

## Quick Start guide for Starter RS-EB-S1B with Easy Camera

### General

Thank you for buying the Round Solutions RS-EB-S1B board.

The RS-EB-S1B extension board is pin compatible to the RS-EB-S1 board. For users of the RS-EB-S1B board there are no changes. We would like to recommend to new customers to test the basics like voice call, SMS and data call first, before moving on to GPRS and sending of JPGs based on Easy camera. If you need help we recommend that you use the Round Solutions Internet forum ([www.roundsolutions.com/forum](http://www.roundsolutions.com/forum)), and use the "SEARCH" function to find older postings with the same topic. It is always very helpful to mention which firmware version is inside the GM862 (AT+GMR).

Components and parts for the quick start

- Starter kit with CMOS camera and antenna from Round Solutions
- Product description guide version 14 or higher (latest version on <http://www.roundsolutions.com/gsm> )
- Hardware description guide version 4 or higher (latest version on <http://www.roundsolutions.com/gsm> )
- Software description guide version 3 or higher (latest version on <http://www.roundsolutions.com/gsm> )
- Power supply that is able to support 2 Ampere peak current
- Full featured SIM card if you would like to use CSD and GPRS.

As a first step we help you to get started without the Camera connected

### Connectors and jumpers on starter kit board

#### PL201 RS 232 interface

9 pin RS 232 interface on V.28 level your PC

#### PL203 Jumper to power on the level shifter

Powers on the RS 232 level shifter

#### PL202

12-pin male connector to supply the GM862-PCS mounted on the starter kit board. Input voltage should be in the range of 4,5 to 12 Volts. Charge line is also provided in case a LI-battery is connected to the VBATT pins. Charge input must fulfill charger line requests.

#### PL103

50 pin Molex connector to interface the GM862 directly.

#### PL101 Different I/O channels

30-pin connector to support ON/OFF, AXE, Reset, GPIO, STAT-LED, audio and serial port with full handshaking. Also the CHARGER\_IN pin can be available placing a 0 Ohm resistor.

Round Solutions GmbH & Co KG Zaunweg 4 D-63303 Dreieich Germany	Tel: +49 (0)6103 960510 Fax: +49 (0)6103 960509 Email: <a href="mailto:info@roundsolutions.com">info@roundsolutions.com</a> WWW: <a href="http://www.roundsolutions.com">www.roundsolutions.com</a>	Quick start guide RS-EB-S1B Version 1.1 Date 12.03.2004 Page 1 of 11
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## SO101 CMOS Camera interface

ZIF connector to CMOS camera.

## SW102 ON/OFF

Power on for GM862.

## SW101 to GPIO1

For future applications.

## DL101 Status LED

Status of GM862.

## Quick Start without connecting the camera

1. Modem cable: Please be sure that you use a modem cable and not a null modem cable (red mark on the flat ribbon cable next to the external power connector J5).

2. Power supplies for RS-EB-S1B: Please use **4,2-15 V power supply** which can take a peak current of **2 Ampere** when the module is connected to the GSM network. If your power supply is not able to support the peak current, then you will get a reset of the GSM module. **The GM862-GSM/GPRS needs a negative pulse/ground of at least 1,5s-2s (max 4s) on the ON pin of the connector J1 Pin 10 by pressing of switcher SW102.**

(Max 4s otherwise the module will get into firmware update mode)

3. SIM card: Be sure that your SIM card support SMS, data call or GPRS if you would like to use these services. If you do not have the services required please contact your GSM network operator. If possible please take away the PIN number for an easy start (not always possible e.g. on Vodaphone Germany).

4. First steps (very short version). Below we explain the use of the GSM module with terminal software:

Ensure that the (straight modem) cable is connected to your PC, the power is connected to the RS-EB-S1B board, the antenna is connected and that a SIM card is in the SIM card reader.

The GM862-modules comes with autobauding. More about autobauding in the Software User Guide chapter 2.5.1. Send the command AT. If you get the answer OK, then you are fine. The recommended speed is 38.400 8,N,1.

Next step should be to send the PIN number (if applicable) with the command AT+CPIN (chapter 2.5.2.2).

Having done that you could use the command AT+CREG to check the GSM network status.

If you use a SIM card that supports voice calls as well, then you could use the command ATD 123456789; to start a voice call to a phone on your desktop or your mobile handset. Please do the ";" at the end of the number!

Without the ";" you start a data call; an analogue PSTN phone will ring, a ISDN phone may or may not ring. An ISDN phone that is coded as a voice device only will not ring and you will get an error code as an answer from the GM862. The level of the error codes depends on the settings of the commands AT+CMEE.

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If you have any questions, please check out the comprehensive technical manuals under [www.roundsolutions.com/gsm](http://www.roundsolutions.com/gsm) and register into the **Round Solutions GM862 Technical Forum under [www.roundsolutions.com/forum](http://www.roundsolutions.com/forum)** This Start Up Guide as well as the latest firmware can be found under [www.roundsolutions.com/techdocs](http://www.roundsolutions.com/techdocs)

## Connecting Easy Camera

It is highly recommended to start with a standard EASY GPRS connection and to access a HTTP server or send an e-mail before you start with Easy camera. You need to have the GPRS connection set up otherwise you will get a negative result. The forum [www.roundsolutions.com/forum](http://www.roundsolutions.com/forum) is a useful source to learn more about GPRS. Please be sure that you connect the flexible cable of the camera right. By an inverse connection the camera will not work.

For the basic information on EASY CAMERA and the CMOS camera please use the Product Description version 14 or higher and Hardware Description Guide version 4 or higher.

### Product description guide

- 2.15 Interface connectors on GM862
- 6.10 Camera custom commands
- 6.3 Command table
- 10.0 Document change log

### Hardware description guide

- 8.0 Camera
- 9.0 Document change log
- 11.0 EVB schematics

### Software description guide

- 5.0 EASY CAMERA operations
- 6.0 Document change log

Next step will be to use the EASY CAMERA AT commands that are listed at 6.10 Camera Custom Commands and send your first picture by email.

## Final Words

We hope that you have made your first steps with our products successfully. Any advise and recommendation you may have is always welcomed. There is huge user community using Round Solutions products and services and it grows each week. Our aim is to support you with the best products, accessories and services you can find. Based on your feedback we are improving our product portfolio, support and service all the time. Please feel free to contact us at any time by:

Phone: +49 (0)6103 960510

Fax: +49 (0)6103 960509

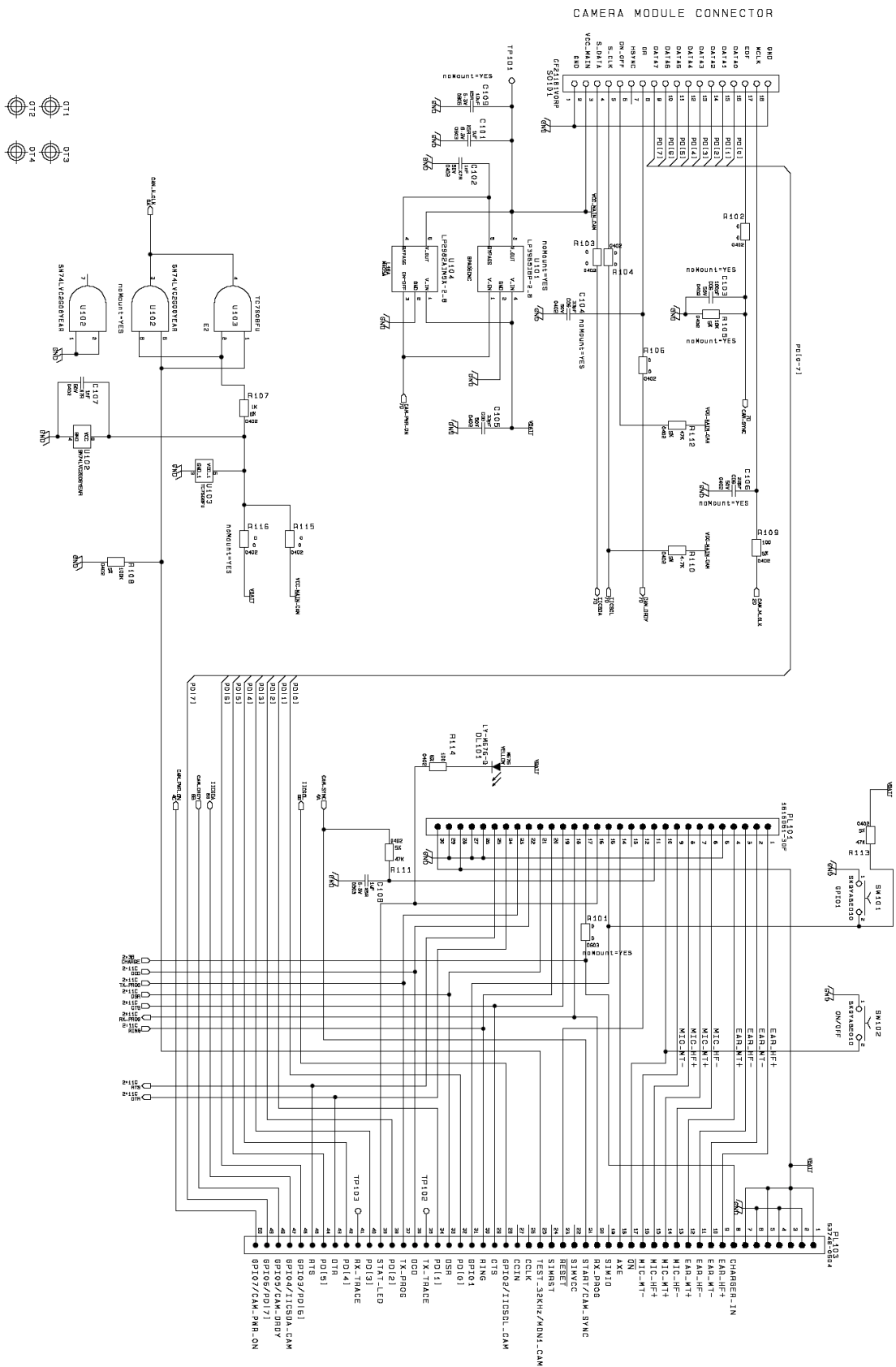
Email: [customerservices@roundsolutions.com](mailto:customerservices@roundsolutions.com)

or in our Internet forum on [www.roundsolutions.com/forum](http://www.roundsolutions.com/forum)

Yours Round Solutions Team

Round Solutions GmbH & Co KG Zaunweg 4 D-63303 Dreieich Germany	Tel: +49 (0)6103 960510 Fax: +49 (0)6103 960509 Email: <a href="mailto:info@roundsolutions.com">info@roundsolutions.com</a> WWW: <a href="http://www.roundsolutions.com">www.roundsolutions.com</a>	Quick start guide RS-EB-S1B Version 1.1 Date 12.03.2004 Page 3 of 11
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# Schematic diagram part 1

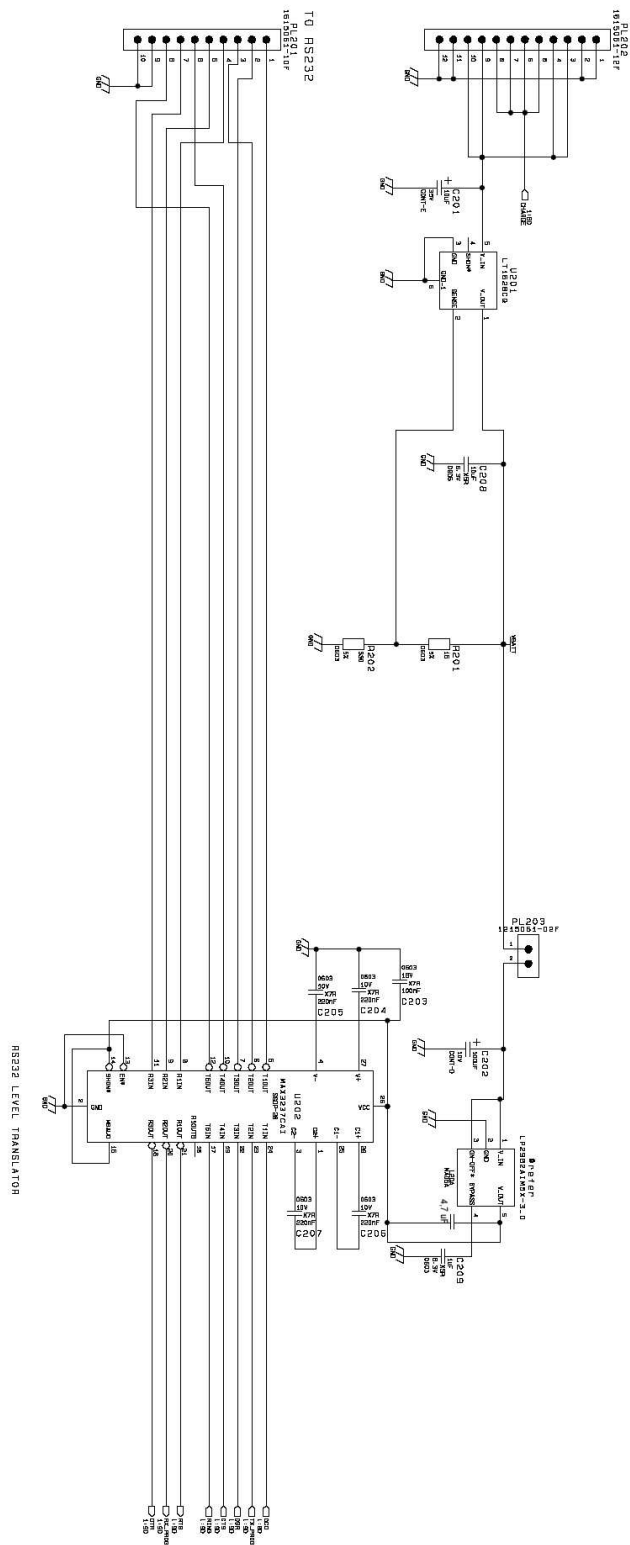


Round Solutions GmbH & Co KG  
 Zaunweg 4  
 D-63303 Dreieich  
 Germany

Tel: +49 (0)6103 960510  
 Fax: +49 (0)6103 960509  
 Email: [info@roundsolutions.com](mailto:info@roundsolutions.com)  
 WWW: [www.roundsolutions.com](http://www.roundsolutions.com)

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## Schematic diagram part 2

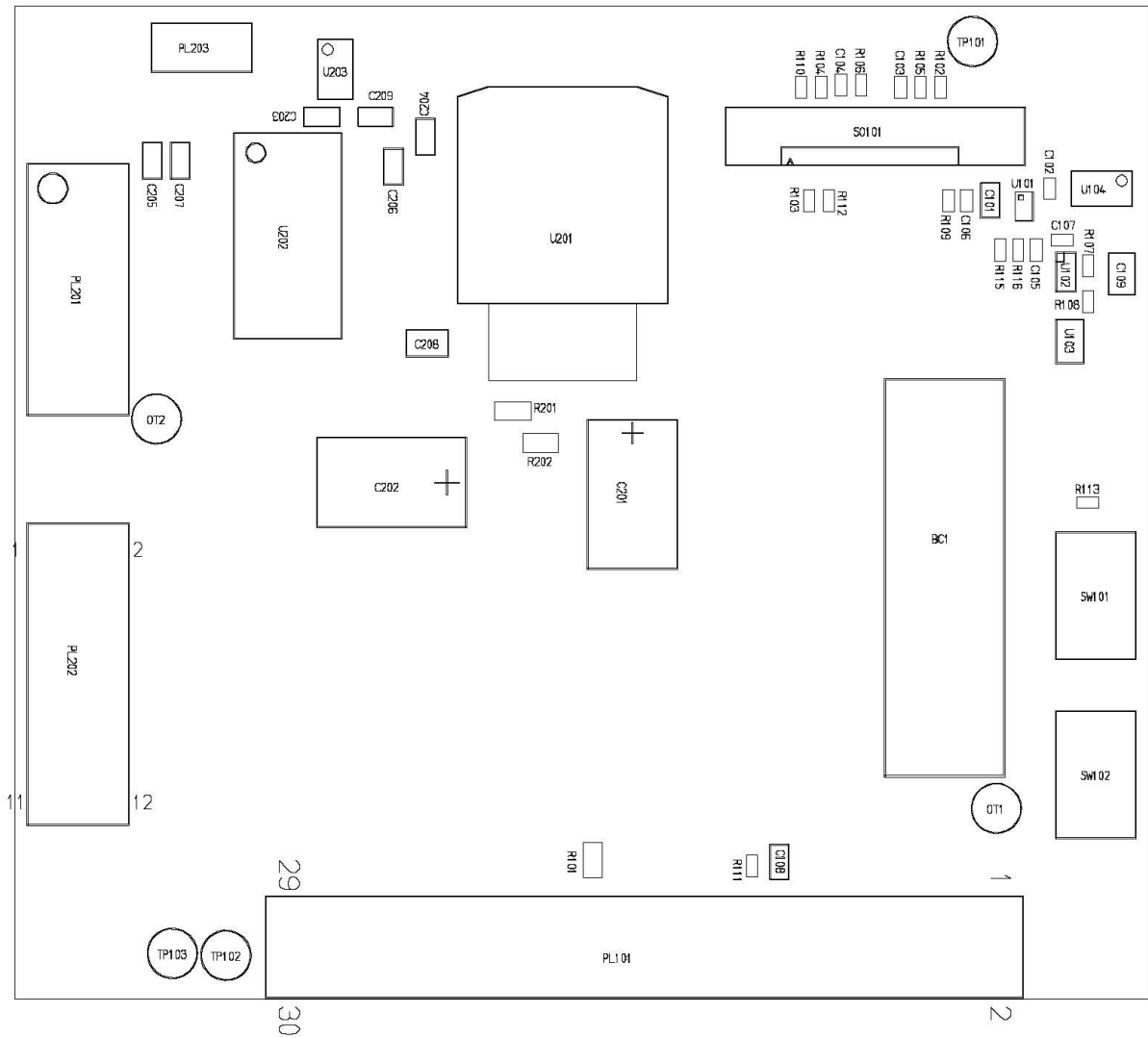


Round Solutions GmbH & Co KG  
 Zaunweg 4  
 D-63303 Dreieich  
 Germany

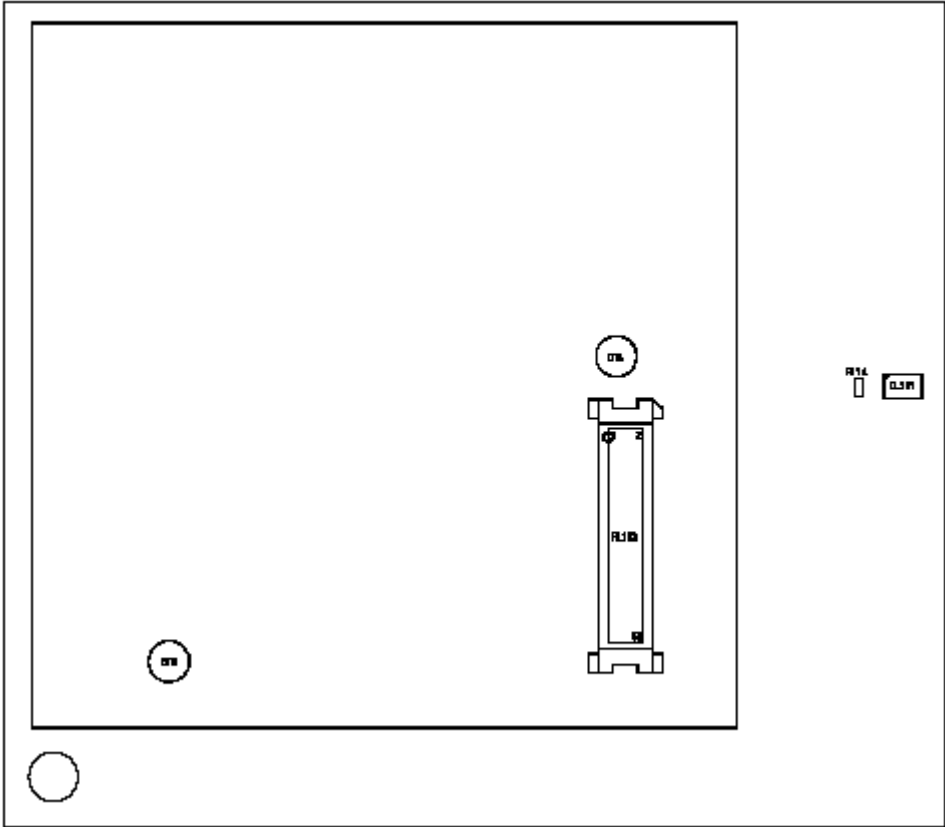
Tel: +49 (0)6103 960510  
 Fax: +49 (0)6103 960509  
 Email: [info@roundsolutions.com](mailto:info@roundsolutions.com)  
 WWW: [www.roundsolutions.com](http://www.roundsolutions.com)

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# Component placement specification



# Component placement specification



## Connector of CMOS camera

The white point shows pin number one.





## Agilent ADCM-2650 Portrait VGA Resolution CMOS Camera Module

### Product Overview

#### Description

The Agilent ADCM-2650 ultra compact CMOS camera module is an advanced, low-power VGA resolution camera component for embedded applications. The camera module combines an CMOS image sensor and image processing pipeline with a high-quality lens to deliver images in JPEG or video format, ready for storage or transmission. Output data is transmitted using a parallel port.

The ADCM-2650 camera module features a quality, integral lens in a tightly integrated sensor and image processing design. The camera module is optimized for use in a variety of embedded applications from cell phones to handheld wireless devices to image-enabled appliances and automotive design.

Incorporating a CCIR 656-compatible 8-bit parallel interface, or a JPEG or YCbCr interface, the ADCM-2650 supports industry-leading data resolutions as well as subsampling.

The ADCM-2650 camera module also supports a range of programmable modes, including support for embedded or external synchronization capabilities, which extend design flexibility.



#### Features

- 480 x 640 portrait VGA resolution
- Bayer color filters – blue, red and green
- Frame rate – 15 frames per second at VGA resolution
- Flexible orientation
- Programmable to many image formats:
  - VGA (480 x 640) portrait only
  - CIF (352 x 288)
  - QVGA (320 x 240)
  - QCIF (176 x 144)
  - QQVGA (160 x 120)
  - QQCIF (88 x 72)
  - Any other format 480 x 640 or smaller
- Panning – window can be placed anywhere in the 480 x 640 array
- Low power – 70 mW typical at 13 MHz input clock
- High intrinsic sensitivity for enhanced low light performance
- Single 2.8V power supply with internal voltage regulation
- Fully configurable image processing

- High quality F/2.8 lens
- Programmable gamma correction and color balancing
- Direct JPEG, YCbCr 8-bit parallel output port (CCIR 656-compatible)
- Embedded synchronization capability – CCIR 656
- Horizontal/vertical mirroring and subsampling
- Programmable VSYNC-HSYNC setup and hold, vertical line blanking and external clock polarity
- Optimized temperature performance
- Excellent image quality – JPEG based compression with selectable quantization tables
- Automatic gathering of frame statistics including histograms for each color channel
- Automatic adjustment of compression rate for constant image file size
- Image resizer
- Auto exposure and auto white balance
- Integrated IR filter
- Compact size – 12.5 x 10.5 x 8.2mm with cover glass

#### Applications

- Mobile phones
- Video phones
- Personal Digital Assistants
- Image-enabled appliances
- Digital still mini cameras
- Embedded automotive
- Monitoring equipment

Round Solutions GmbH & Co KG Zaunweg 4 D-63303 Dreieich Germany	Tel: +49 (0)6103 960510 Fax: +49 (0)6103 960509 Email: <a href="mailto:info@roundsolutions.com">info@roundsolutions.com</a> WWW: <a href="http://www.roundsolutions.com">www.roundsolutions.com</a>	Quick start guide RS-EB-S1B Version 1.1 Date 12.03.2004 Page 9 of 11
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# Data sheet ADCM-2650

The ADCM-2650 camera module is a complete image processing system.

