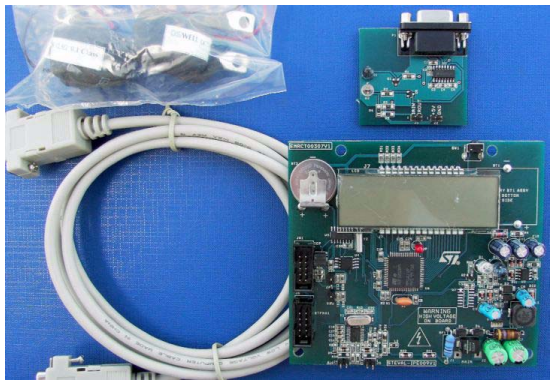
STEVAL-IPE009V1

Mono-phase / multi-tariff energy meter based on the ST72321BR9 and STPM14

Data Brief

Features

- Cost-effective and flexible
- Meets Class 1 accuracy for I_B = 5 A and I_{max} = 80 A according to IEC 61036:1996 + A1: 2000 - Static meter for active energy (classes 1 and 2)
- Operating voltage range 220 V ± 20%
- Continuously detects and displays no-load conditions, reverse direction, fraud and case tamper conditions
- Configurable number of tariffs (1 to 4) and maximum demand type (day, one month or three month)
- Accumulated data for whole meter life (total kWh consumption, average MD (maximum demand), total number of tariffs, tariff time slots, consumption under different tariff rates, power failure date/time)
- Data for last 12 months (consumption under tamper mode for each month, first/last case/fraud tamper date/time, total tamper time and power failure accumulating time for each month)
- Data for absolute maximum demand (absolute MD, date/time) according to type of MD requested
- SW LCD driver for 24 x 4 segment LCD glass with contrast control
- RTC with SPI for real date/time
- EEPROM with SPI for storing 256 Kb of data
- Case tamper detection even in power-down
- External switch for viewing all data stored in EEPROM sequentially even when AC power is not available
- Battery backup to detect tampering and see all parameters stored in EEPROM even during power-down



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- Single point and fast calibration of the STPM14 for Class 1 meter.

Description

This demonstration board is an integrated system designed to provide the user with a complete, ready-to-use energy meter application. It is a medium-end solution for power metering, using the ST72F321BR9T6 microcontroller, the M41T94 RTC (real-time clock), the M95256 EEPROM and the STPM14 energy meter ASSP device.

The multi-tariff energy meter demonstration board implements many features that can be used as a starting platform for evaluation and development of meter applications, including multi-tariff management, absolute and average maximum demand calculation, two types of tamper management, and power failure management.

1 Schematic diagram

1.1 Multi-tariff single-phase meter

Figure 1. Schematic - microcontroller and IrDA section, MCU oscillator/reset

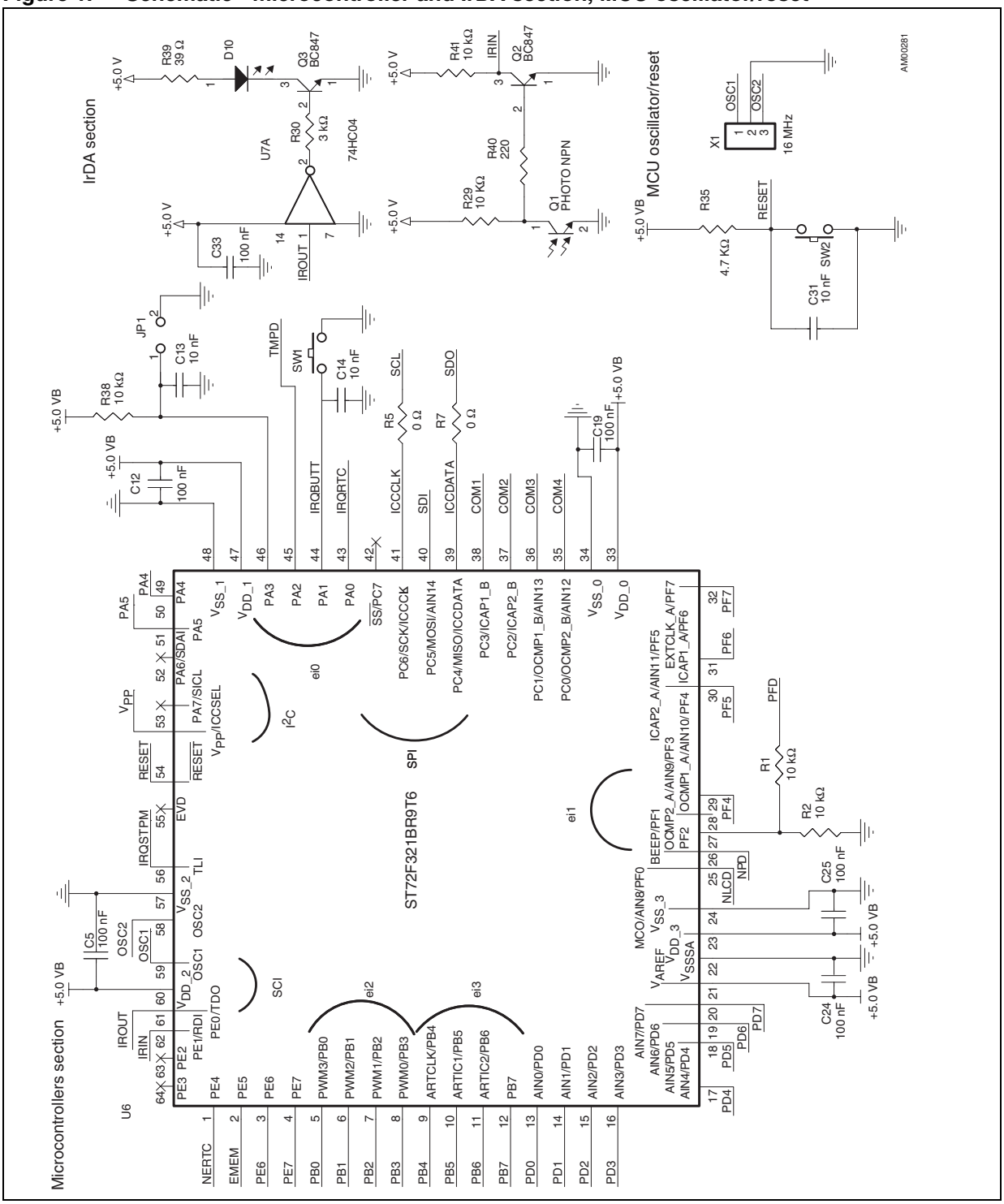


Figure 2. Schematic - power management, RTC/memory SPI block

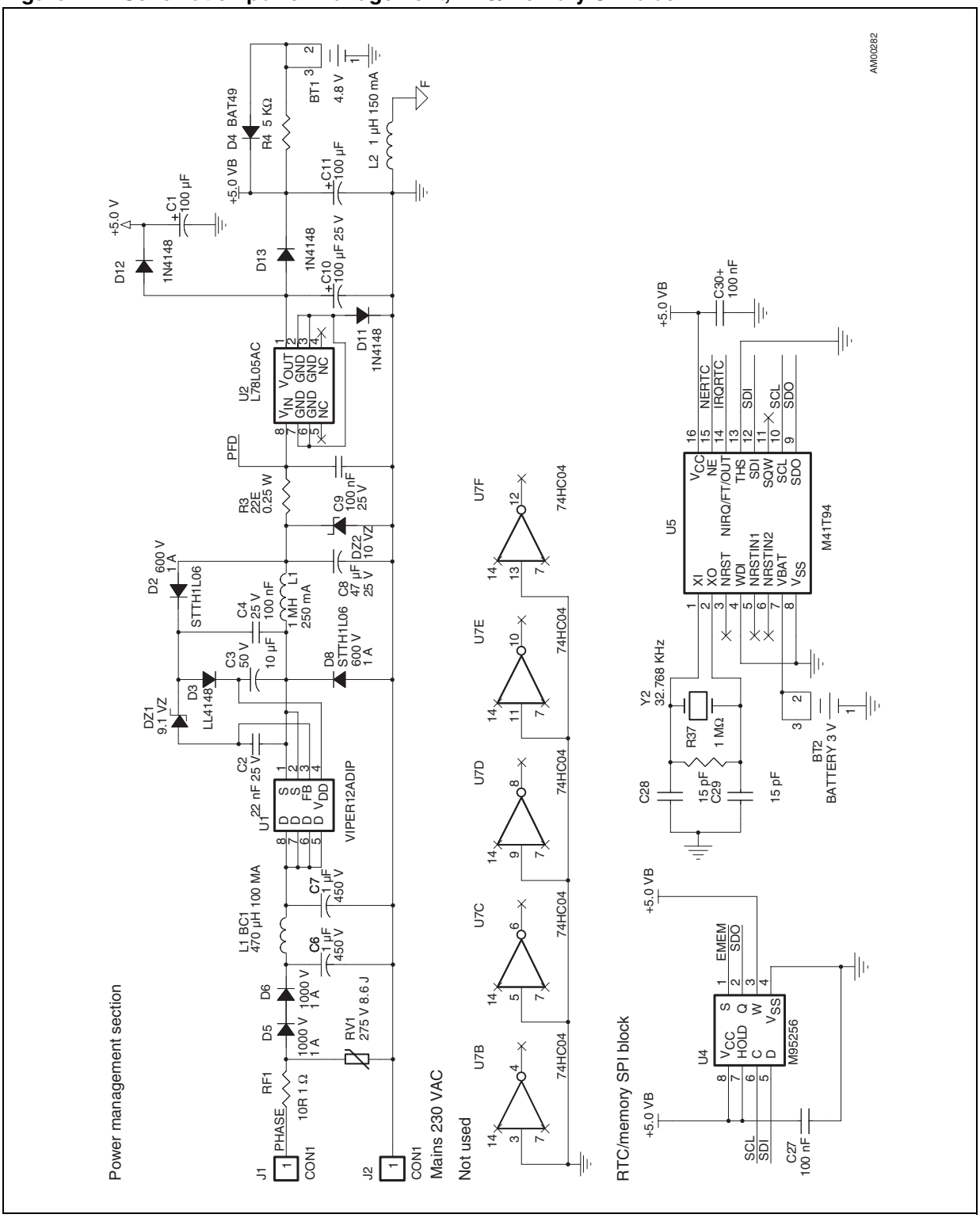
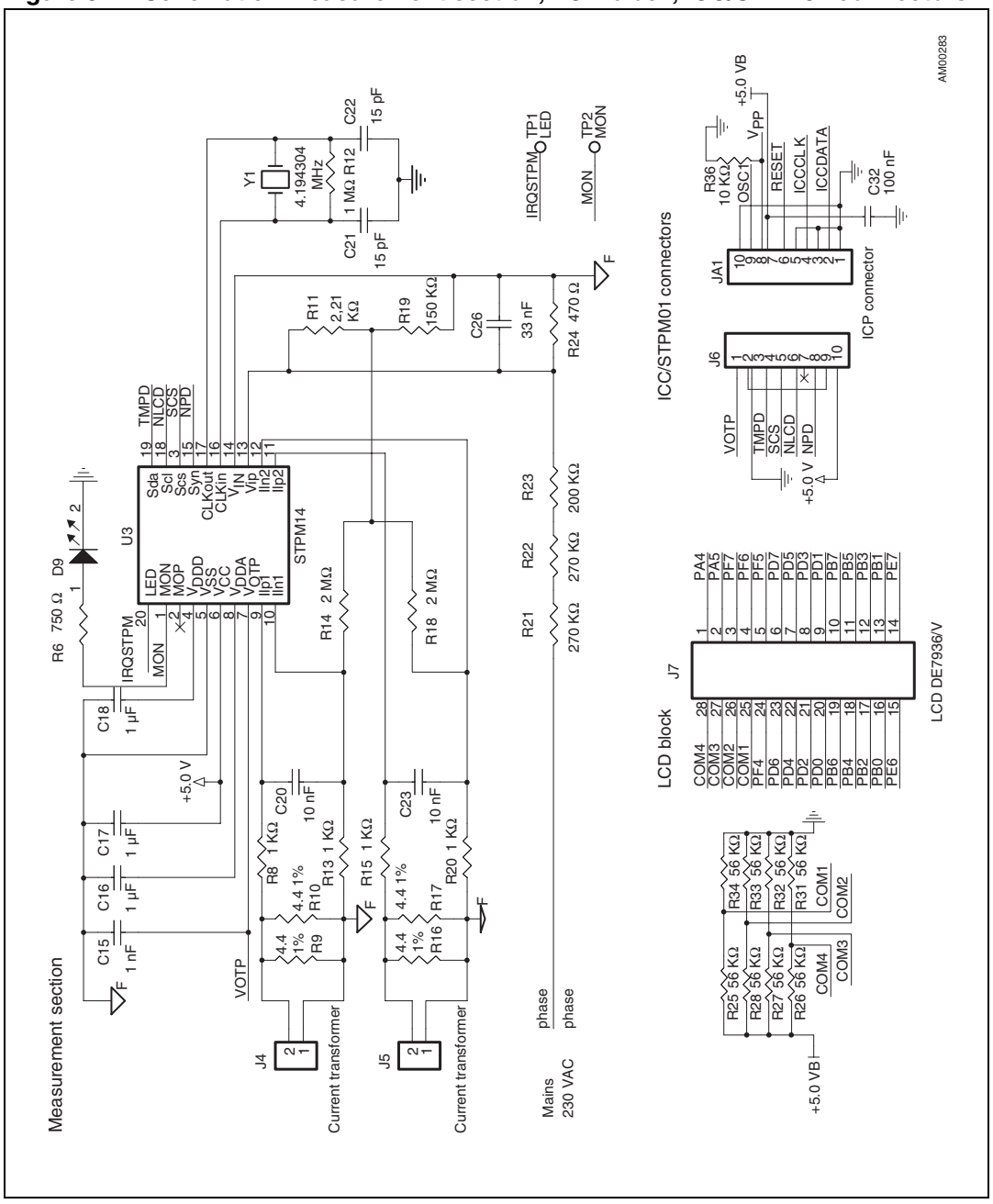
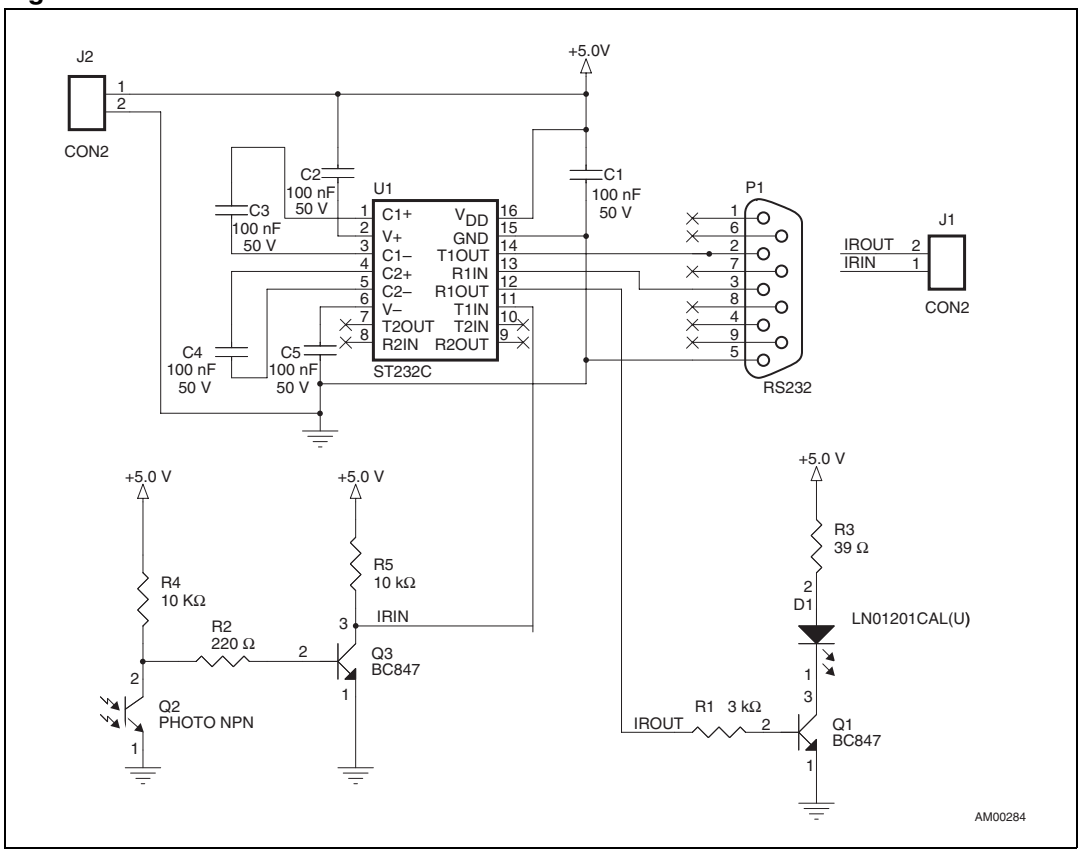


Figure 3. Schematic - measurement section, LCD block, ICC/STPM01 connectors



1.2 SCI-interface

Figure 4. Schematic - SCI-interface



2 Revision history

Table 1. Document revision history

Date	Revision	Changes
22-Sep-2008	1	Initial release.

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