Ingeteam

ABE - Inversores fotovoltaicos INGECON SUN monofásicos con topología multinivel / Single-phase INGECON SUN photovoltaic inverters with multilevel topology

DSP SOFTWARE APPLICATION FOR 1PLAY TL M

ABE1000IPB02_M.DOCX

IPB - DESCRIPCIÓN DE REVISIONES DE SOFTWARE / SOFTWARE REVISION DESCRIPTION

SOFTWARE REVISION DESCRIPTION SUMMARY

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1   Introduction

This document sums up the new functionalities and bug fixes included in each firmware revision.

2 VER._A. IMPLEMENTATION DATE: 14/08/2014

2.1 Configuration´s default values depending on the country and grid standard.

The configuration´s default values will be set depending on the country and grid standard chosen.

2.2 Output power can be derated by display.

A new command has been added for derate the output power on the "Settings" menu of the display.

2.3 SD card compatibility improved.

2.4 Total Harmonic Distortion improved

A new method has been implemented for reducing the harmonic injection to the grid.

3   VER._B. IMPLEMENTATION DATE: 27/08/2014

3.1   New LED Management.

The LEDs will inform new alarms and warnings.

3.2   Impedance measurement improved.

Impedance measurement accuracy has been improved.

4 VER._C. IMPLEMENTATION DATE: 05/09/2014

4.1 AC Power regulation improved.

More accurate AC power regulation has been obtained.

4.2 New Grid Standards added.

- Diesel Grid
- Stand Alone Grids: Studer.
- MEA
- G59_3

5 VER._D. IMPLEMENTATION DATE: 09/10/2014

5.1 Possibility to use an arc discharge detector included.

This firmware version includes the option to include an arc discharge detector with the inverter.

5.2 Touchpad´s accuracy improved.

A periodical calibration has been included to improve the accuracy of the tactile buttons.

6 VER._E. IMPLEMENTATION DATE: 22/10/2014

6.1 SD card compatibility improved.

6.2 Injected Energy is plot in the display.

Pressing "^" key from the main screen, today´s energy is plot hourly and last 24 day´s energy daily.

7 VER._F. IMPLEMENTATION DATE: 16/02/2015

7.1 Maximum Power Point Tracking (MPPT) improved.

New method has been implemented for improve the maximum power point tracking. This way, the inverter´s general efficiency is increased.

7.2 New nominal grid voltage can be selected in Mexico (254 Vrms).

7.3 New regulations included: CEI 021 with Internal SPI and UL1741.

7.4 DC current control improved: Bug that causes the Stop Event 50 "Fault DC/DC" fixed.

Some improvements have been implemented to avoid the Stop Event number 50 (Fault in the DC to DC converter) that last firmware versions got when the power was derated in low irradiance situations.

8   VER._G. IMPLEMENTATION DATE: 20/10/2015

8.1   Bug fixed in the display.

A bug has been fixed that reset the inverter when the energy graphic is asked in the display and the total energy produced by the inverter is greater than 9999 kWh.

8.2   Improvements in the datalogger

The possibility of downloading the equipment´s data faster is included. Depending on the type of connection the faster or the traditional mode will be automatically selected.

BEWARE: THE UPDATING TO THIS FIRMWARE VERSION IMPLIES THE AUTOMATIC ERASING OF THE DATALOGGER HISTORICAL. DOWNLOAD THE DESIRED DATA BEFORE THE UPDATING.

8.3   DC / DC control: Some improvements has been made.

Some improvements have been made in order to enhance the DC/ DC converter´s control.

8.4   Country-Regulation.

- New regulations have been added:
    o RD1699 + UNE206007 Insular + PO12.3.
    o DEWA.
- CEI 021 has been updated to V1 2014-12 revision.

9 VER._H. IMPLEMENTATION DATE: 03/11/2015

9.1 Display: Improvements made in the Contrast.

Some improvements has been made to keep the contrast after doing a "Factory Reset". This way the initial configuration screen will be seen with the proper contrast.

10   VER._I. IMPLEMENTATION DATE: 09/02/2016

10.1   Country-Regulation.

Changes in Chilean Regulations:

-    NETBILLING regulation created.
-    NT regulation updated to September 2015 version.

10.2   Display. New screens added

The V/F Settings and the Connection Waiting Time Settings are shown in the "Inverter Data" menu.
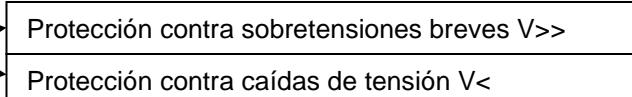
10.2.1 Correspondence of the displayed data with NETBILLING regulation requirements.

Here we can see the correspondence between the monitored data on the screen and those indicated in CHILE NETBILLING standard.
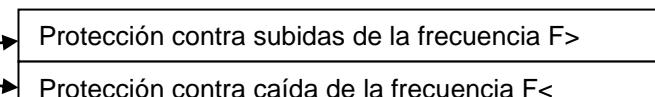
2016-2-03	16:05
Datos de inversor	
S/N	130613010000
FW APP	ABE1000_I
FW BOOT	ABF1002_E

2016-2-03	16:05
Pais normativa:	
CHILE	
NETBILLING	
Vac=220V	
Fac=50 Hz	

2016-2-03	16:05
Ajustes V/F	
VacH2	----V
VacH1	253V
VacL1	176V
VacL2	----V

Protección contra sobretensiones breves V>>

Protección contra caídas de tensión V<

2016-2-03	16:05
Ajustes V/F	
FacH2	----Hz
FacH1	51.50Hz
FacL1	47.50Hz
FacL2	----Hz

Protección contra subidas de la frecuencia F>

Protección contra caída de la frecuencia F<

```
┌─────────────────────────────────────┐
│ 2016-2-03                     16:05  │
├─────────────────────────────────────┤
│                                      │
│ Ajustes V/F                          │
│   T.VacH2              100ms         │
│   T.VacH1              100ms         │
│   T.VacL1              100ms         │
│   T.VacL2              100ms         │
│                                      │
│                                      │
└─────────────────────────────────────┘
```

→ Tiempo Protección contra sobretensiones breves V>>

→ Tiempo Protección contra caídas de tensión V<

```
┌─────────────────────────────────────┐
│ 2016-2-03                     16:05  │
├─────────────────────────────────────┤
│                                      │
│ Ajustes V/F                          │
│   T.FacH2              100ms         │
│   T.FacH1              100ms         │
│   T.FacL1              100ms         │
│   T.FacL2              100ms         │
│                                      │
│                                      │
└─────────────────────────────────────┘
```

→ Tiempo. Protección contra subidas de la frecuencia F>

→ Tiempo. Protección contra caída de la frecuencia F<

```
┌─────────────────────────────────────┐
│ 2016-2-03                     16:05  │
├─────────────────────────────────────┤
│                                      │
│ Ajustes V/F                          │
│   Modo               Habilitado      │
│   VacAvg             242V            │
│                                      │
│                                      │
│                                      │
└─────────────────────────────────────┘
```

→ Protección contra sobretensiones (media 10-minutos) V>

```
┌─────────────────────────────────────┐
│ 2016-2-03                     16:05  │
├─────────────────────────────────────┤
│                                      │
│ Ajustes V/F                          │
│   Modo               Habilitado      │
│   VacHOff            242V            │
│   VacLOff            187V            │
│                                      │
│                                      │
└─────────────────────────────────────┘
```

→ Límite Superior de tensión V>

→ Límite Inferior de tensión V<

```
┌─────────────────────────────────────┐
│ 2016-2-03                     16:05  │
├─────────────────────────────────────┤
│                                      │
│ Ajustes V/F                          │
│   Modo               Habilitado      │
│   FacHOff            50.20 Hz        │
│   FacLOff            47.50 Hz        │
│                                      │
│                                      │
└─────────────────────────────────────┘
```

→ Límite Superior de frecuencia F>

→ Límite Inferior frecuencia F<

```
┌─────────────────────────────────────┐
│ 2016-2-03                     16:05  │
├─────────────────────────────────────┤
│                                      │
│ Tiempo de Espera                     │
│   Estándar            60 s           │
│   Especial            60 s           │
│    Modo Esp.       Deshabilitado     │
│                                      │
│                                      │
└─────────────────────────────────────┘
```

→ Tiempo reconexión. Incluidas desconexiones breves.

11   VER._J. IMPLEMENTATION DATE: 25/11/2016

11.1 Pac vs Vac algorithm has been added.

Pac vs Vac algorithm reduces active power injection when grid voltage is increasing. The power reduction ratios and the grid voltage values are configurable.

11.2 Auxiliary digital input configuration has been added to allow on/off purpose.

Auxiliary digital input can be configured to start and to stop the inverter. This input can be used, for example, to fulfill with Australian regulation, working as DRM0 command.

11.3 3 countries have been added to display menu.

New Zealand, El Salvador and Egypt have been added to "country regulation" display menu.

11.4   Grid Standards have been actualized.

- BDEW has been added in WORLDWIDE menu.
- FRANCE HV has been added in WORLDWIDE menu.
- PANAMA GRID CODE has been added in WORLDWIDE menu.
- N20 has been added in WORLDWIDE menu.
- AS4777 has been updated to 2015 revision.
- AS4777 NEW ZEALAND has been added.
- EL SALVADOR has been added.
- EGYPTERA has been added.

12 VER._K. IMPLEMENTATION DATE: 05/10/2017

12.1 New Nominal Voltages for Brazil

Possibility of setting 230 V or 240 V of Nominal Grid Voltage is added, together with the 220 V that already have the previous firmware versions.

12.2 New Ingeteam Command for giving Active and Reactive Power set points at the same time.

Command number 17 is added for that purpose.

12.3 Active Power Reduction Reason fixed.

The active power reduction reason data is fixed to show the communication reason when the active power derating is given by communications.

12.4 Ingecon Sun Manager Software texts improved

Updating to this firmware version, the text shown in the INGECON SUN MANAGER software are changed in order to improve the comprehension.

13   VER._L. IMPLEMENTATION DATE: 04/01/2018

13.1 CEI016 and CEI021 Grid Standards updated.

The following Grid Standards have been updated:

- CEI021 to 2016-07+V1:2017-07
- CEI016 to 2014+V1:2014+V2:2016+V3:2017

13.2 Residual current measurement improved

 The residual current measurement has been improved to avoid the influence of high frequency harmonics.

13.3 Slave ID revision upgraded

The Slave ID revision has been upgraded to "Revision 1", in order to give more information with it.

14   VER._M. IMPLEMENTATION DATE: 08/02/2018

14.1 Self Consumption with EMS Manager/EMS Board

A malfunctioning in this mode of the Ver_K and Ver_L is fixed.

15   VER._N. IMPLEMENTATION DATE: 23/02/2018

15.1 Working mode in weak grids and AC Coupling improved

This version includes some techniques to improve the performance in weak grids and AC Coupling.

16 VER._O. IMPLEMENTATION DATE: 21/01/2019

16.1 NRS097 grid standard updated from 2010 to 2017

Loading this FW version in a inverter that already is set with the NRS097 won´t automatically update the grid standard to the 2017.

It must be done manually setting again the inverter.

16.2 ABNT_NBR_16149 harmonic response improved.

The harmonic response is improved for the ABNT_NBR_16149 grid standard.

16.3 Self Consumption response improved.

This firmware version is a little bit quicker in the self consumption response to step load changes.

17 VER._P. IMPLEMENTATION DATE: 05/05/2020

17.1 Grid Codes added or updated.

The following Grid Codes has been Added.

- SPAIN: RD 1699 con particularidades para Canarias.
- SPAIN: RD 1699 con particularidades para Canarias + PO.12.3
- SPAIN: NTS UE631.

 Moreover, CEI 0-21 has been updated to 2019-04 version.

17.2 Night stop can be disabled

In some cases it is interesting disabling the night stop to keep the monitoring alive during the night.

Although the inverter will be switched off by default, in this software version there is a setting option to disable the night stop.

18   VER._Q. IMPLEMENTATION DATE: 05/05/2020

18.1 RD 1699 with PO12_3 grid codes restored

Spanish RD1699 grid codes with PO12_3 enabled by default are restored again.

19   VER._R. IMPLEMENTATION DATE: 21/12/2021

19.1 Spanish regulations selection problem fixed in the display

In the previous firmware version there was a problem when selecting the Spanish regulations using the display that is fixed now.

20   VER._S. IMPLEMENTATION DATE: 18/05/2023

20.1 Self Consumption with EMS mode improved

Some improvements are made in the Self Consumption with EMS related to the "Warning 0x20: Self Consumption Communication Error". Now the EMS will be able to set the timeout value in order to avoid the warning in undesired conditions.