	U Kp	0 100	10			
2693	U control	U droop	0.0% 10.0%	4.0%			
2700 Reactive power control relay							
2701	Q control	Deadband	0.0% 10.0%	2.0%		Option: AVR control (D1) GPU: Not available	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 available if 'relay' is selected in menu 2782.
2702	Q control	Q Kp	0 100	10			
2710 Reactive power load sharing control relay							
2711	Q LS ctrl rel.	U deadband	0.0% 10.0%	1.0%		Option: AVR control (D1)	The VAr (Q) load sharing is based on a mix of voltage and VAr
2712	Q LS ctrl rel.	U Kp	0 100	10			

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
2713	Q LS ctrl rel.	Q deadband	0.0% 10.0%	2.0%		GPU: Not available	control. The setting 2664 is setting the impact of the VAr controller over the voltage controller. This menu is only available if 'relay' is selected in menu 2782.
2714	Q LS ctrl rel.	Q weight	0.0% 100.0%	15.0%			
2720 Relay control (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 available if 'relay' is selected in menu 2782. Menu 2725: When set to 'ON' the AVR up relay is activated for the duration of the setting in 2721.
2722	Relay control	AVR per time t_P	50 ms 1500 ms	500 ms			
2723	Relay control	U increase	Not used Option-dep.	Not used			
2724	Relay control	U decrease	Not used Option-dep.	Not used			
2725	Relay control	AVR ON time test	ON OFF	OFF			
2740 Delay regulation							
2741	Delay reg.	Delay	0 s 9900 s	0 s		Designer's Reference Handbook GPU: Option G2	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			
2770 EIC control							
2771	Scania control	Droop	0.0% 25.0%	0.0%	Only available 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 available if 'Cummins' is selected in menu 7561.		
2780 Regulator output							

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
2781	Reg. output	GOV	Relay EIC	Relay		Designer's Reference Handbook GPU: Option G2	Selection of the speed output: Relay, analogue or engine interface communication. Analogue and EIC are option-dependent.
2782	Reg. output	AVR	Relay Analogue EIC	Relay		Option: AVR control (D1)	Generator voltage control based on relay, analogue or EIC output signals. Analogue selection is only available if option E1, E2, EF2, EF4 or F2 is present. EIC selection requires option H5 or H7.
2790 EIC speed demand switch							
2791	EIC speed dem. Sw.	Local norm sw.	Ana. CAN Up/Down ECU Up/Down CAN Ana. ECU Ana. ECU rel. Frequency	Analog CAN	Only MTU J1939 Smart Connect	Option J1939 and MTU ADEC/ MDEC (H5) J1939 (H7)	Selection of used method of speed control for normal and emergency operation in either local or remote modes of the ECU8. Select Analogue CAN for J1939 control. Select Up/Down ECU for relay control. Select Analog ECU relative for analogue control.
2792	EIC speed dem. Sw.	Local Emerg sw.	Ana. CAN Up/Down ECU Up/Down CAN Ana. ECU Ana. ECU rel. Frequency	Analog CAN	Only MTU J1939 Smart Connect		
2793	EIC speed dem. Sw.	Remote norm sw.	Ana. CAN Up/Down ECU Up/Down CAN Ana. ECU Ana. ECU rel. Frequency	Analog CAN	Only MTU J1939 Smart Connect		
2794	EIC speed dem. Sw.	Remote Emerg sw.	Ana. CAN Up/Down ECU Up/Down CAN Ana. ECU Ana. ECU rel. Frequency	Analog CAN	Only MTU J1939 Smart Connect		

Relay output setup

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
5000 Relay 05							
5001	Relay 05	Function	Alarm Horn	Horn		Designer's Reference Handbook	Function selections: - Alarm NE - Alarm/reset - Limit - Horn - Siren relay - Alarm ND - Common alarm
5002	Relay 05	OFF delay	0.0 s 3200.0 s	5.0 s			
5010 Relay 08							
5011	Relay 08	Function	Alarm Horn	Alarm		Designer's Reference Handbook	Function selections: - Alarm NE - Alarm/reset - Limit - Horn - Siren relay - Alarm ND - Common alarm
5012	Relay 08	OFF delay	0.0 s 3200.0 s	5.0 s			
5020 Relay 11							
5021	Relay 11	Function	Alarm Horn	Alarm		Designer's Reference Handbook	Function selections: - Alarm NE - Alarm/reset - Limit - Horn - Siren relay - Alarm ND - Common alarm
5022	Relay 11	OFF delay	0.0 s 3200.0 s	5.0 s			
5030 Relay 14							
5031	Relay 14	Function	Alarm Horn	Alarm		Designer's Reference Handbook	Function selections: - Alarm NE - Alarm/reset - Limit - Horn - Siren relay - Alarm ND - Common alarm
5032	Relay 14	OFF delay	0.0 s 3200.0 s	5.0 s			
5040 Relay 17							
5041	Relay 17	Function	Alarm Horn	Alarm		Option G4 and G5	Function selections: - Alarm NE - Alarm/reset - Limit - Horn - Siren relay - Alarm ND - Common alarm
5042	Relay 17	OFF delay	0.0 s 3200.0 s	5.0 s			
5050 Relay 20							
5051	Relay 20	Function	Alarm Horn	Alarm		Designer's Reference	Function selections: - Alarm NE

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
5052	Relay 20	OFF delay	0.0 s 3200.0 s	5.0 s		Handbook	- Alarm/reset - Limit - Horn - Siren relay - Alarm ND - Common alarm
5060 Relay 21							
5061	Relay 21	Function	Alarm Horn	Alarm		Designer's Reference Handbook	Function selections: - Alarm NE - Alarm/reset - Limit - Horn - Siren relay - Alarm ND - Common alarm
5062	Relay 21	OFF delay	0.0 s 3200.0 s	5.0 s			
5110 Relay 57							
5111	Relay 57	Function	Alarm Horn	Alarm		Option M12	Function selections: - Alarm NE - Alarm/reset - Limit - Horn - Siren relay - Alarm ND - Common alarm
5112	Relay 57	OFF delay	0.0 s 3200.0 s	5.0 s			
5120 Relay 59							
5121	Relay 59	Function	Alarm Horn	Alarm		Option M12	Function selections: - Alarm NE - Alarm/reset - Limit - Horn - Siren relay - Alarm ND - Common alarm
5122	Relay 59	OFF delay	0.0 s 3200.0 s	5.0 s			
5130 Relay 61							
5131	Relay 61	Function	Alarm Horn	Alarm		Option M12	Function selections: - Alarm NE - Alarm/reset - Limit - Horn - Siren relay - Alarm ND - Common alarm
5132	Relay 61	OFF delay	0.0 s 3200.0 s	5.0 s			
5140 Relay 63							
5141	Relay 63	Function	Alarm Horn	Alarm		Option M12	Function selections: - Alarm NE - Alarm/reset - Limit - Horn - Siren relay - Alarm ND - Common alarm
5142	Relay 63	OFF delay	0.0 s 3200.0 s	5.0 s			
5150 Relay 65							
5151	Relay 65	Function	Alarm Horn	Alarm		Designer's Reference	Normally used for governor UP command

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
5152	Relay 65	OFF delay	0.0 s 3200.0 s	5.0 s		Handbook GPU: Option M14.4	(menu 2600). Function selections: - Alarm NE - Alarm/reset - Limit - Horn - Siren relay - Alarm ND - Common alarm
5160 Relay 67							
5161	Relay 67	Function	Alarm Horn	Alarm		Designer's Reference Handbook GPU: Option M14.4	Normally used for governor DOWN command (menu 2600). Function selections: - Alarm NE - Alarm/reset - Limit - Horn - Siren relay - Alarm ND - Common alarm
5162	Relay 67	OFF delay	0.0 s 3200.0 s	0.0 s			
5170 Relay 69							
5171	Relay 69	Function	Alarm Horn	Alarm		Designer's Reference Handbook GPU: Option M14.4	Normally used for AVR UP command (menu 2720). Function selections: - Alarm NE - Alarm/reset - Limit - Horn - Siren relay - Alarm ND - Common alarm
5172	Relay 69	OFF delay	0.0 s 3200.0 s	5.0 s			
5180 Relay 71							
5181	Relay 71	Function	Alarm Horn	Alarm		Designer's Reference Handbook GPU: Option M14.4	Normally used for AVR DOWN command (menu 2720). Function selections: - Alarm NE - Alarm/reset - Limit - Horn - Siren relay - Alarm ND - Common alarm
5182	Relay 71	OFF delay	0.0 s 3200.0 s	5.0 s			
5190 Relay 90							
5191	Relay 90	Function	Alarm Limit Horn	Alarm		Option M14.6: 4 x relay output, slot #6	Function selections: - Alarm NE - Alarm/reset - Limit - Horn - Siren relay - Alarm ND - Common alarm
5192	Relay 90	OFF delay	0.0 s 3200.0 s	5.0 s			
5200 Relay 92							

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
5201	Relay 92	Function	Alarm Limit Horn	Alarm		Option M14.6: 4 x relay output, slot #6	Function selections: - Alarm NE - Alarm/reset - Limit - Horn - Siren relay - Alarm ND - Common alarm
5202	Relay 92	OFF delay	0.0 s 3200.0 s	5.0 s			
5210 Relay 94							
5211	Relay 94	Function	Alarm Limit Horn	Alarm		Option M14.6: 4 x relay output, slot #6	Function selections: - Alarm NE - Alarm/reset - Limit - Horn - Siren relay - Alarm ND - Common alarm
5212	Relay 94	OFF delay	0.0 s 3200.0 s	5.0 s			
5220 Relay 96							
5221	Relay 96	Function	Alarm Limit Horn	Alarm		Option M14.6: 4 x relay output, slot #6	Function selections: - Alarm NE - Alarm/reset - Limit - Horn - Siren relay - Alarm ND - Common alarm
5222	Relay 96	OFF delay	0.0 s 3200.0 s	5.0 s			
5230 Relay 126							
5231	Relay 126	Function	Alarm Limit Horn	Alarm		Option M14.8: 4 x relay output, slot #8	Function selections: - Alarm NE - Alarm/reset - Limit - Horn - Siren relay - Alarm ND - Common alarm
5232	Relay 126	OFF delay	0.0 s 3200.0 s	5.0 s			
5240 Relay 128							
5241	Relay 128	Function	Alarm Limit Horn	Alarm		Option M14.8: 4 x relay output, slot #8	Function selections: - Alarm NE - Alarm/reset - Limit - Horn - Siren relay - Alarm ND - Common alarm
5242	Relay 128	OFF delay	0.0 s 3200.0 s	5.0 s			
5250 Relay 130							
5251	Relay 130	Function	Alarm Limit Horn	Alarm		Option M14.8: 4 x relay output, slot #8	Function selections: - Alarm NE - Alarm/reset - Limit - Horn - Siren relay - Alarm ND - Common alarm
5252	Relay 130	OFF delay	0.0 s 3200.0 s	5.0 s			
5260 Relay 132							

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
5261	Relay 132	Function	Alarm Limit Horn	Alarm		Option M14.8: 4 x relay output, slot #8	Function selections: - Alarm NE - Alarm/reset - Limit - Horn - Siren relay - Alarm ND - Common alarm
5262	Relay 132	OFF delay	0.0 s 3200.0 s	5.0 s			
5270 Transistor output setup							
5271	Transistor 20	T20	Relay kWh	Relay		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	Relay kVArh	Relay			

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 E and F	For Caterpillar engines. Offset is adjusted in menu 2551.
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 E and F	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 E and F	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 E and F	Min. range and factory setting value is option-dependent.
5802	AOut 91 limits	Max.	10 mA 25 mA	20 mA			
5810 AOut 95 limits							
5811	AOut 95 limits	Min.	0 mA 10 mA	0 mA		Option E and F	Min. range and factory setting value is option-dependent.
5812	AOut 95 limits	Max.	10 mA 25 mA	20 mA			

Fuel limiter output

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
5740 Fuel limiter							
5741	Fuel limiter	Output A	Disabled Option-dep.	Disabled		Option M4	
5742	Fuel limiter	Output B	Disabled Option-dep.	Disabled			
5743	Fuel limiter	Type	Disabled 0-20 mA	Disabled			
5750 Fuel limiter 1-3							
5751	Fuel limiter 1-3	R1	0 RPM 4000 RPM	834 RPM		Option M4	Curve setting for fuel limiter output. The condition has to be true, i.e. R1<R2<R3<R4<R5<R6<R7<R8<R9 If this is not fulfilled, the worst-case setpoint R9 will be used.
5752	Fuel limiter 1-3	AO1	0.0 mA 20.0 mA	0.0 mA			
5753	Fuel limiter 1-3	R2	0 RPM 4000 RPM	963 RPM			
5754	Fuel limiter 1-3	AO2	0.0 mA 20.0 mA	0.1 mA			
5755	Fuel limiter 1-3	R3	0 RPM 4000 RPM	1085 RPM			
5756	Fuel limiter 1-3	AO3	0.0 mA 20.0 mA	3.3 mA			
5760 Fuel limiter 4-6							
5761	Fuel limiter 4-6	R4	0 RPM 4000 RPM	1214 RPM		Option M4	Curve setting for fuel limiter output. The condition has to be true, i.e. R1<R2<R3<R4<R5<R6<R7<R8<R9 If this is not fulfilled, the worst-case setpoint R9 will be used.
5762	Fuel limiter 4-6	AO4	0.0 mA 20.0 mA	6.4 mA			
5763	Fuel limiter 4-6	R5	0 RPM 4000 RPM	1351 RPM			
5764	Fuel limiter 4-6	AO5	0.0 mA 20.0 mA	9.3 mA			
5765	Fuel limiter 4-6	R6	0 RPM 4000 RPM	1486 RPM			
5766	Fuel limiter 4-6	AO6	0.0 mA 20.0 mA	12.2 mA			
5770 Fuel limiter 7-9							
5771	Fuel limiter 7-9	R7	0 RPM 4000 RPM	1639 RPM		Option M4	Curve setting for fuel limiter output. The condition has to be true, i.e. R1<R2<R3<R4<R5<R6<R7<R8<R9 If this is not fulfilled, the worst-case setpoint R9 will be used.
5772	Fuel limiter 7-9	AO7	0.0 mA 20.0 mA	14.8 mA			
5773	Fuel limiter 7-9	R8	0 RPM 4000 RPM	1793 RPM			
5774	Fuel limiter 7-9	AO8	0.0 mA 20.0 mA	17.5 mA			
5775	Fuel limiter 7-9	R9	0 RPM 4000 RPM	1800 RPM			
5776	Fuel limiter 7-9	AO9	0.0 mA 20.0 mA	20.0 mA			

Transducer outputs

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
5820 P output 1							
5821	P output 1	Output A	Disabled Option-dep.	Disabled		Option E and F	
5822	P output 1	Output B	Disabled Option-dep.	Disabled			
5823	P output 1	Type	0-20 mA 4-20 mA	4-20 mA			
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	Output A	Disabled Option-dep.	Disabled		Option E and F	
5832	P output 2	Output B	Disabled Option-dep.	Disabled			
5833	P output 2	Type	0-20 mA 4-20 mA	4-20 mA			
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	Output A	Disabled Option-dep.	Disabled		Option E and F	
5842	P output 3	Output B	Disabled Option-dep.	Disabled			
5843	P output 3	Type	0-20 mA 4-20 mA	4-20 mA			
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	Output A	Disabled Option-dep.	Disabled		Option E and F	
5852	S output	Output B	Disabled Option-dep.	Disabled			
5853	S output	Type	0-20 mA 4-20 mA	4-20 mA			

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
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	Output A	Disabled Option-dep.	Disabled		Option E and F	
5862	Q output	Output B	Disabled Option-dep.	Disabled			
5863	Q output	Type	0-20 mA 4-20 mA	4-20 mA			
5864	Q output	Max. value	0 kVAr 16000 kVAr	400 kVAr			
5865	Q output	Min. value	8000 kVAr 16000 kVAr	0 kVAr			
5870 PF output							
5871	PF output	Output A	Disabled Option-dep.	Disabled		Option E and F	Positive value means inductive. Negative value means capacitive.
5872	PF output	Output B	Disabled Option-dep.	Disabled			
5873	PF output	Type	0-20 mA 4-20 mA	4-20 mA			
5874	PF output	Max. value	0.5 0.99	0.80			
5875	PF output	Min. value	-0.99 -0.50	-0.80			
5880 f output							
5881	f output	Output A	Disabled Option-dep.	Disabled		Option E and F	
5882	f output	Output B	Disabled Option-dep.	Disabled			
5883	f output	Type	0-20 mA 4-20 mA	4-20 mA			
5884	f output	Max. value	0.0 Hz 70. 0Hz	55.0 Hz			
5885	f output	Min. value	0.0 Hz 70.0 Hz	45.0 Hz			
5890 U output							
5891	U output	Output A	Disabled Option-dep.	Disabled		Option E and F	The voltage output represents L1-L2 voltage.
5892	U output	Output B	Disabled Option-dep.	Disabled			

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
5893	U output	Type	0-20 mA 4-20 mA	4-20 mA			
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	Output A	Disabled Option-dep.	Disabled		Option E and F	The current output represents L1 current.
5902	I output	Output B	Disabled Option-dep.	Disabled			
5903	I output	Type	0-20 mA 4-20 mA	4-20 mA			
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	Output A	Disabled Option-dep.	Disabled		Option E and F	The voltage output represents L1-L2 voltage.
5912	U BB output	Output B	Disabled Option-dep.	Disabled			
5913	U BB output	Type	0-20 mA 4-20 mA	4-20 mA			
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	Output A	Disabled Option-dep.	Disabled		Option E and F	
5922	f BB output	Output B	Disabled Option-dep.	Disabled			
5923	f BB output	Type	0-20 mA 4-20 mA	4-20 mA			
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	Output A	Disabled Option-dep.	Disabled		Option E and F	

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
5932	Multi-input 102	Output B	Disabled Option-dep.	Disabled			
5933	Multi-input 102	Type	0-20 mA 4-20 mA	4-20 mA			
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	Output A	Disabled Option-dep.	Disabled		Option E and F	
5942	Multi-input 105	Output B	Disabled Option-dep.	Disabled			
5943	Multi-input 105	Type	0-20 mA 4-20 mA	4-20 mA			
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	Output A	Disabled Option-dep.	Disabled		Option E and F	.
5952	Multi-input 108	Output B	Disabled Option-dep.	Disabled			
5953	Multi-input 108	Type	0-20 mA 4-20 mA	4-20 mA			
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	Output A	Disabled Option-dep.	Disabled		Option E and F	
5962	P total consumed	Output B	Disabled Option-dep.	Disabled			
5963	P total consumed	Type	0-20 mA 4-20 mA	4-20 mA			
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							

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
5971	P total available	Output A	Disabled Option-dep.	Disabled		Option E and F	
5972	P total available	Output B	Disabled Option-dep.	Disabled			
5973	P total available	Type	0-20 mA 4-20 mA	4-20 mA			
5974	P total available	Max. value	0 kW 20000 kW	500 kW			
5975	P total available	Min. value	-9999 kW 20000 kW	0 kW			

Regulator output selection

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

No.	Setting		Available settings	Factory setting	Notes	Ref.	Description
5980 Governor output							
5981	Governor output	Output A	Disabled AO66 AO71	AO66		Option E and EF	
5990 AVR output							
5991	AVR output	Output A	Disabled AO66 AO71	AO71		Option E and F	

General setup

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
6000 Nominal settings 1							
6001	Nom. settings 1	Frequency	48.0 Hz 62.0 Hz	50.0 Hz		Designer's Reference Handbook	The selection of nominal settings to be used is set in 6006. A binary input or selection in M-logic can also be used. The range of nom. voltage and nom. power depends on the selected range in '9030 Scaling'.
6002	Nom. settings 1	Power	10 kW 20000 kW	480 kW			
6003	Nom. settings 1	Current	0 A 9000 A	867 A			
6004	Nom. settings 1	Voltage	10 V 160 kV	400 V			
6005	Nom. settings 1	RPM	100 RPM 4000 RPM	1500 RPM			
6006	Nom. settings 1	Set	1 4	1			
6010 Nominal settings 2							
6011	Nom. settings 2	Frequency	48.0 Hz 62.0 Hz	50.0 Hz		Designer's Reference Handbook	The range of nom. voltage and nom. power depends on the selected range in '9030 Scaling'.
6012	Nom. settings 2	Power	10 kW 20000 kW	230 kW			
6013	Nom. settings 2	Current	0 A 9000 A	345 A			
6014	Nom. settings 2	Voltage	10 V 160 kV	480 V			
6015	Nom. settings 2	RPM	100 RPM 4000 RPM	1500 RPM			
6020 Nominal settings 3							
6021	Nom. settings 3	Frequency	48.0 Hz 62.0 Hz	60.0 Hz		Designer's Reference Handbook	The range of nom. voltage and nom. power depends on the selected range in '9030 Scaling'.
6022	Nom. settings 3	Power	10 kW 20000 kW	230 kW			
6023	Nom. settings 3	Current	0 A 9000 A	345 A			
6024	Nom. settings 3	Voltage	10 V 160 kV	480 V			
6025	Nom. settings 3	RPM	100 RPM 4000 RPM	1800 RPM			
6030 Nominal settings 4							
6031	Nom. settings 4	Frequency	48.0 Hz 62.0 Hz	60.0 Hz		Designer's Reference Handbook	The range of nom. voltage and nom. power depends on the selected range in '9030 Scaling'.
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	10 V 160 kV	480 V			
6035	Nom. settings 4	RPM	100 RPM 4000 RPM	1800 RPM			

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
6040 G transformer							
6041	G transformer	U primary	10 V 160 kV	400 V		Designer's Reference Handbook	If no voltage transformer is present, the primary and secondary side values are set to generator nominal value. The range of nom. voltage depends on the selected range in '9030 Scaling'.
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 1							
6051	BB settings 1	U primary	10 V 160 kV	400 V		Designer's Reference Handbook	If no voltage transformer is present, the primary and secondary side values are set to generator nominal value. The range of nom. voltage depends on the selected range in '9030 Scaling'. Selection between Busbar nominal settings 1 and 2 is done in M-logic.
6052	BB settings 1	U secondary	100 V 690 V	400 V			
6053	BB settings 1	U BB nom.	10 V 160 kV	400 V			
6060 Busbar settings 2							
6061	BB settings 2	U primary	10 V 160 kV	400 V		Designer's Reference Handbook	If no voltage transformer is present, the primary and secondary side values are set to generator nominal value. The range of nom. voltage depends on the selected range in '9030 Scaling'.
6062	BB settings 2	U secondary	100 V 690 V	400 V			
6063	BB settings 2	U BB nom.	10 V 160 kV	400 V			
6080 Language							
6081	Language		English Language 1-11	English		Designer's Reference Handbook	The master language is English. Additionally 11 different languages can be configured with the PC utility software.

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.
6092	Date and time	Month	1 12	1			
6093	Date and time	Date	1 31	1			
6094	Date and time	Day of week	1 7	1			
6095	Date and time	Hour	0 23	3			
6096	Date and time	Minute	0 59	5			
6100 Counters							
6101	Counters	Running hours	0 hr 999 hr	0 hr		Designer's Reference Handbook	Setting 6105 resets the kWh counter to 0. It reverts to OFF automatically after being set ON.
6102	Counters	Running, th. hours	0 th. hrs 999 th. hrs	0 th. hrs			
6103	Counters	GB operations	0 20000	0			
6104	Counters	Not available					
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		Option M4	The timer is reset by enabling menu 6116. The menu goes OFF automatically.
6112	Service timer 1	Running hours	0 hrs 9000 hrs	500 hrs			
6113	Service timer 1	Days	1 day 1000 days	365 days			
6114	Service timer 1	Fail class	F1...F6	F2 (warning)			
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		Option M4	The timer is reset by enabling menu 6126. The menu goes OFF automatically.
6122	Service timer 2	Running hours	0 hrs 9000 hrs	500 hrs			
6123	Service timer 2	Days	1 day 1000 days	365 days			

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
6124	Service timer 2	Fail class	F1...F6	F2 (warning)			
6125	Service timer 2	Relay output A	Not used Option-dep.	Not used			
6126	Service timer 2	Reset	OFF ON	OFF			

Alarm horn

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
6130 Alarm horn							
6131	Alarm horn	ON time	0.0 s 3200.0 s	0.0 s		Designer's Reference Handbook	If the setting is adjusted to 0.0 s, the horn relay will be activated continuously until the alarm is acknowledged.

Local/remote mode selection

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
6140 Local/remote							
6141	Local/remote	Fixed mode	OFF REMOTE LOCAL	OFF			Used to lock the unit into a specific operation mode.

Running, start and stop

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
6160 Run status							
6161	Run status	Delay	0.0 s 3200.0 s	5.0 s		Option M4	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			
6165	Freq. Det. Lvl.	Frequency	20 Hz 35 Hz	32 Hz			Parameter 6165 allows adjustment of the running detection level if frequency is used as running detection type (parameter 6172).
6170 Running detection							
6171	Running detect.	No of teeth	0 teeth 500 teeth	0 teeth		Option M4	If menu 6171 is set to 0, the magnetic pickup input is not active. Available running detection types: - Digital input - Magnetic pickup - Frequency - EIC (engine communication) - Multi-input 102 - Multi-input 105 - Multi-input 106 If menu 6175 is set to 0.0, the oil pressure running detection is OFF.
6172	Running detect.	Type	Digital in Multi-input	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 15.0 bar	0.0 bar			
6180 Starter							
6181	Starter	Start prepare	0.0 s 600.0 s	5.0 s		Option M4	Menus 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			
6186	Starter	Setpoint	0.0 bar 300.0 bar	0.0 bar			

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
6190 Start attempts							
6191	Start attempts	Setpoint	1 10	3		Option M4	Number of start attempts.
6192	Change starter	Setpoint	0 5	0			
6193	Change starter	Relay output A	Not used Option-dep.	Not used			
6200 Shutdown override							
6201	Shutdown override	Attempts	1 10	7		Option M4	Shutdown override turns all shutdowns into warnings. The only exceptions are overspeed level 2, fast over-current level 2 and emergency stop. The shutdown override command can be ignored by the rest of the protections with fail class “Shutdown” (see DRH).
6202	Shutdown override	Cooling down	0 s 32000 s	240 s			
6203	Shutdown override	Enable	OFF ON	OFF			
6210 STOP							
6211	STOP	Cooling down	0 s 32000 s	240 s		Option M4	The extended stop timer starts when the running feedback disappears. During the delay time it is not possible to start the engine. Menus 6213 and 6214 are used for temperature-dependent cooling down.
6212	STOP	Extended stop	1.0 s 3200.0 s	5.0 s			
6213	STOP	TYPE	Multi-input 102 M-logic	Multi-input 102			
6214	STOP	Setpoint	0 dec. 482 dec.	0 dec.			
6220 Hz/V OK							
6221	HZ/V OK	Delay	0.0 s 3200.0 s	2.0 s		GPU: Option G2	The voltage and frequency have to be continuously within the limits before the breaker can be closed.

Breaker control

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
6230 Generator breaker control							
6231	GB control	NA				Designer's Reference Handbook GPU: Option G2	Menu 6212 is for compact breakers (need to charge spring before closing). Available GB types: - Pulse - Continuous - Compact
6232	GB control	Load time	0.0 s 30.0 s	0.0 s			
6233	GB control	Type	Pulse Compact	Pulse			
6234	Load before sync.	Type	OFF In Local In Remote ON	OFF			

Power derate

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
6260 Power derate							
6261	Power derate	Input	Multi-in 102 M-logic	Multi-in 102		Option M4	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	Proportional	OFF ON	OFF			
6265	Power derate	Enable	OFF ON	OFF			
6266	Power derate	Limit	0.0% 100.0%	80.0%			

Idle start

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
6290 Idle start							
6291	Idle start	Start timer	0.0 min 999.0 min	300.0 min		Option M4	
6292	Idle start	Enable start	OFF ON	OFF			
6293	Idle stop	Stop timer	0.0 min 999.0 min	300.0 min			
6294	Idle stop	Enable stop	OFF ON	OFF			
6295	Idle running	Relay output A	Not used Option-dep.	Not used			
6296	Idle running	Enable	OFF ON	OFF			

Engine heater

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
6320 Engine heater							
6321	Engine heater	Setpoint	20 deg. 250 deg.	40 deg.		Option M4	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 Multi-inp 108	Multi-inp 102			
6324	Engine heater	Hysteresis	1 deg. 70 deg.	3 deg.			
6325	Engine heater	Enable	OFF ON	OFF			

Generator type

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
6360 Generator type							
6361	Generator type	Type	Synchronous Asynchronous	Synchronous		Option M4	

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		Designer's Reference Handbook GPU: Not available	Adjustment of the analogue load sharing line max. value.
6390 Load share type							
6391	Load share type	Setpoint	Adjustable Selco T4800			Designer's Reference Handbook GPU: Not available	Selection between selectable load sharing line max. value (setting 6381) or adaptation to Selco T4800 load sharing line.

Max. ventilation

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
6460 Max. ventilation							
6461	Max. ventilation	Setpoint	20 deg. 250 deg.	90 deg.		Option M4	
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			

Start/stop next generator

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
6520 Start next gen							
6521	Start next gen	Setpoint	0% 100%	80%		Designer's Reference Handbook	Start signal to the next generator. Set the selected relay to 'Limit' mode.
6522	Start next gen	Timer	0.0 s 3200.0 s	10.0 s			
6523	Start next gen	Output A	Not used Option-dep.	Not used			
6524	Start next gen	Output B	Not used Option-dep.	Not used			
6525	Start next gen	Enable	OFF ON	OFF			
6530 Stop next gen							
6531	Stop next gen	Setpoint	50% 100%	20%		Designer's Reference Handbook	Stop signal to the next generator. Set the selected relay to 'Limit' mode.
6532	Stop next gen	Timer	0.0 s 3200.0 s	30.0 s			
6533	Stop next gen	Output A	Not used Option-dep.	Not used			
6534	Stop next gen	Output B	Not used Option-dep.	Not used			
6535	Stop next gen	Enable	OFF ON	OFF			

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%		Option M4	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	Type	Multi-in 102 Multi-in 108	Multi-in 102			
6556	Fuel pump logic	Fail class	F1...F6	Warning (F2)			

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).

Metric/US units

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
6920 Metric/US units							
6921	Engineering units		Bar/Celsius Psi/Fahrenheit	Bar/Celsius		Option M4	Changing units in this parameter only applies to units shown in display.

Controller settings

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
7050 Fixed power settings							
7051	Fixed power set	Power	0% 100%	100%		Designer's Reference Handbook GPU: Not available	Parallel with mains settings.
7052	Fixed power set	Power factor	0.60 1.00	0.90			
7053	Fixed power set	Power factor	Inductive Capacitive	Inductive			
7054	Fixed power set	Reactive power	0% 100%	100%			

Y1 (X1) droop curve

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
7120 Y1(x1) Deadband							
7121	Y1(x1) Deadband	Deadband low	0.00 % 99.99 %	0.40 %		Designer's Reference Handbook GPU: Not available	
7122	Y1(x1) Deadband	Deadband high	0.00 % 99.99 %	0.50 %			
7123	Y1(x1) Deadband	Hysterese low	0.00 % 99.99 %	0.50 %			
7124	Y1(x1) Deadband	Hysterese high	0.00 % 99.99 %	0.50 %			

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
7130 P(x1) Slope							
7131	P(x1) Slope	MIN	0 kW 20000 kW	200 kW		Designer's Reference Handbook GPU: Not available	
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			

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
7140 Droop curve 1							
7141	Droop curve 1	P(x1)	P(x1) P(x1)	P(x1)		Designer's Reference Handbook GPU: Not available	
7142	Droop curve 1	X1	f f	f			
7143	Droop curve 1	Enable	OFF ON	OFF			

Y2 (X2) droop curve

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
7150 Y2(x2) Deadband							
7151	Y2(x2) Deadband	Deadband low	0.00 % 99.99 %	2.00 %		Option D1 GPU: Not available	
7152	Y2(x2) Deadband	Deadband high	0.00 % 99.99 %	2.00 %			
7153	Y2(x2) Deadband	Hysterese low	0.00 % 99.99 %	2.10 %			
7154	Y2(x2) Deadband	Hysterese high	0.00 % 99.99 %	2.10 %			

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
7160 Q(x2) Slope							
7161	Q(x2) Slope	MIN	0 kVAr 20000 kVAr	200 kVAr		Option D1 GPU: Not available	
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			

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
7170 PF(x2) Slope							
7171	PF(x2) Slope	MIN	0.60 1.00	0.80	PF	Option D1 GPU: Not available	
7172	PF(x2) Slope	I/C	Inductive Capacitive	Inductive			
7173	PF(x2) Slope	MAX	0.60 1.00	1.00	PF		
7174	PF(x2) Slope	I/C	Inductive Capacitive	Inductive			
7175	PF(x2) Slope	Slope low	- 1.000 1.000	-0.005	PF		
7176	PF(x2) Slope	Slope high	-1.000 1.000	0.005	PF		

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
7180 Droop curve 2							
7181	Droop curve 2	PF(x2)	PF(x2) Q(x2)	PF(x2)		Option D1 GPU: Not available	
7182	Droop curve 2	X2	U P	U			
7183	Droop curve 2	Enable	OFF ON	OFF			

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	These settings must be ON if commands are to be sent over the Modbus communication. This 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	PF	OFF ON	OFF			
7505	Comm. control	Reactive power	OFF ON	OFF			
7510 External communication							
7511	Ext. communication	ID	1 247	1		Option H2 and H9 or H3	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 and H9	
7513	Ext. communication	Mode	RTU ASCII	RTU		Option H2 and H9	
7514	Ext. communication	Ver.	1-3	Standard		Option H2 and H3	1. Standard: Normal PPU-3 register layout. 2. GPU/PPU-2: GPU/PPU-2 register layout. Only GPU/PPU-2 registers will respond, requests to any other register will result in "ILLEGAL DATA ADDRESS". 3. MIX: GPU/PPU-2 register layout. Requests to GPU/PPU-3 registers that are not occupied by GPU/PPU-2 will respond as in "Standard" mode.

Engine interface communication

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
7560 Engine I/F							
7561	Engine I/F	Engine type	OFF QSX15 QSK23/45/60/78 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 EMS Volvo Penta Volvo Penta EMS2 Scania EMS Scania EMS S6 MDEC 2000/4000 M.302 MDEC 2000/4000 M.303 MTU ADEC Cummins Generic J1939 MTU J1939 Smart Connect	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 available 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”. Menu 7565 is for selection of an AVR that is controlled via CAN.
7562	EIC SA/ADEC ID	Node ID	0 256	0			
7563	EIC Controls	Enable	OFF ON	ON			
7564	EIC Auto view	Enable	OFF ON	OFF			
7565	EIC AVR control	AVR type	OFF CAT CDVR	OFF			
7566	TSC1 SA	Enable	-1 256	-1			

CANport selection

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
7840 CANselect							
7841	CAN A	EIC	OFF EIC	EIC		Option H7	7842: Enables communication between controller and Axiomatic module. Remember also to set parameter 7891. If one of these parameters are set to OFF, the CAN communication to external modules, other controllers or external ECUs are stopped.
7842	CAN B	Axiomatic	OFF Axiomatic	Axiomatic		Option M4 + H7/H5	
7843	CAN C	External I/O	OFF External I/O	External I/O		Option H8.2	
7845	CAN E	CAN Loadshare	OFF CAN Loadshare	CAN Loadshare		Option G9	
	CAN E	EIC	OFF EIC	EIC		Option H5	

CANshare configuration

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
7850 CANshare							
7851	CANshare ID	ID	1 32	1		Option G9	7852: “M-LOGIC” enables change of CANshare section from M-Logic. 7853: Password level is “Master”. 7854: When set to “OFF” menus 7851, 7852 and 7853 are disregarded.
7852	CANshare section	Section	1 M-LOGIC	1			
7853	CANshare setup	Setup	OFF ON	OFF			
7854	CANshare superv.	Enable	OFF ON	ON			
7891	Ext IO J1939	Axiomatic	OFF Axiomatic	OFF		Option M4 + H7/H5	7891: Enables communication between controller and Axiomatic module.

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.x)	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.x)	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 re-establishing communication after a fault/disconnection.
7972	CAN 1	Baud	50 k 125 k 250 k	125 k			
7973	CAN 1	ID	1 to 64	1			
7974	CAN 1	Reset	NO YES	NO			
7980 CAN 2							
7981	CAN 2	Type	OFF Beckhoff	OFF		Option: External I/O modules (H8.x)	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 re-establishing communication after a fault/disconnection.
7982	CAN 2	Baud	50 k 125 k 250 k	125 k			
7983	CAN 2	ID	1 to 64	1			
7984	CAN 2	Reset	NO YES	NO			

Jump menus

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

9000 Software version

Information about the actual software downloaded to the unit. Please check this before contacting DEIF regarding service and support matters.

9010 Display character test

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

Scaling

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
9030 Scaling							
9030	Scaling	Range	10 V – 2500 V 10 kV – 160 kV	100 V – 25000 V		Designer's Reference Handbook	This setting will change the scaling of the measurements shown in the display.

Hysteresis

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
9040 Reset ratio							
9041	Reset ratio f		0.0% 10.0%	0.5%		Designer's Reference Handbook	
9042	Reset ratio P/Q		0.0% 10.0%	1.0%			
9043	Reset ratio I		0.0% 10.0%	1.0%			
9044	Reset ratio U		0.0% 10.0%	1.0%			

Alarm test mode

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
9050 Alarm test mode							
9051	Alarm test mode	Enable	ON OFF	OFF		Designer's Reference Handbook	Used to activate a specific alarm or all alarms at once. Alarm test mode is automatically disabled when the delay has run out.
9052	Alarm test mode	Delay	0.1 s 3200.0 s	60.0 s			
9053	Alarm test mode	Activate one alarm	0 9999	0			
9054	Alarm test mode	Activate all alarms	ON OFF	OFF			

Emulation

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
9060 Emulation							
9060	Emulation	Enable	ON OFF	OFF		Option G9	Activation of the emulation mode.

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
9080 Engine logic							
9080	Engine logic	Enable	ON OFF	ON		Option M4	

Passwords

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
911x Password							
9116	User password	Setting	0 32000	2000		Designer's Reference Handbook	It is recommended to change the password levels of the user, service and master passwords, if access to parameter settings is to be restricted.
9117	Service password	YYYYY setting	0 32000	2001			
9118	Master password	XXXXX setting	0 32000	2002			

Service menu

The service menu can only be entered using the 'JUMP' push-button. This menu is used in service situations.

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
9120 Service menu			
9121	Service menu	Timers	Shows remaining alarm delay time.
9122	NA	NA	
9123	Service menu	Digital inputs	Shows digital input status.
9124	Service menu	Digital outputs	Shows digital output status.
9125	Service menu	Miscellaneous	Shows miscellaneous information.

AC configuration

This menu is used to choose between the different AC measurement systems.

No.	Setting		Min. Max.	Factory setting	Ref.	Description
9130 AC config.						
9130	AC config.	Setting	1 phase L1 3 phase L1L2L3	3 phase L1L2L3	Designer's Reference Handbook	Available settings: 3 phase L1L2L3 (1) 2 phase L1L3 (2) 2 phase L1L2 (3) 1 phase L1 (4)

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							
9141	Angle comp. BB/G 1	Angle	-179.0 deg. -179.0 deg.	0.0 deg.		Designer's Reference Handbook	Used together with 6050 'BB settings 1'.
9142	Angle comp. BB/G 2	Angle	-179.0 deg. 179.0 deg.	0.0 deg.			Used together with 6060 'BB settings 2'.

Dimmer

No.	Setting		Ref.	Description
9150 Backlight dim				
9150	Backlight dim		Operator's manual	Sets the light intensity for the display.

Memory backup

The memory backup menu is only accessible using the "JUMP" push-button on the display.

No.	Setting	Description
9230 Memory backup		
9231	Backup memory	This function stores the memory
9232	Restore memory	This function restores the memory

CAN share IDs

The CAN share ID overview menu is only accessible using the "JUMP" push-button on the display.

No.	Setting	Description
9250 Load share IDs		
P1	Page 1 Active CAN IDs	Each page can show up til seven controllers. The specific controller shows its own CAN ID as the first number and then the rest from the lowest to the highest ID number.
P2	Page 2 Active CAN IDs	
P3	Page 3 Active CAN IDs	
P4	Page 4 Active CAN IDs	
P5	Page 5 Active CAN IDs	

GSM settings

GSM settings are only accessible in the utility software.

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
10320 GSM pin code							
10320	GSM pin code	Function	0 9999	1933		Option H9.2	
10330 Telephone no. 1							
10330	Telephone 1	Function	0 99999999999	12345678903		Option H9.2	

Menus similar to menu 10330 are available for telephone nos. 2-5 with the menu numbers 10340-10370.

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

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	Sensor type 1		Option M4	Selections are: -Sensor type 1 -Sensor type 2 -Sensor type 3 -Configurable
10470 VDO 1 input setpoint 1						
10470	VDO 1 inp. setp. 1	0 Ohm 480 Ohm	10 Ohm		Option M4	Configurable VDO curve.
10480 VDO 1 output setpoint 1						
10480	VDO 1 outp. setp. 1	-49 482	40		Option M4	Configurable VDO curve.
10490 VDO 1 input setpoint 2						
10490	VDO 1 inp. setp. 2	0 Ohm 480 Ohm	44.9 Ohm		Option M4	Configurable VDO curve.
10500 VDO 1 output setpoint 2						
10500	VDO 1 outp. setp. 2	-49 482	50		Option M4	Configurable VDO curve.
10510 VDO 1 input setpoint 3						
10510	VDO 1 inp. setp. 3	0 Ohm 480 Ohm	81 Ohm		Option M4	Configurable VDO curve.
10520 VDO 1 output setpoint 3						
10520	VDO 1 outp. setp. 3	-49 482	60		Option M4	Configurable VDO curve.
10530 VDO 1 input setpoint 4						
10530	VDO 1 inp. setp. 4	0 Ohm 480 Ohm	134.7 Ohm		Option M4	Configurable VDO curve.
10540 VDO 1 output setpoint 4						
10540	VDO 1 outp. setp. 4	-49 482	80		Option M4	Configurable VDO curve.
10550 VDO 1 input setpoint 5						
10550	VDO 1 inp. setp. 5	0 Ohm 480 Ohm	184 Ohm		Option M4	Configurable VDO curve.
10560 VDO 1 output setpoint 5						

No.	Setting	Min. Max.	Factory setting	Notes	Ref.	Description
10560	VDO 1 outp. setp. 5	-49 482	100		Option M4	Configurable VDO curve.
10570 VDO 1 input setpoint 6						
10570	VDO 1 inp. setp. 6	0 Ohm 480 Ohm	200 Ohm		Option M4	Configurable VDO curve.
10580 VDO 1 output setpoint 6						
10580	VDO 1 outp. setp. 6	-49 482	110		Option M4	Configurable VDO curve.
10590 VDO 1 input setpoint 7						
10590	VDO 1 inp. setp. 7	0 Ohm 480 Ohm	210 Ohm		Option M4	Configurable VDO curve.
10600 VDO 1 output setpoint 7						
10600	VDO 1 outp. setp. 7	-49 482	115		Option M4	Configurable VDO curve.
10610 VDO 1 input setpoint 8						
10610	VDO 1 inp. setp. 8	0 Ohm 480 Ohm	220 Ohm		Option M4	Configurable VDO curve.
10620 VDO 1 output setpoint 8						
10620	VDO 1 outp. setp. 8	-49 482	120		Option M4	Configurable VDO curve.

VDO 105

VDO 105 settings are only accessible in the utility software.

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

VDO 108

VDO 108 settings are only accessible in the utility software.

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

Multi-input selections

No.	Setting	Min. Max.	Factory setting	Notes	Ref.	Description
10970 Engineering units						
10970	Engineering units	Bar/Celsius Psi/Fahrenheit	Bar/Celsius		Option M4	Changing units in this parameter only changes the units shown in the USW.
10980 Multi-input configuration 102						
10980	Multi-inp.conf. 102	4-20 mA Binary	0-40V DC		Option M4	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		Option M4	Possible selections: 4-20 mA 0-40V DC Pt100 Pt1000 VDO oil pressure VDO water temp. VDO fuel level Binary
11000 Multi-input configuration 108						

No.	Setting	Min. Max.	Factory setting	Notes	Ref.	Description
11000	Multi-inp.conf. 108	4-20 mA Binary	0-40V DC		Option M4	Possible selections: 4-20 mA 0-40V DC Pt100 Pt1000 VDO oil pressure VDO water temp. VDO fuel level Binary

External digital outputs

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

The same for settings 12800-12940.

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 the option H8 description for details.

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

DEIF A/S reserves the right to change any of the above.