

## **Manual AMB8425-M-EV**

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Version 1.1

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## 1 Functional Description

The evaluation board AMB8425-M-EV and the AMB8465-M USB-Stick makes possible the establishment of a wireless connection between wireless M-bus devices within a very short time. Moreover, the AMB8425-M-EV board provides easy connection to a computer or to an external processor.

The radio module is addressed directly from the computer, using the Windows program AMBER Commander.

The evaluation kit consists of one development board with mounted AMB8425-M modules, one power supply adapters, one AMB8465-M USB-Stick and other connection material. The development board can be connected either directly to the RS232 interface of a PC or to any other microcontroller system. For this purpose, there are several plugs to which all signals of the AMB8425-M are lead through all the way to the aerial connection.

All consumers of the board can be separated from each other; thus, the power supply of the radio module can take place entirely from external components.

### Characteristics:

- RS232 interface
- Pins of the AMB8425-M lead out
- Facilitates the evaluation of the power consumption (unused components can be separated by means of jumpers)

## 2 Product Scope

The AMB8425-M-EV kit is delivered in a product case and comprises:

- 1 x development board A84259100 with mounted AMB8425-M wireless M-bus module
- 1 x SMA aerial OPC1981
- 1 x power adapter OPC1901 5 V/650 mA
- 1 x RS232 data cable 2 m
- 1xAMB8465-M USB-Stick
- 1xUSB data cable 1,8m



Figure 1: AMB8425-M-EV

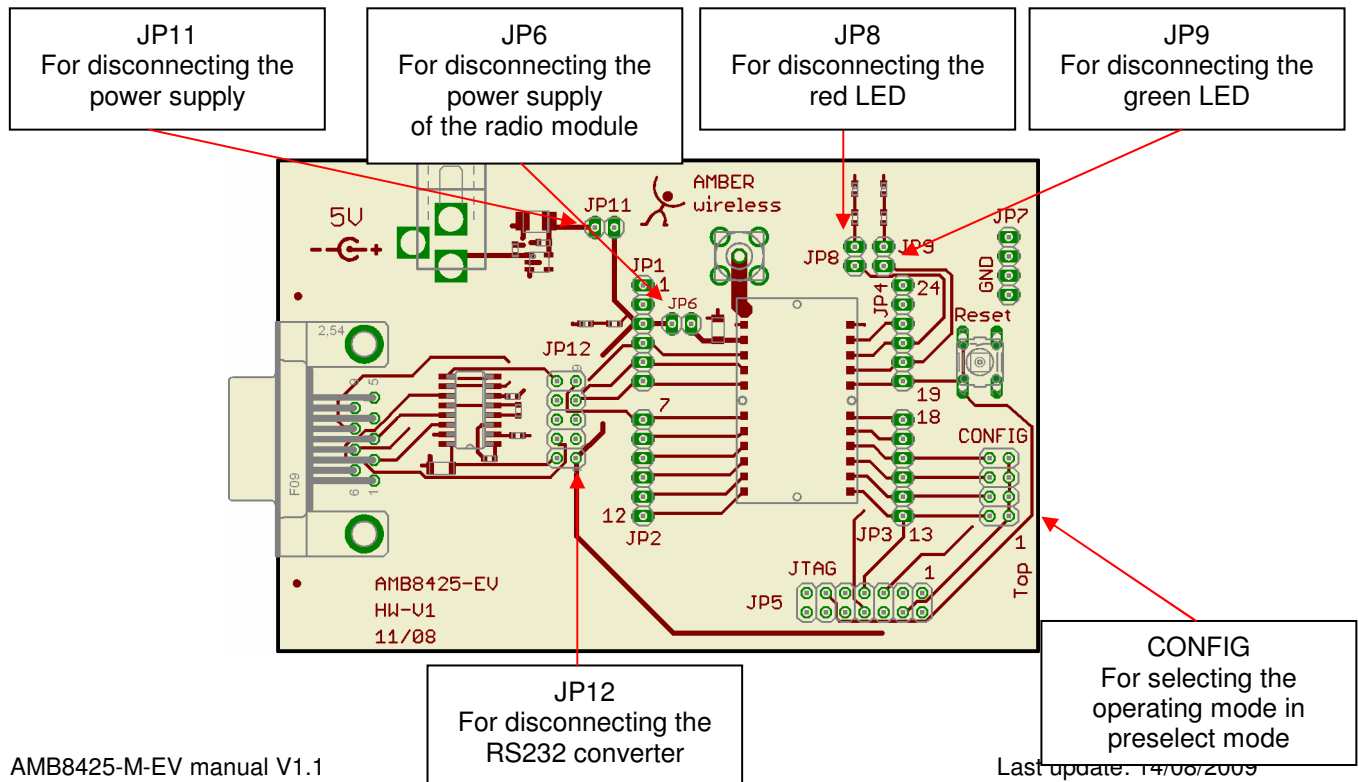
### 3 The Development Board



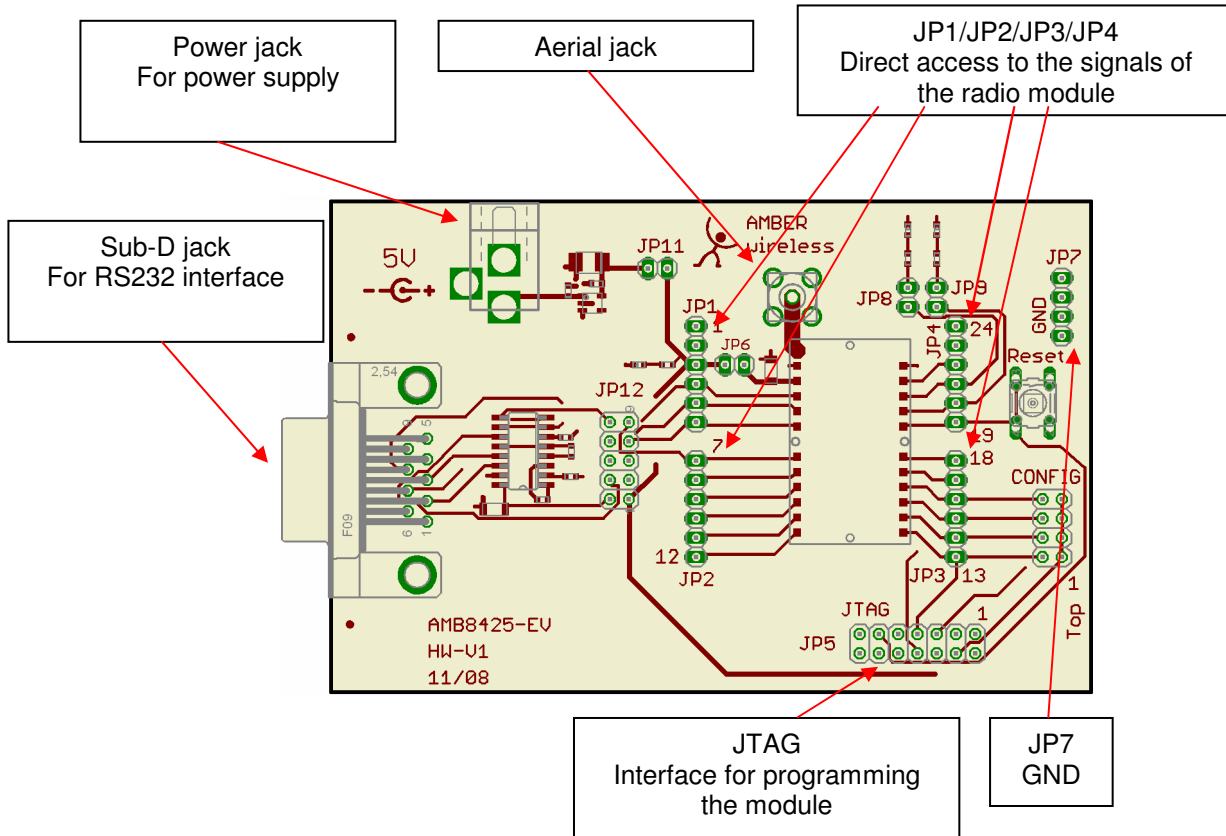
Figure 2: Development board A84259100

#### 3.1 Overview

##### 3.1.1 Jumpers



### 3.1.2 Connections



## 3.2 Power Supply

### 3.2.1 Power Adapter/Power Jack

The development board can be operated by connecting the supplied 5 V adapter or another 5 V power source (pay attention to the polarity) to the power jack.

If the power supply is connected and the bridge on JP6 is set correctly (as in the factory state), the **power LED** will be active.

### 3.2.2 JP11 / External Power Supply

The AMB8425-M and the RS232 converter can be powered via pin3 of JP1 (see following figures). For this, earth can be connected to pin2 of JP1, pin24 of JP4, or one of the pins of JP7. Voltage range: 3 V (RS232 converter) to 3.6 V.

In this case, JP11 must be opened (separation from the internal voltage control).

If the power supply is connected, the power LED will be active.

### 3.2.3 JP6 / Current Measurement Bridge

By default, JP6 is bridged for operation. If a current meter is connected instead of the bridge, the power consumption of the radio module can be measured here.

If the meter is not attached and the bridge is not set, the module will not receive any supply voltage. However, the power LED may be active, as it is connected upstream of the current measurement bridge in order not to distort the module's power consumption.

Parts connected to the module, such as LEDs, can be separated from the module via JP8 and JP9.

Power can also be supplied to the module via JP6 (2.85 V – 3.6 V). However, in this case the RS232 converter will not be powered.

### 3.3 Interfaces

#### 3.3.1 UART / RS232

The UART of the module can be connected to the RS232 converter by setting the bridge to JP12; in this case, it is available as RS232 at the sub-D-9 jack. In this way, the module can be connected directly to a PC.

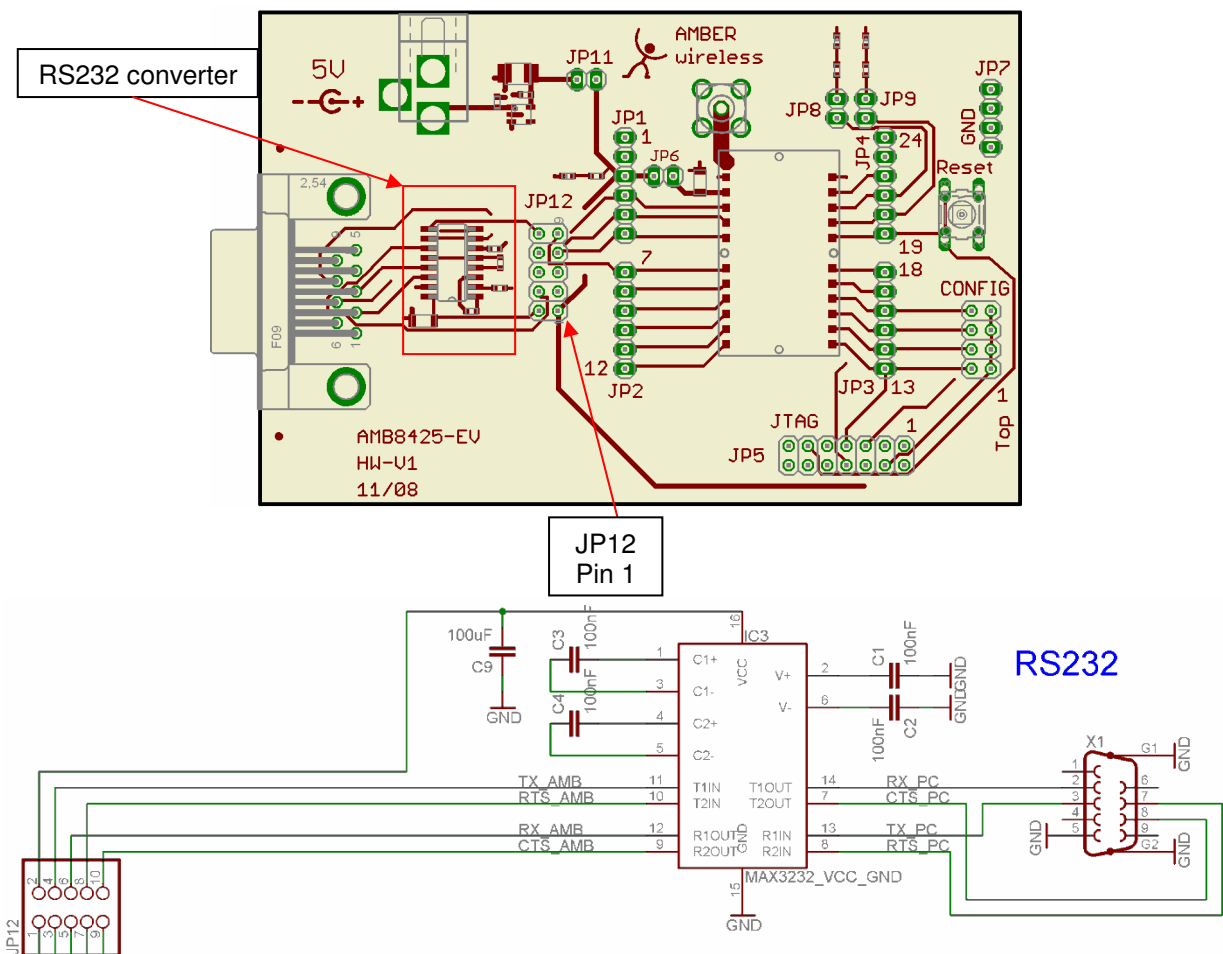


Figure 3: RS232

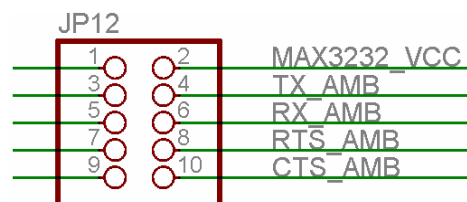
### 3.3.2 RS232 Pinout

RS232 sub-D-9 jack			
Pin	Name	Meaning	Direction
1	N.C.	Not connected	-
2	Tx	Transmit data	Output
3	Rx	Receive data	Input
4	N.C.	Not connected	-
5	GND	Earth	-
6	N.C.	Not connected	-
7	CTS	Clear to send	Input
8	RTS	Request to send	Output
9	N.C.	Not connected	-

**Table 1: Sub-D-9**

### 3.3.3 UART / TTL

If a microcontroller is to be connected to AMB8425-M, remove the bridges on JP12. The UART can be accessed directly on the pin bar JP1/JP2 to which all other pins of AMB8425-M are connected.

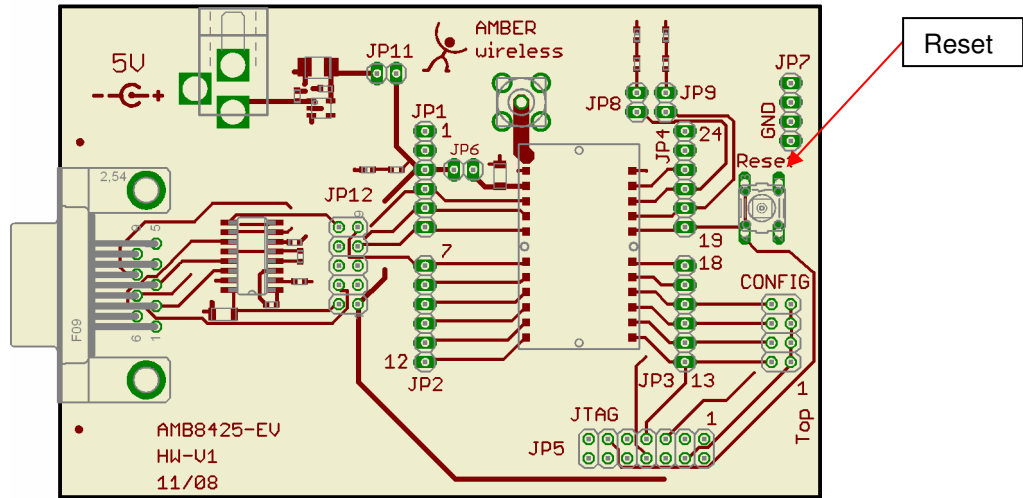


**Figure 4: Pinout JP12**

Watch the level compatibility. When powered over the power jack (section 3.2.1), the levels of the AMB8425-M are 3.3 V. If the power supply is implemented according to section 3.2.2, the levels of the AMB8425-M can be adjusted in the range from 3 V to 3.6 V.

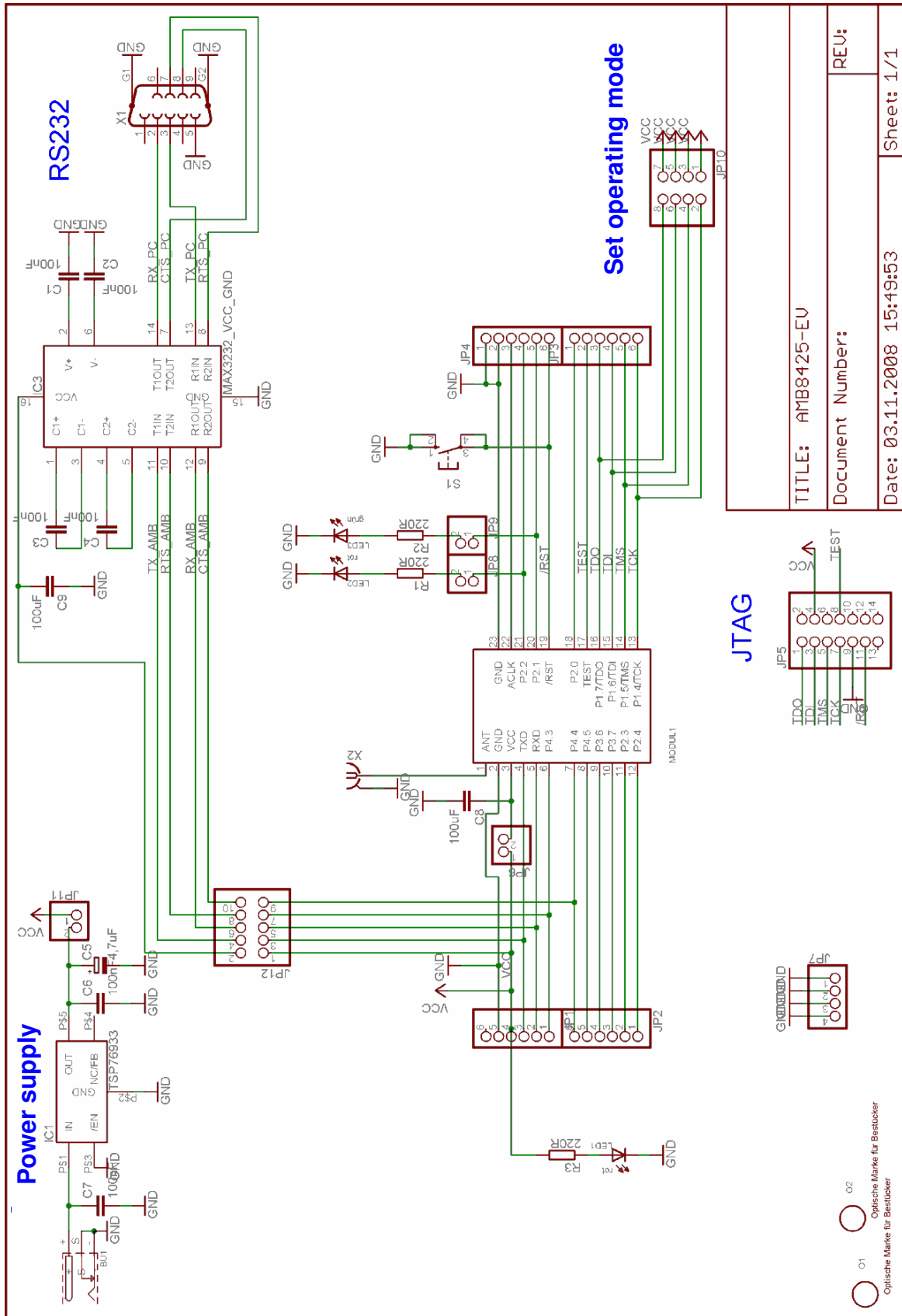
### 3.4 Reset

On the AMB8425-M, the low active reset input of the  $\mu$ C is wired to the supply voltage by means of an RC combination, so that the module is switched on correctly. On the development board, there is a reset button by means of which the AMB8425-M can be reset. Moreover, the reset is available on JP4 pin 19.





### 3.5 Wiring Diagram



## 4 The USB Stick

As a counter point of the radio link a USB stick is used, which also contains a AMB8425-M. It is a USB-to-Serial converter, which integrates multiple LED arriving from radio data, the sending of radio data and the voltage signal.

Before you connect the stick to the PC, it is necessary to install the USB driver (FTDI). The installation routine is in the manual of the USB sticks (AMB8465-M) described in greater detail.

After installation, the USB stick is reachable via a virtual COM port and approached the same as the AMB8425-M on the development board will be handled.



Figure 5 AMB8465-M

## **5 Using the AMB8425-M-EV Kit**

### **5.1 Configuration with AMBER Commander**

The AMB8425-M can easily be parameterised with the Windows software "AMBER Commander" and the respective configuration file/command library. Please install this software from the enclosed AMBER CD or from the Internet under Service/Download on your computer. Then connect the evaluation kit to your PC by way of the RS232 interface and open the AMBER Commander with the respective configuration file.

The functions of the AMBER Commander are described in the accompanying manual.

### **5.2 Communication with Other Devices**

Following the correct configuration of the radio module with the help of the AMBER Commander, the module can communicate with other wireless M-bus devices (provided these run in the same operating mode or in a compatible operating mode).

## 6 Important notes

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