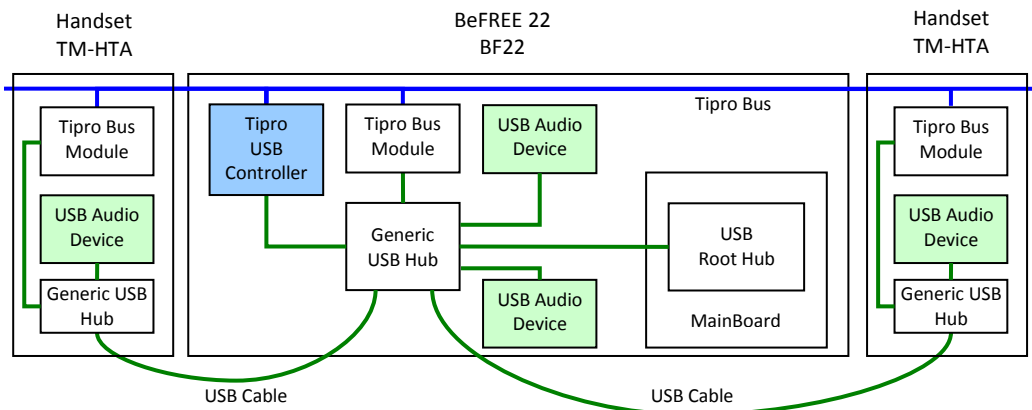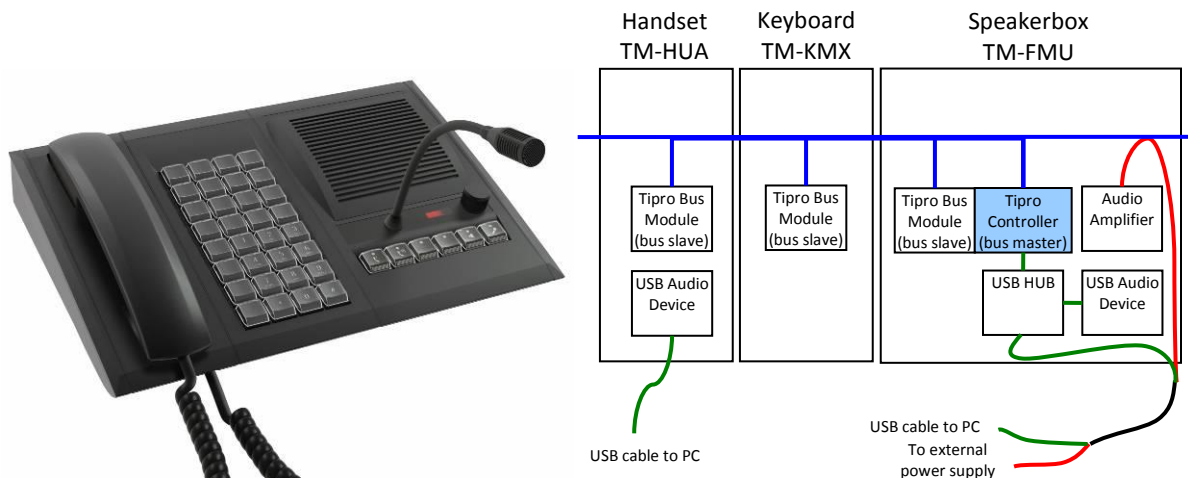Modularity Demystified

At a Glance

1. Configuration with BeFREE touchcomputer (also referred to as Terminal or Console)

2. Configuration without BeFREE (also referred to as Intercom)

In Detail

Tipro's FREE and BeFREE products belong to one single modular product family. The modular concept enables different modules to be combined into various compositions (referred to as configurations). Each configuration must comprise exactly one Tipro controller, which resides inside one of the selected modules. The following rules apply:

1. BeFREE touchcomputer modules always have the controller built-in. See example 1 on the first page.
2. If no BeFREE is present, the controller shall be in a module which requires an external power supply (Speakerbox or Chameleon). See example 2 on the first page.
3. If these modules are also not present, the controller shall be in the Handset.

Note: in certain exceptional cases it might be necessary to deviate from the rules above.

Components implementing the modularity

- Tipro Bus electrically interconnects all modules and the controller within a configuration, enabling them to communicate to each other. The bus is powered (5V) by the controller. The controller is powered by the host computer through USB.
- Controller is the master of the Tipro Bus and provides the interface to the host computer as a standard USB HID keyboard. The host can access any module via the controller.
- Modules are the slaves of the Tipro bus, each having its own microcontroller to perform specific functions. Modules range from a keyboard and handset up to the all-in-one touch computer BeFREE. Each module is programmable with a number of settings to be adjusted for particular application. Such a setting is, for instance, an action to be taken upon key press/release or a gain of an audio amplifier.
- Programming is the procedure of defining parameters/settings of a complete configuration. ChangeMe software is respective programming utility for Windows operating systems.
- Powering
   o USB Ports provide power to USB Audio Devices and Tipro Controller
   o Tipro Controller transfers power to all Tipro Bus Modules via Tipro Bus
   o Tipro Power Bus, sourced by BeFREE, provides power to Speakerbox (Audio Amplifier) and Chameleon (LCD Keys) as shown in the example 1.
   o External Power Supply is normally connected only to BeFREE (see example 1). In case this is not present, it is connected to Speakerbox (see example 2) and Chameleon.

Table 1: Connection Overview

	Tipro Controller	External Power	Tipro Power Bus	Audio
BeFREE	Built-in	Needed	Present (as source)	Not present
Speakerbox	Optional	Needed[*]	Present (as load)	Present
Chameleon	Optional	Needed[*]	Present (as load)	Not present
Handset	Optional	Not needed	Not present	Present
Keyboard	Optional	Not needed	Not present	Not present

[*] only in configurations without BeFREE