



STEVAL-IPE010V1

Energy meter demonstration kit motherboard based on the STPMC1 and STPMS1

Data brief

Features

- V_{nom} : 230 V_{RMS}
- I_{nom} CT: 1 A (I_{max} 30 A)
- I_{nom} Sh: 5 A (I_{max} 80 A)
- f_{LIN} : 50 / 60 \pm 10% Hz
- Operating temperature: - 40 / + 85 °C
- RoHS compliant

Description

The purpose of the demonstration kit is to provide an evaluation platform for the STPMC1 and STPMS1 devices, but it can also be used as a starting point to design a Class 1 meter for 2 to 4-wire power line systems using delta or wye service.

The STPMC1 is a metering ASSP implemented through an advanced 0.35 μ m BCD6 technology. The STPMS1 is an ASSP designed as a building block for single or multi-phase energy meters.

The kit is made up of the STEVAL-IPE010V1 motherboard with the STPMC1 mounted, and up to 5 daughterboards (order code STEVAL-IPE011V1), each with an STPMS1 mounted to sense the voltage and current of each phase.

Each phase is monitored by an independent daughterboard, in which an autonomous power supply is provided to the board itself and, once it is connected, also to the motherboard.

On this board, the STPMS1 device senses the phase current through a CT or a shunt sensor, and the phase voltage through a voltage divider. The presence of dedicated networks greatly reduces the sampling (aliasing) noise and the crosstalk noise between voltage and current channels, increasing meter precision. The STPMS1 produces a sigma-delta stream, sent together with the supply voltage, to the STPMC1 through a card edge connector.

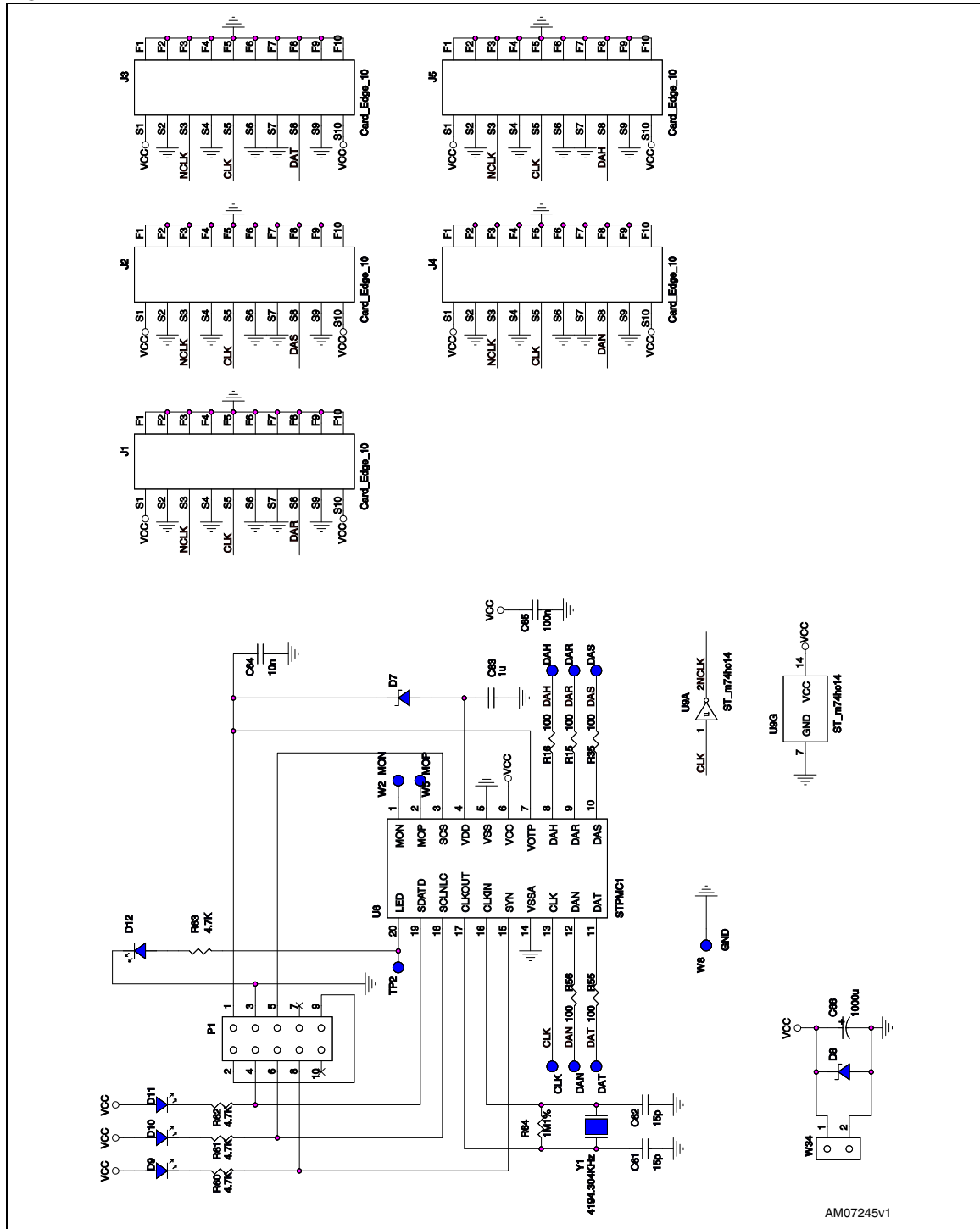


The motherboard receives the sigma-delta streams from the daughterboards which are further elaborated by the STPMC1. This device, from a 4.194 MHz crystal oscillator, provides a common clock with programmable frequency to all the daughterboards.

The motherboard, through a 10-pin flat cable connector, can be interfaced to a microprocessor board to implement advanced metering features (multi-tariff, data management and storage, communication, etc). It also has stepper motor connectors for simple energy meter implementation.

1 Schematic diagram

Figure 1. Circuit schematic



2 Revision history

Table 1. Document revision history

| Date | Revision | Changes |
|-------------|----------|------------------|
| 16-Jun-2010 | 1 | Initial release. |

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