



# STEVAL-ISA105V1

## Power supply for energy meter and power line modem based on the ALTAIR04-900

Databrief

### Features

- Min. operating voltage  $V_{acmin}$ : 90 V<sub>ac</sub>
- Max. operating voltage  $V_{acmax}$ : 265 V<sub>ac</sub>, 440 V<sub>max</sub>
- Topology: quasi-resonant flyback converter, primary side regulation
- Mains frequency f<sub>L</sub>: 50 Hz +/-3 Hz
- Input/output isolation: yes, Galvanic isolation >2.7 KV
- Nominal output voltage:
  - 5 V/70 mA nominal, 1 A max.
  - 3.3 V/30 mA nominal, 150 mA max.
  - 12 V/2 mA nominal, 100 mA max.
  - 5 V\_ISO/2 mA nominal, 80 mA max.
- Total output power P<sub>out</sub>: 1 W nominal, 7.5 W (during transmission mode)
- Typical efficiency @ 230 V<sub>ac</sub>: > 75%
- Output voltage pk-pk ripple: < 100 mV
- Protection: short-circuit protection
- Reflected voltage of transformer, V<sub>R</sub>: 100 V
- RoHS compliant

### Description

The STEVAL-ISA105V1 demonstration board implements a power supply based on a quasi-resonant mode of operation using ST primary side ALTAIR04-900 flyback switch.

The ALTAIR04-900 is a high-voltage all-primary sensing switcher intended for operating directly from the rectified mains with minimum external parts. It combines a high-performance low voltage PWM controller chip and a 900 V avalanche-rugged power section in the same package.

The controller is a current-mode specifically designed for offline quasi-resonant flyback converters. The device is capable of providing constant output voltage using all primary sensing



feedback. This eliminates the need for the optocoupler, the secondary voltage reference, as well as the current sensor, while still maintaining quite accurate regulation.

## 1

**Figure 1. Schematic diagram**



## 2 Revision history

**Table 1. Document revision history**

Date	Revision	Changes
06-Aug-2012	1	Initial release.

**Please Read Carefully:**

Information in this document is provided solely in connection with ST products. STMicroelectronics NV and its subsidiaries ("ST") reserve the right to make changes, corrections, modifications or improvements, to this document, and the products and services described herein at any time, without notice.

All ST products are sold pursuant to ST's terms and conditions of sale.

Purchasers are solely responsible for the choice, selection and use of the ST products and services described herein, and ST assumes no liability whatsoever relating to the choice, selection or use of the ST products and services described herein.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted under this document. If any part of this document refers to any third party products or services it shall not be deemed a license grant by ST for the use of such third party products or services, or any intellectual property contained therein or considered as a warranty covering the use in any manner whatsoever of such third party products or services or any intellectual property contained therein.

**UNLESS OTHERWISE SET FORTH IN ST'S TERMS AND CONDITIONS OF SALE ST DISCLAIMS ANY EXPRESS OR IMPLIED WARRANTY WITH RESPECT TO THE USE AND/OR SALE OF ST PRODUCTS INCLUDING WITHOUT LIMITATION IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE (AND THEIR EQUIVALENTS UNDER THE LAWS OF ANY JURISDICTION), OR INFRINGEMENT OF ANY PATENT, COPYRIGHT OR OTHER INTELLECTUAL PROPERTY RIGHT.**

**UNLESS EXPRESSLY APPROVED IN WRITING BY TWO AUTHORIZED ST REPRESENTATIVES, ST PRODUCTS ARE NOT RECOMMENDED, AUTHORIZED OR WARRANTED FOR USE IN MILITARY, AIR CRAFT, SPACE, LIFE SAVING, OR LIFE SUSTAINING APPLICATIONS, NOR IN PRODUCTS OR SYSTEMS WHERE FAILURE OR MALFUNCTION MAY RESULT IN PERSONAL INJURY, DEATH, OR SEVERE PROPERTY OR ENVIRONMENTAL DAMAGE. ST PRODUCTS WHICH ARE NOT SPECIFIED AS "AUTOMOTIVE GRADE" MAY ONLY BE USED IN AUTOMOTIVE APPLICATIONS AT USER'S OWN RISK.**

Resale of ST products with provisions different from the statements and/or technical features set forth in this document shall immediately void any warranty granted by ST for the ST product or service described herein and shall not create or extend in any manner whatsoever, any liability of ST.

ST and the ST logo are trademarks or registered trademarks of ST in various countries.

Information in this document supersedes and replaces all information previously supplied.

The ST logo is a registered trademark of STMicroelectronics. All other names are the property of their respective owners.

© 2012 STMicroelectronics - All rights reserved

STMicroelectronics group of companies

Australia - Belgium - Brazil - Canada - China - Czech Republic - Finland - France - Germany - Hong Kong - India - Israel - Italy - Japan - Malaysia - Malta - Morocco - Philippines - Singapore - Spain - Sweden - Switzerland - United Kingdom - United States of America

[www.st.com](http://www.st.com)

# Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

[STMicroelectronics:](#)

[STEVAL-ISA105V1](#)