

InteliMains 510

Mains supervision controller

SW version 1.4.0

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1 General information

1.1 Version information

Major version with fast load transition, support of CAN chargers and modbus master function and improvement cooperation with IntelliNeo controllers.

1.2 Clarification of Notation

Note: *This type of paragraph calls the reader's 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.

WARNING: 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 1.4.0

2.1 New features

- New setpoint *System Use Notification Text* was added
 - Add new text in IntelliConfig when user is logging-in
- System accepts the negative values of System Base Load
 - For negative values *LAI ANEXT: BaseLoad* function is used
 - Setpoint *System Load Control PTM* must be set as *IM Request*
- Added support for Modbus master
 - Software key is needed
- Intelicharger 120 12-24 CAN is now supported
- Load Shedding modification
 - New setpoint *Number Of Tripped Stages* added
 - User can set which Load Stages are activated after switch to island operation
- Power Flow between Mains, Genset and Bess Improvement
 - Setpoint *Load Control PTM* has new options
 - Zero Import
 - Min Import
 - Max Import
 - Mains Preference
 - BESS Max Charging
 - BESS Max Discharging
 - New setpoints added:
 - *Mains Import Min*
 - *Mains Import Max*
 - *Mains Import Hysteresys*
 - *Gen P optimal*
 - *#Gen P Min*
 - Used for cooperation with IntelliNeo and IntelliBess controllers
- Added Support of fast transfers (<100ms) for:;
 - *Close Transfer Max Duration*
 - *Open Transfer Min Brake*
- Display brightness adjustment
 - Via *LAI Display Brightness*

2.2 Bug fixes

- Rocof protection works now in both directions
- Incompatibility between IM510 and IGS-NT controllers fixed
 - If resynchronization of shared setpoints was issued on IGS-NT, all IGS-NT's controllers disconnected for a brief moment
- Fixed missing logout message in History when timeout expired after 60 seconds
- Incompatibility between LBI *MGCB Disable* and CB control in MAN Mode
 - Controller now doesn't hold internally instruction to open/close when CB button is pressed when LBI *MGCB Disable* is active

3 Changes in the version 1.3.0

3.1 New features

- The following fixed (predefined) protections are newly evaluated in 20 ms loops
 - Mains Overvoltage and Undervoltage
 - Mains Overfrequency and Underfrequency
 - Short circuit
 - IDMT Mains Overcurrent
 - Overload protection
 - ROCOF
 - Vector Shift
- User defined protections for the following values can be also evaluated in fast 20 ms loops
 - *Mains Voltage L1-N, Mains Voltage L2-N, Mains Voltage L3-N, Mains Voltage L1-L2, Mains Voltage L2-L3, Mains Voltage L3-L1, Mains Current L1, Mains Current L2, Mains Current L3, Aux Current, Bus Frequency, Bus Voltage L1-N, Bus Voltage L2-N, Bus Voltage L3-N, Bus Voltage L1-L2, Bus Voltage L2-L3, Bus Voltage L3-L1*
- *Configuration Lock* function to lock and protect a configuration by a password
- Increased size of PLC, the following number of blocks was added
 - Mux Const: 4
- New LBO SYNCHRONIZING being active during any type of synchronization
- The setpoint *Connection Type* can be forced
- New options for screen customization in the *Screen Editor*
 - Rotating and mirroring icons
 - Possibility to set a Line width

3.2 Bug fixes

- In case of external breaker control, a control unit does not try to open a breaker in case of ROCOF or Vector Shift protection are active

4 Changes in the version 1.2.0

4.1 New features

- Update of load control for parallel to mains applications (setpoint *#System Load Control PTM*)
 - The option *Load Shar* renamed to *IM Loadsharing* (the behavior remains the same)
 - New option *IM Request* (for sites with IntelliNeo controllers using FW version 2.0 and newer supporting multiNeo principles)
- Update of PF control for parallel to mains applications (setpoint *#System PF Control PTM*)
 - The option *Var Shar* renamed to *IM Varsharing* (the behavior remains the same)
 - New option *IM Request* (for sites with IntelliNeo controllers using FW version 2.0 and newer supporting multiNeo principles)
- The in-built Ethernet port can be switched between the trusted and untrusted interface
 - For smooth connection of e.g., remote displays
- Improvement of the Time Stamp function by adding the possibility to create history logs based on defined conditions (given by the state of the new LBI TIME STAMP ACT)
- The resolution of measured frequency was improved to 3 decimal places
- Setpoints *Bus VT Ratio* and *Mains VT Ratio* can be set with 2 decimal places
- The setpoint *Waiting For Breaker Feedback* was added
- New LAIs Dynamic Spinning Reserve and Dynamic Spinning Reserve Offset for receiving the values for DSR from external sources
- New setpoints defining a controller address
 - Setpoint *CAN Controller Address* for inter-controller communication over CAN2 terminal
 - Setpoint *Terminal Comm Address* for remote communication with other terminals such as display, SCADA, IntelliConfig over Ethernet or RS485
- New setpoint *Modbus Server Address* used for setting the address of a controller for communication over Modbus with 3rd party systems
- New option for protections evaluation called *Blocked*
 - A specific protection is normally evaluated but neither alarm nor any controller reaction occur
- New setpoint *Force Value Logging* for enabling/disabling an event record of Force value activation in a history
- Increased size of PLC, the following number of blocks was added
 - Mux Const: 4
 - Integration: 6
- New LBI UNKNOWN SOURCE SYNCHRONIZATION for synchronization and load transfer in applications where there is no ComAp genset on the CAN2 line
- A history event is recorded in case a user changes the statistics in IntelliConfig
- New LBOs START BUTTON STATE, STOP BUTTON STATE, FLTRES BUTTON STATE and HORNRES BUTTON STATE that are active as long as the respective buttons are pressed
- New LBOs Vector Shift Active and ROCOF Active indicating the respective protections states
- LBOs USER KEY X STATE indicating a state of grey buttons on a controller's front fascia

- New screen Values on the integrated color display (ICD) showing all the available values in a controller
- New values *Mains Relative PF*, *Load Relative PF*, *Generator Relative PF* and *Total Running Relative PF* were added
- Values *Gen Loaded 16* and *Gen Loaded 32* were renamed to *Source Loaded 16* and *Source Loaded 32*

4.2 Bug fixes

- Traps within the SNMP protocol were fixed
- Soft unload in both MCB and MGCB applications works correctly in the MAN mode
 - Maximal duration of the transfer is limited by the setpoint *Close Transfer Max Duration*
- Current bargraphs and its protection limits are displayed correctly on the ICD
- In a single system with 2 IntelliMains controllers with disabled mains coupling, LBOs SYSTEM START/STOP on both utility control units were activated incorrectly
- Fixed load transfer in the situation when an alarm *Wrn MCB Fail to Open* occurs and LBI FORCED ISLAND is active
- AMF function works properly in case of mains fail and the setpoint *MGCB Parallel Close* is set to *MCB Closed*
- Efficiency mode within Power management works correctly when combining IG1000/IM1010 family and IG200/500 or IM20/510 (new generation) family
- Run hours equalization mode within Power management was fixed
 - Incorrect priorities might have been assigned
- Fixed conversion of values in SNMP protocol v1, v2c and v3

5 Changes in the version 1.1.0

5.1 New features

- LBI GROUP LINK in BTB application
 - In case the LBI is not configured, BTB controller makes automatically Group link function between adjusted groups through closing the BTB breaker.
 - In case the LBI is configured, the group link is provided when BTB breaker is closed (BTB feedback - active) and LBI GROUP LINK is closed.
- Universal hours counter
 - This counter increments its value when appropriate LBI is active. Actual value of timer is visible in statistics.
 - 4 counters available
- ROCOF and Vector shift protections
 - These protections trip breakers also in MAN mode
- Function force value was added for following setpoints:
 - BTB control subgroup in BTB application
 - *MGCB Parallel Close* setpoint in MCB application
 - *Min Power PTM* setpoint in MCB application
- Range of setpoint *Nominal Mains Import* was increased to 32 000 kW
- SNMP improvement
 - Support of SNMP v3
 - SNMP v3 is supported on plug-in module CM3-Ethernet and on on-board ethernet
 - FW 1.1.0.7 or newer of CM3-Ethernet plug-in module is required
- Universal values for modbus interface added
 - 4x *RemoteControl 2B*
 - 2x *RemoteControl 4B*
 - 1x *RemoteControl Bin*
- Actual values of exercise timers are visible
- Default value of setpoint *MCB Close Delay*
 - New default value is 5s
- Support of 8C and 16C communication modes on CAN2 line - setpoint *CAN Intercontroller Comm Mode*
- Default value of setpoint *MCB Open Window*
 - New default value is 1%
- LBO HISTORY RECORD INDICATION PULSE added - This LBO triggers 1s pulse when new history record is created in history log.
- Remote alarm messaging improvement
 - There are setpoints for each type of alarm in controller - these setpoint can enable or disable remote alarm messaging for each alarm type

- New setpoint *Bus Meas Error Delay*
 - This setpoint adjust delay for bus measurement error protection.
- It is possible to rename default names of existing objects in the configuration, for instance:
 - Universal Hours Counters
 - Remote Controls
 - Pulse Counters
 - User Buttons
- Setpoint *Nominal Frequency* has 1 decimal place
- A user defined groups and subgroups of setpoints within User Setpoints management
 - 2 groups, 5 subgroups
- Voltage protections can be evaluated based on the phase-phase, phase-neutral or both voltages using new setpoint *Evaluated Voltage Protections*
- Adjustment of access rules
 - all setpoint can be edited by all roles in controller
- LBI MGCB OPEN
 - When this LBI is active, it is not possible to close MGCB. When MGCB is already closed and this LBI is activated, MGCB is opened immediately.
- Support of power management in kVA mode
- Modification of PLC block Comp Hyst
 - Input Enable added - input is used for enabling of output of comparator. When input is not configured, output is enabled all the time.
- Subgroup Load Transfer was moved to Process Control setpoint group
- Logical analog inputs for external control:
 - PF CONTROL: ANEXT BASE PF
 - Q CONTROL: ANEXT BASE Q
 - Q CONTROL: ANEXT IMP/EXP Q
- Setpoint *Time Stamp Act* added
 - Use this setpoint for periodical records in history log
- Improvement of PLC blocks Ramp and Up/Down
 - New parameter for setting a time units for ramping (s/min)
- Modification of setpoint *MGCB Parallel Close*
 - New option No+Reserve - MGCB is closed to parallel operation when SYSTEM RESERVE OK = 1
- It is possible to close MGCB in MAN mode when LBO SYSTEM START/STOP is not active
- Improved user access management - access level based was replaced by a role-based system
 - Individual user accounts can be assigned to individual roles
 - Role 0: administrator
 - Role 1-7: configurable roles
 - Role 8: Modbus
 - Role 9: SNMP

» LBI DARK MODE

- When active the status LED and backlight of a controller are turned off (application and controller keep running)

5.2 Bug fixes

- Airgate status value is correctly displayed
- Setpoint Generator Unload MGCB Open Level
 - » setpoint was renamed to Generator Unload Level
 - » setpoint is used also in MCB application
- MGCB is opened when system stop protection is activated
- Correct evaluation of BTB closing conditions
 - » BTB cannot close to dead BusL (Bus R - OK) If there is Genset Loaded (on the L side)
- Evaluation of ROCOF/Vector Shift protections in MCB application when option Parallel only is selected
 - » correct evaluation of protections
- Close transfer to bus without ComAp genset controller
 - » If there is voltage on the bus, but no ComAp controller connected to the bus, the Close Transfer ends in a loop of MGCB closing/opening
- Open transfer procedure when setpoint *Open Transfer Min Break* > 3s
 - » The transfer does not happen as expected, MGCB keeps closing/opening forever.
- MCB Fail To Open alarm stays active until MCB is opened
- Change of regulation parameters of Load loop where not applied when regulation loop was active
- Mains Return Delay timer was always applied when mains fail occurs - even when mains returned before start of genset

6 Notes

Revision number	Related SW version	Date	Author
4	1.4.0	30.10.2025	Michal Slavata
3	1.3.0	24.2.2025	Petr Chvojka
2	1.2.0	29.1.2025	Petr Chvojka
1	1.1.0	6.5.2024	Michal Slavata