ROUTER

INSTRUCTION FOR USE | **C6 ROUTER**

Original Manual
Document 20090747 EN 03

Preface

The described hard- and software are developments of the KEB Automation KG. The enclosed documents correspond to conditions valid at printing. Misprint, mistakes and technical changes reserved.

Signal words and symbols

Certain operations can cause hazards during the installation, operation or thereafter. There are safety informations in the documentation in front of these operations. Security signs are located on the device or machine. A warning contains signal words which are explained in the following table:

⚠ DANGER	Dangerous situation, which will cause death or serious injury in case of non-observance of this safety instruction.
⚠ WARNING	Dangerous situation, which may cause death or serious injury in case of non-observance of this safety instruction.
⚠ CAUTION	Dangerous situation, which may cause minor injury in case of non-observance of this safety instruction.
NOTICE	Situation, which can cause damage to property in case of non-observance.

RESTRICTION

Is used when certain conditions must meet the validity of statements or the result is limited to a certain validity range.

Is used when the result will be better, more economic or trouble-free by following these procedures.

More symbols

►	This arrow starts an action step.
• / -	Enumerations are marked with dots or indents.
=>	Cross reference to another chapter or another page.

Note to further documentation.
www.keb.de/service/downloads

Laws and guidelines

KEB Automation KG confirms with the EC declaration of conformity and the CE mark on the device nameplate that it complies with the essential safety requirements.

The EC declaration of conformity can be downloaded on demand via our website. Further information is provided in chapter "Certification".

Warranty and liability

The warranty and liability on design, material or workmanship for the acquired device is given in the general sales conditions.

Here you will find our general sales conditions.
www.keb.de/terms-and-conditions

Further agreements or specifications require a written confirmation.

Support

Through multiple applications not every imaginable case has been taken into account. If you require further information or if problems occur which are not treated detailed in the documentation, you can request the necessary information via the local KEB Automation KG agency.

The use of our units in the target products is outside of our control and therefore lies exclusively in the area of responsibility of the customer.

The information contained in the technical documentation, as well as any user-specific advice in spoken and written and through tests, are made to best of our knowledge and information about the intended use. However, they are regarded as being only informal and changes are expressly reserved, in particular due to technical changes. This also applies to any violation of industrial property rights of a third-party. Selection of our units in view of their suitability for the intended use must be done generally by the user.

Tests can only be done within the intended end use of the product (application) by the customer. They must be repeated, even if only parts of hardware, software or the unit adjustment are modified.

Copyright

The customer may use the instructions for use as well as further documents or parts from it for internal purposes. Copyrights are with KEB Automation KG and remain valid in its entirety.

This KEB product or parts thereof may contain third-party software, including free and/or open source software. If applicable, the license terms of this software are contained in the instructions for use. The instructions for use are already available to you, can be downloaded free of charge from the KEB website or can be requested from the respective KEB contact person.

Other wordmarks or/and logos are trademarks (™) or registered trademarks (®) of their respective owners.

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Glossary

0V	Earth-potential-free common point
1ph	1-phase mains
3ph	3-phase mains
AC	AC current or voltage
Application	The application is the intended use of the KEB product.
ASCL	Asynchronous sensorless closed loop
AWG	American wire gauge
B2B	Business-to-business
CAN	Fieldbus system
CODESYS	Operating system of the standard control and programming environment
CODESYS Safety-PS	Safety programming system
COM-BIVERT	KEB drive converters
COMBIVIS	KEB start-up and parameterizing software
Customer	The customer has purchased a KEB product from KEB and integrates the KEB product into his product (customer product) or resells the KEB product (dealer)
DC	DC current or voltage
DIN	German Institut for standardization
EMC	Electromagnetic compatibility
Emergency stop	Shutdown of a drive in emergency case (not de-energized)
Emergency switching off	Switching off the voltage supply in emergency case
EN	European standard
End customer	The end customer is the user of the customer product.
EtherCAT	Real-time Ethernet bus system of the company Beckhoff
Ethernet	Real-time bus system - defines protocols, plugs, types of cables
FE	Functional earth
FSoE	Functional Safety over Ethernet
GND	Reference potential, ground
Head module	Description for the bus coupler or small control in the KEB-I/O EtherCat system
HMI	Human machine interface (touch screen)
IEC	International standard
IP xx	Degree of protection (xx for level)
KEB product	The KEB product is subject of this manual.
KEB-I/O EtherCAT SPS	Small control system from the KEB-I/O system
KEB-I/O EtherCAT System	I/O module family
Manufacturer	The manufacturer is KEB, unless otherwise specified (e.g. as manufacturer of machines, engines, vehicles or adhesives).
MCM	American unit for large wire cross sections
MTTF	Mean service life to failure
NN	Sea level
PE	Protective earth
PELV	Protective Extra Low Voltage
PFD	Term used in the safety technology (EN 61508-1...7) for the size of error probability
PFH	Term used in the safety technology (EN 61508-1...7) for the size of error probability per hour
PLC	Programmable logic controller
POU	Program Organization Unit
RJ45	Modular connector with 8 lines
Safety Package	Plug in for COMBIVIS studio 6 with safety functionally
Safety PLC	Safety programmable logic controller
Safety PLCopen	Library of the certified basic level safety blocks
SELV	Safety Extra Low Voltage (< 60 V)
SIL	The security integrity level is a measure for quantifying the risk reduction. Term used in the safety technology (EN 61508 -1...7)
USB	Universal serial bus

Standards for control & automation

DGUV regulation 3	Electrical installations and equipment
DIN 46228-1	Wire-end ferrules; Tube without plastic sleeve
DIN 46228-4	Wire-end ferrules; Tube with plastic sleeve
DIN IEC 60364-5-54	Low-voltage electrical installations - Part 5-54: Selection and erection of electrical equipment - Earthing arrangements, protective conductors and protective bonding conductors (IEC 64/1610/CD)
DIN VDE 0100-729	Low-voltage electrical installations - Part 7-729: Requirements for special installations or locations - Operating or maintenance gangways (IEC 60364-7-729); German implementation HD 60364-7-729
EN 1037	Safety of machinery - Prevention of unexpected start-up; German version EN 1037
EN 55011	Industrial, scientific and medical equipment - Radio frequency disturbance characteristics - Limits and methods of measurement (IEC/CISPR 11); German version EN 55011
EN 55021	Interference to mobile radiocommunications in the presence of impulse noise - Methods of judging degradation and measures to improve performance (IEC/CISPR/D/230/FDIS); German version prEN 55021
EN 60204-1	Safety of machinery - electrical equipment of machines Part 1: General requirements (VDE 0113-1, IEC 44/709/CDV)
EN 60439-1	Low-voltage switchgear and controlgear assemblies - Part 1: Type-tested and partially type-tested assemblies (IEC 60439-1); German version EN 60439-1
EN 60529	Degrees of protection provided by enclosures (IP Code) (IEC 60529)
EN 60664-1	Insulation coordination for equipment within low-voltage systems Part 1: Principles, requirements and tests (IEC 60664-1)
EN 60721-3-1	Classification of environmental conditions - Part 3-1: Classification of groups of environmental parameters and their severities - Section 1: Storage (IEC 104/648/CD)
EN 60721-3-2	Classification of environmental conditions - Part 3: Classification of groups of environmental parameters and their severities - Section 2: Transportation and handling (IEC 104/670/CD)
EN 60721-3-3	Classification of environmental conditions - Part 3: Classification of groups of environmental parameters and their severities; section 3: Stationary use at weatherprotected locations; Amendment A2 (IEC 60721-3-3); German version EN 60721-3-3
EN 61000-2-1	Electromagnetic compatibility (EMC) - Part 2: Environment - Section 1: Description of the environment - Electromagnetic environment for low-frequency conducted disturbances and signalling in public power supply systems
EN 61000-2-4	Electromagnetic compatibility (EMC) - Part 2-4: Environment; Compatibility levels in industrial plants for low-frequency conducted disturbances (IEC 61000-2-4); German version EN 61000-2-4
EN 61000-4-2	Electromagnetic compatibility (EMC) - Part 4-2: Testing and measurement techniques - Electrostatic discharge immunity test (IEC 61000-4-2); German version EN 61000-4-2
EN 61000-4-3	Electromagnetic compatibility (EMC) - Part 4-3: Testing and measurement techniques - Radiated, radio-frequency, electromagnetic field immunity test (IEC 61000-4-3); German version EN 61000-4-3
EN 61000-4-4	Electromagnetic compatibility (EMC) - Part 4-4: Testing and measurement techniques - Electrical fast transient/burst immunity test (IEC 61000-4-4); German version EN 61000-4-4
EN 61000-4-5	Electromagnetic compatibility (EMC) - Part 4-5: Testing and measurement

	techniques - Surge immunity test (IEC 61000-4-5); German version EN 61000-4-5
EN 61000-4-6	Electromagnetic compatibility (EMC) - Part 4-6: Testing and measurement techniques - Immunity to conducted disturbances, induced by radio-frequency fields (IEC 61000-4-6); German version EN 61000-4-6
EN 61000-4-34	Electromagnetic compatibility (EMC) - Part 4-34: Testing and measurement techniques - Voltage dips, short interruptions and voltage variations immunity tests for equipment with mains current more than 16 A per phase (IEC 61000-4-34); German version EN 61000-4-34
EN 61131-2	Programmable controllers - Part 2: Equipment requirements and tests (IEC 61131-2)
EN 61373	Railway applications - Rolling stock equipment - Shock and vibration tests (IEC 61373)
EN 61439-1	Low-voltage switchgear and controlgear assemblies - Part 1: General rules (IEC 121B/40/CDV); German version FprEN 61439-1
EN 61508-1...7	Functional safety of electrical/electronic/programmable electronic safety-related systems – Part 1...7 (VDE 0803-1…7, IEC 61508-1…7)
EN 61800-2	Adjustable speed electrical power drive systems - Part 2: General requirements - Rating specifications for low voltage adjustable frequency a.c. power drive systems (VDE 0160-102, IEC 61800-2)
EN 61800-3	Speed-adjustable electrical drives. Part 3: EMC requirements and specific test methods (VDE 0160-103, IEC 61800-3)
EN 61800-5-1	Adjustable speed electrical power drive systems - Part 5-1: Safety requirements - Electrical, thermal and energy (IEC 61800-5-1); German version EN 61800-5-1
EN 61800-5-2	Adjustable speed electrical power drive systems - Part 5-2: Safety Requirements - Functional (IEC 22G/264/CD)
EN 62061	Safety of machinery - functional safety of electrical, electronic and programmable electronic safety-related systems (VDE 0113-50, IEC 62061)
EN ISO 13849-1	Safety of machinery - safety-related parts of control systems - Part 1: General principles for design (ISO 13849-1); German version EN ISO 13849-1
UL 61800-5-1	American version of the EN 61800-5-1 with „National Deviations“

1 Basic Safety Instructions

The COMBICONTROL is designed and constructed in accordance with state-of-the-art technology and the recognised safety rules and regulations. However, the use of such devices may cause functional hazards for life and limb of the user or third parties, or damages to the system and other material property.

The following safety instructions have been created by the manufacturer for the area of electric drive technology. They can be supplemented by local, country- or application-specific safety instructions. This list is not exhaustive. Non-observance of the safety instructions by the customer, user or other third party leads to the loss of all resulting claims against the manufacturer.

NOTICE

Hazards and risks through ignorance.

- ► Read the instructions for use !
- ► Observe the safety and warning instructions !
- ► If anything is unclear, please contact KEB Automation KG !

1.1 Target Group

This manual is written for design, project planning, servicing and commissioning experts. Qualified personnel for the purpose of this instruction manual must have the following qualifications:

- Knowledge and understanding of the safety instructions.
- Knowledge of automation technology.
- Knowledge of functional safety.
- Skills for installation and assembly of electrical equipment.
- Detection of hazards and risks of the electrical drive technology.
- Understanding of the function in the used machine.
- Knowledge of the operation of the Windows operating system.
- Knowledge of *DIN IEC 60364-5-54*.
- Knowledge of *EN 60204-1*
- Knowledge of national safety regulations (e.g. *DGUV regulation 3*).

1.2 Transport, storage and proper use

The transport is carried out by qualified persons in accordance with the environmental conditions specified in this manual. The devices shall be protected against excessive strains.

Electronic devices contain electrostatic sensitive components.

► Avoid contact.

► Wear ESD-protective clothing.

Do not store the devices

- in the environment of aggressive and/or conductive liquids or gases.
- with direct sunlight.
- outside the specified environmental conditions.

1.3 Installation

⚠ DANGER

Do not operate in an explosive environment!

► The device is not intended for the use in potentially explosive environment.

To prevent damages to the device:

- Make sure that no components are bent and/or isolation distances are changed.
- The device must not be put into operation in case of mechanical defects. Non-compliance with the applicable standards.
- Do not allow moisture or mist to penetrate the unit.
- Avoid dust permeating the device. Allow for sufficient heat dissipation if installed in a dust-proof housing.
- Note installation position and minimum distances to surrounding elements. Do not cover the ventilation openings.
- Mounting according to the specified degree of protection.
- Make sure that no small parts fall into the device during assembly and wiring (drilling chips, screws etc.). This also applies to mechanical components, which can lose small parts during operation.
- Check the reliable fit of the device connections in order to avoid contact resistances and sparking.
- The safety instructions are to be kept!

1.4 Electrical connection

ATTENTION

In order to prevent malfunctions or unpredictable conditions, observe the following instructions:

- ► For any work on the device switch off the supply voltage.
- ► Never bridge upstream protective devices (also not for test purposes).
- ► Install all required covers and protective devices for operation.
- ► The electrical installation shall be carried out in accordance with the relevant requirements.
- ► Cable cross-sections and fuses must be dimensioned according to the design of the machine manufacturer. Specified minimum / maximum values may not be fallen below /exceeded.
- ► With existing or newly wired circuits the person installing the units or machines must ensure the EN requirements are met.
- ► When using components without isolated inputs/outputs, it is necessary that equipotential bonding exists between the components to be connected (e.g. by the equipotential line). Disregard can cause destruction of the components by equalizing currents.

1.5 Start-up and operation

When the device is installed in machines, start-up (i.e. commencement of the intended operation) is prohibited until it is determined that the machine complies with the machine directive; Account is to be taken of *EN 60204-1*.

- During operation, all covers and doors shall be kept closed.
- Use only approved accessories for this device.
- Never touch terminals, busbars or cable ends.

1.6 Maintenance

The following maintenance work has to be carried out when required, but at least once per year by authorized and trained personnel.Check unit for loose screws and plugs and tighten if necessary.

- ► Check unit for loose screws and plugs and tighten if necessary.
- ► Clean the device from dirt and dust deposits. Depending on the device, pay particular attention to ventilation slots or cooling fins.
- ► Examine and clean extracted air filter and cooling air filter of the control cabinet.

1.8 Repair

In case of malfunction, unusual noises or smells inform a person in charge!

⚠ DANGER

Unauthorized exchange, repair and modifications!

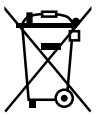
Unpredictable malfunctions!

- ► The function of electronic devices can be influenced by the setting and parameterization. Never replace without knowledge of the application.
- ► Modification or repair is permitted only by KEB Automation KG authorized personnel.
- ► Only use original manufacturer parts.
- ► Infringement will annul the liability for resulting consequences.

1.7 Disposal

Electronic devices of the KEB Automation KG are exclusively professional devices for further industrial processing (so-called B2B devices).

Manufacturers of B2B devices are obliged to take back and recycle devices manufactured after 14.08.2018. These devices may not be disposed at the collection centres of public sector disposal organisations.



If no deviating agreement has been made between the customer and KEB or no deviating mandatory legal regulation exists, KEB products marked in this way can be returned. Company and keyword to the return point can be taken from the list below. Shipping costs are paid by the customer. Thereupon the devices will be professionally recycled and disposed.

The entry numbers are listed country-specific in the following table. The corresponding KEB return addresses can be found on our website.

Withdrawal by	WEEE-Reg.-No.		Keyword
Austria			
KEB Automation GmbH	ERA:	51976	Stichwort „Rücknahme WEEE“
France			
RÉCYLUM - Recycle point	ADEME:	FR021806	Mots clés „KEB DEEE“
Germany			
KEB Automation KG	EAR:	DE12653519	Stichwort „Rücknahme WEEE“
Italy			
COBAT	AEE: (IT)	19030000011216	Parola chiave „Ritiro RAEE“
Spain			
KEB Automation KG	RII-AEE	7427	Palabra clave „Retirada RAEE“

The packaging must be feed to paper and cardboard recycling.

2 System Description

The COMBIVIS connect router is a device that is able to support the remote services as a stand-alone solution. It enables the use of COMBIVIS connect in all those situations where for any reason the software solution is not an option. COMBIVIS connect Router device applies to the automation network with zero impact on the actual devices. No changes are requested to the configuration of any of the existing devices.

COMBIVIS Connect Router implements a specific variant of COMBIVIS connect Runtime; from the functional point of view this is equivalent to the standard Runtime concepts.

2.1 Special features

- KEB COMBIVIS connect Router runtime on Microsoft Windows Embedded Compact 7.
- Full compatibility with standard COMBIVIS connect software functions (see COMBIVIS connect Control Center online manual for further information).
- ARM Cortex A8 processor (1.0 GHz, 800MHz for ET version).
- 512MB RAM DDR3-800
- 2/4GB eMMC memory, file system organization for data storage
- Ethernet interface 10/100 Mbps WAN for Internet connection.
- Ethernet interface 100 Mbps LAN for the automation network.
- RS-232/RS-485/RS-422 optically isolated serial port with MPI support up to 187 Kbit/s.
- USB 2.0 interface for system configuration and updates.
- Front panel LEDs for device status and operation report.
- 24 VDC Digital input to control COMBIVIS connect Router device WAN connection activation.
- 24 VDC Digital input for COMBIVIS connect Router device software reset.
- Digital output to report the status of the WAN connection to the COMBIVIS connect Server Infrastructure.
- Digital output to report remote the presence of a Control Center connection (Remote assistance service running).
- Stainless steel housing
- DIN rail book mounting and wall book mounting.
- Degree of protection IP 20

2.2 Router package

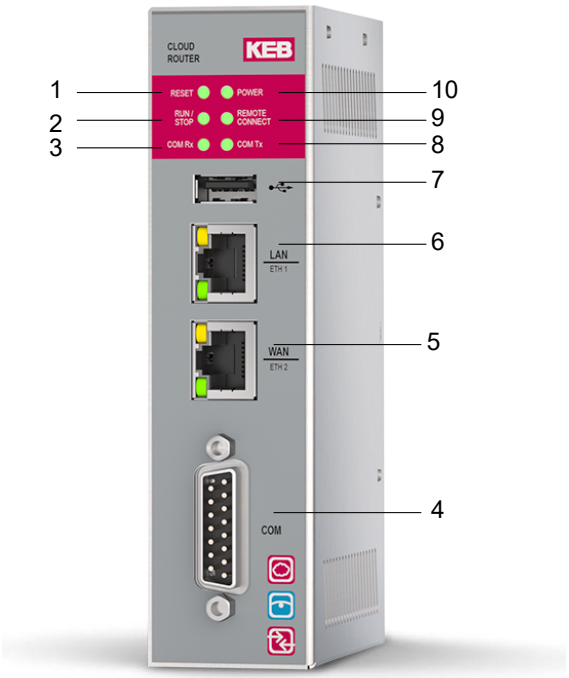
COMBIVIS connect Router device package consists of:

E/L system	
DIN mount kit	
Wall mount kit	
n.1 Power supply plug	
n.1 Isolated IO plug	
Pentaband Stick Antenna (optional)	

Pentaband Outdoor Antenna (optional)	
Pentaband Wall mount Antenna (optional)	
Antenna cable extension 3/5 m (optional)	

Figure 1: Router package

2.3 Front view C6 Router E1 - E4



1	Reset LED (yellow)
2	Run /Stop LED (green/red)
3	COM Rx LED
4	COM
5	WAN ETH2
6	LAN ETH1
7	USB
8	COM Tx LED (green)
9	Remote connection LED (green)
10	Power LED (green)

Figure 2: Front detail

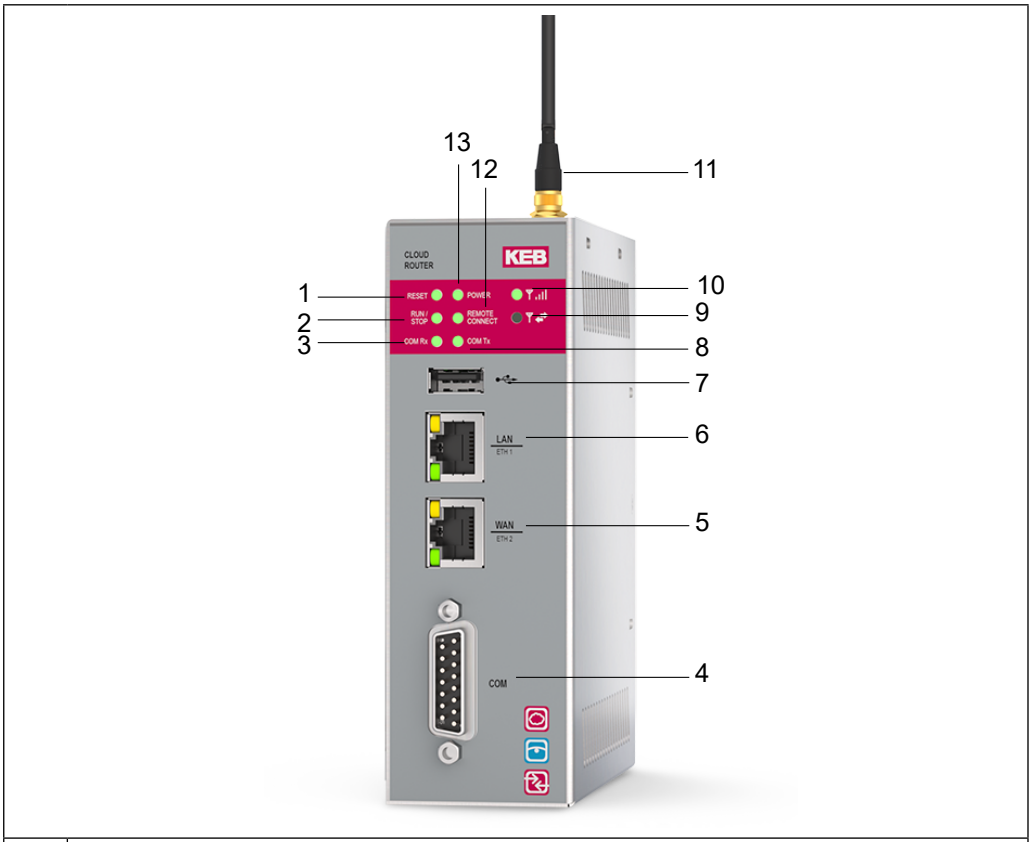
The following behaviors are defined:

•	Steady lighted
•	Blinking
•	Continuous sequence of a blink codes with a short pause in between to report a status.
•	Single sequence of a blink code to report an event.

LED	Status	Description
Reset	Steady lighted	Active when pressing the reset button or when a non-recoverable hardware error occurs.
Power	Steady lighted	Active when the COMBIVIS connect Router device is properly powered
RUN/STOP	Steady green	COMBIVIS connect started and connected to the server
	Steady red	COMBIVIS connect started but NOT connected to the server
	Blinking green	COMBIVIS connect started and connecting to the server
	Blinking red	COMBIVIS connect started but not connected to the server because not associated to any Domain
	Sequence of 2 red blinks	connection attempt to a different domain than the first of the initial registration
	Single 2 green blinks	Configuration from USB stick successfully completed
	Single 2 red blinks	User credential for Domain access not valid
	Single 3 green blinks	COMBIVIS connect Router device update from USB stick successfully completed.
	Single 3 red blinks	COMBIVIS connect Router device update from USB stick failed.
	Single 4 red blinks	Factory restore started
	Single 5 red blinks	COMBIVIS connect Runtime execution error, a system restart occurs.
	Single 6 red blinks	USB stick data format not correct or unknown error
Remote Connection	Steady lighted	Active when at least one Control Center client is connected to the C6 ROUTER E1, otherwise off
COM Rx COM Tx	Signal presence	These LEDs are directly connected to the serial port Rx/Tx signals and they show traffic through the lines

Figure 3: C6 Router E1-E4 front view

2.4 Front view C6 Router L1-L4



1	Reset LED (yellow)
2	Run /Stop LED (green/red)
3	COM Rx LED
4	COM
5	WAN ETH2
6	LAN ETH1
7	USB
8	COM Tx LED (green)
9	3G/4G modem activity
10	3G/4G modem connection
11	RF antenna connector
12	Remote Connection LED (green)
13	Power LED (green)

Figure 4: Front detail

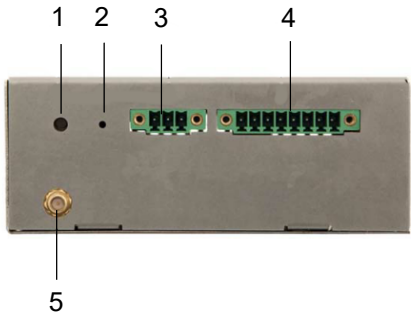
The following behaviors are defined:

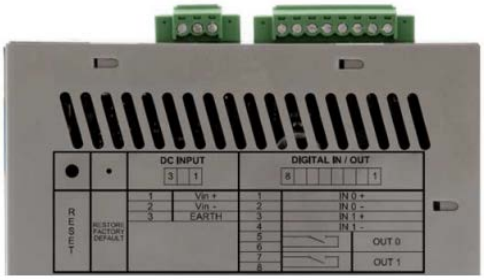
•	Steady lighted
•	Blinking
•	Continuous sequence of a blink codes with a short pause in between to report a status.
•	Single sequence of a blink code to report an event.

LED	Status	Description
Reset	Steady lighted	Active when pressing the reset button or when a non-recoverable hardware error occurs.
Power	Steady lighted	Active when the COMBIVIS connect Router device is properly powered
Run/Stop	Steady green	COMBIVIS connect started and connected to the server
	Steady red	COMBIVIS connect started but NOT connected to the server
	Blinking green	COMBIVIS connect started and connecting to the server
	Blinking red	COMBIVIS connect started but not connected to the server because not associated to any Domain
	Sequence of 2 red blinks	connection attempt to a different domain than the first of the initial registration
	Single 2 green blinks	Configuration from USB stick successfully completed
	Single 2 red blinks	User credential for Domain access not valid
	Single 3 green blinks	COMBIVIS connect Router device update from USB stick successfully completed.
	Single 3 red blinks	COMBIVIS connect Router device update from USB stick failed.
	Single 4 red blinks	Factory restore started
	Single 5 red blinks	COMBIVIS connect Runtime execution error, a system restart occurs.
	Single 6 red blinks	USB stick data format not correct or unknown error
Remote connection	Steady lighted	Active when at least one Control Center client is connected to the C6 ROUTER E1, otherwise off
COM Rx COM Tx	Signal presence	These LEDs are directly connected to the serial port Rx/Tx signals and they show traffic through the lines

3G/4G MODEM connection	Steady red	The modem has not detected network signal.
	Blinking green	The modem has detected a weak signal from the network.
	Steady green	The modem has detected a strong signal from the network.
	Blinking red	SIM error (e.g. wrong PIN).
3G/4G MODEM activity	Blinking green	Modem currently connected.
	Off	Modem disconnected.
Figure 5: C6 Router L1-L4 front view		

2.5 Close-up view C6 Router L1-L4



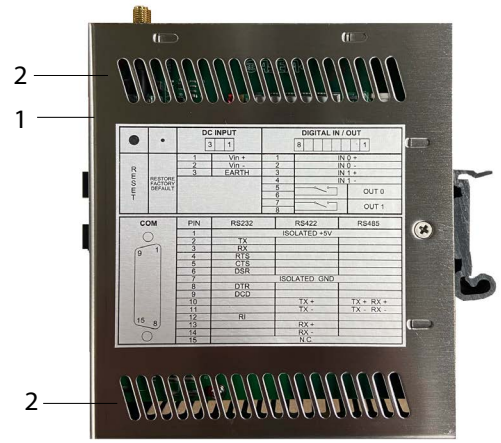


1	Reset key
2	Button for restoring factory settings
3	DC power input
4	Digital input / output
5	Antenna connection (only for L1-L4)
Figure 6: C6 Router L1-L4 close-up view	

Reset	Forces the device restart. The command ensures a complete initialization of all internal electronics and software. The visual feedback of the operation is returned by the RESET LED.
Restoring factory settings	Restores the COMBIVIS connect Router device to factory settings. All the settings are reset, all the system software is restored to original versions including the operating system, the firmware the COMBIVIS connect Runtime and Domain registrations (identity is removed). To execute the restore, turn off the device, press and hold down the reset button and give power. You need to hold down the button for at least 10 seconds. The starting of the restore process is indicated by the dedicated blink sequence of the LEDs. Wait for the process to be completed and system restart.
IN0	This input works as “Connection mode”, also referred as “selector key” input. By default the status of this input is ignored. When the COMBIVIS connect Router device is configured to handle the input (see “General options” in the COMBIVIS connect Router device configuration chapter) it can be used to control from outside the connection to the server. The input can be driven by a mechanical selector, by a key selector or by PLC outputs.
IN1	This input allows controlling the device restart from outside. The operation corresponds to the RESET button. Once the command is received a proper feedback is returned by the status LED.
OUT0	The output turns active when COMBIVIS connect Router device is connected to the associated Domain. Note that the simple connection to the server does not activate the output. It is required that COMBIVIS connect is successfully authenticated to the Domain.
OUT1	The output is active when at least one Control Center client is connected to the COMBIVIS connect Router device.

Figure 7: C6 Router L1-L4 features

2.6 Right side C6 Router L1-L4



1	Full stainless steel enclosure
2	Aeration holes

Figure 8: C6 Router L1-L4 right side

2.7 Left side C6 Router L1-L4

1	Full stainless steel enclosure
2	Aeration holes

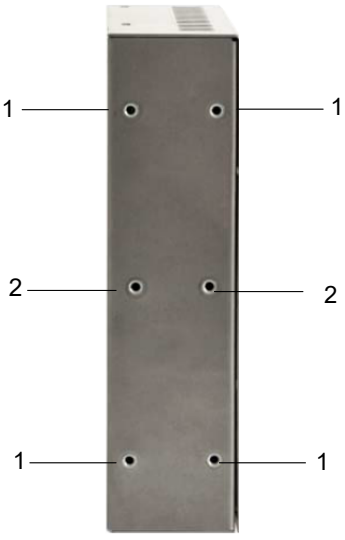
Figure 9: C6 Router L1-L4 left side

2.8 Rear side C6 Router L1-L4

1	Wall book mounting plate holes
2	DIN book mounting hook holes
3	SIM card socket

Figure 10: C6 Router L1-L4 rear side

2.9 Rear side C6 Router E1-ET, E2-ET and E1-E4



1	Wall book mounting plate holes
2	DIN book mounting hook holes

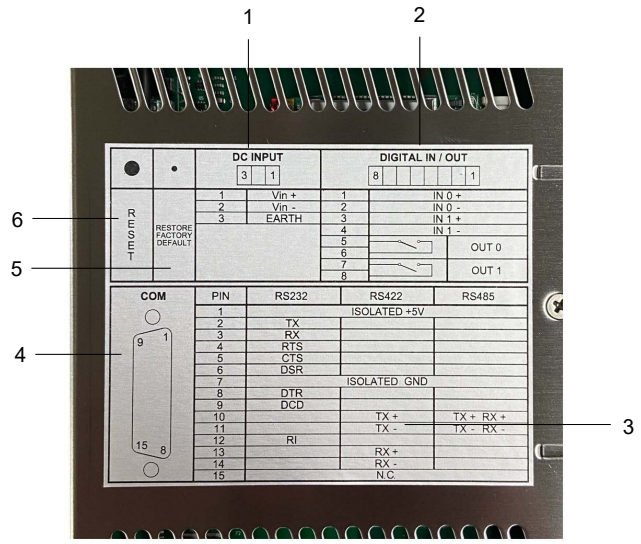
Figure 11: C6 Router E1-ET, E2-ET and E1-E4

2.10 Labels

On the side panels there are the following labels:

1	WAN MAC code	
2	LAN MAC code	
3	IMEI	
4	Mat.No.	
5	LAN IP	192.168.0.1
	Mask	255.255.255.0
	WAN IP	DHCP
	User	admin
	Password	admin

Figure 12: C6 Router labels



1	DC input
2	Digital input / output
3	Electrical information
4	COM interface
5	Button for restoring factory settings
6	Reset button

Figure 13: C6 Router labels

1	SIM card sticker

Figure 14: C6 Router SIM card sticker

2.11 Antenna

2.11.1 Pentaband stick antenna - 00C6FD0-AAS0

•	C6 Router direct mounting or panel mounting can be combined with different cable lengths:	
	3 m	00C6FD0-AC30
	5 m	00C6FD0-AC50
	10 m	00C6FDo-ACA0
•	20 W	
•	0dBi	
•	50 Ohm	
•	48 mm	
•	SMA-M	

Figure 15: C6 Router Pentaband stick antenna features

Figure 16: C6 Router Pentaband stick antenna - 00C6FD0-AAS0

2.11.2 Pentaband wall mounting antenna - 00C6FD0-AAW0

•	with 3 m cable
•	Wall mounting with 90° bracket
•	IP 67
•	50 W
•	2.5 dBi
•	50 Ohm
•	248 mm
•	SMA-M

Figure 17: C6 Router Pentaband wall mounting antenna features

Figure 18: C6 Router Pentaband wall mounting antenna - 00C6FD0-AAW0

2.11.3 Pentaband outdoor antenna - 00C6FD0-AAE0

•	with 1 m cable
•	Wall mounting with 90° bracket
•	IP 67
•	50 W
•	2.5dBi
•	50 Ohm
•	248 mm
•	SMA-M

Figure 19: C6 Router Pentaband outdoor antenna features

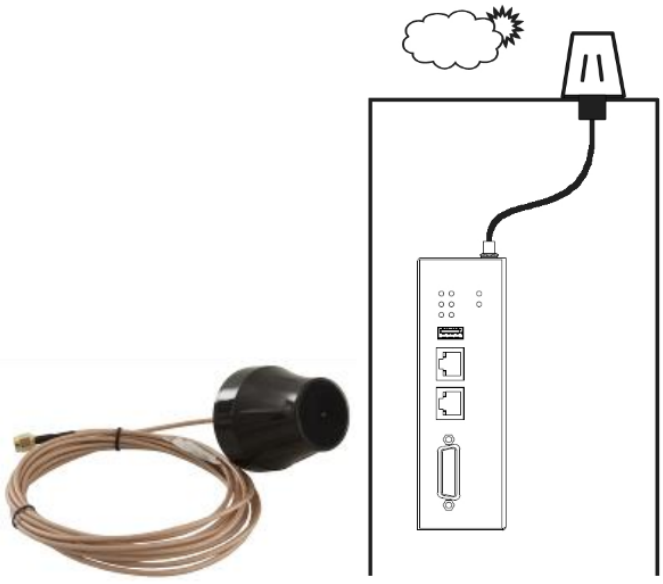


Figure 20: C6 Router Pentaband outdoor mounting antenna - 00C6FD0-AAE0

3 Installation and Connection

3.1 Preparation for installation

3.1.1 Select the mounting location

- Position COMBIVIS connect Router device such that it is ergonomically accessible for the operator.
- Choose a suitable mounting height.
- Ensure that the aeration holes are not covered.
- Keep a distance of 2.5 cm on the right and left side to the router.

3.2 Checking the package contents

- Check the package content for visible signs of transport damage and for completeness.
- In the case of damaged parts, contact your KEB representative. Do not install parts that were damaged during the shipment.

3.3 Checking the operating conditions

- Read carefully the standards, approvals, EMC parameters and technical specifications for operation of the device. This information is available in the following sections:
  a) Certificates and approvals.
  b) Electromagnetic compatibility .
- Check the mechanical and climatic ambient conditions for operation of the device.
- Follow the instructions for local use of the device.
- Adhere to the permissible rated voltage and the associated tolerance range:
  a) 12V and 24V
  b) Range: 9÷36 V_{DC}

3.4 Installation position

The COMBIVIS connect Router device is suitable for installation in:

- Mounting cabinets
- Control cabinets
- Switchboards

For installation in control cabinets and in particular, in closed containers, make sure the recommended ambient temperature is maintained.

3.5 Damage due to overheating

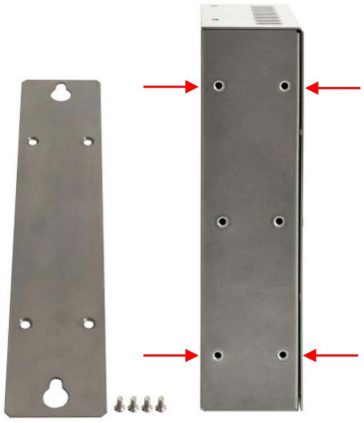
- The operating temperature must range between 0° and 50°C for E1-E4 and L1-L4 devices.
- The operating temperature must range between -20° and +70°C for E1-ET, E2-ET devices.
- An inclined installation reduces the thermal convection of the device and the maximum permissible ambient temperature for operation. Please contact KEB for details.
- The device may otherwise be damaged and its certifications and warranty will be void.

3.6 Preparing the mounting

In order to ensure a proper mounting of the system, the material of the mounting frame must be sufficiently stable.

3.7 Mounting the device

3.7.1 Installation procedure wall mounting



•	Install wall mounting plate as shown.

Figure 21: Wall mounting procedure

Figure 22: Wall mounting procedure / DIN rail mounting

- Drill the required holes on the housing panel according to the instructions detailed in the figure.
- There are 2 fastening points. Fastening can be made using stainless steel screws M4x20.

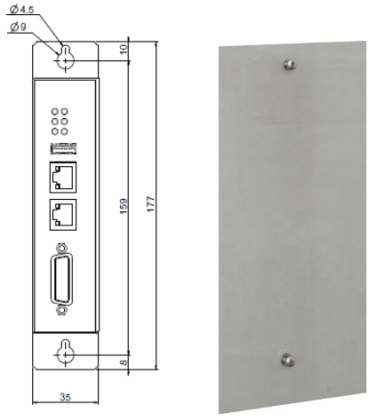


Figure 23: Wall mounting procedure / DIN rail mounting

- Hang the system as shown in the figure.

Step 1:	First lift slightly and insert the top.

Step 2:	Then align the bottom.

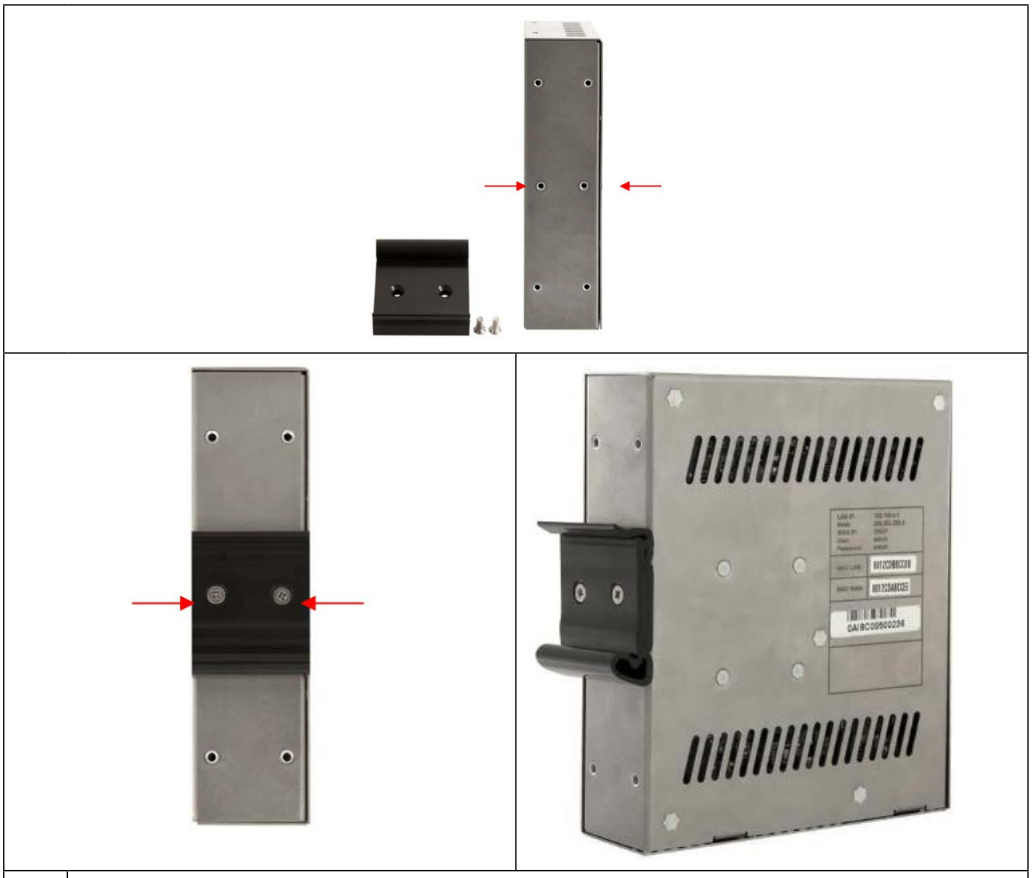
Step 3:	Release the top to match the slots with the screws.

Step 4:	Tighten the two screws.

Figure 24: Wall mounting procedure / DIN rail mounting

3.7.2 Wall mounting procedure DIN rail mounting

The system can be installed on a DIN guide as follows:



•	Mount the DIN hooks as shown.

Figure 25: Wall mounting procedure / DIN rail mounting

•	Mount the DIN mounting rail into the system.

•	Example of correct installation.

Figure 26: Wall mounting procedure / DIN rail mounting

To remove the system from the DIN guide:

•	Lift the system up and release it from the DIN mounting rail.

Figure 27: Wall mounting procedure

3.8 SIM installation

The SIM card is not provided with the product.The SIM card must be associated with a data traffic plan. The traffic plan must be properly chosen depending on foreseen traffic generated by the remote assistance sessions and SMS notification usage (for L1-L4 models).

The SIM card must be of ID-000 (ISO/IEC 7810) standard format (25 mm × 15 mm).

Step 1:	Insert the SIM card into the device.

Step 2:	Pull the SIM card in the hole till you listen a “click”.

Figure 28: SIM installation

3.9 Antenna Installation

3.9.1 Pentaband stilo antenna

The exact dimensions for this are in the chapter "Technical specifications / dimension drawings".

•	Drill a 6.5 mm hole in the metal.

•	Recommended torque for mounting is 0.9 Nm.

Figure 29: Pentaband stilo antenna

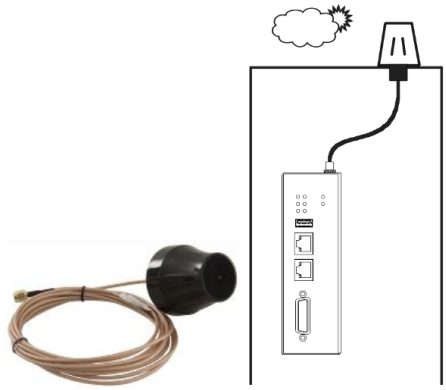
3.9.2 Pentaband wall mounting antenna

The exact dimensions for this are in the chapter "Technical specifications / dimension drawings".

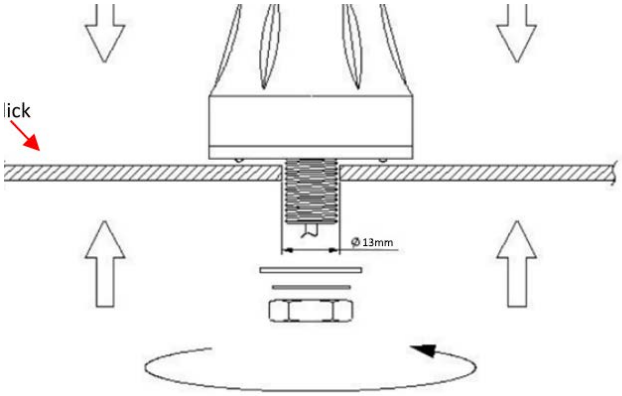
Figure 30: Pentaband wall mounting antenna

3.9.3 Pentaband outdoor antenna

The exact dimensions for this are in the chapter "Technical specifications / dimension drawings".



•	Drill a 13.0 mm hole in the metal.



•	Recommended torque for mounting is 2.94 Nm.
•	Maximum torque for mounting is 3.92 Nm.

Figure 31: Pentaband outdoor antenna installation

3.10 Connecting the device

3.10.1 Notes on connection

- COMBIVIS connect Router device must be installed in accordance with the indications contained in this instruction manual.
- These devices are intended to be connected to a “Secondary Circuit Overvoltage Category II”.

3.10.2 Grounding and bonding

Whenever two pieces of equipment connected to each other are far apart, it is possible that their ground connections could be at a different potential level. The shielding of the data cable connects the machine housing on one end and the COMBIVIS connect Router device housing on the other end and is therefore subject to high compensation currents that can destroy the interface. To overcome this hazard such current must be steered away from the interface. To achieve this goal the following methods can be used:

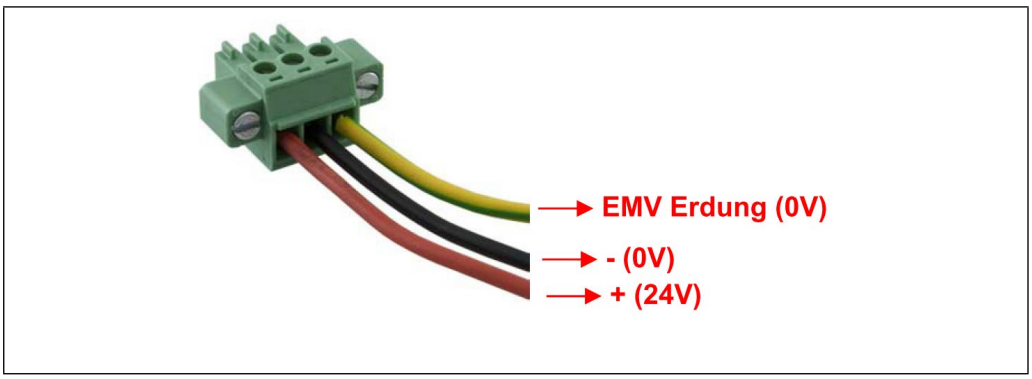
- Use an equipotential bonding cable (16mm^2, suitable at least 75C°) to connect the equipment’s’ ground to the COMBIVIS connect Router device’s ground.
- Connect the shielding of the data cable at both ends to the equipotential bonding rail before connecting the interfaces.

3.10.3 Power supply connection

The device may only be connected to a 12V or 24V power supply (maximum permissible operating voltage range 9V to 36V) which fulfills the requirements of safe extra low voltage (SELV) in accordance with IEC/EN/DIN EN/UL60950-1.

The power supply has to fulfil the requirements NEC Class2 or LPS in accordance with IEC/EN/DIN EN/UL60950-1Connect the device with a cable cross-section of 0.75 – 1.5 mm2 (AWG18 to AWG16 suitable at least 75C°).

- Remove the three poles connector from the system.
- Connect the positive pole, the negative and the ground one (also refer to the label on the back of the system) to the related terminals of the three pole connector.



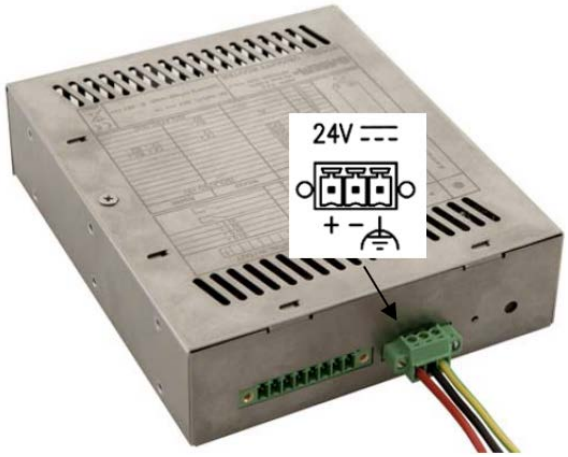


Figure 32: Connections for the power supply

3.10.4 Connecting the Ethernet ports

The routers always have two Ethernet ports, one is referred as WAN (Internet connection), the other one as LAN (automation network).

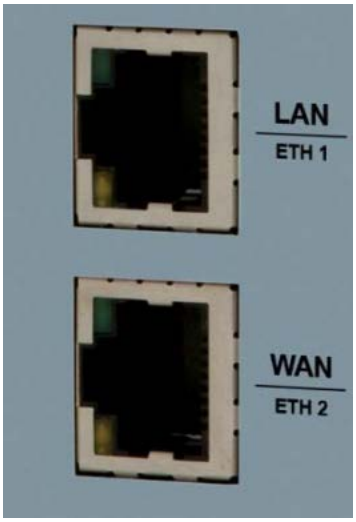


Figure 33: Connections for the Ethernet ports

When using the cable connection for Internet, it must be connected to the WAN port.The LAN port shall be connected to the automation sub-network.

3.10.5 Switching on and testing the COMBIVIS connect Router device

Connect the power supply cable to COMBIVIS connect Router device. Switch on the power supply. The green POWER LED will light on.

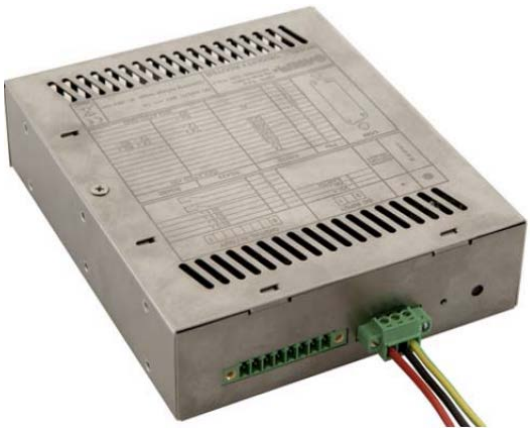


Figure 34: Connections for the power supply

Please refer to the COMBIVIS connect Control Center online help for all the details about how to configure and use COMBIVIS connect Router device.

3.11 Connecting the serial port

A special DB15 connector supports all serial protocols (pin assignment see chapter 6.4.1). Therefore it is necessary to adapt the connections to the technical requirements; KEB can supply connector adapters as optional parts but user can adapt DB15 connector by himself.For further details please contact KEB.

3.11.1 Connecting to MPI or PPI networks

The electrical specification of the MPI networks are often referring to the use of DB9 connectors like the one shown in the figure below.

Figure 35: DB9 connection adapter

The connector provides also the pass-through DB9 female connector for the MPI cable of the programming device.

In order to support the use of the standard Profibus / MPI connectors on the market, we recommend using the adapter cable (available as an accessory) to convert the DB15-M connector of the COM port to a standard DB9-F, as this is necessary for the connector.

The adapter is shown in the following figure:

Figure 36: Adapter cable

The internal connection corresponds to the following table:

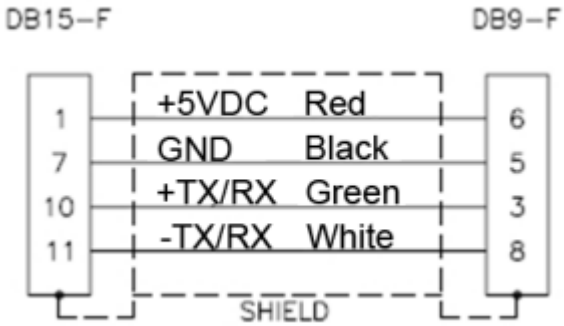


Figure 37: Connection adapter cable

The line connection and polarization is normally realized by using resistors mounted internally to the standard Profibus / MPI connectors.

The KEB adapter cable provides on the DB9-F connection side all signals required by the MPI communication and the line connection.The KEB cable converter does NOT contain resistors for line termination.Present notes do not replace the official documentation about Profibus and MPI network wiring. Please refer to official specification for any additional detail.For further details please contact KEB.

3.12 Connecting the digital inputs and outputs (I/O)

This section shows some examples of how to connect the digital inputs and outputs (I/O) with key switches, buttons and lamps.

3.12.1 IN0 - WAN connection enabling security key

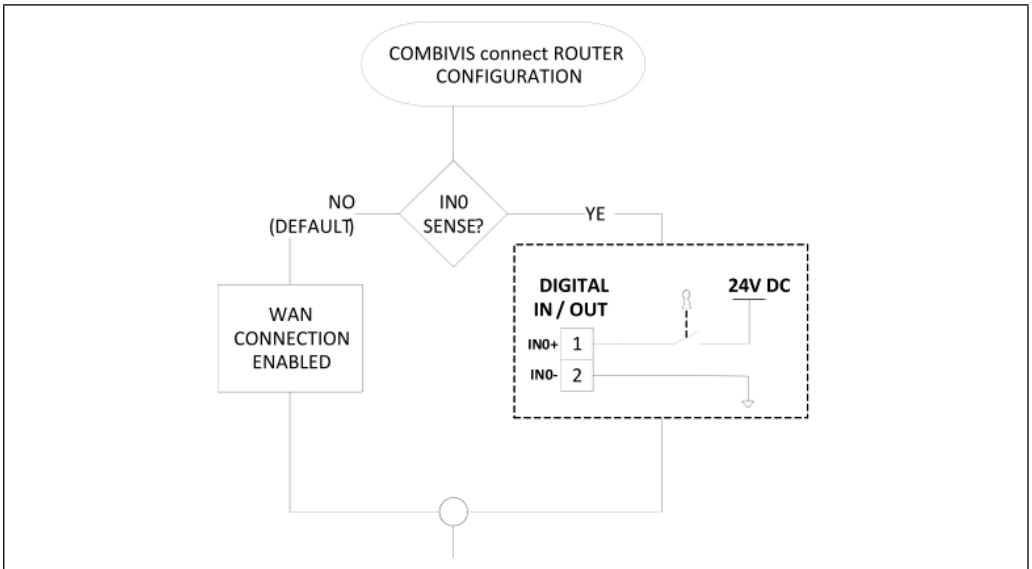


Figure 38: IN0-WAN connection example for activating a security key

3.12.2 IN1–Reset input

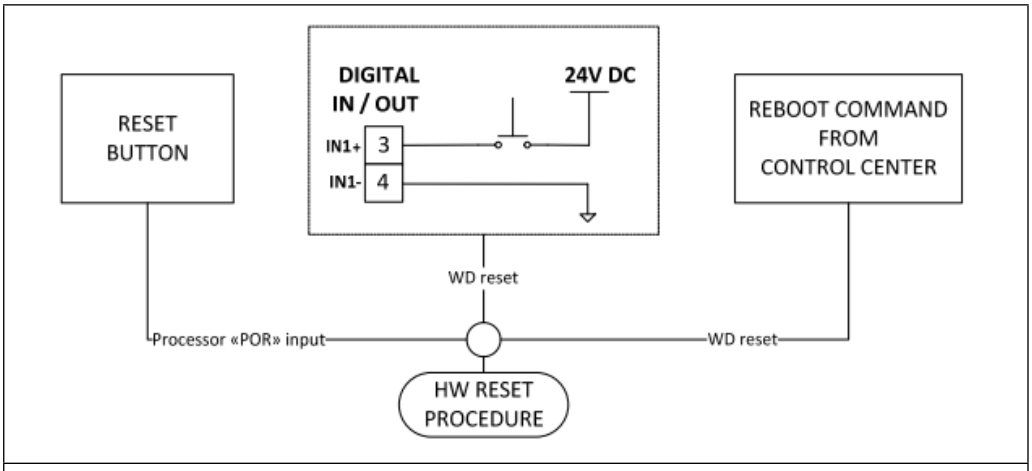


Figure 39: IN1-Reset input

To perform the hardware reset via input IN1, it is necessary to connect the input for at least 10 seconds.

3.12.3 OUT0-WAN connection to activate signalling equipment

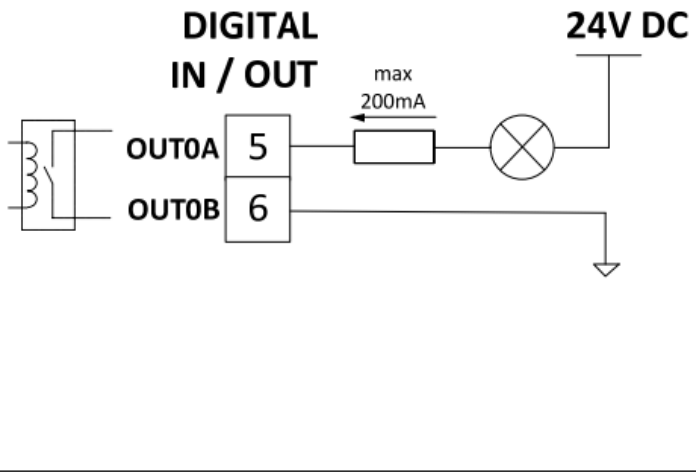


Figure 40: OUT0-WAN to activate signalling equipment

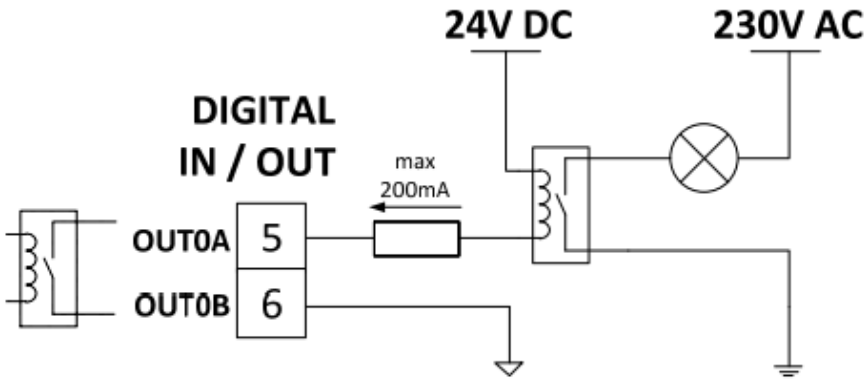


Figure 41: OUT0-WAN to activate signalling equipment

3.12.4 OUT0 – Remote assistance service running

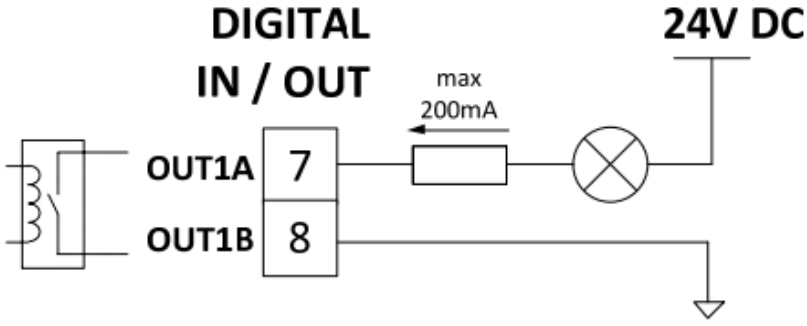


Figure 42: OUT0-Remote services application

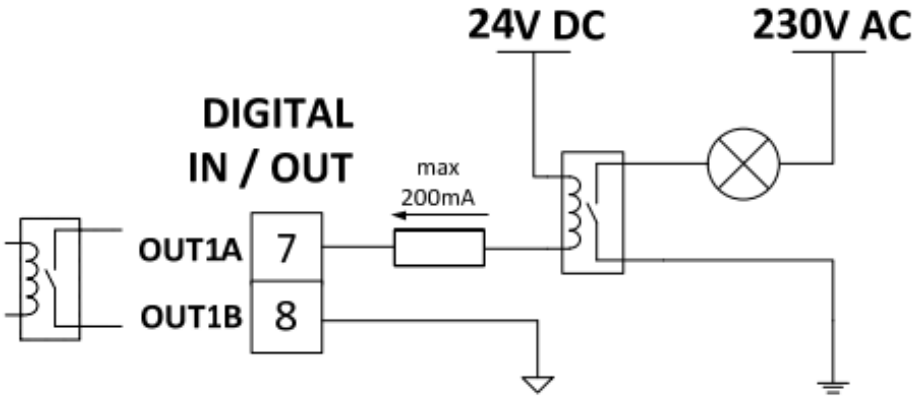


Figure 43: OUT0-Remote services application

4 Commissioning

4.1 Configuration

COMBIVIS connect Router system software is designed to reduce as much as possible the user intervention and simplify the few mandatory settings.

No settings is required for VPN and for the bridging of the Ethernet interfaces.All basic settings are made at factory level. No changes are requested to the user.The COMBIVIS connect Router device configuration is limited to the network interfaces IP addresses, to the serial port configuration, to the connection mode and Domain registration.

COMBIVIS connect Router device can be configured in two ways:

- Using a network connection.
- Using a USB stick on which the configuration file has been copied.

In both cases the configuration is done using COMBIVIS connect Control Center.

Please refer to the COMBIVIS connect Control Center online help for all the instructions about how to configure and make the COMBIVIS connect Router device commissioning. COMBIVIS connect Router device requires for the configuration COMBIVIS connect Control Center version 2 or above. Control Center is available for download in the dedicated product section of the www.keb.de website.

4.1.1 COMBIVIS connect Router E2/L2 models

COMBIVIS connect Router devices with data monitoring functionality (E2/L2 models) can be additionally configured to run a COMBIVIS HMI project for data collection, alarm notification and web visualization. These models come out from production already configured with all the required application software and they are ready to be programmed by means of a standard COMBIVIS studio HMI.

The E2/L2 systems are featuring COMBIVIS HMI Runtime Advanced for WinCE and they must be programmed using COMBIVIS studio HMI version 4 or above.

To transfer a COMBIVIS HMI project to a COMBIVIS connect Router E2/L2 device, you just need to specify in the COMBIVIS HMI transfer dialog the IP address of the router and provide the path for file storage in the router internal memory.

- Start the COMBIVIS HMI development programme.
- Load the project to transfer.
- Click on the transfer icon (see picture).

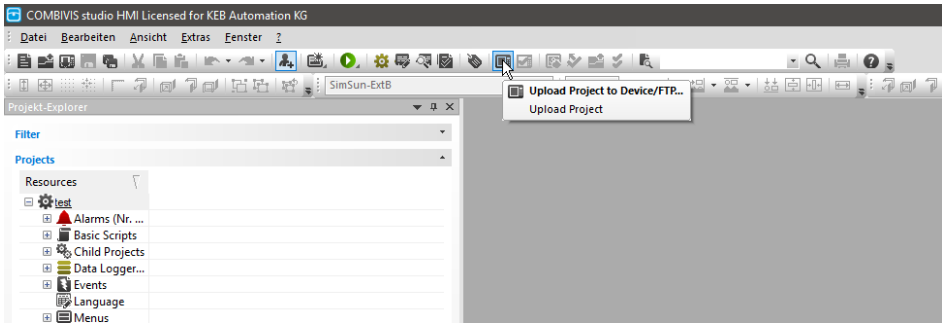


Figure 44: COMBIVIS connect Router E2/L2 models

The following window will appear:

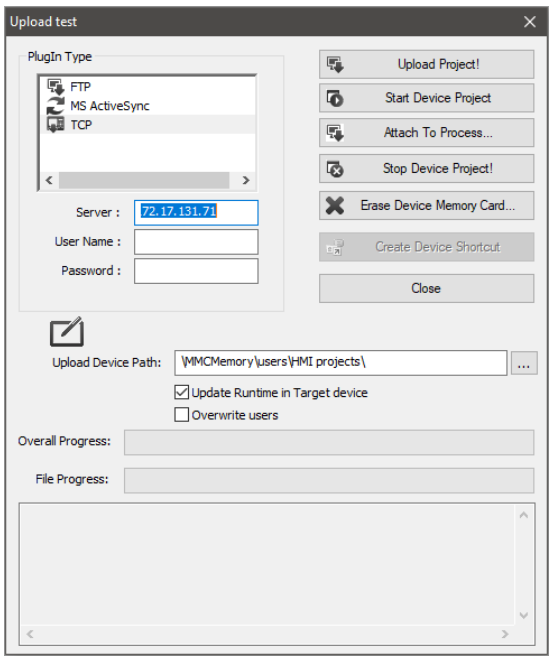


Figure 45: COMBIVIS connect Router E2/L2 models

Select "TCP" in the upper left list.

Write the IP address of the Router (WAN or LAN port IP)

Under "Upload Device Path", select the download path in which the project is to be saved in the router.

The project must be transferred to the “MMCMemory” data storage.

To transfer the project click on the button “Upload Project”. Once the transfer is completed, click “Start Device Project” to run the application.

the name of the memory are according to the following table:

Memory	Name used by the user system	Note
NAND	NANDFlash	Internal memory used to store the operating system. It is a read-only memory.
MMC	MMCMemory	For saving data and executable programs. Read and Write memory.

Figure 46: COMBIVIS connect Router E2/L2 models

Please refer to the "COMBIVIS connect Software User Manual" for additional information on retrieving data loggers of the E2/L2 router systems.

COMBIVIS connect E2/L2 models with integrated 2G/3G/3G+ modem support the SMS alarm notification; the COMBIVIS HMI alarm dispatcher software is already configured to use the internal modem. You only need to configure the alarm thresholds according to the application requirements. Please see the COMBIVIS studio HMI online help for further information about how to setup alarm notification via SMS.

COMBIVIS connect E2 models without integrated modem, DO NOT support alarm notification via SMS. Only e-mail notifications are supported.

5 Maintenance

5.1 Maintaining and cleaning

COMBIVIS connect Router device is designed for maintenance-free operation except for the replacing of the battery backup when necessary.

NOTICE

Notice: Do not use detergents, solvents, cleaners or objects that could scratch the surface.

NOTICE

Notice: switch off the power before any cleaning operation.

5.2 Backup battery replacement (CR1220 3V)

Remove the two distance pins as indicated in the figure.

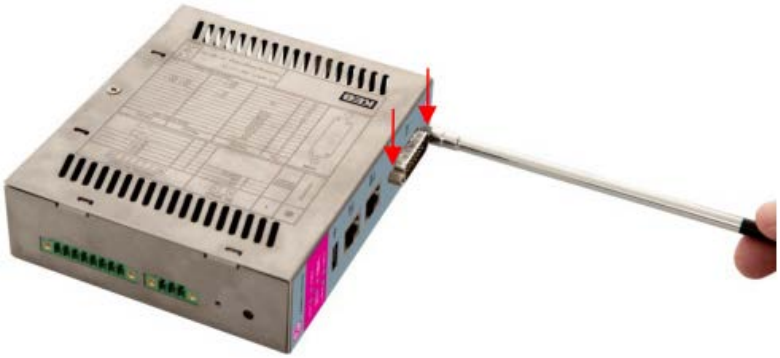


Figure 47: Backup battery replacement

Figure 48: Backup battery replacement

Remove the screw as indicated in the figure.

Figure 49: Backup battery replacement

Locate the battery position.

Figure 50: Backup battery replacement

Remove the battery.

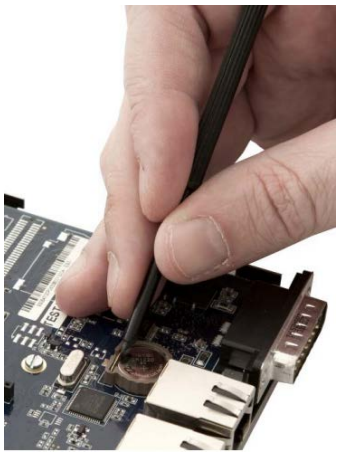


Figure 51: Backup battery replacement

Remove the battery and replace it with a battery of the same model (CR2032 3V).

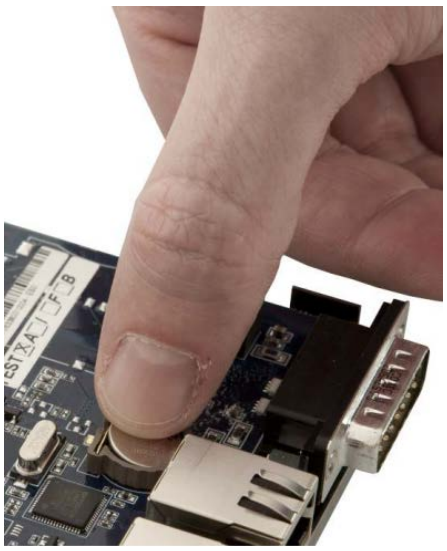


Figure 52: Backup battery replacement

5.3 Backup and restore

COMBIVIS connect Router device supplies tools to backup and restore the contents of its internal memory in order to manage the configuration and the operating system of COMBIVIS connect Router device. For more information please see the COMBIVIS connect Control Center online manual or contact the KEB support center.

5.4 Update of the operating system

COMBIVIS connect Router device is a hardware device that works thanks to a set of software components; they can be divided in:

- Firmware
- COMBIVIS connect Runtime
- COMBIVIS HMI Runtime (only for E2-E4/L2-L4 models)

All the COMBIVIS connect Router device software components can be changed using a very simple procedure, fully automatic, safe and fast.

The software components upgrades are distributed in the format of a single file that works as “container” for the components to be replaced.To perform an update, copy the ".asr" file into the root directory of a USB stick. Plug the USB Stick into the COMBIVIS connect Router device USB port and cycle the power.During the power up phase, the COMBIVIS connect Router device recognizes the presence of the USB Stick with the update and it will immediately start the system software update procedure.

A proper visual feedback will inform about the status of the operation.No action is requested by the user.The update is completed after the COMBIVIS connect Router device is automatically restarted.Please contact the technical support for further information.

5.5 Technical support and repairs

KEB offers wide-ranging, complete after-sales technical support. The staff who deal with this handle questions on the entire range of products skillfully, quickly, and efficiently.

You can phone our staff in the service department, and they will give you complete, prompt advice on how to resolve your problems.

KEB Automation KG
Suedstrasse 38
32683 Barntrup, Germany
telephone +49 5263 401-0
Fax +49 5263 401-116
Email: combicontrol@keb.de

6 Technical Specifications

6.1 Technical data

System software characteristics		
Integrated system software	Operating system	Microsoft Windows Embedded Compact 7 (C7P)
	Other software	KEB COMBIVIS connect runtime firmware

Table 1: System software characteristics

System hardware characteristics		
Motherboard	Model	All-in-one, KEB R171
	RTC	Hardware with battery backup
CPU C6 Router E1	Processor	ARM Cortex A8 - Freescale i.MX535 - 1 GHz
	Memory bus	400 MHz
CPU C6 Router E1ET	Processor	ARM Cortex A8 - Freescale i.MX537 - 800 MHz
	Memory bus	400 MHz
System memory	Type/size/socket	512 MB, / DDR3-800 / soldered
Serial port	Type	1 x RS232/422/485 (DB15M) software selectable
	Optoisolation	Yes
Ethernet interfaces	Type	1 x 10/100Mbps WAN (RJ45) with link/activity leds 1 x 100Mbps LAN (RJ45) with link/activity leds
3G/4G modem (only for C6 Router L1-L4)	Type	provides data service under global GSM/GPRS/EDGE/WCDMA networks (14.4Mbps Downlink data rate)
USB interfaces	Type	1 x USB 2.0 (TYPE-A, host port, software switch off)
Mass storage	Internal / not removable	NAND-FLASH: 256 MB (read only) for operating system and other system software. eMMC: 2/4 GB - 8 Bit v. 4.4 compatible (application software and COMBIVIS connect Runtime).
Battery	Type	Coin (CR1220 3V) removable, non rechargeable.
	Lifetime	3 years
Buttons, LEDs and keys	Reset button	System
	Factory recovery button	User

	LEDs	Reset Power Run / Stop Remote connection COM Rx COM Tx 3G/4G modem activity Modem connection

Table 2: System hardware characteristics

Electrical characteristics		
Power supply	Type	Integrated on board, auto ranging
	Input voltage	9÷36 VDC with 3-pole connector
	Protection	Reverse polarity protection, overvoltage, solder fuse on the PCB
These devices are intended to be connected to a “Secondary Circuit Overvoltage Category II”.		

Table 3: Electrical characteristics

Mechanical characteristics		
Housing	Type	Book mount
	Material	Steel, white galvanized

Table 4: Mechanical characteristics

Environmental characteristics		
Temperature C6 Router E1-E4 / L1-L4	Operation	0° … +50°C
	Storage	-20° … +60°C
Temperature C6 E1ET, E2ET	Operation	0° … +70°C
	Storage	-20° … +70°C
Humidity	Operation / storage	80% (non-condensing)

Table 5: Environmental characteristics

6.2 Panel antenna characteristics

Electrical	
Frequency range	800MHz to 2200MHz
Bands	GSM-DCS-PCS-UMTS-CDMA-GPRS-EDGE-HSPA
VSWR	≤ 2.3
Polarization	Linear
Power handling	20 W
Impedance	50 Ohm
Connector	Straight SMA(M)

Table 6: Panel antenna characteristics

Environmental & mechanical	
Temperature	-40° to +85°C
Radome color	black
Radome material	Pu
Weight	6 g

Table 7: Panel antenna characteristics

6.3 Wall mount Panel antenna characteristics

Mains form					
Frequency (MHz)	824 ~ 896	880 ~ 960	1710 ~ 1880	1850 ~ 1990	1710 ~ 2170
Peak gain (dBi)					
Free space	-0.7	-0.9	1.7	2.5	2.2
L-angle bracket	4.0	3.6	2.8	3.8	3.3
Average gain (dBi)					
Free space	-5.7	-5.3	-2.2	-2.1	-2.3
L-angle bracket	-1.7	-1.8	-2.2	-1.7	-1.9
Efficiency					
Free space	27 %	30 %	61 %	62 %	60 %
L-angle bracket	69 %	66 %	59 %	68 %	65 %
Impedance	50Ω				
Polarization	Linear				
Radiation pattern	Omni-directional				
Input power	50 W				
Mechanical					
Dimensions	Height 248 ± 5 mm				
Base diameter	17.08 ± 0.2 mm				
Whip diameter	4 ± 0.2 mm				
Housing	ABS				
Connector	SMA connector				
Environmental & mechanical					
Temperature range	-40° to +85°C				
Humidity	Non condensing 65°C 95% RH				

Table 8: Wall mount Panel antenna characteristics

6.4 Outdoor Panel antenna characteristics

Electrical			
Antenna	G30		
Standard	2G/3G/4G		
Operation frequency (MHz)	698~960 MHz	1710~2170 MHz	2500~2800MHz
Peak Gain	1.2 dBi	3.2dBi	2.5dBi
Average gain	-4.5 dB	-2.5 dB	-4.5 dB
Efficiency	40%	55%	40%
VSWR	<3.0:1		
Impedance	50Ω		
Polarization	Linear		
Radiation properties	Omni-directional		
Input power	5 W		
Mechanical			
Dimensions (mm)	Height: 48 mm / diameter: 50 mm		
Cable	Length: 1 m RG316*		
Housing	UV resistant ABS		
Base and thread	Nickel plated copper		
Connector	SMA(M) fully customizable		
Nut	Nut M12		
Sealant	Rubber stopper		

Table 9: Outdoor Panel antenna characteristics

6.5 Dimension drawings

6.5.1 C6 Router E1-E4

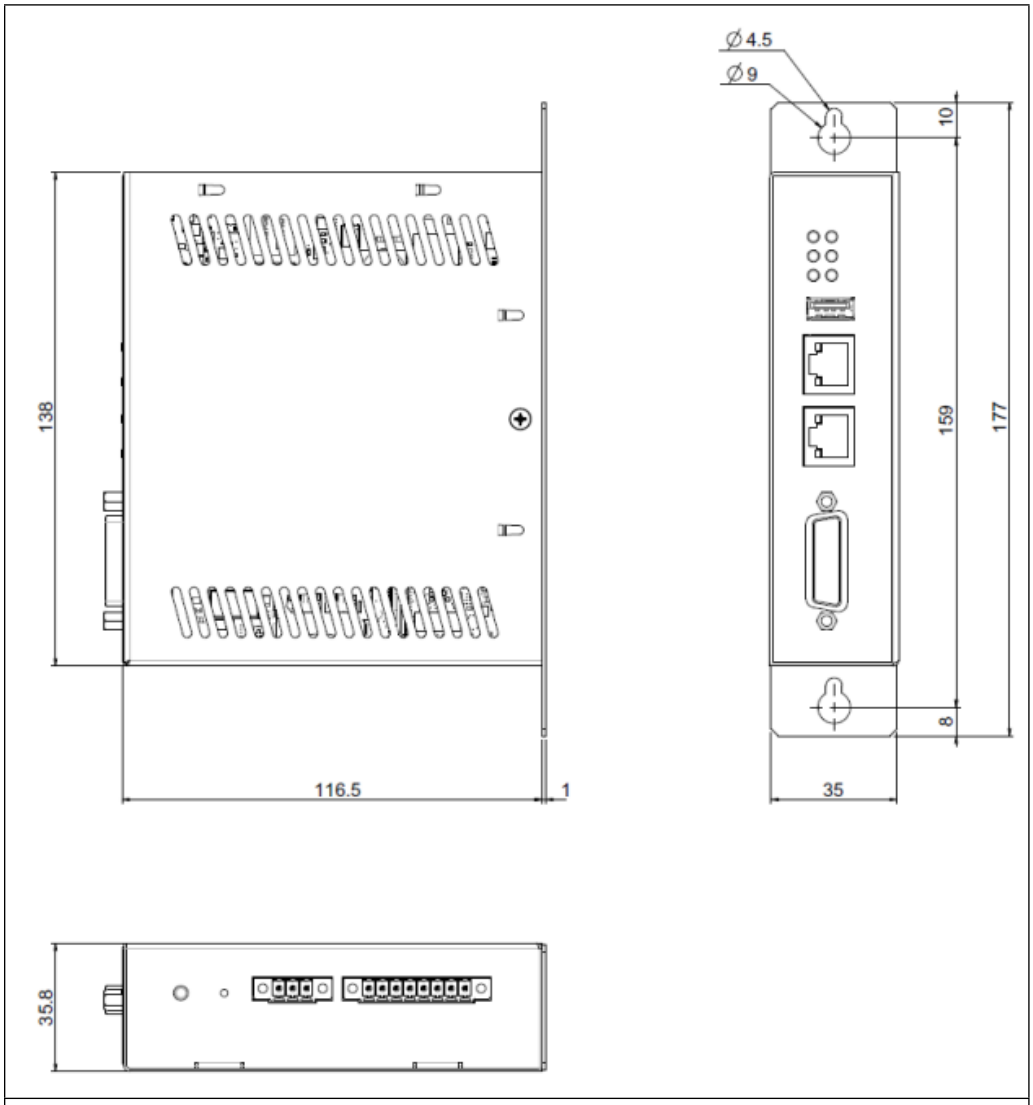


Figure 53: Dimensions

6.5.2 C6 Router L1-L4

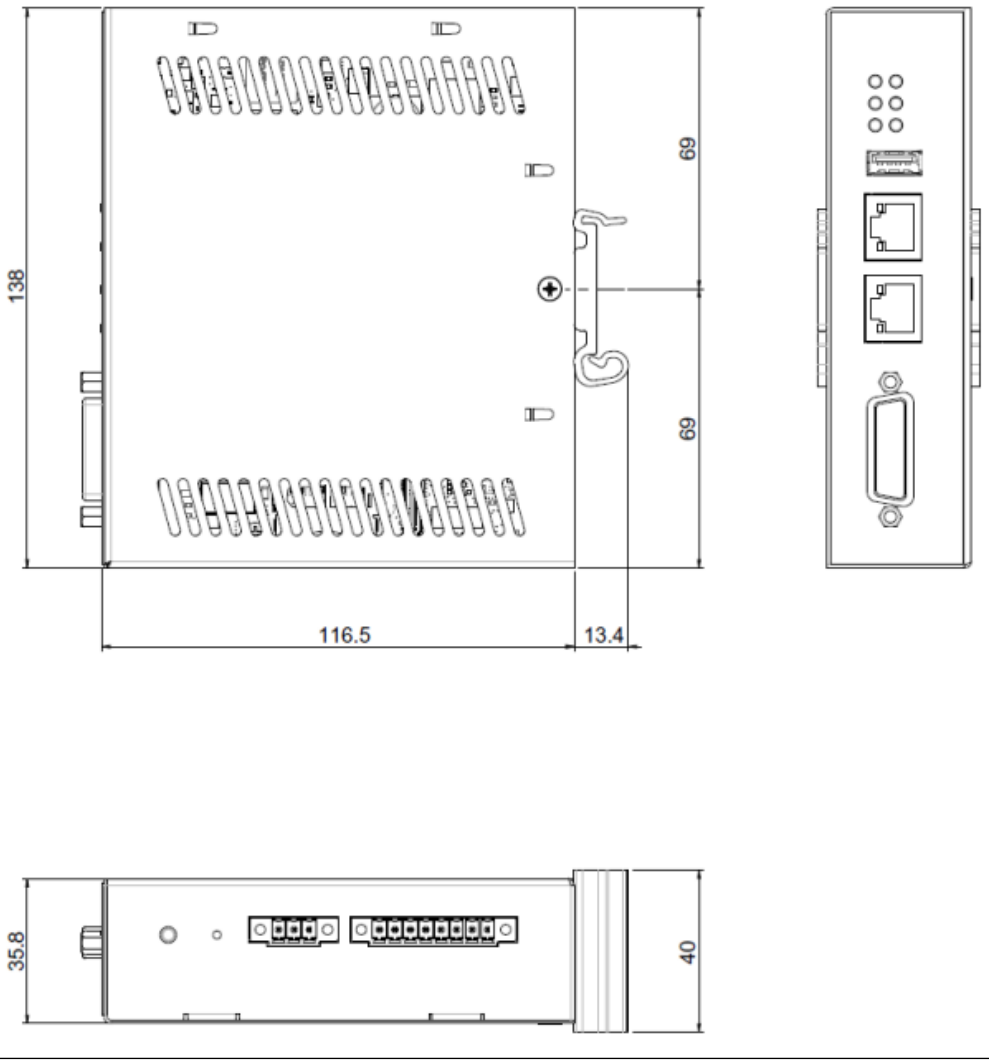


Figure 54: Dimensions

6.5.3 Panel antenna drawing dimensions

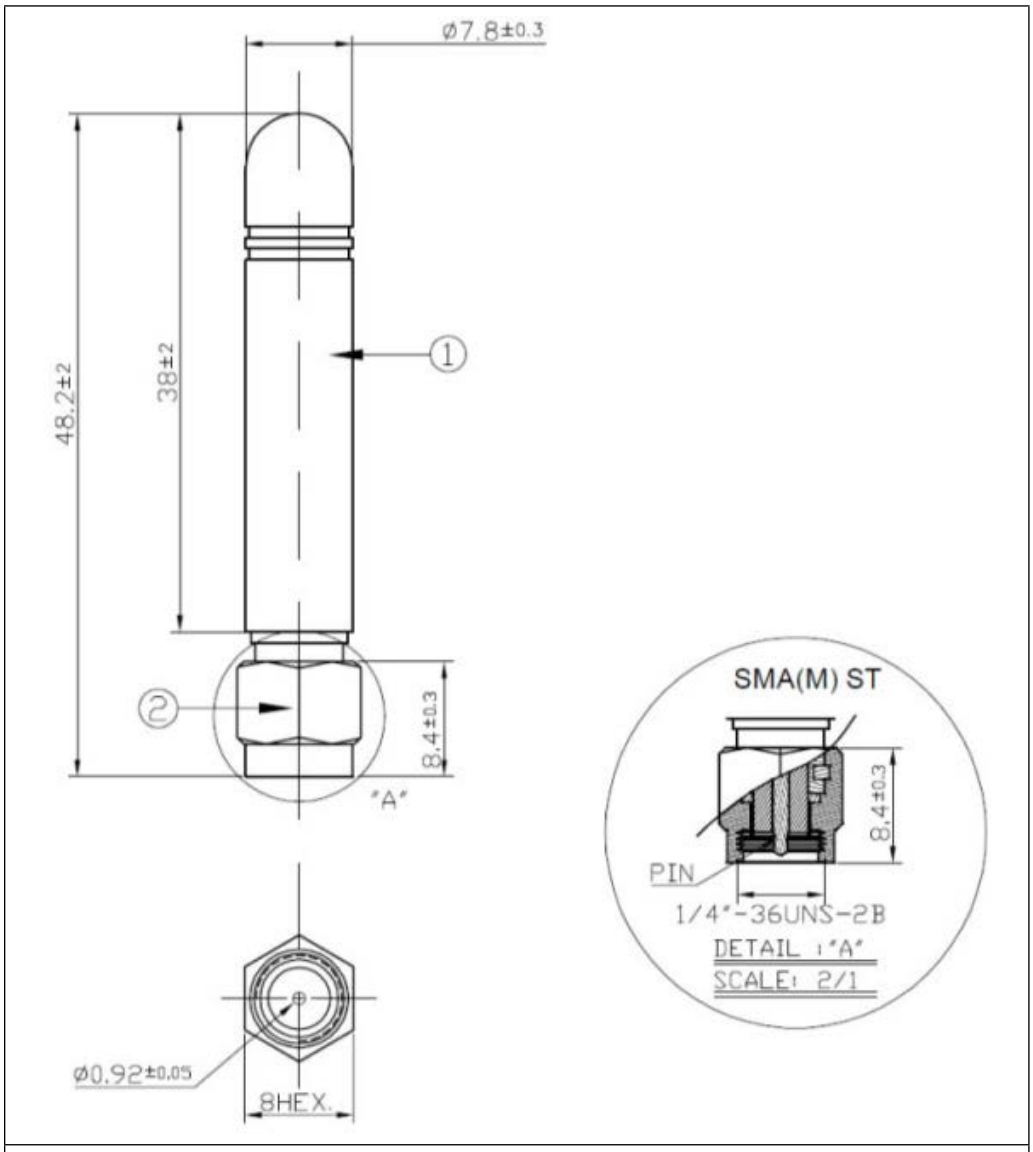


Figure 55: Panel antenna drawing dimensions

6.5.4 Wall mount antenna drawing dimensions

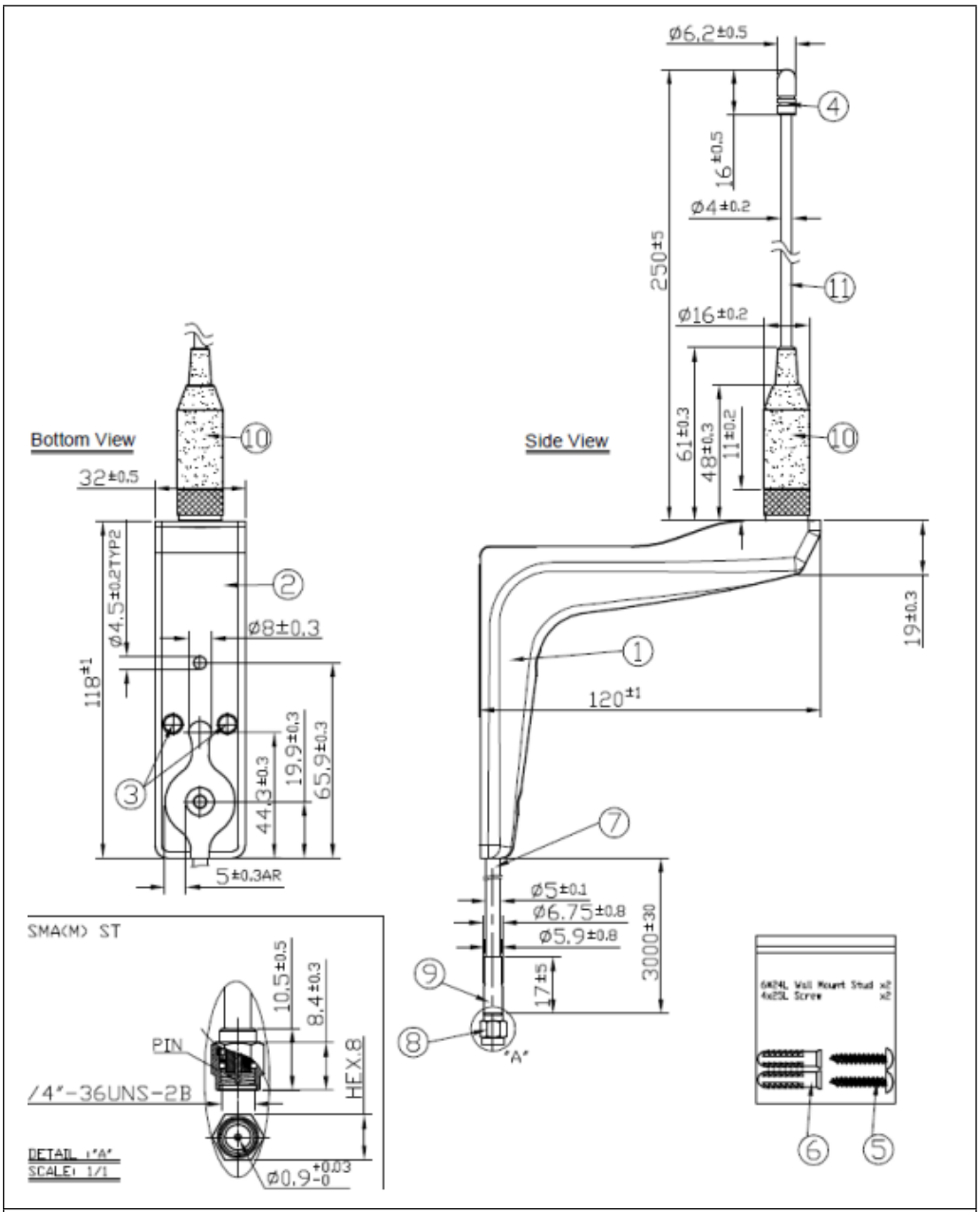


Figure 56: Wall mount antenna drawing dimensions

6.5.5 Outdoor panel antenna drawing dimensions

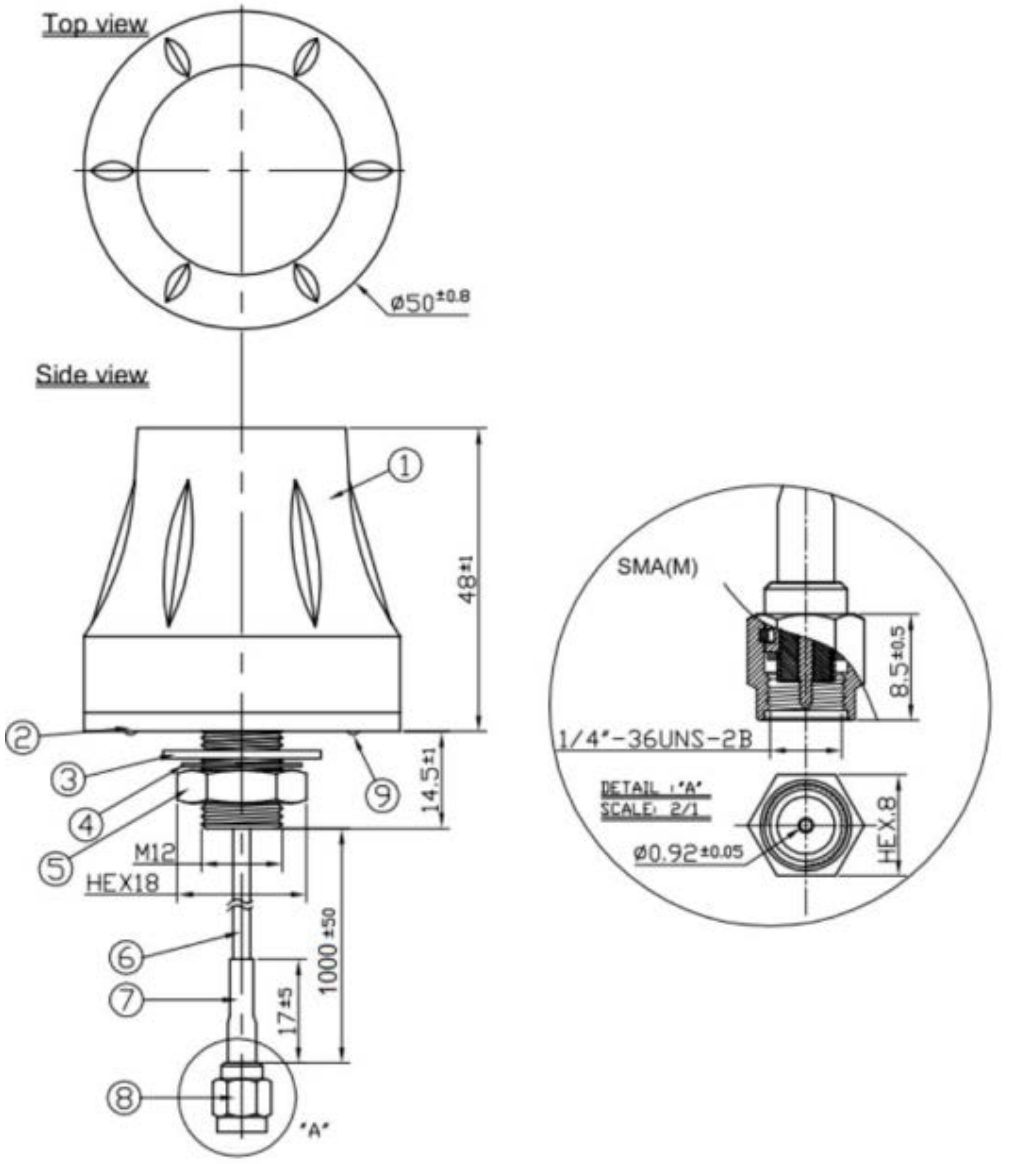


Figure 57: Outdoor panel antenna drawing dimensions

6.6 Ports PINOUT

6.6.1 COM1 – DB15M serial

PIN	Signal	I/O
1	Isolated +5 VDC	OUT
2	Transmit data (RS-232)	OUT
3	Receive data (RS-232)	IN
4	Request to send	OUT
5	Clear to send	IN

6	Data set ready	IN
7	Isolated ground	-
8	Data terminal ready	OUT
9	Carrier detect	IN
10	Transmit data + / receive data + (RS-485/RS-422)	I/O
11	Transmit data - / receive data - (RS-485/RS-422)	I/O
12	Ring indication (RS-232)	IN
13	Receive data + (RS-422)	IN
14	Receive data - (RS-422)	IN
15	N.C.	-
Table 10:	*COM - DB15M serial*	

Any polarization or termination resistor connected to RS422/485 channel, if required, it has to be provided by the user.

6.6.2 Digital input / output

8							1

PIN	Signal
1	IN 0 +
2	IN 0 -
3	IN 1 +
4	IN 1 -
5	OUT 0 - A
6	OUT 0 - B
7	OUT 1 - A
8	OUT 1 - B
Table 11:	*Digital IN / OUT*

6.6.3 DC input

3		1

PIN	Signal
1	Vin +
2	Vin -
3	Earth
Table 12:	*DC input*

7 Certification

7.1 Mark of conformity

EU DECLARATION OF CONFORMITY

Document No. / month.year: ce_ca_RED-C6F-Router-b_en / 02.2021

Manufacturer:	KEB Automation KG Südstraße 38 32683 BARNTRUP Germany	
Product type:	Control type	yyC6FDxx – xxxx
	Control size	yy = 00 x = any letter or number
	Voltage category	24 V

The above given product is in accordance with the following directives of the European Union

Number:	**RED : 2014 / 53 / EU**
Text:	Directive on the availability on the market of Radio Equipment.
Number:	**Hazardous Substances: 2011 / 65 / EEC (incl. 2015 / 863 / EU)**
Text:	Directive on the approximation of the laws of the Member States relating on the restriction of the use of certain hazardous substances in electrical and electronic equipment.

Responsible: KEB Automation KG
Südstraße 38
32683 BARNTRUP

Place, date Barntrup, 16 February 2021

Issued by:

i. A. W. Hovestadt / Conformance Officer

W. Wiele / Technical Manager

This declaration certifies the conformity with the named directives, but does not contain any assurance of quality.

The safety instructions, described in the instruction manual are to be followed.

KEB Automation KG, Südstr. 38, D-32683 Barntrup www.keb.de E-Mail: info@keb.de Tel.: +49 5263 401-0 Fax: -116

EU DECLARATION OF CONFORMITY

Annex 1

Document-No. / month.year:	ce_ca_RED-C6F-Router-b_en.docx / 02.2021	
Product type:	Control type	yyC6FDxx – xxxx
	Control size	yy = 00 x = any letter or number
	Voltage category	24 V

The conformity of the above given product to the European Directive 2014/53/EU is given by complete approval / testing to the following European harmonized standards.

This is covered by the following European Standards:

EN - Standard	Text	Date
Radio:		
ETSI EN 301 489-1 V2.2.3	EMC standard for radio equipment and services; Part 1: Common technical requirements	11/2019
ETSI EN 301 489-52 V1.0.0 draft	EMC standard for radio equipment and services; Part 2: Specific conditions for Cellular Communication Mobile and portable (UE) radio and ancillary equipment	11/2016
ETSI EN 301 511-52 V9.0.2	Global System for Mobile communications: : Harmonized EN for mobile stations in GSM 900 and GSM1800 systems	03/2003
EMC:		
EN 55024 Version 2010 + Corr. 2011 + A1 of 2015	Information technology equipment – Immunity characteristics – Limits and methods of measurement	
EN 55032 Version 2015 + Corr. 2016	Electromagnetic compatibility of multimedia equipment – Emission Requirements	
EN 61000 – 6 – 2 Version 2005	Electromagnetic compatibility (EMC) – Part 6-2: Generic standards – Immunity for industrial environments	
EN 61000 – 6 – 4 Version 2007 + A1 of 2011	Electromagnetic compatibility (EMC) – Part 6-4: Generic standards – Emission standard for industrial environments	
Safety:		
EN 61010-1 Version 2010	Safety requirements for electrical equipment for measurement, control and laboratory use – Part 1: General requirements	
EN 61010-2-201 Version 2013	Safety requirements for electrical equipment for measurement, control and laboratory use – Part 2-201: Particular requirements for control equipment	

EU DECLARATION OF CONFORMITY

Annex 1

Document-No. / month.year:	ce_ca_RED-C6F-Router-b_en.docx / 02.2021	
Product type:	Control type	yyC6FDxx – xxxx
	Control size	yy = 00 x = any letter or number
	Voltage category	24 V

The conformity of the above given product to the European Directive 2011/65/EU with changes of 2015/863/EU (for restrictions of the use for certain hazardous substances in electrical and electronic equipment) is given by qualification of components and manufacturing process within the ISO 9001 QM system. The necessary information and declarations are documented and memorized.

The above given product was developed, manufactured and tested within an internal quality management system. This ISO 9001 QM system was approved by:

Notified body:	TÜV - CERT
Adress:	Zertifizierungsstelle des RWTÜV Steubenstrasse 53 D - 45138 Essen
No. of approval	041 004 500
Dated:	20.10.1994
Valid until:	December 2021

7.2 UL Marking

NRAQ.E479848 - Programmable Controllers

Programmable Controllers

See General Information for Programmable Controllers

KEB AUTOMATION KG
SUEDSTRASSE 38
32683 BARNTRUP, GERMANY

E479848

Investigated to ANSI/UL 508

Front-Panel Mounting Display, for use on a flat surface of a type 1 and 4X INDOOR enclosure, Model(s) aaC6AF1-44xx Where "a" may be any character for different sizes of panel display. Where ?xx? can be 02 or 05 representing SW Configuration.

aaC6AF1-45xx Where "a" may be any character for different sizes of panel display. Where ?xx? can be 02 or 05 representing SW Configuration.

Open type, Programmable controllers Model(s) 00C6CB1-0100, 00C6CB1-0200, 00C6CB1-0300, 00C6CB1-0400, 00C6CB1-0500, 00C6CB1-0600, 00C6CB1-0700, 00C6CB1-0800, 00C6CB1-0900, 00C6CB1-1000, 00C6CB1-1100, 00C6CB1-1200, 00C6CB1-1300, 00C6CB1-1400, 00C6CB1-1600, 00C6CB1-1700, 00C6CB1-1800, 00C6CB1-1900, 00C6CB1-2000, 00C6CB1-2100, 00C6CC1-0100, 00C6CC1-0200, 00C6CC1-0300, 00C6CC1-0400, 00C6CC1-0500, 00C6CC1-0700, 00C6CC1-0800, 00C6CC1-0900, 00C6CC1-1000, 00C6CC1-1100, 00C6CC1-1200, 00C6CC1-1300, 00C6CC1-1400, 00C6CC1-1500, 00C6CC1-1600, 00C6CC1-1700, 00C6CC1-1800, 00C6CC1-1900, 00C6CE1-0100, 00C6CE1-0200, 00C6CF1-0200, 00C6CH1-0100, 00C6CJ1-0100, 00C6HA1-xxxx, 00C6HB1-xxxx

Programmable Controllers Model(s) 00C6CA1-0100 where xy may be 00,02,03,04,06,07,08,09 or 10.

00C6CF1-0100 where xy may be 00,02,03,04,06,07,08,09 or 10.

Programmable controllers Model(s) aaC6HA1-xxxx Where "a" may be any character for different sizes of panel display.

aaC6HB1-xxxx Where "a" may be any character for different sizes of panel display.

Investigated to UL 61010-1 and UL 61010-2-201

Programmable Automation Controller, PAC Model(s) C6 Smart, xxC6Gxx-xxxx

Investigated to UL 61010-1, 3rd Edition and UL 61010-2-201, 1st Edition

Front-Panel Mounting or Open type Industrial PC Model(s) 00C6HM1-xxxx Where "xxxx" is a 4 digit / letter combination for different software configurations.

00C6HN1-xxxx Where "xxxx" is a 4 digit / letter combination for different software configurations.

aaC6HM1-xxxx Where "a" may be any character for different sizes of panel display. Where "xxxx" is a 4 digit / letter combination for different software configurations.

aaC6HN1-xxxx Where "a" may be any character for different sizes of panel display. Where "xxxx" is a 4 digit / letter combination for different software configurations.

Industrial PC Model(s) 00C6HL1-xxxx Where "xxxx" is a 4 digit / letter combination for different software configurations.

Industrial PC Model(s) 00C6HP1-xxxx Where "xxxx" is a 4 digit / letter combination for different software configurations.

00C6HQ1-xxxx Where "xxxx" is a 4 digit / letter combination for different software configurations.

Programmable controllers Model(s) aaC6JF1-110x Where "a" may be any character for different sizes of panel display. Where ?x? is any digit representing Customer ID.

aaC6JF1-111x Where "a" may be any character for different sizes of panel display. Where ?x? is any digit representing Customer ID.

aaC6JF1-112x Where "a" may be any character for different sizes of panel display. Where ?x? is any digit representing Customer ID.

Investigated to UL 61010-1, 3rd Edition and UL 61010-2-201, 2nd Edition

Programmable Controllers, "Multi Fieldbus Interface C6 Remote I/OS" Model(s) 00C6CH1-0200, 00C6CH1-0300, 00C6CH1-0400, 00C6CH1-0500

Investigated to

Industrial PC Model(s) 00C6HC1-xxxx

Last Updated on 2020-03-11

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