

OV-1

900 MHz AMR Receiver Module



Affordable Data Collection from 900 MHz Utility Metering Systems

PRODUCT DESCRIPTION

Grid Insight has taken its knowledge of proprietary wireless meter reading technologies and coupled it with a low-cost, high-performance integrated receiver and microcontroller to provide a flexible solution to fixed-location AMR reception challenges not addressed by OEMs.

The Grid Insight® 900 MHz AMR Receiver Module (P/N OV-1) is a low-cost, easily embeddable component that receives and decodes wireless data signals from many common utility metering transmitters. With a plaintext UART output, a simple command language, and just five required pins, integration is straightforward. Firmware variants are available to provide compatibility with wireless metering systems manufactured by Neptune, Itron, Badger, Mueller, and Kamstrup.

Perfect for short-run integration projects, the OV-1 conforms to the same dimensions and pin assignments as the Digi® XBee® family of transceiver boards. The OV-1 thus benefits from the numerous XBee-compatible prototyping boards available from suppliers like Grid Insight, Sparkfun, and Adafruit Industries. Adapter boards are available for RS-232, USB, Ethernet, and Raspberry Pi.

FEATURES

- » Receive and decode gas, water, and electric meter data
- » Access tamper, leak, burst, and backflow flags
- » Receive all transmitters within range
- » Flexible interfacing through XBee-compatible form factor
- » Adaptive frequency hopping optimization for legacy transmitters (U.S. Patent Number 8,842,712)
- » Frequency-hopping synchronization*
- » Low current consumption (25 mA peak)
- » Firmware is field upgradable through the UART interface
- » Receive-only design* streamlines FCC compliance testing

COMPATIBILITY

The OV-1 module is compatible with the following wireless meters and wireless metering transmitters:

Water

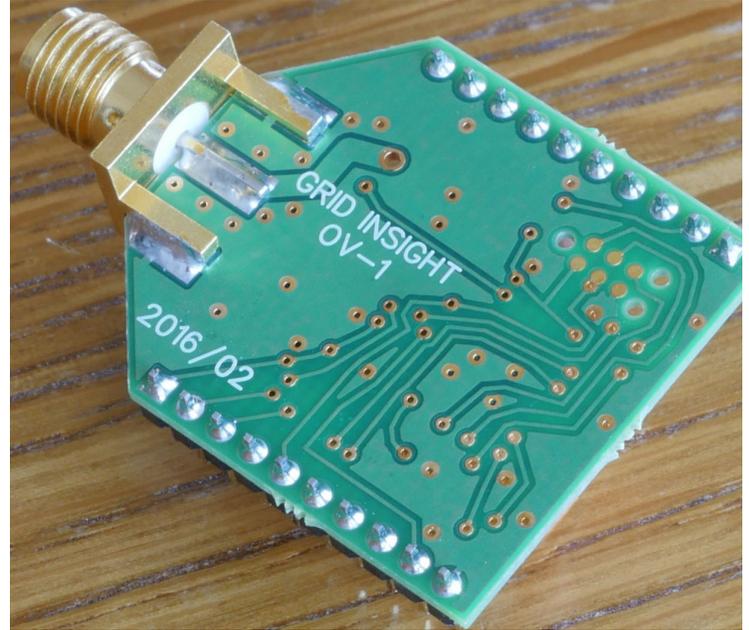
- » Badger Meter ORION® CE and ORION® CE FHSS
- » Hersey Meters: Hot Rod® V1
- » Itron 60W, 100W, and 100WD
- » Kamstrup Metering flowIQ® 2100, 2250, 3101, and 3250
- » Mueller Systems Hot Rod® V1 and V2
- » Neptune Technology Group R900® and R900i®

Gas

- » Itron 100G, 100GDLN and 100G DLS

Electricity

- » Itron ERT® 40ER-1, ERT® II, Centron® C1SR, Sentinel® R300SD
- » GE I-210 & kV2c with 52ESS, 54ESS, 55ESS, 56ESS, or 57ESS ERT®
- » Schlumberger Centron® C1SR



LICENSING

Each OV-1 module includes a perpetual license to use any of the released OV-1 firmware variants on that module. For larger or more complex projects, or whenever the OV-1 is not suitable, Grid Insight can provide flexible licensing or a complete custom solution.

ABOUT GRID INSIGHT

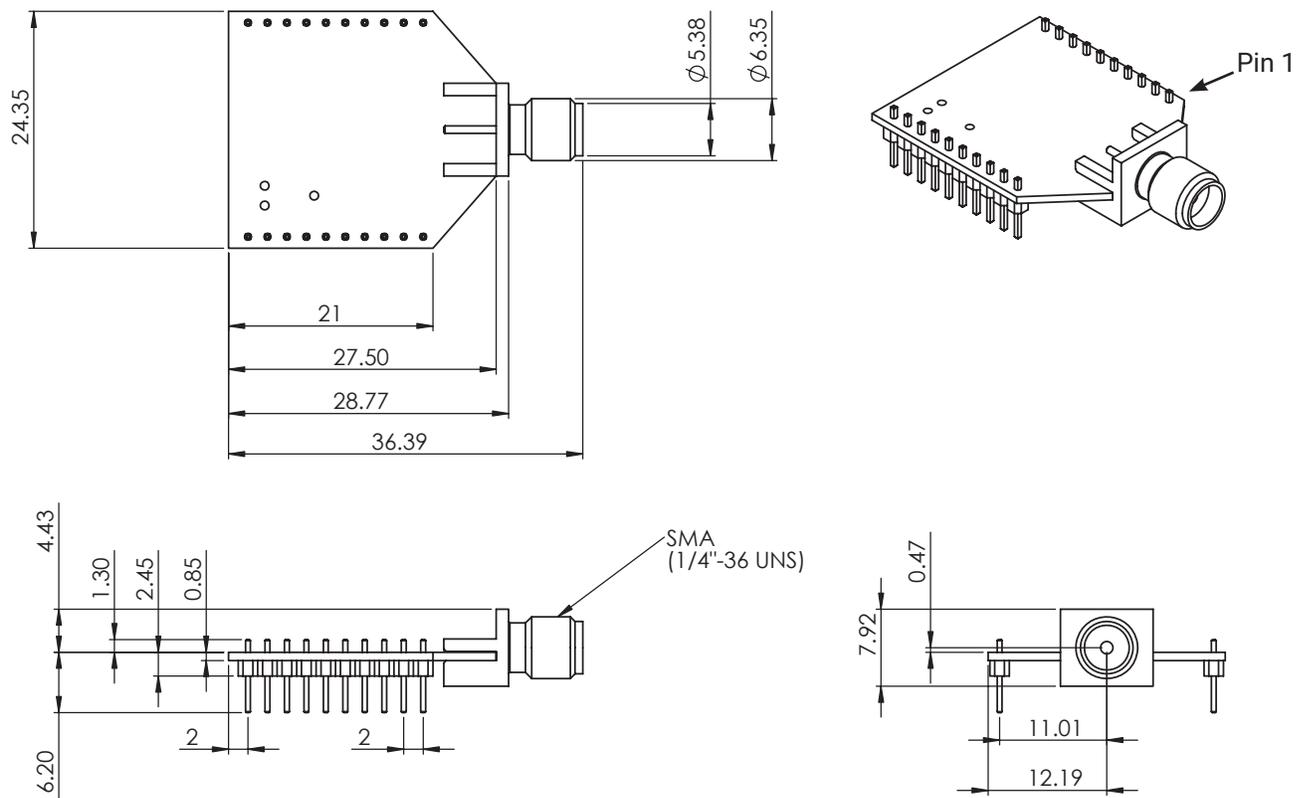
Grid Insight performs research, develops products, and provides system integration consulting focused on the smart grid ecosystem. Our specialties include utility meter interfaces, mixed-signal electronics design, software architecture, and sensor data acquisition.

Grid Insight has experience working with OEMs and system integrators to add AMR reception and decoding capability to existing and new product designs ranging from kWh meters that relay nearby water meter readings, to gas meters used to monitor drilling rig emissions, to a city-wide fixed-network meter reading system that works seamlessly with a multi-vendor, multi-generation, multi-protocol metering fleet.

“This product will revolutionize how I am collecting data – no more pulse counting, pulses per gallon, gallons per pulse, analog to flow conversions. Brilliant!!”

*Will Pollock
Utility Technical Services Group
City of Everett, Washington*

For smart utilities.™



Scaled to approximately 125% actual size

SPECIFICATIONS

Supply voltage	3.0 to 3.5V
Maximum current consumption	25 mA
I/O pin logic levels	CMOS standard (3.3V)
UART configuration	115200 baud N-8-1; No flow control
Required Pins	1-VCC, 2-DOUT, 3-DIN, 5-nRESET, 10-GND
Antenna jack	SMA female, 50 Ω
Receive range	902-928 MHz
Maximum RF input power	+10 dBm
Minimum detectable signal	-105 dBm @ BER < 0.1%
RSSI units	dB (not calibrated)
RSSI non-linearity	+/- 1 dB

DEVELOPMENT KIT CONTENTS

- » OV-1 Module
- » Tilt-rotate dipole whip antenna
- » USB adapter board
- » Raspberry Pi adapter board with battery-backed RTC

† Not available for all transmitter types
‡ Reads only "bubble-up" endpoints



The OV-1, coupled with an inexpensive Raspberry Pi single board computer using the adapter available from Grid Insight, fits nicely into an off-the-shelf enclosure. This configuration works well for quick prototypes and limited-run deployments where Ethernet, Wi-Fi, or cellular data will be used as backhaul.



GRID INSIGHT®
For smart utilities™

1286 Mount Baker Road Suite B204
Eastsound, WA 98245-8931 USA
1-415-449-4757 • www.gridinsight.com

© 2019 Grid Insight. All rights reserved.

Grid Insight® OV-1 900 MHz AMR Receiver Module

Last revised on 2019-08-13

Badger and ORION are trademarks of Badger Meter, Inc. DIGI and XBee are trademarks of Digi International Inc. Itron, Centron, Sentinel, and ERT are trademarks of Itron, Inc. flowIQ® is a trademark of Kamstrup Metering. Hot Rod® is a trademark of Mueller Systems. R900® and R900i® are trademarks of Neptune Technology Group. Third-party trademarks are used strictly for nominative purposes. No endorsement by trademark holders is expressed or implied.