ETE/V6291/PVT/04-52

Vitolink® hardware specification©

1. General principles and requirements

When the AC voltage crosses zero, very small interrupts are created in the line voltage(102&103), see curve figure 1. When a control signal has to be sent, a series of small interrupts in the line voltage are forming a digital control signal(104).
Herewith:
- A Vitolink system consist of a main controller that generates line interrupts and that is connected to load controllers able to control various loads (e.g. lighting).
- The communication is done over the power line no extra wiring is required.
- There is no limit on the length of the power line.
- The interrupts are so small that the harmonic current stays within the limits of the international standards(IEC).
- The interrupts are between 1.45 and 1.55 ms from zero crossing.
- Vitolink can work with capacitive loads (e.g. electronic ballasts) because of the patented technique. Therefore it switches an extra electrical load on the line during the small interrupt. This assures that the TRIAC controller switches off in difficult conditions.
- Vitolink is intended for use in mini grids with defined electrical loads(e.g. a lighting grid). Defined electrical loads are loads that can continue operation when small line interrupts is generated. Defined electrical loads may not have a reactive energy that is greater then 150 VA. In practice almost all loads will function very reliable with exception for lamps with ferromagnetic ballasts (old technology).

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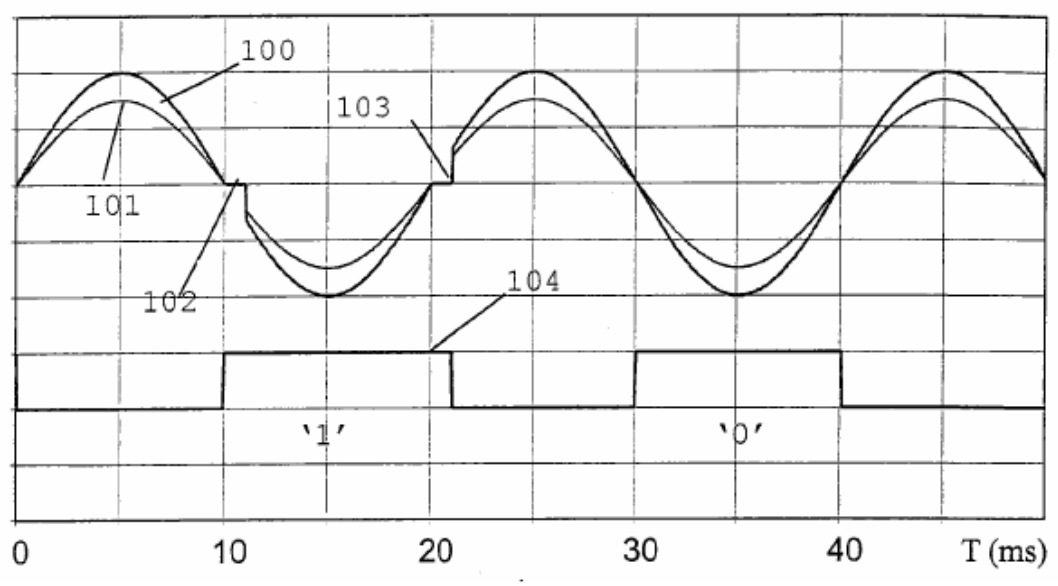

Figure 1. working principle of Vitolink

2. Vitolink system configuration and system component definitions

Figure 2&3 contain the typical system components of a Vitolink system.
Vitolink system components should follow the terminology used in this chapter.

2.1 Vitolink main controllers

Definition:
This are controllers that are inserted between the line voltage and that can generated interrupts in the line voltage that allow to sent control signals.

Types(will be updated regularly):
MAINCON-S (figure 2):

- 5 A unit
- serial and parallel interface
- 2 indicator lamps
- 2 push button
- output for external TRIAC or switch
- input for power measurement

CON4OFF (figure 3):

- 5 A unit
- 4 on/off togglebutton

CON3DIM (figure 3):

- 5 A unit
- 3 dimming control buttons

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2.2 Vitolink main controller accessories

Definition:
This are accessories that are connected to the main controller, mainly to provide user interfaces.

Types(will be updated regularly):
CLUS-1 (see figure 2):
- serial interface to main controller.
- modem connection (RS232).

CLUS-2:
- serial interface to main controller.
- LAN connection (RS232).

SWITCH20A (see figure 2):
- external switch 20 A (TRIAC).

POWMOD1 (see figure 2):
- external current measurement shunt (required for feed back communication)

CUSTOM:
- dedicated equipment available with Vitolink partners.

2.3 Vitolink load controllers

Definition:
This is control equipment connected directly to the loads (e.g. lamps).

Types(will be updated regularly):
STREETRC-1:
- on/off switch with solid state relays 2A.
- 1-10 V dimming interface.

RCONOFF-1:
- 2 on/off switch with solid state relays 2A.
- will provide TRIAC dimming in future versions.

RCDIM-1:

- 3 1-10 V dimming interface outputs.

OEM lamp ballasts:
- dedicated lamp ballast available with Vitolink partners.

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3. Vitolink patented hardware receiver for load controllers

The patented Vitolink receiver is easy to implement in hardware (see figure 4).
It consist of a comparator circuit with special patented feedback. Few external components are needed and the circuits own power consumption is low.

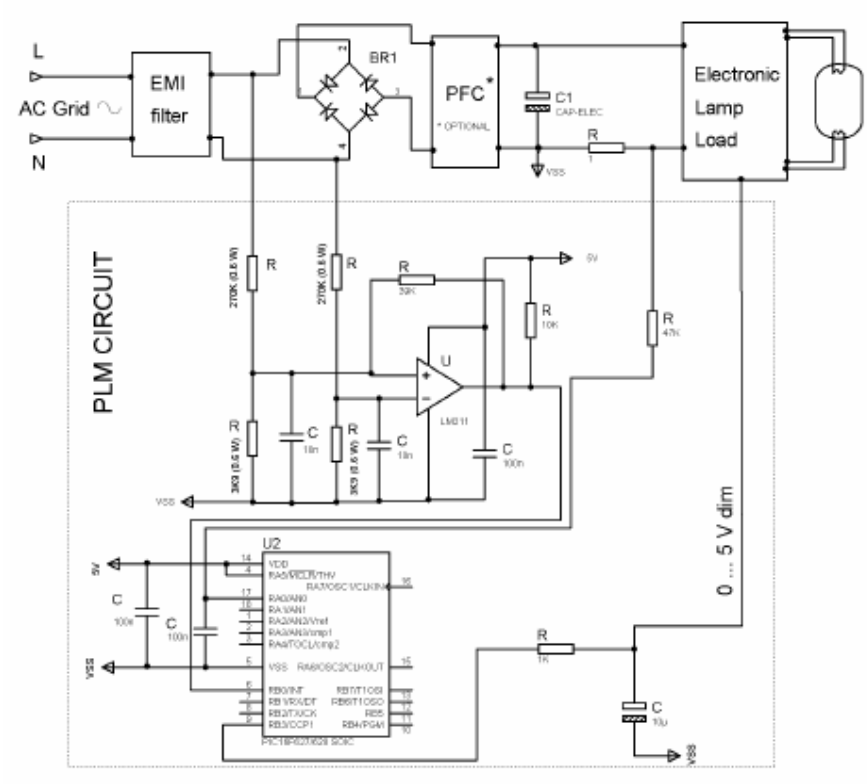

Figure 4. example of Vitolink receiver hardware (in this case integrated in a dimmable ballast with 0-5V interface)

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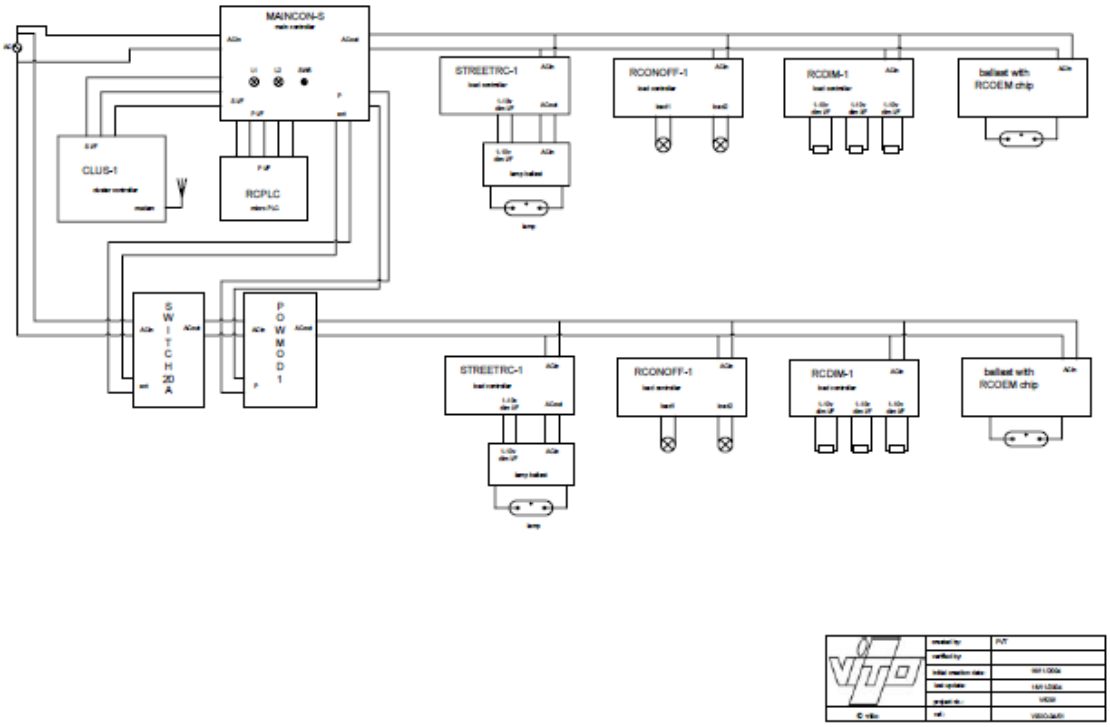

Figure 2 system components

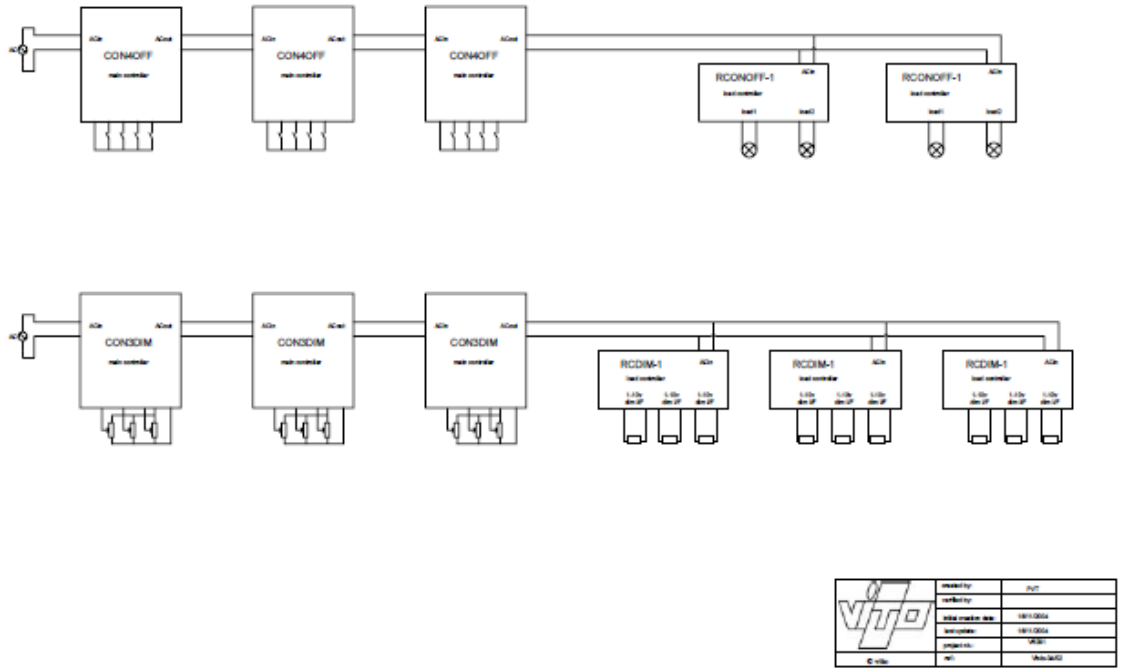

Figure 3 system components

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