STEVAL-IHP007V1

Power line communication module for street lighting

Features
- SM6T15CA: Transil 600 W TVS diode
- SMAJ5.0CA-TR: Transil 400 W TVS diode
- ST7580: FSK, PSK multi-mode power line networking system-on-chip
- STM32F103CBT7: STM32 ARM-based 32-bit MCU
- STPS1L30: low drop power Schottky rectifier 1 A, 30 V, 0.3 V
- STTH1L06A: Turbo 2 ultrafast high voltage rectifier
- RoHS compliant

Description
The STEVAL-IHP007V1 evaluation board is a power line communication module addition to the STEVAL-ILH007V1 HID ballast module. It provides functions for the management of street lighting network architecture in the CENELEC A-B-D bands.

The module is based on an STM32F103CBT7 ARM Cortex-M3 microcontroller and an ST7580 PSK narrow band power line modem with up to 28.8 kbps data rate. The embedded MCU can be easily replaced with an equivalent 48-pin MCU from the STM32F0, STM32F2, STM32F3 families with a few changes.

The module is designed to work with the STEVAL-ILH007V1 HID module, but can be associated with other lighting driver boards with a standard serial communication port.

Note that this board only functions in a network with an EVALKITST7580-1 board designated as the master; this is achieved via UART commands.
Figure 1: STEVAL-IHP007V1 circuit schematic (1 of 5)
Figure 2: STEVAL-IHP007V1 circuit schematic (2 of 5)

Figure 3: STEVAL-IHP007V1 circuit schematic (3 of 5)

Isolated Zero Crossing
Figure 4: STEVAL-IHP007V1 circuit schematic (4 of 5)

Power Line Coupling Section

Figure 5: STEVAL-IHP007V1 circuit schematic (5 of 5)

JTAG Interface
STEVAL-IHP007V1 firmware section

Figure 6: Firmware architecture

Figure 7: Data link architecture
Figure 8: Application architecture

- PL_APPLICATION: Application.c/h
- COM_USER: User.c/h
- CALENDAR: Calendar.c/h

Application Layer

- PLM interfaces
- Serial User interfaces
- Calendar management

Data Link layer
Revision history

Table 1: Document revision history

<table>
<thead>
<tr>
<th>Date</th>
<th>Rev</th>
<th>Changes</th>
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<tbody>
<tr>
<td>09-Feb-2015</td>
<td>1</td>
<td>First release.</td>
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<tr>
<td>23-Jul-2015</td>
<td>2</td>
<td>Description has been updated.</td>
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<tr>
<td>07-Jan-2016</td>
<td>3</td>
<td>Updated board photo on the cover page.</td>
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<tr>
<td>02-Sep-2016</td>
<td>4</td>
<td>Text and formatting changes throughout document.</td>
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<tr>
<td></td>
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<td>Updated cover page Description.</td>
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<td>Updated Figure 6: “Firmware architecture”</td>
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