

InteliLite

AMF25, AMF20, MRS16,
MRS11

Controller for single gen-set
applications

SW version 1.3.2

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1 General information

1.1 Version information

Repair of minor ECU bugs.

1.2 Clarification of notation

Note: *This type of paragraph calls readers attention to a notice or related theme.*

IMPORTANT: This type of paragraph highlights a procedure, adjustment etc., which can cause a damage or improper function of the equipment if not performed correctly and may not be clear at first sight.

Example: This type of paragraph contains information that is used to illustrate how a specific function works.

2 Changes in the version 1.3.2

2.1 Repairs

- ▶ Ignoring of RPM values coming from CAN interface from John Deer Electronic Control Unit in the initial time of starting procedure.
- ▶ The fault code SPN „65579“ from ECU Iveco NEF&Cursor is ignored and not displayed.

3 Changes in the version 1.3.1

3.1 Repairs

- ▶ Repaired support of plug-in module EM-BIO8-EFCP
- ▶ Repaired support of VOLVO ECUs

4 Changes in the version 1.3.0

4.1 New features

- ▶ Running hours on main screen
 - New item in setpoint *Main Screen*

Main Screen

Setpoint group	Basic Settings	Range [units]	PwrFactor/ATT/Run Hours [-]
Default value	PwrFactor	Step	-
Setpoint visibility	Always	Position	Actual position
Config level	Advanced	Related applications	AMF, MRS
Description			
Setpoint adjust the value which is shown on main screen. <ul style="list-style-type: none"> ▶ PwrFactor: Value of power factor is shown on main screen. ▶ ATT: This option is for Tier IV Final support. In this case value of DEF Level is shown on main screen. ▶ Run Hours: Value of running hours will be shown on main screen. 			

- ▶ Selectable connection type of CM-4G-GPS
 - Added new setpoint *Required Connection Type*

Required Connection Type

Setpoint group	Basic Settings	Range [units]	2G/3G/4G/Automatic [-]
Default value	Automatic	Step	-
Setpoint visibility	With module CM-4G-GPS	Position	Under setpoint Mode
Config level	Standard	Related applications	AMF, MRS
Description			
This setpoint adjusts preferred connection type of CM-4G-GPSmodule.			

- ▶ Improvement of battery voltage evaluation
 - Added new binary outputs AL BATTERY UNDERVOLTAGE and AL BATTERY OVERVOLTAGE, added new alarms *Wm Battery Undervoltage* and *Wm Battery Overvoltage*
 - Changed behavior of binary output AL BATTERY VOLTAGE and alarm *AL Battery Flat*
 - Removed alarm *Wm Battery Voltage*.

AL Battery Undervoltage

Description
This binary output is active when there is alarm <i>Wm Battery Undervoltage</i> in alarmlist.

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Description

This binary output is active when there is alarm *Wm Battery Overvoltage* in alarmlist.

Wm Battery Undervoltage

Alarm Type	Warning
Alarmlist message	Wm Battery Undervoltage
Alarm evaluated	All the time
Related applications	AMF, MRS
Description	This alarm informs the operator that the controller supply voltage is under limit.

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Alarmlist message	Wm Battery Overvoltage
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Description	This alarm informs the operator that the controller supply voltage is over limit.

AL Battery Voltage

Description

This binary output is active when there is alarm *Wm Battery Undervoltage* or *Wm Battery Overvoltage* in alarmlist.

AL Battery Flat

Description

This binary output is active when there is alarm *Wm Battery Undervoltage* or *Sd Battery Flat* in alarmlist or isn't confirm.

- ▶ Improvement of analog measurement
 - FLS alarms from analog inputs are ignored during cranking
 - there is new filter for spikes on analog measurement
- ▶ Disabling of selected protections via setpoints (only in Intel Lite AMF25 and MRS16)
 - Added new setpoints *Overload Protection*, *Short Circuit Protection*, *IDMT Overcurrent Protection*, *Current Unbalance Protection*, *Generator <> Voltage Protection*, *Voltage Unbalance Protection*, *Generator Frequency Protection*, *Underspeed Protection*, *Overspeed Protection* and *Underspeed Sd*, added new binary input PROTECTIONS ENABLE
 - Changed range of setpoint *Overspeed Sd*

Overload Protection

Setpoint group	Protections	Range [units]	Enabled/Disabled/LBI Enable [-]
Default value	Enabled	Step	-
Setpoint visibility	Always	Position	First in group
Config level	Advanced	Related applications	AMF, MRS
Description			
<p>This setpoint adjusts the behavior of generator Overload protection.</p> <ul style="list-style-type: none"> ▶ Enabled - protection is enabled. Behavior of protection is adjusted via setpoints Overload BOC, Overload Wm, Overload BOC Delay. ▶ Disabled - protection is disabled. ▶ By LBI - protection is enabled or disabled by the state of LBI Protections Enable. 			

Short Circuit Protection

Setpoint group	Protections	Range [units]	Enabled/Disabled/LBI Enable [-]
Default value	Enabled	Step	-
Setpoint visibility	Always	Position	Under Overload Protection
Config level	Advanced	Related applications	AMF, MRS
Description			
<p>This setpoint adjusts the behavior of generator Short Circuit protection.</p> <ul style="list-style-type: none"> ▶ Enabled - protection is enabled. Behavior of protection is adjusted via setpoints <i>Short Circuit BOC</i> and <i>Short Circuit BOC Delay</i>. ▶ Disabled - protection is disabled. ▶ By LBI - protection is enabled or disabled by the state of LBI Protections Enable. 			

IDMT Overcurrent Protection

Setpoint group	Protections	Range [units]	Enabled/Disabled/LBI Enable [-]
Default value	Enabled	Step	-
Setpoint visibility	Always	Position	Under Short Circuit Protection
Config level	Advanced	Related applications	AMF, MRS
Description			
<p>This setpoint adjusts the behavior of generator IDMT Overcurrent protection.</p> <ul style="list-style-type: none"> ▶ Enabled - protection is enabled. Behavior of protection is adjusted via setpoint <i>IDMT Overcurrent</i>. ▶ Disabled - protection is disabled. ▶ By LBI - protection is enabled or disabled by the state of LBI Protections Enable. 			

Current Unbalance Protection

Setpoint group	Protections	Range [units]	Enabled/Disabled/LBI Enable [-]
Default value	Enabled	Step	-
Setpoint visibility	Always	Position	Under IDMT Overcurrent Protection
Config level	Advanced	Related applications	AMF, MRS

Description

This setpoint adjusts the behavior of generator Current Unbalance protection.

- ▶ Enabled - protection is enabled. Behavior of protection is adjusted via setpoints *Current Unbalance BOC* and *Current Unbalance BOC Delay*.
- ▶ Disabled - protection is disabled.
- ▶ By LBI - protection is enabled or disabled by the state of LBI Protections Enable.

Generator <> Voltage Protection

Setpoint group	Protections	Range [units]	Enabled/Disabled/LBI Enable [-]
Default value	Enabled	Step	-
Setpoint visibility	Always	Position	Under Current Unbalance Protection
Config level	Advanced	Related applications	AMF, MRS

Description

This setpoint adjusts the behavior of Generator <> Voltage protection.

- ▶ Enabled - protection is enabled. Behavior of protection is adjusted via setpoints *Generator > Voltage Sd*, *Generator > Voltage Wm*, *Generator < Voltage Sd*, *Generator < Voltage Wm* and *Generator <> voltage delay*.
- ▶ Disabled - protection is disabled.
- ▶ By LBI - protection is enabled or disabled by the state of LBI Protections Enable.

Voltage Unbalance Protection

Setpoint group	Protections	Range [units]	Enabled/Disabled/LBI Enable [-]
Default value	Enabled	Step	-
Setpoint visibility	Always	Position	Under Generator < Voltage Protection
Config level	Advanced	Related applications	AMF, MRS
Description			
<p>This setpoint adjusts the behavior of Generator overvoltage protection.</p> <ul style="list-style-type: none"> ▶ Enabled - protection is enabled. Behavior of protection is adjusted via setpoints <i>Voltage Unbalance BOC</i> and <i>Voltage Unbalance BOC Delay</i>. ▶ Disabled - protection is disabled. ▶ By LBI - protection is enabled or disabled by the state of LBI Protections Enable. 			

Generator Frequency Protection

Setpoint group	Protections	Range [units]	Enabled/Disabled/LBI Enable [-]
Default value	Enabled	Step	-
Setpoint visibility	Always	Position	Under Voltage Unbalance Protection
Config level	Advanced	Related applications	AMF, MRS
Description			
<p>This setpoint adjusts the behavior of generator Frequency protection.</p> <ul style="list-style-type: none"> ▶ Enabled - protection is enabled. Behavior of protection is adjusted via setpoints <i>Generator > Frequency BOC</i>, <i>Generator > Frequency Wm</i>, <i>Generator < Frequency Wm</i>, <i>Generator < Frequency BOC</i>, <i>Generator <> BOC Delay</i>. ▶ Disabled - protection is disabled. ▶ By LBI - protection is enabled or disabled by the state of LBI Protections Enable. 			

Underspeed Protection

Setpoint group	Protections	Range [units]	Enabled/Disabled/LBI Enable [-]
Default value	Enabled	Step	-
Setpoint visibility	Always	Position	Under Frequency Protection
Config level	Advanced	Related applications	AMF, MRS
Description			
<p>This setpoint adjusts the behavior of engine speed protection.</p> <ul style="list-style-type: none"> ▶ Enabled - protection is enabled. Behavior of protection is adjusted via setpoint <i>Underspeed Sd</i>. ▶ Disabled - protection is disabled. ▶ By LBI - protection is enabled or disabled by the state of LBI Protections Enable. 			

Overspeed Protection

Setpoint group	Protections	Range [units]	Enabled/Disabled/LBI Enable [-]
Default value	Enabled	Step	-
Setpoint visibility	Always	Position	Under Underspeed Protection
Config level	Advanced	Related applications	AMF, MRS
Description			
This setpoint adjusts the behavior of engine speed protection.			
<ul style="list-style-type: none"> ▶ Enabled - protection is enabled. Behavior of protection is adjusted via setpoint <i>Overspeed Sd</i>. ▶ Disabled - protection is disabled. ▶ By LBI - protection is enabled or disabled by the state of LBI Protections Enable. 			

Sd Underspeed

Setpoint group	Engine Settings	Range [units]	0 .. Overspeed Sd[%]
Default value	25%	Step	1% of nominal RPM
Setpoint visibility	Always	Position	Under Overspeed Sd
Config level	Advanced	Related applications	AMF, MRS
Description			
This setpoint adjusts the threshold level for Sd Underspeed protection.			

Sd Overspeed

Setpoint group	Engine Settings	Range [units]	Underspeed Sd .. 150 [%]
Default value	25%	Step	1% of nominal RPM
Setpoint visibility	Always	Position	Under Overspeed Sd
Config level	Advanced	Related applications	AMF, MRS
Description			
This setpoint adjusts the threshold level for Sd Overspeed protection.			

Protections Enable

Description
This logic binary input will enable or disable protections, which are adjusted like LBI Enable.

4.2 Repairs

- ▶ Correct showing of more SPN codes from ECU
- ▶ Repaired behavior of logical binary outputs ECU Comm OK and ECU Comm Error
 - LBO ECU Comm OK - active when communication with ECU is OK
 - LBO ECU Comm Error - active when there is detected problem with ECU communication
- ▶ Repaired number of decimal numbers when bar units are changed to psi units
- ▶ Added missing unit conversion between meters and feet

5 Changes in the version 1.2.1

5.1 Repairs

- ▶ Symbols (padlock, alarm, remote connection) are displayed on screens in Chinese
- ▶ BIN Protection on binary input 1 works when LBI EMERGENCY STOP is not configured
- ▶ Fault Code SPN 0 is not showed in alarm list when DM1 frame is sent
- ▶ Reactive energy in statistics values is calculated in right way
- ▶ PLC block force protection displays correct message in Alarmlist
- ▶ In default configuration units for setpoints *analog input 1 calibration*, *analog input 2 calibration* and *analog input 3 calibration* are displayed
- ▶ Range of bargraph in LiteEdit for second analog input is displayed in right way
- ▶ Units conversion between liters and gallons was repaired in boundary conditions
- ▶ Name of value *Satellites* was repaired
- ▶ Blocking of active call after fail of active call was removed
- ▶ Interpretation of patch version was repaired
- ▶ Function for calculation of speed of text rotation depending of actual temperature was repaired
- ▶ Repaired behavior of breakers when Operation Mode is changed (only in AMF controllers)
 - When operation mode is changed from AMF to MRS (via setpoint or via logical binary input) then it is not possible to close GCB if MCB feedback is active

6 Changes in the version 1.2.0

6.1 New features

▶ CAN bus extension modules support

- Extension modules can be configured via LiteEdit 2015 and connected to CAN1 terminal of the controller to extend the number of binary and analog I/O.
- There are 5 slots dedicated for extension modules where following table indicates available module types for each module slot.

Slot	Module				
	Intel AIN8	Intel IO8/8	Intel IO16/0	IGS-PTM	IGL-RA15
1	X	X	X	X	X
2	X	X	X	X	X
3	X	X	X	-	X
4	X	X	X	-	X
5	-	X	X	-	-

▶ 3rd set of Alternate setpoints

- There are 3 independent sets of setpoints that can be switched via binary inputs activation.
- Setpoints that are included (group Alternate Config):
 - Nominal RPM 1..3
 - Nominal Frequency 1..3
 - Nominal Voltage Ph-N 1..3
 - Nominal Current 1..3
 - Connection Type 1..3
 - ECU Frequency Select 1..3
 - ECU Speed Adjustment 1..3
- Following table defines which binary inputs activates which alternate configuration.

Activated set of configuration	Configuration 2	Configuration 3
1	0	0
2	1	0
3	0	1
3	1	1

► 5 languages support

- The unit can hold up to 5 languages which can be switched online via binary inputs as per table below.
- New LBI "Lang Selection 3" to allow together with Lang Selection 1 and 2 to activate one of 5 languages following way based on LBI „Lang Selection 1..3“ activation:

Language selected	Lang Selection 3	Lang Selection 2	Lang Selection 1
1	0	0	1
2	0	1	0
3	0	1	1
4	1	0	0
5	1	0	1

► SNMP v2c support

- Added "community based" version of SNMP v2
- SNMP v1 remains supported as well, the module responds using the same version as used in the request
- Both PDU types "notification-type" and "inform-type" can be used with SNMP v2c. The adjustment of PDU type used for unsolicited messages is done in the controller via it's setpoints and this adjustment must be supported also in the controller firmware. The PDU "trap-type" is used by default if the adjustment is not supported in the controller firmware.

Note: The MIB table can be now exported using LiteEdit in either SMIv1 or SMIv2 format.

6.2 Repairs

- Reset to MAN function has not been working. The bug was fixed.
- Problem with MCB breaker pulse after controller's restart (if MCB logic = Close Off) was resolved.
- Ignoring ECU fault codes during prestart function was fixed.
- Mains and Gen-set kWh and kVAh statistic values were not counting correctly. The bug was fixed.
- Plug-in CM-BIO8-EFCP module protection (missing module) didn't evaluate correctly (always shutdown). The bug was fixed.
- Incorrect representation of ECU DM1 frame in Alarmlist bug was fixed.
- Padlock, "I" (=new Alarmlist item) and "R" (= remote communication) was not shown properly for graphical languages. The bug was fixed.
- IDMT protection delay did not work properly. The bug was fixed.
- Maintenance timers were not counting down when ECU engine was configured. The bug was fixed.
- Alternate configuration index does not change at some parameters on controller's configuration screen (setpoints: Connection Type, Nominal Current, etc.). The bug was fixed.
- PLC Comparators didn't work properly with the inputs that have alternative setpoints. The bug was fixed.
- Initialization screen wasn't displayed correctly for graphical languages (e.g. Chinese). The bug was fixed.
- Overloading of CAN bus (more devices with various communication speed) caused controllers' restart. The bug was fixed.

7 Changes in the version 1.1.0

7.1 New features

- ▶ In-built PLC
 - You are now able to create your own logic in order to satisfy any unexpected requirement that might come up
- ▶ CM-4G-GPS
 - This is a new plug-in module that joined the new IntelliLite family. It provides 4G/LTE communication and integrates a GPS device. This module allows on the controller the following capabilities:
 - Geofencing
 - The possibility to define a geographical area within which the gen-set is allow to operate and set different types of protections for when the gen-set is taken out of it.
 - Tracking over WebSupervisor
 - The coordinates of the gen-sets along the time will be saved and the path the gen-set has followed can be displayed on WebSupervisor
- ▶ SNMP Traps
 - The controller, over CM-Ethernet, will actively send SNMP traps, not only on alarms, but also on events. In case of alarms, another SNMP trap will be sent when the condition that originated the alarm is no longer present.
- ▶ TIER4Final
 - The controller display all required icons on screen, reads the required analog values (DPF, DEF), forces/inhibits the regeneration, etc.
- ▶ Low temperature options
 - There is a hardware option for applications on low temperature environment that allows the controller to operate from – 40 C.
- ▶ Decimal Format
 - It is possible to display either no decimals or one decimal.
- ▶ Units
 - It is possible to display units either on the International System (Metrics) or on US System
- ▶ Fuel Theft
 - If the level of fuel decreases abnormally, the controller will alert that something wrong is happening.
- ▶ 4 channels for emails + 4 channels for SMS
 - There was an increase on the number of channels for active emails and SMS messages, now it possible to send the messages to 4 email addresses and 4 mobile numbers.
- ▶ Export of setpoints and values
 - From LiteEdit, setpoint and values can be exported on CSV files.

8 Related information

8.1 Available files

Firmware (*.exe)			
For Intelilite AMF25	For Intelilite AMF20	For Intelilite MRS16	For Intelilite MRS11
Intelilite-Install-Suite-1.3.2.0.exe	Intelilite-Install-Suite-1.3.2.0.exe	Intelilite-Install-Suite-1.3.2.0.exe	Intelilite-Install-Suite-1.3.2.0.exe

Table 8.1 Available firmware

Archives (*.ail3)			
For Intelilite AMF25	For Intelilite AMF20	For Intelilite MRS16	For Intelilite MRS11
Intelilite-AMF25-1.3.2	Intelilite-AMF20-1.3.2	Intelilite-MRS16-1.3.2	Intelilite-MRS11-1.3.2

Table 8.2 Available archives

8.2 Overview of all available hardware

	Intelilite AMF25	Intelilite AMF20	Intelilite MRS16	Intelilite MRS11
Binary Inputs	8	7	7	6
Binary Outputs	8	7	7	6
Analog Inputs	4	3	4	3
Analog Outputs	0	0	0	0
Communications	USB, RS232-485, 4G, GPRS, Ethernet	USB, RS232-485, 4G, GPRS, Ethernet	USB, RS232-485, 4G, GPRS, Ethernet	USB, RS232-485, 4G, GPRS, Ethernet

Table 8.3 Available hardware

8.3 Available related documentation

Documents	Description
InteliLite AMF25 1.2.1 Global Guide	Global Guide of controller InteliLite AMF25 http://www.comap.cz/support/download-center/type/manuals/
InteliLite AMF20 1.2.1 Global Guide	Global Guide of controller InteliLite AMF20 http://www.comap.cz/support/download-center/type/manuals/
InteliLite MRS16 1.2.1 Global Guide	Global Guide of controller InteliLite MRS16 http://www.comap.cz/support/download-center/type/manuals/
InteliLite MRS11 1.2.1 Global Guide	Global Guide of controller InteliLite MRS11 http://www.comap.cz/support/download-center/type/manuals/
InteliLite 1.2.1 Operator Guide	Operator Guide of controller InteliLite http://www.comap.cz/support/download-center/type/manuals/

Table 8.4 Available documentation

9 Notes

9.1 Change of Operation Mode in version 1.2.1

When operation mode is changed from AMF to MRS (via setpoint or via logical binary input) then it is not possible to close GCB if MCB feedback is active (since version 1.2.1).

IMPORTANT: In older firmware versions please double check the real state of MCB when you do this operation.

Note: Also behavior of GCB UV coil was modified. GCB UV coil is active only when gen-set is running and when MCB is open.

9.2 Document history

Revision number	Related sw. version	Date	Author
5	1.3.2	30.3.2017	Michal Slavata
4	1.3.1	24.3.2017	Michal Slavata
3	1.2.1	24.11.2016	Michal Slavata
2	1.2.0	10.10.2016	Michal Slavata
1	1.1.0	14.4.2016	Michal Slavata