BeFREE
V3.0 (Intel ATOM based)

User manual

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November 7, 2011

RECORDS OF REVISION

REVISION	DATE	SUMMARY		AUTHOR
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1 General overview

1.1 What is what?

BeFREE is an integration of a PC and a LCD Touch Monitor, based on the existing FREE+ line. Therefore BeFREE is compatible with all existing and future FREE/FREE+ line modules. The BeFREE offers full connectivity in a very compact form and allows for easy-access maintainability. Intel Dual Core ATOM processors are used, which are powerful enough for most tasks. Due to low heat components and special design BeFREE produces very low noise levels.
BeFREE is built in the housing of the original 15" FREE+. It consist of an industrial grade motherboard, hard disk or solid state disk, DC/DC converter, touch screen, high brightness TFT LCD and Tipro controller.
There are two basic connectivity types; one standard and one powered. The powered types have powered (Retail) USB connections, powered COM ports and a cashdrawer port. They have a larger power supply so peripherals can be powered from the BeFREE.
Besides these two types there is also a fanless type which has the similar connectivity as the standard type, just with extra audio connectors.

1.2 What is new?

Version 3 of BeFREE has some significant changes to the previous version, though general characteristics as shape, modularity and serviceability remained the same.
The biggest change is the move to the ATOM D510 processor (of Intels embedded roadmap).

All internal electronics have been redesigned as well as all metal parts of the "drawer".
The main objective, besides upgrading the performance was to lower energy consumption.

At the same time we have moved to a new TFT LCD display with better viewing characteristics and lower energy consumption.

1.3 Where is what?

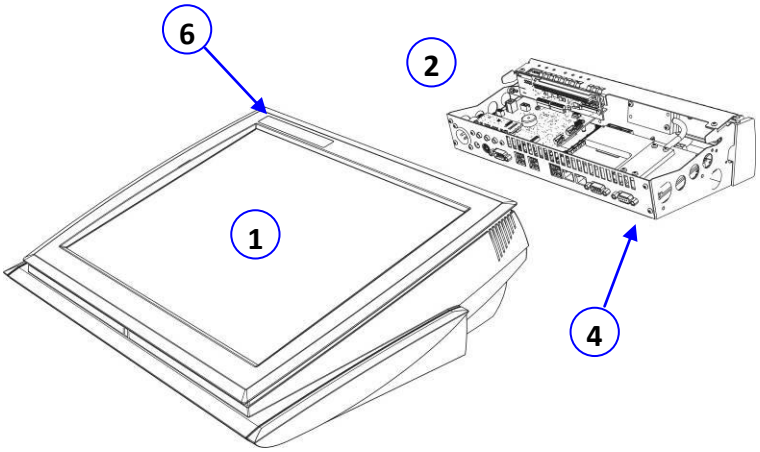


Figure 1- BeFREE (top part and PC part)

1 - Housing
- TFT LCD
- Touch screen

2 - PC part of BeFREE
- Tipro controller
- HD/SSD
- Processor
- DC-DC converter
- Motherboard
- Connector plate

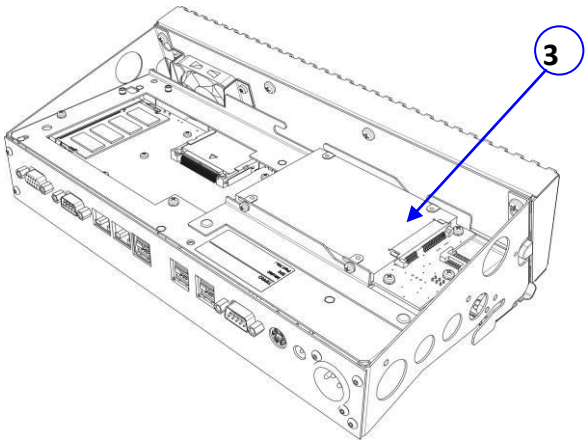


Figure 2- PC part of BeFREE (upside down)

3 - HD/SSD
4 - Connector plate
5 - ON/OFF button
6 - Status LEDs

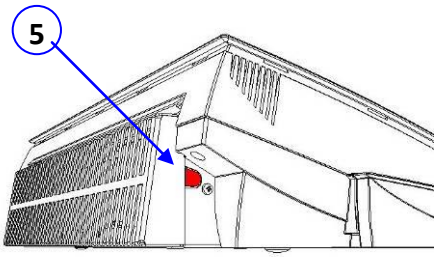


Figure 3 - left rear view

1.4 Package Contents

1. BeFREE
2. Power supply
3. Power cord (EU)
4. CD with drivers and documentation

1.5 Getting Started

1. Place the BeFREE on a flat and even surface

2. If desired, connect devices like keyboard, network, etc.

3. Connect the external power supply to the BeFREE.
   To remove the connector, the button must be pressed while pulling the connector.

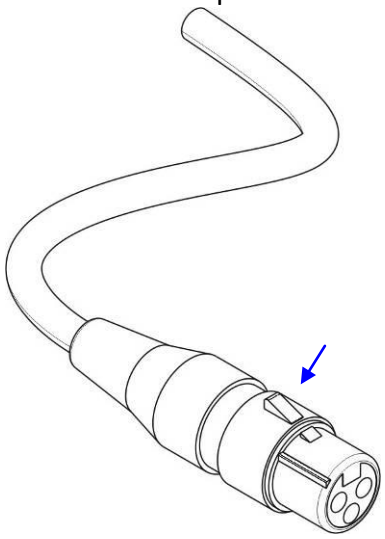


Figure 4 - Power cord

4. Connect the power supply mains cable to the outlet.

5. Press the ON/OFF button (see 1.3, point 5 -). It might take a few seconds before the image appears.

6. The system can be turned off either by the Operating System, or by pressing the ON/OFF button (you might need to hold it for a few seconds).

1.6 Cable Management

Cables can be fixed in place with the cable management.
Open the mechanism as indicated below and guide the cables through.

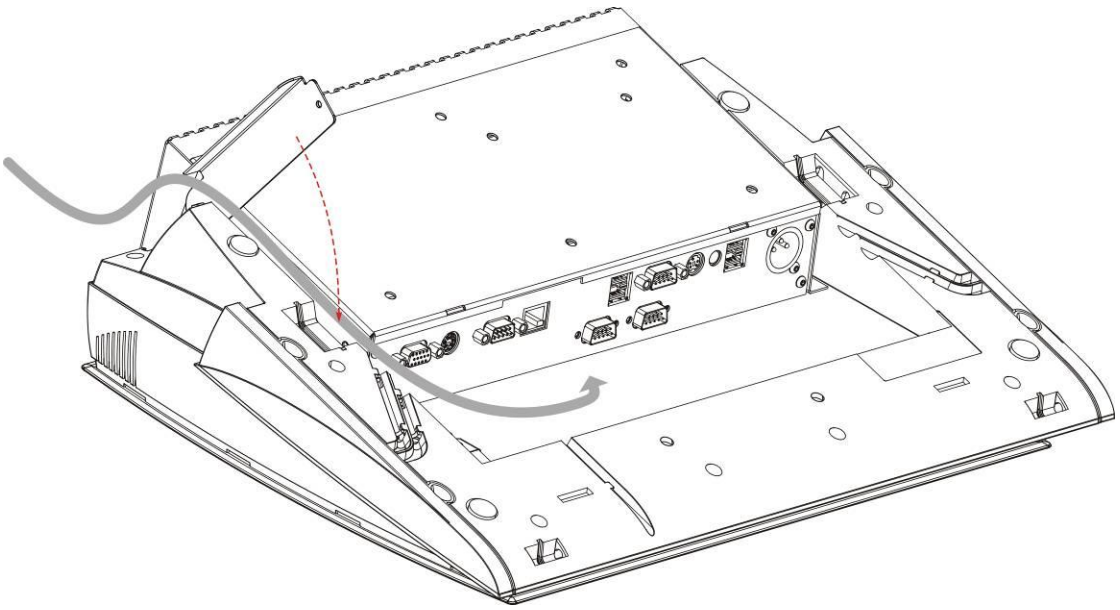


Figure 5 - Cable management

1.7 Status LEDs

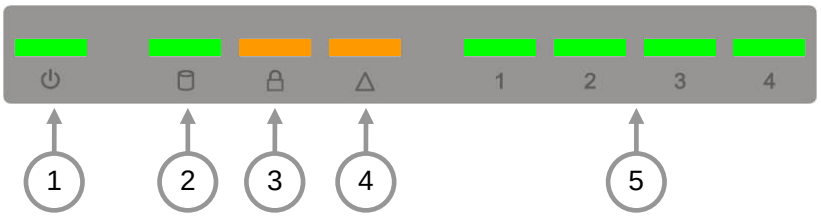


Figure 1.6 - LED Indicators

1	Power	• Short blinking: Off state, power connected • Continuous: operating • Long blinking: Sleep mode/Standby	Green
2	Hard disk	Blinking when hard disk (HD/SSD) is active	Green
3	Touchscreen	On when touchscreen disabled	Orange
4	Warning	On when error occurred	Orange
5	Configurable	• Fan state • Current active layer of Tipro Controller • Error number (overrides user settings) – see Appendix A • User defined (via API)	Green

Table 1.1 - LED indicators

1.8 Cleaning

You should clean BeFREE's screen display with dry soft, clean cloth. Then you should wipe the cloth across the display from left to right, moving from the top of the display down to the bottom of the display. If your display contains grease or some other contaminant, then you should dampen your cloth with water.

You should also use some non-aggressive cleaners as:

- ⇒ Water.
- ⇒ Water with a tiny amount of soft liquid soap.
- ⇒ Isopropyl Alcohol.
- ⇒ Commercial glass cleaners that do not contain ammonia.

2 Warnings

Tipro products are designed to operate safely when installed and used according to the product instructions and general safety practices. The guidelines included in this chapter explain the potential risks associated with BeFREE operation and provide important safety practices designed to minimize these risks. By carefully following the information contained in this chapter, you can protect yourself from hazards and create a safer BeFREE work environment.

2.1 General Precautions for Tipro Products

Retain the safety and operating instructions provided with the product for future reference. Follow all operating and usage instructions. Observe all warnings on the product and in the operating instructions. To reduce the risk of fire, bodily injury, and damage to the equipment, observes the following precautions.

2.1.1 Damage Requiring Service

Unplug the product from the electrical outlet and take the product to a Tipro authorized service provider under the following conditions:

- The power cord, extension cord, or plug is damaged.
- Liquid has been spilled or an object has fallen into the product.
- The product has been exposed to water.
- The product has been dropped or damaged in any way.
- There are noticeable signs of overheating.
- The product does not operate normally when you follow the operating instructions.

2.2 Servicing

Except as explained elsewhere in the Tipro documentation, do not service any Tipro product yourself. Always remove the power cord before opening the BeFREE. Never run the PC-part of BeFREE separately from the screen and housing. Opening, removing covers or running PC-part separately may expose you to electric shock. Service needed on components inside these compartments should be done by a Tipro authorized service provider.

2.3 Mounting Accessories

Do not use the product on an unstable table, cart, stand, tripod, or bracket. The product may fall, causing serious bodily injury and serious damage to the product. Use only with a table, cart, stand, or bracket recommended by Tipro, or sold with the product.

2.4 Ventilation

Slots and openings in the product are provided for ventilation and should never be blocked or covered, since these ensure reliable operation of the product and protect it from overheating. The openings should never be blocked by placing the product on a bed, sofa, carpet, or other similar, flexible surface. The product should not be placed in a built-in apparatus such as a bookcase or rack unless the apparatus has been specifically designed to accommodate the product, proper ventilation is provided for the product, and the product instructions have been followed.
Make sure also the external power supply has enough free space around for heat dissipation.

2.5 Water and Moisture

Do not use the product in a wet location. BeFREE is not waterproof.

2.6 Power Sources

The product should be operated only from the type of power source indicated on the product's electrical ratings label. If you have questions about the type of power source to use, contact your Tipro authorized service provider or local power company.

2.7 Accessibility

Be sure that the power outlet you plug the power cord into is easily accessible and located as close to the equipment operator as possible. When you need to disconnect power to the equipment, be sure to unplug the power cord from the electrical outlet.

2.8 Internal Battery

Your computer may contain an internal battery-powered real-time clock circuit. Do not attempt to recharge the battery, disassemble it, immerse it in water, or dispose of it in fire. Replacement should be done by a Tipro authorized service provider.

2.9 Extension Cord

If an extension cord or power strip is used, make sure that the cord or strip is rated for the product and that the total ampere ratings of all products plugged into the extension cord or power strip do not exceed 80% of the extension cord or strip ampere rating limit.

2.10 Overloading

Do not overload an electrical outlet, power strip, or convenience receptacle. The overall system load must not exceed 80% of the branch circuit rating. If power strips are used, the load should not exceed 80% of the power strip input rating.

2.11 Cleaning

Unplug the product from the wall outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning.

2.12 Heat

The product should be placed away from radiators, heat registers, stoves, or other pieces of equipment (including amplifiers) that produce heat.

2.13 Circulation and Cooling

Allow sufficient air circulation around the BeFREE and the external power supply during use. Prevent direct exposure to radiant heat sources.

2.14 Replacement Parts

When replacement parts are required, be sure the service provider uses replacement parts specified by Tipro.

2.15 Options and Upgrades

Use only the options and upgrades recommended by Tipro.

2.16 Object Entry

Never push a foreign object through an opening in the product.

2.17 Powered ports

Maximum current per port is 3A for Powered USB, 1A for Powered COM.
See also 3.5

2.18 Cash Drawer

The cash drawer uses the modular connectors specifically designed for cash drawers. Do not connect ordinary telephone line to these connectors.

3 Versions

There are 3 basic types of BeFREE:

1. Standard type
2. Powered type
3. Fanless type

The following items are the same in all versions:

- Display with Touchscreen
- Mainboard, processor and RAM
- Tipro Connectivity

Differences are in power supply, both external AC/DC and internal DC/DC. The standard and fanless versions are powered by 12V 80W, the powered version by 12V 150W.
The powered version offers more powered connectivity and can supply more current to peripherals than the standard version.

Visually the difference can be noticed at the rear; The fanless version has a heatsink, the powered version has a heatsink with integrated fan, the standard version has no heatsink, just protection for the fan

The differences in connectivity are shown below

3.1 Connectivity

3.1.1 Standard

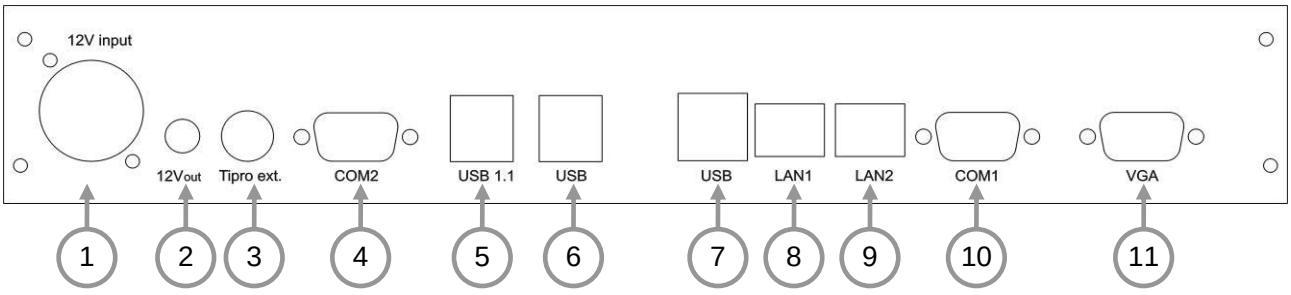


Figure 7 – Standard type

Connectors:

	Connector name	Type	Note
1	12V Input	XLR	
2	12V Output	2.1mm, center positive	
3	Tipro External Bus	Mini DIN 5	
4	COM 2	DSUB-9 male	Powered Pin9 (RI/+5V/+12V)
5	Dual USB	2×USB type – A	USB 1.1 (intended for Tipro devices)

6	Dual USB	2×USB type – A	USB 2.0
7	Dual USB	2×USB type – A	USB 2.0
8	LAN 1	RJ-45 8-pin	
9	LAN 2	RJ-45 8-pin	
10	COM 1	DSUB-9 male	
11	VGA	DSUB-15	

Table 2 - Connectivity Standard BeFREE

3.1.2 Powered

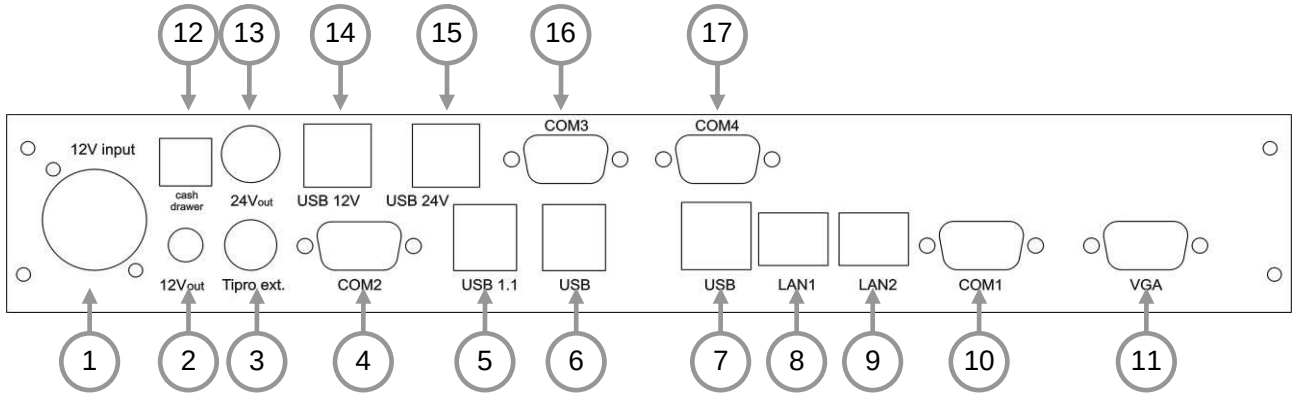


Figure 8 - Powered Type

	Connector name	Type	Note
1	12V Input	XLR	
2	12V Output	2.1mm, center positive	
3	Tipro External Bus	Mini DIN 5	
4	COM 2	DSUB-9 male	Powered Pin9 (RI/+5V/+12V)
5	Dual USB	2×USB type – A	USB 1.1 (intended for Tipro devices)
6	Dual USB	2×USB type – A	USB 2.0
7	Dual USB	2×USB type – A	USB 2.0
8	LAN 1	RJ-45 8-pin	
9	LAN 2	RJ-45 8-pin	
10	COM 1	DSUB-9 male	
11	VGA	DSUB-15	
12	Cashdrawer (24V)	RJ-12	Epson standard
13	24V output	EPSON 3-pin POWER	
14	Powered USB 12V	Power USB 12V (green)	
15	Powered USB 24V	Power USB 24V (red)	
16	COM 3	DSUB-9 male	Powered Pin9 (RI/5V/12V/24V)
17	COM 4	DSUB-9 male	Powered Pin9 (RI/5V/12V/24V)

Table 3 - Connectivity Powered BeFREE

3.1.3 Fanless

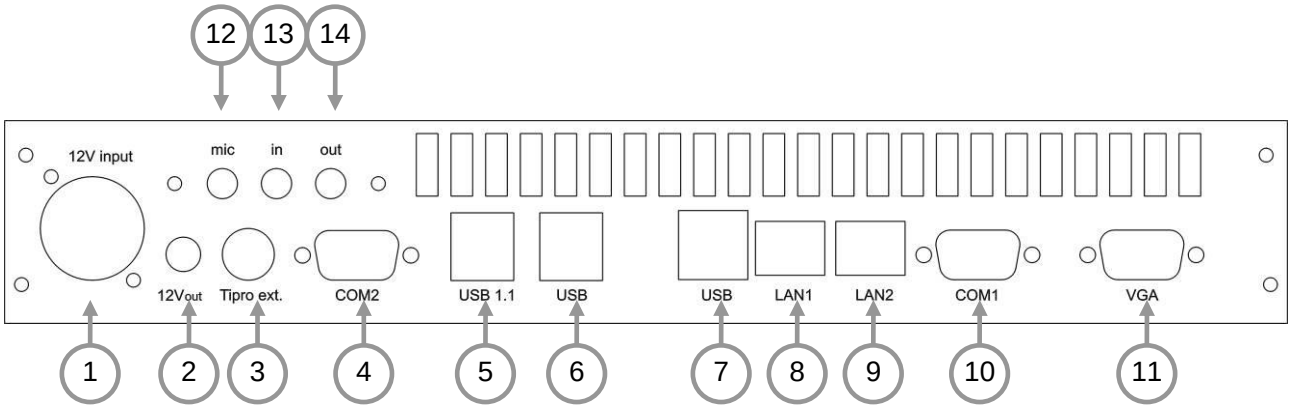


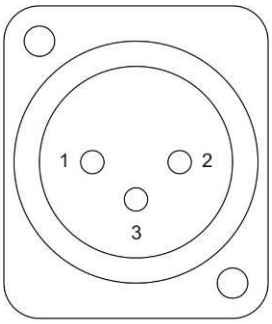
Figure 9 – Fanless type

	Connector name	Type	Note
1	12V Input	XLR	
2	12V Output	2.1mm, center positive	
3	Tipro External Bus	Mini DIN 5	
4	COM 2	DSUB-9 male	Powered Pin9 (RI/+5V/+12V)
5	Dual USB	2×USB type – A	USB 1.1 (intended for Tipro devices)
6	Dual USB	2×USB type – A	USB 2.0
7	Dual USB	2×USB type – A	USB 2.0
8	LAN 1	RJ-45 8-pin	
9	LAN 2	RJ-45 8-pin	
10	COM 1	DSUB-9 male	
11	VGA	DSUB-15	
12	Audio microphone	Stereo Jack 3.5 mm	For mono microphones
13	Audio Line-in	Stereo Jack 3.5 mm	
14	Audio Line-out	Stereo Jack 3.5 mm	

Table 4 - Connectivity Fanless BeFREE

3.2 Connector specifications

3.2.1 12V input

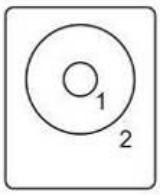


12V	
Pin #	***Name***
1	N.C.
2	GND
3	+12V

3.2.2 24V output

Pin #	***Name***
1	+24V
2	GND
3	N.C.

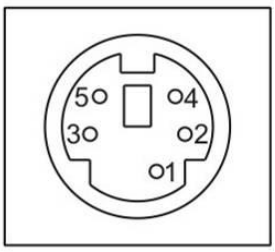
3.2.3 12V output



2.1 mm. connector.

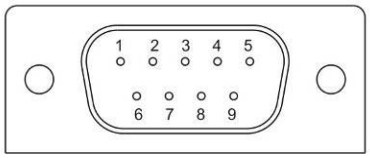
Pin #	***Name***
1	+12V
2	GND

3.2.4 Tipro external bus



Pin #	***Name***
1	TBM_CLK
2	+VTBS
3	GND
4	TBM_DATA
5	EXT_CFG2

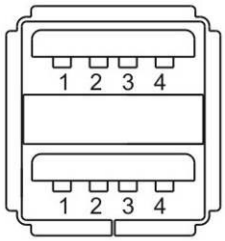
3.2.5 Serial port



Notes:
- +24V on pin 9 available on Powered BeFREE.
- For current limitations see 3.5.1 and/or 3.5.2

	COM 1	**COM 2**	**COM 3/4**
Pin #	***RS232***	***RS232***	***RS232***
1	DCD	DCD	DCD
2	RX	RX	RX
3	TX	TX	TX
4	DTR	DTR	DTR
5	GND	GND	GND
6	DSR	DSR	DSR
7	RTS	RTS	RTS
8	CTS	CTS	CTS
9	RI	RI /+5V /+12V	RI /+5V /+12V /+24V

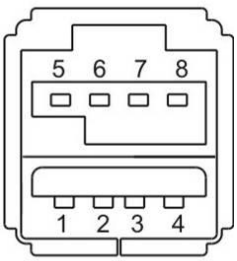
3.2.6 USB



All USB ports can provide 500mA on VBUS.

Pin #	***Name***
1	VBUS
2	D-
3	D+
4	GND

3.2.7 Powered USB 12V

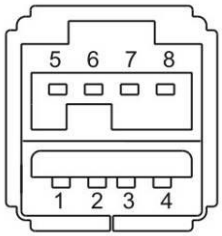


Pin out of USB part same as standard USB port, see 3.2.6.

Pin #	***Name***
1	VBUS
2	D-
3	D+
4	GND

Pin #	***Name***
5	GND
6	+12V
7	+12V
8	GND

3.2.8 Powered USB 24V

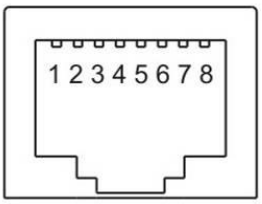


Pin out of USB part same as standard USB port, see 3.2.6.

Pin #	*Name*
1	VBUS
2	D-
3	D+
4	GND

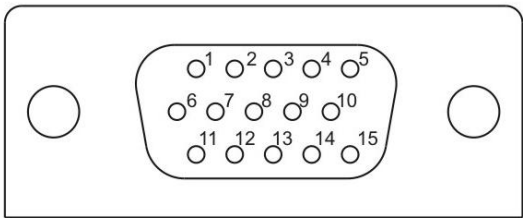
Pin #	*Name*
5	GND
6	+24V
7	+24V
8	GND

3.2.9 Ethernet



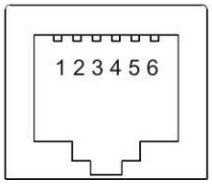
Pin #	*Name*
1	TX+
2	TX-
3	TCT
4	N/C
5	N/C
6	RCT
7	RX+
8	RX-

3.2.10 VGA



Pin #	*Name*	*Pin #*	*Name*
1	CRT_RED	9	+5V
2	CRT_GREEN	10	VGA GND
3	CRT_BLUE	11	N/C
4	N/C	12	CRT_SDA
5	VGA GND	13	CRT_HSYNC
6	VGA GND	14	CRT_VSYNC
7	VGA GND	15	CRT_SCL
8	VGA GND		

3.2.11 Cashdrawer



Pin #	*Name*
1	Shield
2	Kick out 1
3	Open/Close
4	Power 24V[1]
5	Kick out 2
6	GND

[1] Optionally 12V, see 5.2.2

3.3 Tipro Controller

The Tipro controller is built into the BeFREE. It controls Powered outputs, Display brightness, Fan, Cashdrawer and all other (optional) Tipro modules connected to BeFREE.
For monitoring, setting and programming modules, fan etc. ChangeMe is used, see 4.3. For general programming please refer to ChangeMe Help file.

In all BeFREE versions the Tipro Controller is communicate via the USB interface. USB is used for both programming the controller and for sending key-events.
BeFREEs produced after xxxx have the possibility to additionally connect the Tipro Controller to a COM port. See 5.2.3
In some cases this might be necessary, for instance when software expects data on serial interface (i.e. data from a Magnetic Card Reader).

3.4 Fan Control

BeFREE has integrated a specially designed Fan control which ensures that BeFREE is always producing as little noise as possible.
The Fan control is a device which controls fan speed proportionally to the BeFREE's temperature. In general that means the higher the temperature is, the greater the fan speed.
The temperature of BeFREE can be monitored in ChangeMe (see 4.3.1.1**Napaka! Vira sklicevanja ni bilo mogoče najti.**) or by using MIDAPI[1] functions.

The status of the fancontrol is shown by the LEDs on the top of the frame labeled 1 to 4.

-	Fan control is off
2	Fan control is working, fanspeed is regulated according to temperature
4	Temperature is over maximum, fan at 100%, damage might occur!

Note:
Optionally the LEDs can display the current layer of the Tipro controller instead of the FAN status.
Section 4.3.2 describes how to change this setting.

[1] Tipro's API. See MIDAPI documentation for more info

3.5 Power restrictions

3.5.1 Peripherals power restrictions Standard and Fanless versions

20W total available for external devices which has to be divided over 12 and 5V

Connection type:	Maximum load per port	Symbol	Maximum power allowed:
Tipro Bus	**1A**	P_{5V}	**18W**
USB:	**500 mA**		
COM 5V:	**1A**		
COM 12V:	**1A**	P_{12V}	**20W**
12V power output	**1A**		

Calculation of total used power:

$$1.1 \cdot P_{5V} + P_{12V} \leq 20W$$

Example:
Connected are:

- USB Keyboard with 30 mA consumption
- USB scanner. 155mA max.

Can we still connect a 8.4” customer display on 12V. Rating: 6W?

Calculate: $1.1 \cdot (0.03 + 0.155) \cdot 5 + 6 = 7W$

So we can easily connect the display on 12V.
Together all devices will consume 7W and the maximum rating of the 12V connection (1A) is lower than the display uses (0.5A)

3.5.2 Peripherals power restrictions Powered BeFREE

60W total available for external devices which has to be divided over 24/12/5V
Consumption is limited per port, per voltage and as a total.

Connection type:	Maximum load per port	Symbol	Maximum power allowed:
Tipro bus	**1 A**	P_{5V}	**30W**
USB 1.1	**100 mA**		
USB 2.0	**500 mA**		
COM 5V	**1 A**		
COM 12V	**1 A**	P_{12V}	**60W**
Powered USB12V	**3 A**		
12V output	**1 A**		
COM 24V	**1 A**	P_{24V}	**55W**
Powered USB 24V	**2.3 A**[1]		
24V output	**2 A**		

Calculation of total used power:

$$1.1 \cdot P_{5V} + P_{12V} + 1.1 \cdot P_{24V} \leq 60W$$

Example:
Connected are:

- USB Keyboard with 30 mA consumption
- USB scanner. 155mA max.
- Customer display, 6W on 12V

Can we still connect a printer on 24V. Rating: 1.6A?

Calculate: $1.1 \cdot (0.03 + 0.155) \cdot 5 + 6 + 1.1 \cdot 1.6 \cdot 24 = 49.3W$

So we can easily connect the printer.
Together all devices will consume less than 50W, 10 less than allowed. The maximum rating of the 12V connection (1A) is higher than the display uses (0.5A) and the maximum allowed current on 24V (2.3 A) is also higher than the consumption of the printer.

[1] Limited by the total available power on 24V

3.6 Cash Drawer

Powered BeFREEs has one RJ12 connector (see 3.1.2, No 12 and 3.2.11) for cash drawers.

The cash drawer uses the modular connectors.

! Do not connect ordinary telephone line to these connectors.

The cash drawers is driven by Tipro controller.
By default the cashdrawer port is set to 24V, but it can be changed to 12V. See 5.2.2 to change the voltage.

3.6.1 Explanation of programming Cash Drawer Ports

The cashdrawer port can be controlled by using Tipro's API (MIDAPI) or by using OPOS

3.6.1.1 OPOS:

If your Tipro OPOS drivers don't support Cash drawer check on web site http://www.tipro.net for latest drivers or contact Tipro support mail (support@tipro.net).

All supported OPOS commands can be found in UnifiedPOS document version 1.8 on page 139 (Chapter 4).

Cash drawer names are defined in registry:
(HKEY_LOCAL_MACHINE\SOFTWARE\OLEforRetail\ServiceOPOS\CashDrawer) and are by default set to: TiproCashDrawer1 and TiproCashDrawer2.
They can be changed manually in the registry.

3.6.1.2 API

Please check the MIDAPI documentation for details (see 7)

4 Software Installation

4.1 Driver installation under Windows

Windows XP and Windows 7 are supported.
Under Windows most drivers will be found and installed automatically. The drivers noted below must be installed manually from the enclosed CD.
Please always check our website for possible updates (www.tipro.net/support, then choose BeFREE).
Follow step 1 to 6 as they appear on the drivers CD.

4.1.1 Step 1, Chipset drivers

Go to the directory named “Step 1 - Intel Chipset Software Installation Utility” and run infinst_autol.exe.
Click **Next** and accept the license agreement. Click **Next** again.
You must restart the BeFREE, do this by choosing “Yes, I want to restart my computer now” and click **Finish**.

4.1.2 Step 2, Graphics drivers

Open the directory “Step 2 - Intel Graphics Media Accelerator Driver”, then “WDM” for Windows drivers, then choose your Windows version.
Run Setup.exe.
Click **Next** and accept the license agreement and click **Next** again.
Your screen might flicker during the installation, this is normal.
You must restart the BeFREE, do this by choosing “Yes, I want to restart my computer now” and click **Finish**.

4.1.3 Step 3, Ethernet drivers

Open the directory “Step 3 - Intel Ethernet 82567V and 82583V”, then “WDM” and run PROWin32.exe.
Click **Next** and accept the license agreement, click **Next** again and then **Install**.
When the installation is finished, press **Finish**.
No restart is needed.

4.1.4 Step 4, Audio drivers

This is only needed if you have a BeFREE with the optional audio connectivity.
Go to the directory “Step 4 - Realtek HD Audio Codec”, choose your Windows version and run setup.exe
Confirm that you wish to continue with the installation by pressing **yes**.
Click next to start the installation.
You must restart the BeFREE, do this by choosing “Yes, I want to restart my computer now” and click **OK**.

4.1.5 Step 5, Touch screen drivers

Open the directory “Step 5 - ELO touch driver”.
Run the executable in this folder.exe.
Click **OK** to continue, then click **unzip**. The installation will start automatically after you press **OK** again.
Choose your language or leave default, and click **next**.
Select “Install USB Touchscreen Drivers” and click **next**. Then accept the licence agreement to continue. After installing click **Finish**.
The calibration should start automatically, (otherwise go to Start > Control Panel (classic view) > ELO Touchscreen, **Align**)
To calibrate press the shown targets (3) , test and accept the settings.

4.1.6 Step 6, ChangeMe installation

Open the directory “Step 6 - Tipro ChangeMe Software” (Please check our website for the latest update (see 4.1)). Version 5.6.33 or higher is needed.
Run the exectuable in the directory.
Click **next**, you can optionally change the installation directory, click **next** again, choose “complete”, **next** again and finally **install**.
You must restart the BeFREE, do this by choosing “Yes, I want to restart my computer now” and click **Finish**.

The first time you run ChangeMe (Start > All Programs > Tipro Keyboards > ChangeMe), you will have to press OK to confirm there is no PS/2 keyboard connected. This is needed just at the first start.
After this it will detect new hardware and install the Tipro Keyboard automatically.
Because this takes some time, the autodetect feaure of ChangeMe will not find the keyboard at first. Wait untill Windows reports that the “new hardware is installed and ready to use”.
Now click **autodetect** to detect the intergrated modules.

4.2 Driver installation for Linux and other Operating Systems

Other Operating systems are not actively supported by Tipro.
All hardware integrated does support Linux, but this might be limited to certain distributions.
Some drivers are included on the driver CD, but might not suit your specific distribution.
Below follows a list of integrated chipsets, if available the driver location on the CD or the manufacturer's website.

Intel	chipset	Intel ATOM D510 and ICH8M	www.intel.com
	ethernet	Intel 82567V and 82583V	On CD or: www.intel.com
Realtek	audio	ALC888-GR	On CD or: www.realtek.com
ELO	touchscreen		http://elotouch.com/Support/Downloads/default.asp

4.3 ChangeMe

The first time you run ChangeMe, drivers for Tipro USB controller will install automatically.
Let the installation finish, then press “autodetect” to search for the controller.
The next times you run ChangeMe it will detect automatically the controller in BeFREE on USB[1].
Press on the BeFREE icon to open the dialog.

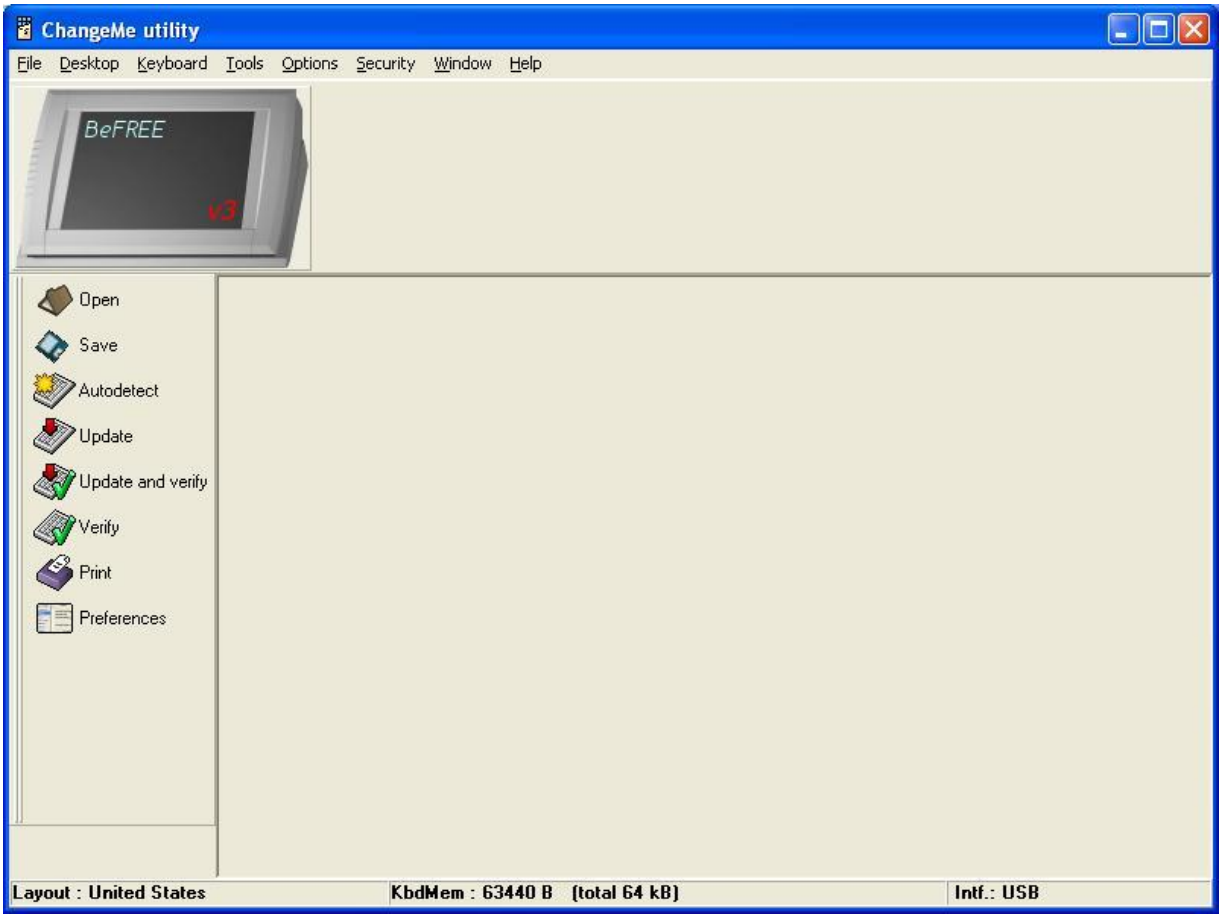


Figure 10 - ChangeMe main window

[1] USB is the default interface. Powered BeFREEs can optionally also communicate via serial interface, see 3.3 and 5.2.3.
To change the interface in ChangeMe double click on “Intf: USB” in the lower right corner of the main window (see Figure 10 - ChangeMe main window) and select COM 4, 9600 baud rate.

4.3.1 Status

4.3.1.1 Fan control

The Fan control window is just for information purposes. Press on “Read” to get the air temperature inside BeFREE and the relative fanspeed.

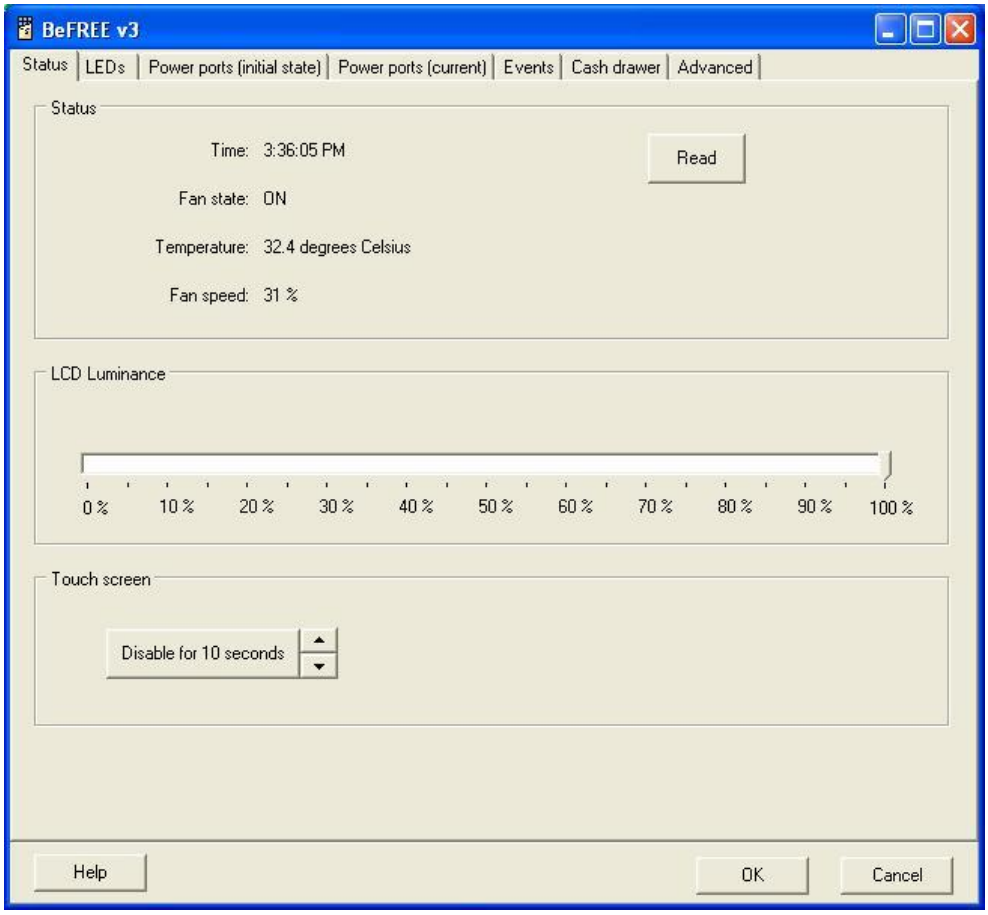


Figure 11 - status dialog

4.3.1.2 LCD Luminance

The backlight luminance of the LCD can be set. Move the slider to the desired position. Press “Read” to get the current setting.
If you press OK, the backlight settings will be used until the next power off. The settings are also written to the lay-file.
After Update, the backlight settings are remembered the next time the BeFREE starts.

4.3.1.3 Touch screen

You can disable the touchsensor for a certain amount of time, for instance for cleaning purposes. The orange LED with tehg lock symbol indicates the touchscreen is disabled, blinking green LEDs indicate that the timer is running

4.3.2 LED functionality

The behavior of the LEDs labelled 1 – 4 can be set. By default they show the fan status, but they can also show the layer that the controller is in. Optionally the LEDs can be set to not display anything. Error codes (see Appendix A) will always override this setting.
LEDs can also be driven by the API, for more information please refer to the MIDAPI help.

4.3.3 Power Ports

The control of powered ports is a new feature on the BeFREE. Powered ports can be turned on or off and their initial state at startup can be set.
The Standard and Fanless BeFREE support only the External 12V and COM2 (top 2 rows in the settings dialog), the Powered BeFREE has additionally two powered COM ports and two powered USB ports.
Powered ports can also be controlled by API, see MIDAPI help for more details.

Pressing “OK” will keep the current settings until the next power off. Pressing “OK” will also save the current settings to the lay file. With the next Update command these settings will be saved as initial settings. This means that these setings will be the default settings the next time the BeFREE starts.

4.3.3.1 Powered COM

The voltage for the COM powered ports must be set by jumper (see 5.2.1). After that this voltage can be turned on or off in ChangeMe.
If the powered COM port is set to Ring, no power – default, setting the voltage to ON in ChangeMe will have no effect.
If the COM port is set to provide 12V, only the 12V switch in ChangeMe has effect.

4.3.3.2 Connections

Some ports are controlled by a single switch, some by two in series, some ports share one switch.

- 12V out and COM2, if set to 12V, are controlled by one switch; Ext12V.
- COM 3 and 4, if set to 5V: each is controlled by its own switch
- COM 3 and 4, if set to 12V and USB1: each is controlled by its own switch and by the 12V FUSE. If the fuse is turned off, all 12V connected ports are turned off.
- COM 3 and 4, if set to 24V, USB2 and 24V out: DC/DC manages all these ports. If turned off, they all turn off.

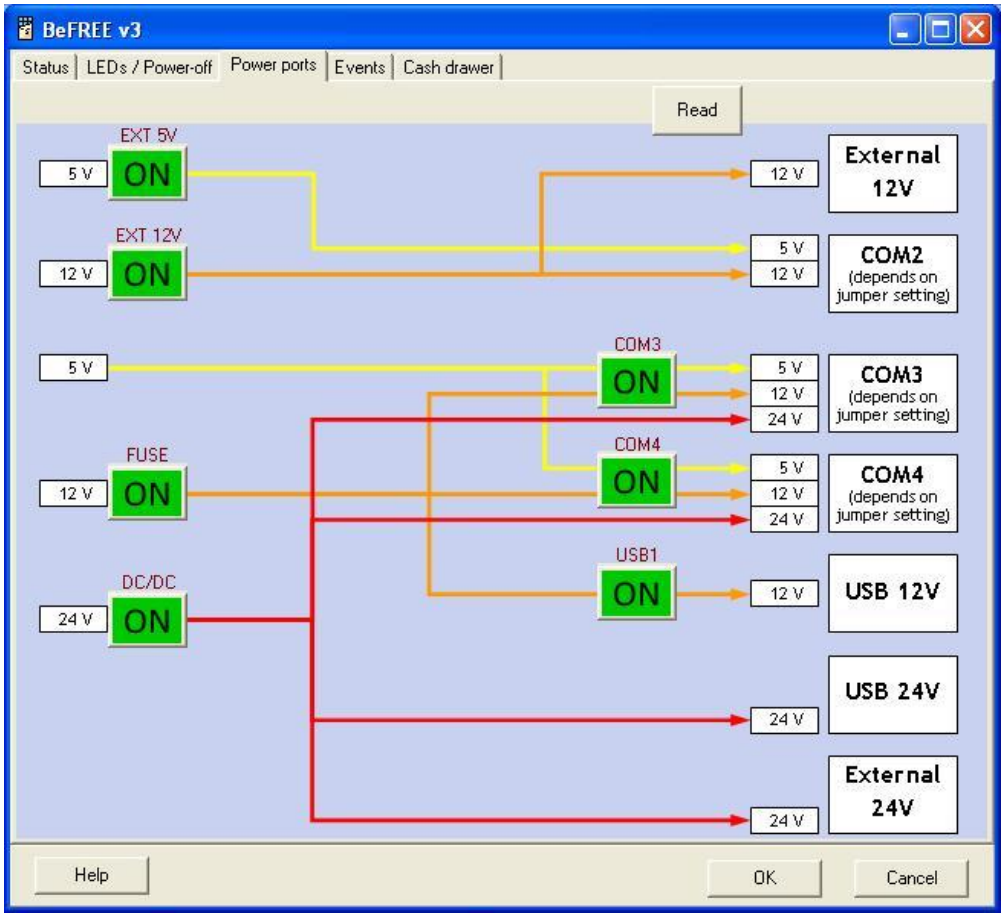


Figure 12 - power settings

4.3.4 Events

Events detected by the Tipro controller can be sent to the system as programmable keys. Possible events are fan state changes, power state changes, etc.

4.3.5 Cashdrawer

The Cashdrawer window is used for testing the cashdrawer port.
Although the window is shown for all versions of BeFREE, it functions just for Powered BeFREEs, which have a cashdrawer port.

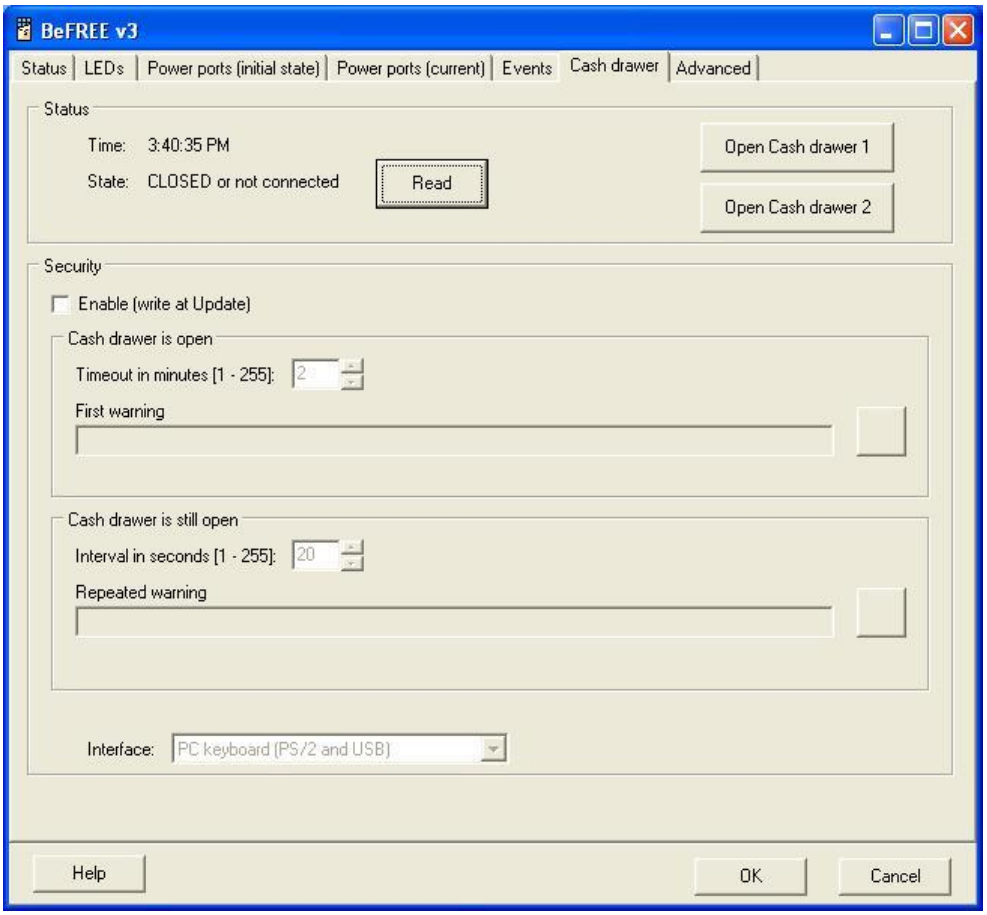


Figure 13 - Cashdrawer dialog

Press “Read” to get the current status of the drawer(s). In case no cashdrawer connection is present (standard and fanless BeFREE) the status open is shown.
On the Powered BeFREE the status is “closed or not connected” when no cashdrawer is present or when it is connected and closed[1]. The Status is “open” when the drawer is open.
Use the buttons “Open Cashdrawer” to test opening the drawer.
Optionally warnings can be sent after a certain time out if the drawer is still open.

4.3.6 Advanced – Power off mode

By default the BeFREE is set to low energy consumption off-mode. This means that just the Tipro controller is powered and set to a special low power state.
In the standard mode, the standby circuitry of the mainboard remains powered while the BeFREE is turned off.
This means that in the standard mode Wake on LAN and sleep mode of the Operating System are enabled. The consumption in off state is somewhat higher than in the low energy mode.

[1] Since the connector allows for only one open/close signal, the signal for both drawers is combined. So if either one of the drawers is open both Drawer 1 and Drawer 2 indicate open.

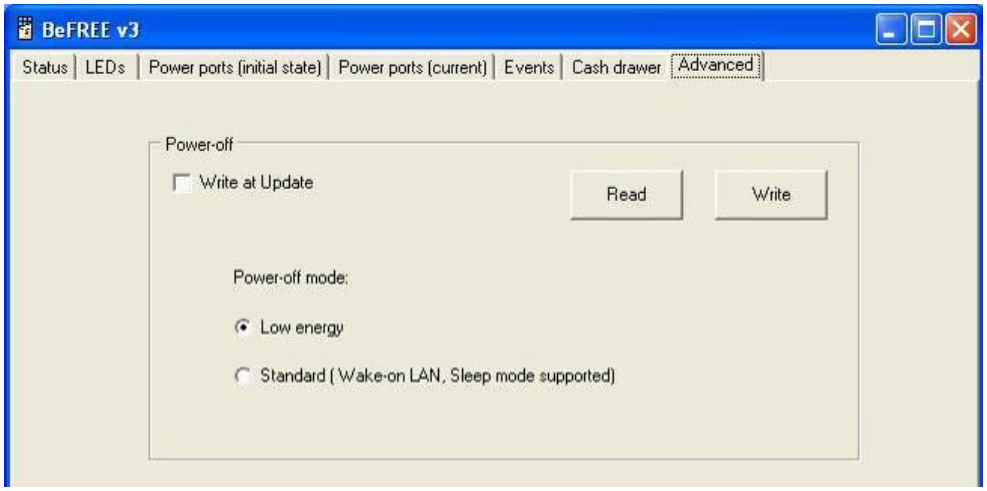


Figure 14 - power off mode

4.4 Protecting against accidental ON/OFF

A way of protecting the BeFREE from turning off is by disabling the turn off by button in Windows:

Start > Control Panel > Power Options, Advanced Tab, Power Button;
Change setting to:

- Do nothing - no reaction when the button is pressed. Turn of the BeFREE by going to Start > Shut Down.
- Ask me what to do – dialog will appear asking you what to do.

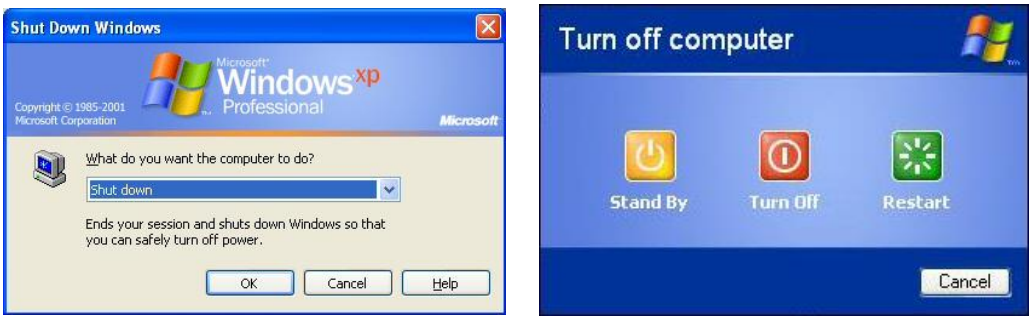


Figure 15 - Shut Down Dialogs

5 Hardware settings

5.1 HOW TO open BeFREE

!	Always remove the power cord when opening the BeFREE!

Tools:

- philips (cross) screwdriver

Procedure:

1. Remove all connectors from BeFREE
2. Turn BeFREE upside down. Place some soft protection under the screen!
3. Remove the 2 screws on either side of the housing as indicated on the drawing:

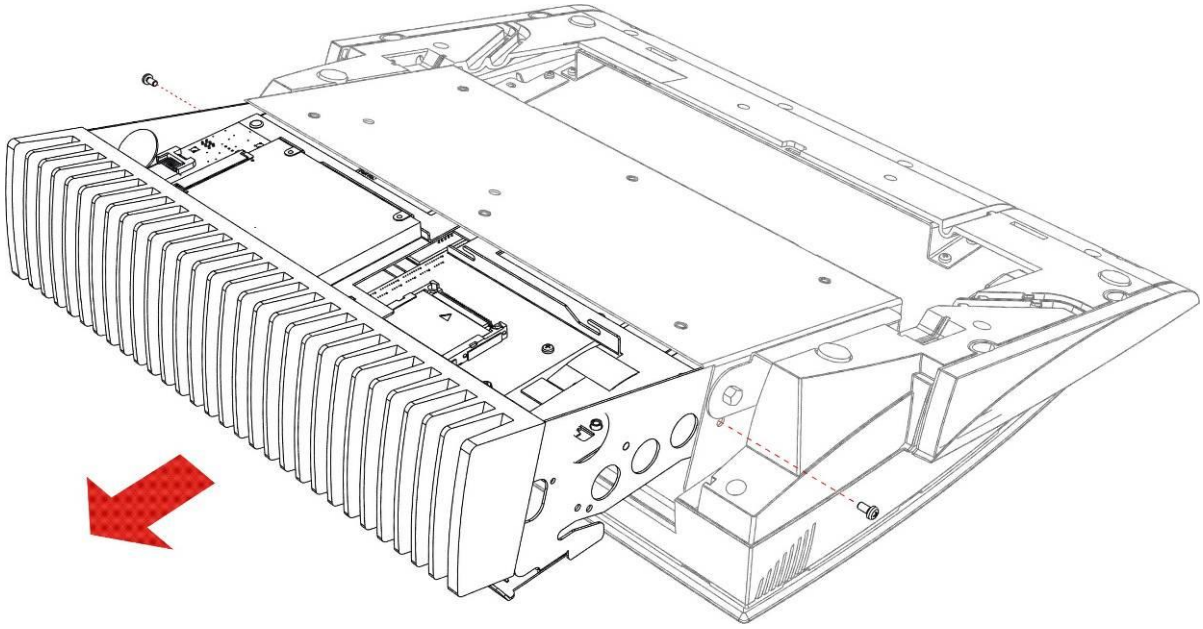


Figure 16 - open BeFREE

Now the PC-part can slide out. You might have to push at the connector side and pull at the heatsink side.
If you turn around the PC-part you can reach the jumpers to set voltage on powered COM ports (see 5.2.15.2.1)

To close BeFREE again:

1. Slide the PC-part back into the housing
2. Fix the 2 screws at the sides
3. Replace all original cables

5.2 Jumpers

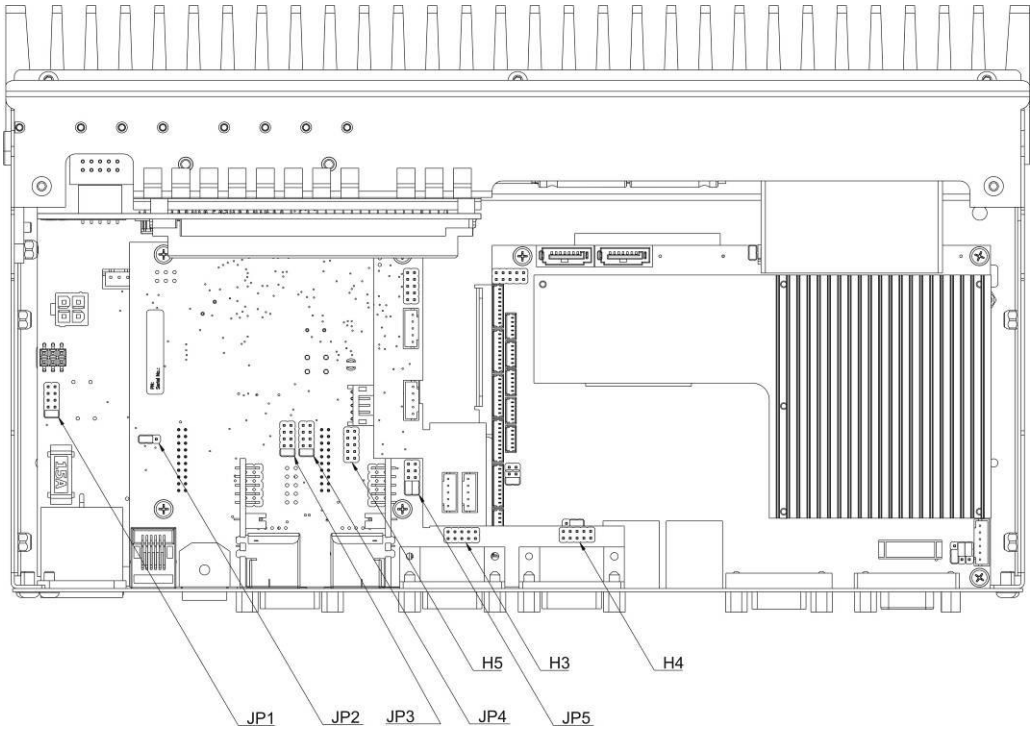


Figure 17 –Jumper position

5.2.1 Setting of the voltage on the powered COM ports

COM 2 (and COM 3 and COM 4 on powered versions) can be configured to have power on pin 9[1].

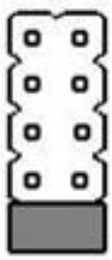
For maximum allowed load see 3.5

- First step is to open the BeFREE. Follow steps described in previous section.
- Next step is to turn around the PC part so that you can see the top.

5.2.1.1 Standard version

The jumper JP1 for COM 2 on the Standard version is positioned totally on the left side, behind the connector for the power supply, see picture below.

JP1, jumper configuring COM 2 pin 9



Not in use

12V.

5V.

Not in use

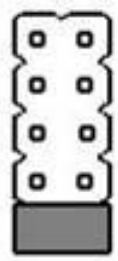
Ring, no power, default

[1] See 3.2.5

5.2.1.2 Powered version

COM 2, COM3 and COM 4 are available on Powered BeFREE. COM 2 is the same as described in the section above. The jumpers JP3 JP4 for COM 3 and 4 are located on the Add-on board as indicated on Figure 17 –Jumper positionFigure 17 above.

JP3, JP4; jumper configuring COM 3 and 4 pin 9



24 V.

12V.

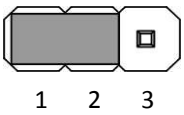
5V.

Not in use

Ring, no power, default

5.2.2 Cashdrawer voltage

By default the Cahdrawer is set to 24V output. Optionally this can be set to 12V by means of jumper JP2.



1 – 2 : 24V (default)
2 – 3 : 12V

5.2.3 Tipro Controller serial communication

All BeFREEs produced after July 2011 have this enabled by default: no need to open the BeFREE. The controller is connected to COM 5.
On earlier Powered BeFREEs, the Tipro Controller can be set to communicate via RS232[1]. USB communication is also still possible. The connector COM 4 cannot be used in this case. After the BeFREE is opened (see 5.1), move the cable from header H3 to H5 (see Figure 17 above).

[1] Refer to ChangeMe help file for information on changing interface from USB to RS232

6 BIOS settings

Any changes to the BIOS, except changing date/time and boot order, are not recommended by Tipro and are at the customers own risk[1].
You can always recall Tipro default settings by selecting “Load optimized defaults” in the main menu (6.5.6.1).

6.1 System Test and Initialization

These routines test and initialize board hardware. If the routines encounter an error during the tests, you will either hear a few short beeps or see an error message on the screen. There are two kinds of errors: fatal and non-fatal. The system can usually continue the boot up sequence with non-fatal errors. Non-fatal error messages usually appear on the screen along with the following instructions: Press <F1> to RESUME.
Write down the message and press the F1 key to continue the boot up sequence.

6.2 System configuration verification

These routines check the current system configuration against the values stored in the CMOS memory. If they do not match, the program outputs an error message. You will then need to run the BIOS setup program to set the configuration information in memory.
There are two situations in which you will need to change the CMOS settings:
1. You want to change the boot order.
2. The CMOS memory has lost power and the configuration information has been erased.

6.3 AMI BIOS Setup

American Megatrends BIOS ROM has a built-in Setup program that allows users to modify the basic system configuration. This type of information is stored in battery-backed CMOS RAM so that it retains the Setup information when the power is turned off.

6.4 Entering Setup

Power on the computer and press <Del> or <F2> immediately when the Tipro logo is shown. This will allow you to enter Setup

6.5 Setup Utility

Once you enter the BIOS CMOS Setup Utility, the Main Menu will appear on the screen. Use the left-right arrow keys to navigate through the different menus listed at the top.
Use the up-down arrow keys to navigate through the items listed on the page.
<Enter> opens the sub menu for an item or allows you to change settings for that item.
<Esc> brings you one menu level higher, or lets you exit the setup utility, after confirmation.
<F4> is the shortcut for Save Configuration & Exit.

[1] Any repairs and support that are a consequence of changes to the BIOS, other than date/time or boot order, are not covered under warranty.

6.5.1 Main

The Bios information is listed and the system time and date can be changed. Use <Tab> to move from hours to minutes etc.

6.5.2 Advanced

The first item –Launch PXE OpROM- is the only item that should be changed, if necessary.

6.5.2.1 Launch PXE OpROM

Set the Launch PXE OpROM to [Enabled] to allow booting via LAN.

6.5.2.2 H/W Monitor

This item can be used to view the current system temperatures and voltages.

6.5.3 Chipset

6.5.3.1 Restore AC Power Loss

Can be set in South Bridge. This sets the behavior of BeFREE in case of re-applying power after (unexpected) power loss. Settings other than [Power Off] must be combined with Setting the BeFREE Power Mode in ChangeMe to Standard off-mode. See 4.3.6.
Possible options are:

- Power Off; BeFREE stays off after re-applying power (default)
- Power On; BeFREE automatically starts after re-applying power
- Last State; If BeFREE was off during power loss, it will stay of when re-applying power. If BeFREE was runnig during power loss, it will automatically start after re-applying power.

6.5.4 Boot

The Boot Option Priorities list the possible boot options. The boot order can be changed here. If you want to momentarily change the boot order, see boot override in 6.5.6.2

6.5.5 Security

The Security tab offers the possibility for two passwords:

1 - Administrator password
2 - User password

If only the administrator password is set, it limits access to the BIOS Setup. If only the user password is set, it will have to be entered on each boot and to access the BIOS setup.

6.5.6 Save & Exit

6.5.6.1 Save & Exit options

You can choose to exit with and without saving the changes made or to restare defaults.
If there are any problems, we advise to always first choose restore defaults to go back to the original factory settings.

6.5.6.2 Boot override

Use this option to override the default boot order, for instance to boot from USB DVD for operating system installation, though the harddisk remains the default boot device.

7 References

- ChangeMe Help
- MIDAPI Help
- Tehnical Overview BeFREE

8 NOTICES

8.1 Disclaimer

Information furnished by Tipro is believed to be accurate and reliable. However, Tipro makes no representations or warranties regarding the accuracy or completeness of the contents of this document and reserves the right to make changes to specifications and product descriptions at any time without notice.

8.2 Copyright Notice

Appendices

A – Error Codes

Warning LED (orange) is blinking, four status LEDs (green) indicates type of error.

1	2	3	4	Failure description
				No error
■				No 5V from main DC/DC
	■			No PS_ON signal from motherboard
■	■			No 12V for powering the motherboard
		■		No external 12V
■		■		No external 5V
	■	■		External 12V is not turning off
■	■	■		PS_ON signal is not turning off
			■	12V for motherboard is not turning off
■			■	Main DC/DC is not turning off
	■		■	Fan is not spinning
■	■		■	No USB signal from motherboard