

## *Hardware Manual*

# *RM CANview® Gateway*



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## 1 Legal Regulations

### Safety instructions



**These instructions are part of the device. They contain text and illustrations for the correct handling of the unit and must be read before installation or use.**

Adhere to the information in the documentation. Non-observance of the instructions, operation, which is not in accordance with use as prescribed below incorrect installation or handling, can affect the safety of people and equipment.

The device must be installed, connected and put into operation by a qualified electrician. Disconnect the device externally before handling it. Also disconnect any independently supplied output load circuits.

As no components to be maintained by the user are contained in the device, the housing must not be opened. The device can only be repaired by the manufacturer. The device must be disposed of in accordance with the national environmental regulations.

In case of malfunction of the device or uncertainties, please contact the manufacturer. Tampering with the device can seriously affect the safety of people and equipment. This is not permitted and leads to an exclusion of liability and warranty.

This device is not designed for direct connection to telecommunication networks.

This device is designed to be used in systems, which must be checked for conformity with legal requirements prior to placing into operation. The integrator of this device is responsible to check and comply with regional directives and requirements.

This device is also designed for use in restricted access locations.

RM Michaelides GmbH assumes no responsibility for the use of any information contained in this manual and makes no representation that they are free of patent infringement. RM Michaelides GmbH does not convey any license under its patent rights nor the rights of others.

This device requires an explicit permission of the manufacturer in order to be exported into the USA



## 2 About the CANview<sup>®</sup> Gateway

CANview<sup>®</sup> Gateway is designed for a fast data exchange between two CAN networks or as a repeater for long distance CAN networks. The two CAN interfaces are separately galvanically isolated. Optionally received CAN messages can be transmitted via USB to a host PC for monitoring and data analysis.

CANview<sup>®</sup> Gateway can be completely powered by its integrated male CAN (CAN 1) connector, the power supply connector or via USB. It is equipped with a high-performance 16-Bit microcontroller. The firmware and configuration can be updated using the integrated serial interface. This makes it possible to program the device to support proprietary CAN protocols or to run customer specific complex applications.

CANview<sup>®</sup> Gateway can be delivered as an OEM device or in a rugged aluminum case for use in harsh environments. The device state is indicated by four LEDs.

The device is available in various options. It may optionally be equipped with a CAN termination resistor and/or different connectors. The device is also available in an IP67 version. The different ordering options are described in chapter 7 'Naming Conventions' on page 12.



For further information, support and customer specific hardware and firmware adaptations see our web page:  
[www.rmcan.com](http://www.rmcan.com) - Support  
or contact us via e-mail:  
<mailto:info@rmcan.com>

## 3 Disposal

Observe your national laws when disposing the device and its package.



## 4 Important information for using CANview® Gateway



**This device CANview® Gateway 2101 is designed to be used in systems, which must be checked for conformity with legal requirements prior to placing into operation. The integrator of this device is responsible to check and comply with regional directives and requirements.**

Observe the information of the devices manuals. Non-observance of the notes, operation that is not in accordance with the use as prescribed below, wrong installation or handling can result in serious harm concerning the safety of people and plant.

The operation manual has to be stored available at any time and has to be handed over to each user.

The device may only be installed, connected and commissioned by qualified personnel.

Disconnect the device externally before doing any work on it. If necessary, also disconnect separately supplied output circuits.

In the case of malfunctions or uncertainties, please contact the manufacturer.

Tampering with the device can lead to considerable risks for the safety of people and plant. It is not permitted and leads to an exclusion of any liability and warranty claims.

This device requires an explicit permission of the manufacturer in order to be exported into the USA.

The type label and the housing must not be contacted (particularly cleaned) with any kind of solvent-containing substance.

### Operation

The device must not be operated in machines and applications where life depends on the proper operation of this piece of equipment.

### CAN

The signals on the CAN connection terminals CAN-Low and CAN-High must match the signals on the CAN-terminals of the connected devices.

GND of the CAN-connector has to be connected to CAN-GND.

The CAN interfaces are separately galvanically isolated against the rest of the device.

The shielding must be placed on the power side only as shielding of CAN ports will neutralize the galvanic isolation. Because of the galvanic isolation of the CAN interface, the CAN Ground and the power supply ground should not be short-circuited. Otherwise the galvanic isolation will be suspended.



To estimate the maximum length of the CAN bus-line for a given CAN baud rate, the following table can be used:

CAN Baud Rate	Max. bus length
1Mbit/s	25m
800 kbit/s	50m
500 kbit/s	100m
250 kbit/s	250m
125kbit/s	500m
50kbit/s	1000m

## 5 The Connectors

The drawing below this text shows an overview of the explained hardware components.



Depending on the different ordering options as described in chapter 7 'Naming Conventions' on page 12, the device may be equipped with just a sub set of the connectors shown above.

The device may only be installed, connected and commissioned by qualified personnel. Disconnect the device externally before doing any work on it. If necessary, also disconnect separately supplied output circuits.

## 5.1 CAN-Connectors

Apart from connecting CANview® Gateway to the first CAN bus, the CAN-connector 1 can be used to supply the device with power. If used so the CANview® Gateway has to be connected to the CAN-Bus in order to operate.

The device can be equipped with two 9-pole Sub-D connectors (male/CAN1; female/CAN2) or with a male 8-pole M12 connector which connects both CAN interfaces. The different ordering options are described in chapter 7 'Naming Conventions' on page 12.

The Pin assignments of the Sub-D CAN-connectors are according to the CiA DR303-1 and are shown in the tables and drawings below. The female screwlock thread diameter is UNC 4-40.



**Because the CAN interface is galvanically isolated, the CAN-Ground and the power supply ground should not be short-circuited. Otherwise the galvanic isolation will be suspended.**

Table 1: Sub-D 9-pole – CAN1-connector pin assignment (male)

Destination	Pin	Potential
Power supply	6	GND
	9	9...36 V DC
CAN interface	2	CAN-L
	3	CAN Ground
	7	CAN-H

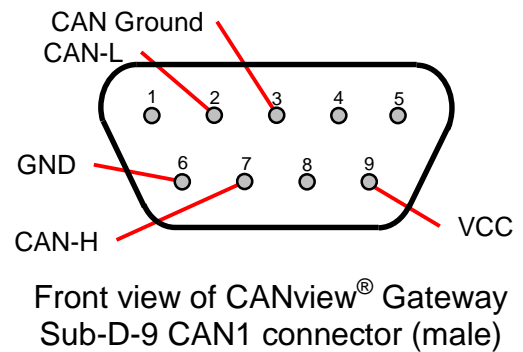
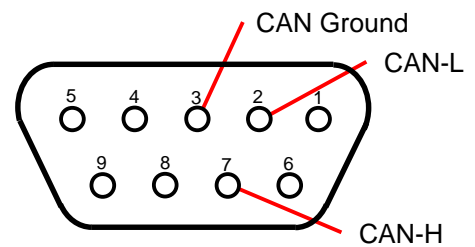


Table 2: Sub-D 9-pole – CAN2-connector pin assignment (female)

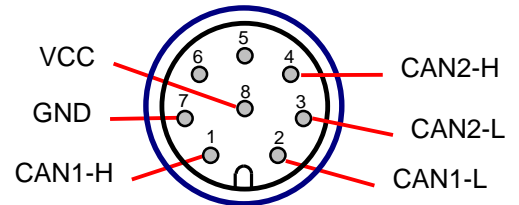
Destination	Pin	Potential
CAN interface	2	CAN-L
	3	CAN Ground
	7	CAN-H





**Table 3: M12 – CAN-connector pin assignment**

Destination	Pin	Potential
CAN interface	1	CAN1-H
	2	CAN1-L
	3	CAN2-L
	4	CAN2-H
	5	Not connected
	6	Not connected
Power supply	7	GND
	8	9...36 V DC



Front view of CANview® Gateway M12 CAN connector (male)

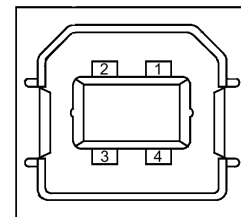
## 5.2 USB connector

The USB-Port is used to interface the CANview Gateway with the PC. It provides a data transmission rate of up to 12Mbit/s. For interfacing the device with a PC a standard USB cable can be used.

The device can be powered via the USB interface. It is recommended to power the device by a USB Host or by a self powered USB Hub. On bus powered Hubs, the Voltage drop of  $V_{Bus}$  can be too high under worst case conditions which might prevent the device from starting up.

**Table 4: USB connector**

Destination	Pin	Potential
USB Connector (B Type)	1	$V_{Bus}$
	2	D-
	3	D+
	4	GND



Front view of CANview® Gateway USB connector (B Type)

### 5.3 Serial interface Connector

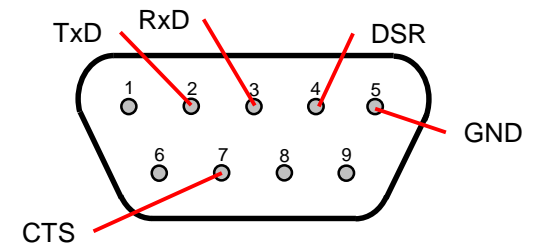
The serial interface connector is used to update the device's firmware and to write the configuration to the device. The CANview® Gateway serial interface is equipped with a male 9-pole Sub-D connector. A non-crossed RS232 cable may be used to connect the CANview® Gateway to the Computer to download new Firmware or the configuration. The serial interface may also be used for customer specific applications. The female screwlock thread diameter is UNC 4-40.



**For Firmware download please refer to the RM 16x-Programmer manual.  
For Configuration download please refer to the CANview® Gateway Configurator manual.**

Table 5: Serial interface connector pin assignment

Destination	Pin	Potential
Serial interface (RS232)	2	TxD (CANview® Gateway)
	3	RxD (CANview® Gateway)
	4	DSR (starts the device in firmware update mode)
	5	GND
	7	CTS (resets the device)



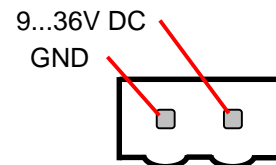
Front view of CANview® Gateway Serial interface connector (male)

### 5.4 Power connector

The Power connector is used to power the CANview® Gateway if the supply voltage is not provided via the CAN bus cable.

Table 6: Power connector pin assignment

Destination	Pin	Potential
Power Connector	1	GND
	2	9...36 V DC



Front view of CANview® Gateway Power connector

## 6 Mechanical Outlines

### 6.1 Standard housing

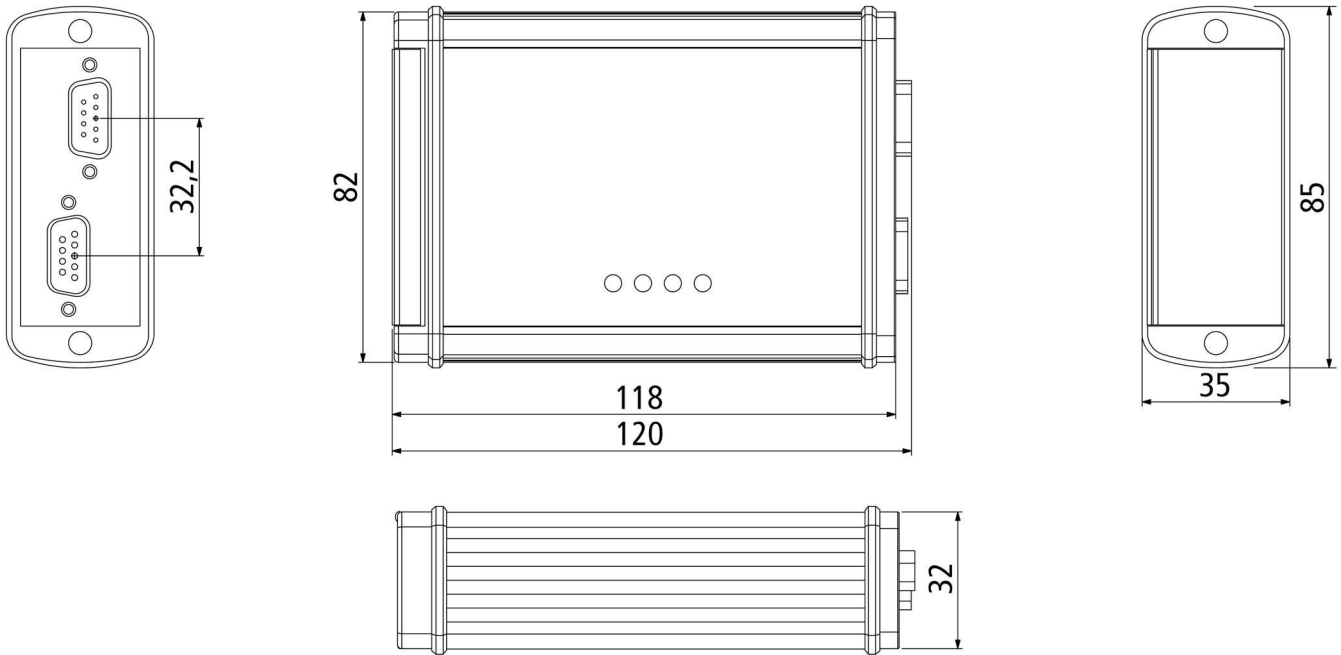


Figure 1: Standard housing of CANview Gateway



## 7 Naming Conventions

The CANview® Gateway – Family is available with various Options. To differentiate between these options four ciphers are attached to the family name “CANview® Gateway”. These name extension can be found on the rating plate on the back of the housing.

The following names have been defined until now:

Device name	Description	Order number
<b>CANview® Gateway 2001</b>	CANview® Gateway in aluminum housing <ul style="list-style-type: none"><li>- Sub-D 9-pole (male) CAN1 connector</li><li>- Sub-D 9-pole (female) CAN2 connector</li><li>- CAN1 and CAN2 are galvanically isolated</li><li>- Configuration update via RS232 interface</li><li>- RS232 and power connector hidden behind hinged flap</li></ul>	253 002 007
<b>CANview® Gateway 2002</b>	CANview® Gateway in aluminum housing <ul style="list-style-type: none"><li>- Sub-D 9-pole (male) CAN1 connector</li><li>- Sub-D 9-pole (female) CAN2 connector</li><li>- CAN1 and CAN2 are galvanically isolated</li><li>- Configuration update via RS232 interface</li></ul>	253 002 009
<b>CANview® Gateway 2101</b>	CANview® Gateway in aluminum housing <ul style="list-style-type: none"><li>- Sub-D 9-pole (male) CAN1 connector</li><li>- Sub-D 9-pole (female) CAN2 connector</li><li>- CAN1 and CAN2 are galvanically isolated</li><li>- USB interface</li><li>- Configuration update via RS232 interface</li><li>- RS232 and power connector hidden behind hinged flap</li></ul>	253 002 008
<b>Others ...</b>		On request



## 8 Technical Data

Table 7: Technical Data of CANview® Gateway

Value	Description
Supply Voltage (V+)	10 ... 30V DC
Current Drawn	< 60mA @ 30V DC < 80mA @ 24V DC < 210mA @ 10V DC
Operating Temp.	-40 ... +60°C (without USB interface) in restricted access locations: -40 ... +80°C (without USB interface, with appropriate interconnection cables) 0 ...+60°C (with USB interface) in restricted access locations: 0 ...+70°C (with USB interface, with appropriate interconnection cables)
LEDs	4 (ON, CAN1 communication, Error, CAN2 communication) Devices with USB interface: 5 (ON, CAN1 communication, Error, CAN2 communication, USB communication)
IP rating	IP20
Additional features	a) Optional IP67 rated M12 CAN connector b) Optional Low speed CAN interface
Controller	16 Bit
Flash Memory Size	128 kB (optional: external data-flash up to 8 MB)
SRAM Size	262 KB
EEPROM Size	8 KB
CAN Specification	2.0 A/B
CAN-Bus coupling	According to ISO 11898, High speed
Galvanic Isolation	Both CAN interfaces separately galvanically isolated
Max. Baud Rate	1Mbit/s



Value	Description
<b>CAN Protocol</b>	Layer 2
<b>Order Numbers</b>	See 'Naming Conventions' on page 12
<b>Optional Parts</b>	136 000 055 CAN Cable 9-pin SUBD \ 9-pin SUBD Power CAN cable with SubD-9 (f) and SubD-9 (f), 2m with power connector.  136 000 004 CAN Cable 9-pin SUBD \ 9-pin SUBD CAN cable with SubD-9 (f) and SubD-9 (f), 2m  142 200 010 Wall mounting set
<b>Standard Housing</b>	Aluminum
<b>Dimensions in mm</b>	120 x 85 x 35
<b>Weight in grams</b>	230
<b>Certifications</b>	UL – File number: E205530 CANview® Gateway 2001/2002: CE – EN61000-6-3:2005; EN61326-1:2006; EN61000-6-2:2006; ISO7637-3:1995 e1 (Type approval number: e1*72/245*2006/28*5016*00)



## 9 Certificate of conformity



### EG-Konformitätserklärung

Für folgendes Erzeugnis

*CANview Gateway 2001/2002*

wird bestätigt, daß es den Vorschriften, insbesondere den Schutzanforderungen, entspricht, die in der RICHTLINIE 2004/108/EG DES EUROPÄISCHEN PARLAMENTS UND DES RATES vom 15. Dezember 2004 zur Angleichung der Rechtsvorschriften der Mitgliedstaaten über die elektromagnetische Verträglichkeit und zur Aufhebung der Richtlinie 89/336/EWG festgelegt sind.

Diese Erklärung gilt für alle identischen Exemplare des Erzeugnisses bei bestimmungsgemäßer Verwendung.

Zur Beurteilung des Erzeugnisses hinsichtlich der elektromagnetischen Verträglichkeit wurden folgende einschlägige harmonisierte europäische Normen herangezogen, deren Fundstellen im Amtsblatt der Europäischen Gemeinschaften veröffentlicht wurden:

Störaussendung: EN 61000-6-3:2005  
EN61326-1:2006

Störfestigkeit gegen: EN 61000-6-2:2006  
ISO 7637-3:1995

Hinweise zum bestimmungsgemäßen Gebrauch sowie auf Einschränkungen bezüglich des Einsatzbereichs werden in der Anlage zu dieser Erklärung bzw. der Technischen Dokumentation gemacht.

Diese Erklärung wird verantwortlich für folgenden Hersteller abgegeben:

Unternehmensbezeichnung: RM Michaelides Software & Elektronik GmbH  
Anschrift: Donaustraße 14  
36043 Fulda  
Telefon / Telefax: 0661/9490-101 0661/9490-333

Name des Unterzeichners: Robert Michaelides  
Stellung im Unternehmen: Geschäftsführer

Fulda  
Ort

05.07.2007  
Datum

  
rechtsverbindliche Unterschrift



## 10 History

### 10.1 Hardware Documentation History

V1.00 (13.12.2006): - First official version

V1.01 (13.03.2007): - Hint for immunity related functions added

- Additional device options added

- Temperature range changed for devices without USB port

- Screwlock thread diameter added

V1.02 (11.07.2007): - CE certificate added

- e1 type approval added

V1.03 (07.04.2008): - Telecommunication network and restricted access locations hints added

- Temperature range: restricted access locations added

- IP rating added

V1.04 (14.04.2008): - Temperature range for restricted access locations changed

V1.05 (25.04.2008): - Voltage range changed

- Temperature range: appropriate interconnection cables added

### 10.2 Hardware History

V2.00 (13.12.2006): - First official version

V2.02 (18.04.2007): - Corrections due to CE certification