Micro Client M@C57

User’s Manual

Version: 1.00 (Preliminary)

Kontron Embedded Computers GmbH

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Contents

Introduction

Kontron Embedded Computers would like to point out that the information contained in this manual may be subject to technical alteration, particularly as a result of the continuos upgrading of Kontron Embedded Computers products. The attached documentation does not entail any guarantee on the part of Kontron Embedded Computers with respect to technical processes described in the manual or any product characteristics set out in the manual. Kontron Embedded Computers does not accept any liability for any printing errors or other inaccuracies in the manual unless it can be proven that Kontron Embedded Computers is aware of such errors or inaccuracies or that Kontron Embedded Computers is unaware of these as a result of gross negligence and Kontron Embedded Computers has failed to eliminate these errors or inaccuracies for this reason. Kontron Embedded Computers expressly informs the user that this manual only contains a general description of technical processes and instructions which may not be applicable in every individual case. In cases of doubt, please contact Kontron Embedded Computers.

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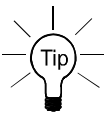
Symbols used in this Manual

Symbol	Meaning
	This symbol indicates the danger of injury to the user or the risk of damage to the product if the corresponding warning notices are not observed.
	This symbol indicates that the product or parts thereof may be damaged if the corresponding warning notices are not observed.
	This symbol indicates general information about the product and the user manual.
	This symbol precedes helpful hints and tips for daily use.

Important Instructions

This chapter contains instructions which must be observed when using your M@C57.

The manufacturer's instructions provide useful information on your system.

Note on the Guarantee

Due to their limited service life, parts which, by their nature, are especially subject to wear (wearing parts) are not included in the guarantee beyond the legal stipulations. This applies, for example, to the display backlighting and the batteries..

Exclusion of Accident Liability Obligation

Kontron Embedded Computers shall be exempted from the statutory accident liability obligation if the user fails to observe the safety instructions.

Liability Limitation / Exemption from the Guarantee Obligation

In the event of damage to the device caused by failure to observe the hints in this manual and eventually on the device (especially the safety instruction), Kontron Embedded Computers shall not be required to honour the guarantee even during the guarantee period and shall be exempted from the statutory accident liability obligation.

Safety Instructions

Please read this section carefully and observe the instructions for your own safety and correct use of the device.

The chapter also contains information on approval and interference suppression of your device.

Observe the warnings and instructions on the device and in the manual.

The M@C57 is built and tested by Kontron Embedded Computers in accordance with EN60950/VDE0805 and left the works in a perfectly safe condition.

In order to maintain this condition and ensure safe operation, the user must observe the instructions and warnings contained in this manual.

Kontron Embedded Computers can only guarantee the safety, reliability and performance of the device if all of the following safety instructions are observed.

- ❑ The device must be used in accordance with the instructions for use.
- ❑ The electrical installations in the room must correspond to the requirements of the respective regulations.
- ❑ Ensure that there are no cables, in areas where persons can trip over them.
- ❑ Do not use a power cable in sockets shared by a number of other power consumers. Do not use an extension cable.
- ❑ Do not place the device in direct sunlight, near to heat sources or in a damp place. Make sure the device has adequate ventilation.
- ❑ Only devices and components may be connected to the interfaces of the system which fulfil the requirements of an SELV circuit (security low voltage output) in accordance with EN60950.

- ❑ All plugs on the connection cables must be screwed or locked to the housing.
- ❑ The device may be operated in each position.
- ❑ It must be assumed that safe operation is no longer possible,
  - if the device has visible damage or
  - if the device no longer functions.

  In these cases the device must be shut down and secured against unintentional operation.
- ❑ It is not allowed to open (disassemble) the device.
- ❑ Repairs may only be carried out by a person authorised by Kontron Embedded Computers.
- ❑ Only original accessories approved by Kontron Embedded Computers may be used.

For DC powered systems

- ❑ The DC-input must fulfil SELV requirements of EN60950 standard.

Instructions for the Lithium Battery

The base board integrated in your system is equipped with a lithium battery. The lithium battery should be replaced only in the factory.

Warning

There is a danger of explosion if the wrong type of battery is used for replacement.

Electromagnetic Compatibility

This product has been designed for industrial, commercial and office use, including small business use. The most recent version of the EMC guidelines (EMC Rules 89/336/EWG) and/or the German EMC laws apply. If the user modifies and/or adds to the equipment (e.g. installation of add-on cards), the prerequisites for the CE conformity declaration (safety requirements) may no longer apply.

FCC Statement

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in residential area is likely to cause harmful interference in witch case the user will be required to correct the interference at his own expense.

Scope of Delivery

- ❑ MicroClient M@C57
- ❑ MicroClient M@C57 – User's Manual
- ❑ DC- fast Phoenix connector without cable (for DC-power supply only)
- ❑ Clamp with screws (M4x25) (4 pcs.)

Optional Parts

- ❑ CompactFlash-Card, Type I / II
- ❑ AC/DC Adapter (for AC-power supply)

Type Label and Product Identification

The type label is attached at the rear side of the device.

Device designation on the type label	**Product identification**
M@C57	Micro Client M@C57

Product Description

The standard configuration of the Micro Client M@C57 runs under real time operating systems like Windows CE.NET or Embedded LINUX and is a Human-Machine-Interface designed for industrial applications.
Other operating systems support: upon request.

Micro Client M@C57 is equipped with an on board Flash (IDE) and an external accessible CompactFlash™-slot.

The implemented 7.2” touch screen covers the display as well as soft-touch-keys, that provides a user-friendly operation of the M@C57.
The integrated display is a 5.7“ TFT/STN QVGA display, with 320 x 240 (pixel) resolution and 350/201 cd/m^2 brightness.
The operating elements of the M@C57 consist of the “Reset-button” and the free programmable soft-touch-keys. An on screen keyboard is available as input unit.

The M@C57 is available as DC-version (reverse polarity protected), but it is ready for AC-operation by use of the optional AC/DC power supply adapter.

M@C57 is suitable for installation in an instrument panel or other cabinets and can be operated in horizontal as well as in vertical position.

The M@C57 is not equipped with any internal devices that have rotated parts and that why it is particularly shock and vibration resistant.

Fig. 1: Micro Client M@C57 (frontal view)

The M@C57 is a computer without cooling fans. The following technical highlights could be specified:

- ❑ user friendly
- ❑ noiseless
- ❑ low power consumption

The air openings, located on the sides of the device, provide air circulation for the system interior cooling, in order to prevent overheating.

☞ Please take care if you powered up the system, that the air openings must be not obstructed by objects.

Front Side

At the front side of the M@C57 are available:

- ❑ the front plate
- ❑ the 7.2” touch screen
- ❑ the display with touch screen
- ❑ the free configurable soft-touch-keys

The protection class IP65 is ensured at the front side of the M@C57 by proper installation (refer to section “M@C57 Mounting”). The corresponding sealing to the installation-panel, takes place via the rubber seal at the rear of the front plate.

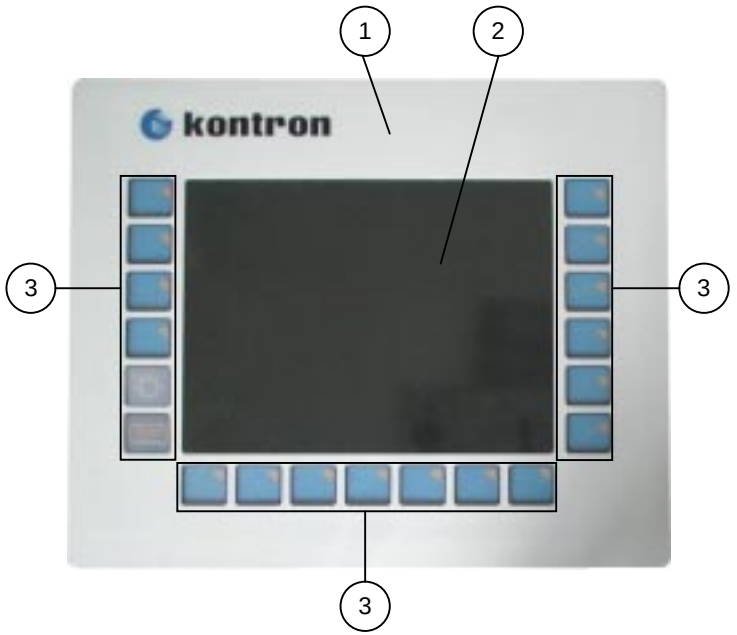


Fig. 2: M@C57 – front side

1 Front plate
2 5.7“ display
3 Soft-touch-keys

Front Plate

The front plate of the M@C57 is designed as panel version and is suited for panel mounting. For the panel mounting of the M@C57 are available four clamps with screws (M4x25), supplied unassembled (see subsection “Installation Fastener”).

Touch Screen

The touch screen surface covers both the readout-range (used for readout range of the display) and the range outside of the display (uses for the soft touch keys).

The touch screen driver corresponding for your operating system is installed on the M@C57, depending on the ordered M@C57 system configuration.

Display with Touch Screen

The built-in display is a 5.7“ TFT/STN QVGA display with up to 320 x 240 (pixel) resolution and 350/201 cd/m^2 brightness. For technical specification of the built-in display refer to the chapter „Main Specifications“. The display surface of the M@C57 is also mechanically protected through the touch screen.
The touch screen registers contacts of a finger or a pen and moves the mouse pointer. This functions under integration of the necessary software only.

☞ Do not use a hard or a pointed object to operate the touch screen, since it can damage the touch screen surface.

Free Configurable Soft-Touch-Keys and Taskbar

There are available 19 free configurable soft-touch-keys as follows:

- ❑ One soft-touch-key to activate the control of the display's brightness-dialog
- ❑ One soft-touch-key to activate the onscreen keyboard
- ❑ 17 free configurable soft-touch-keys

Fig. 3: M@C57 – Operating elements

1 Soft-touch-key to control the brightness-dialog-box
2 Soft-touch-key to control the onscreen keyboard
3 Tasklbar

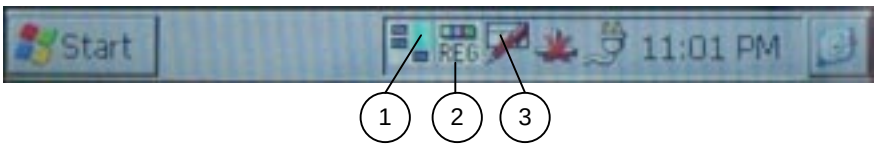


Fig. 4: CE.NET-Taskbar on M@C57

1 „Key Configuration"-tool icon
2 „RegFlushKey"-tool icon
3 „Onscreen-Keyboard"-tool icon

A soft-touch-key registers contact of a finger or a pen and activates the key-function. This functions under integration of the necessary software only.
The corresponding software (customised programmed) is included as tool into the image of the operating system.

The programming of these keys, will be implemented by Kontron, according to the customer requirements.

On the taskbar is available a corresponding tool for the keys configuration (allocation of the keys with the executable programs).

The labelling of the soft-touch-key functions, takes place according to the customer requirement, by means of the key-symbol-strips.
The key-symbol-strips are from the outside applicable and/or exchangeable (e.g. if the functions of the keys are changed).

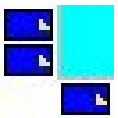
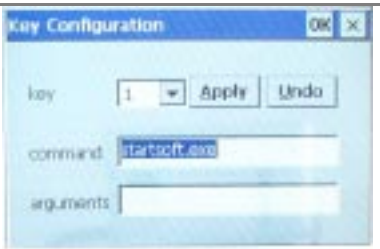
The list of the soft-touch-keys can be expanded by use of the „Key Configuration“-dialog-box. The soft-touch-keys are numbered from 1 to 19 as follows:

- On left side, from the bottom up: 1 to 6
- On the bottom side from left to right: 7 to 13
- On the right side from the bottom up: 14 to 19

A corresponding *.exe-file is available for each configured (customised) key.

Operation of the „KeyConfiguration“-Dialog Box

A double tap to the corresponding tool icon integrated on the taskbar display the „KeyConfiguration“-dialog box.

	
Tool-item on the taskbar	*„Key Configuration“-dialog-box*

Follow these steps below to expand and to redefine the key-list:

1. Select in the field „Key“ the key number, which you want to redefine or allocate.
2. Enter in the field „command“ the corresponding *.exe-file.
3. In the field „arguments“ can be registered program options and arguments.
4. Confirm the entry with <**Apply**>.
5. •Close the program with •<**OK**>.

☞ The command• <**Undo**>• restore the last saved entry, only if the <**Apply**>• was not activated.

☞ If you confirm by mistake the application with  the program will be quitted and the corresponding tool-icon disappears from the taskbar.

The program must be started again from the Windows directory.

Onscreen Keyboard

The onscreen keyboard can be activated by corresponding soft-touch-key (on the left side of the soft-touch keys) and the corresponding tool icon (integrated on the right side of the taskbar).

Onscreen Keyboard

There are three possibilities to control the onscreen keyboard:

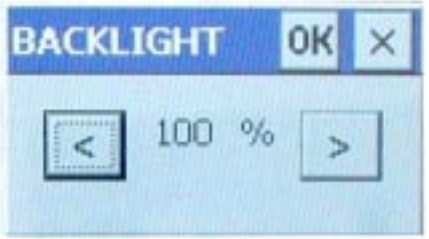
Onscreen keyboard by	To display	To remove
 Soft-Touch-Key	1x tapping	1x tapping
 Tool-icon on the Taskbar	1x tapping and a popup-menu is displayed; 1x tapping on the „Keyboard“ selection	1x tapping and a popup-menu is displayed: 1x tapping on the „Hide Input Panel“ selection
 Tool-icon on the Taskbar	2x tapping	2x tapping

Brightness Adjustment

Use the corresponding soft-touch-key (on the left side of the soft-touch keys) to have access to the dialog-box for the screen brightness adjustment. The factory setting for brightness is 100%.

Follow the steps bellow to adjust the screen brightness:

1. Call-up the “Backlight” dialog-box, by tapping the corresponding soft-touch-key.

	
Symbol of the Soft-touch-key	*Dialog-box*

2. Change the level (% indication) to your desired level, by use of the adjustment buttons < and >. Factory setting is 100%, so when you adjust for the first time the brightness of the M@C57, it is possible only to reduce the brightness level.
3. Close the program with •<**OK**>.

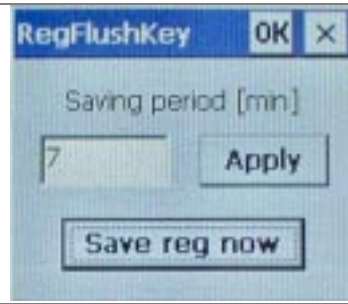
☞ This application can be confirmed and closed with  also. The new setting value gets not lost.

„RegFlushKey“-Dialog

Customised applications or settings can be stored permanently only on the Windows registry (on the CF-card).
With the “RegFlushKey”-dialog-box you can determine whether this storage is to take place at regular intervals, or the change is to be stored immediately.

Change of the interval for regular saving

1. Call up the „RegFlushKey“-dialog box, by tapping the corresponding tool-icon, integrated on the right side of the taskbar.

	
Tool-icon on the taskbar	*„RegFlushKey” - dialog box*

2. Change the time value (min.) to your desired time value (min.) for the regular storage.
3. Confirm the entry with <**Apply**>.
4. •Close the program with •<**OK**>.

Immediately Storage

1. At the from you definite time for storage, call-up the “RegFlushKey”-dialog box, by tapping the corresponding tool-icon, integrated on the right side of the taskbar.
2. Confirm the saving with <**Save reg now**>.
3. Close the program with •<**OK**>.

☞ If you confirm by mistake application with  the program will be quitted and the corresponding tool-icon disappears from the taskbar.

The program must be started again from the Windows directory.

Key-Symbol-Strips

The labelling of the soft-touch-keys functions, takes place according to the customer requirement, by means of the key-symbol-strips.
The key-symbol-strips are from the outside applicable and/or exchangeable (e.g. if the functions of the keys are changed).

Tip

The key-symbol-strips have to be replaced from the rear side of the front panel. In order to replace the key-symbol-strips.

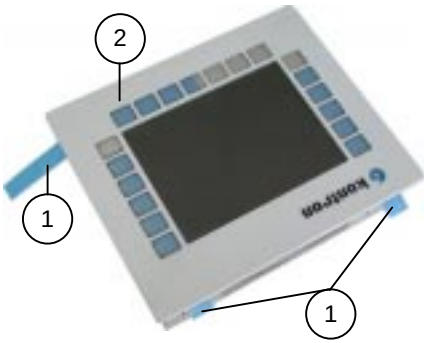


Fig. 5: M@C57 front side view with pulled-out key-symbol-strips

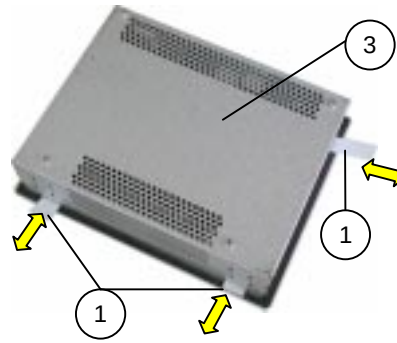


Fig. 5a: M@C57 rear side view with pulled-out key-symbol-strips

1 Key-symbol-strips
2 Front plate of the M@C57
3 Rear side of the M@C57

Interfaces on the Bottom Side

At the bottom side of the M@C57 are available:

- ❑ DC-PCB direct connector contact
- ❑ the interfaces
- ❑ the reset-button

Fig. 6: M@C57 – bottom side with interfaces

1	DC-PCB direct connector contact	4	LAN-connector
2	Reset-button	5	2x USB-connector
3	COM1-serial interface		

DC-PCB Direct Contact Connector

This connector is used to enable the connection of the M@C57 to the power supply.

- ❑ **For DC-power connection:** by use of a DC-power cord with the corresponding Phoenix connector (only the Phoenix connector is supplied).
- ❑ **For AC-power connection:** by use of the optional AC/DC power supply adapter.

Reset Button

If your system no longer reacts, you must restart the M@C57. To do this, press the reset button.

When you reset, all data in the main memory are erased.

Interfaces of the M@C57

Serial Interface Connector COM1

This connection is available as a 9-pin D-SUB plug and allows you to connect serial peripheral. The interface is configured as RS232.

LAN Interface Connector

This interface connector is provided as an RJ45-socket with integrated LEDs.

Dual USB Interface Connector

This connector (2x USB Vers. 1.1) allows you to connect different USB compatible peripheral devices to the M@C57.

Left Side

At the left side of the M@C57 are situated:

- ❑ the air openings (see section “Air Openings”)
- ❑ the CompactFlash™-slot (external accessible)
- ❑ the positioning slots for the mount clamp ((see section “M@C57 Mounting”)

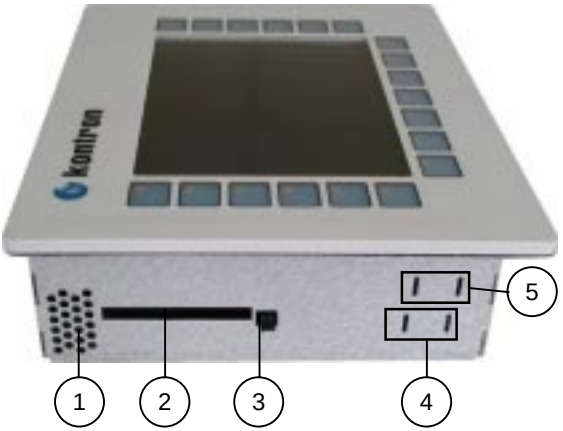


Fig. 7: M@C57 – left side

1	Air openings	4	First positioning slots
2	CompactFlash™-slot	5	Second positioning slots
3	CF-Eject-button		

CompactFlash™ - Slot

The M@C57 is equipped with an external accessible CompactFlash™-slot for CompactFlash card type I/II. The CompactFlash-slot is equipped with an eject button for removing of the CompactFlash™-card.

Inserting and Removing the External Accesible CompactFlah™-Card

The MqC57 is equipped with an external accessible CompactFlash™-slot. This allows the operation with one CompactFlash™-card type I or II.

☞ The system must be powered down before the CompactFlash™-card can be inserted or removed.

Air Openings

The air openings are provided at the top side and at the left side and at the right side of the chassis of the M@C57.

The cooling of the M@C57 is done by the chassis surface. The air openings located on the sides of the device provide air circulation for the M@C57 interior cooling, preventing overheating.

☞ When switching on the M@C57, ensure that the air openings are not obstructed by objects.

Fig. 8: Air openings at the top side

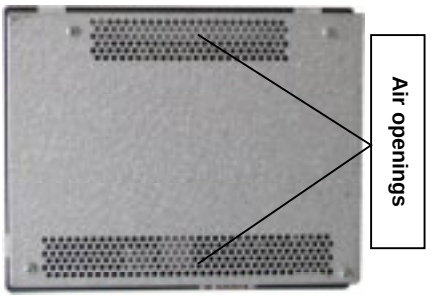


Fig. 9: Air openings at the rear side

Fig. 10: Air openings at the left side

Fig. 11: Air openings at the right side

System Start-up

Power Cord Connection

The DC-power plug (PCB-direct contact) is located on the bottom side of the M@C57.

☞ The mains voltage of the power source must agree with the value on the type label.

Fig. 12: AC-connection

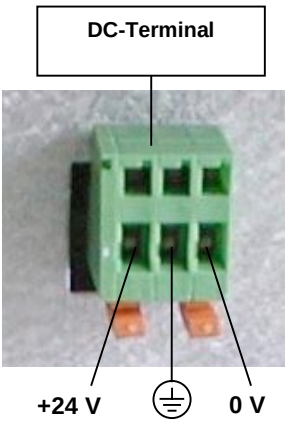


Fig. 12a: DC-connection

AC-Connection

1. Connect the one cord-end of the optional AC/DC power supply adapter into the DC-connector of the M@C57. (see *fig. 12*).
2. Connect the other end of the AC/DC power supply adapter into a corresponding outlet of the AC main power source.

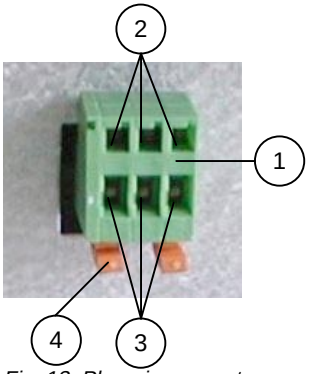
⚠ Use the power cord suitable for the power supply in your country.

Do not remove or alter the grounding prong on the power cord. In situations where a two-slot receptacle is present, have it replaced with a properly grounded three-prong grounding type receptacle.

DC-Connection

For the DC-connection prepare the connecting wires with the provided Phoenix plug.

☞ The length of the DC-connecting wires may not exceed 10 m.



1 Phoenix-plug

1 Opening mechanisms of the fixing terminals

2 Fixing terminals

3 Snap-lock system of the Phoenix-plug

Fig. 13: Phoenix-connector

1. Cut the required length two isolated wires (∅ up to 1,5 mm^2).

2. Strip each end 5 –7 mm.

3. Twist the striped wire-ends and tin it the with solder.

4. Each fixing terminal of the Phoenix plug will be opened, if an auxiliary tool (screwdriver or pointed tool) is pressed into the opening mechanism of the corresponding fixing terminal.

Fig. 14: Phoenix-connector-Preparing the DC-connector

5. Slide-in each wire into the corresponding fixing terminal.

6. Pull-out the auxiliary tool (screwdriver or pointed tool).

The second end of each wire will be prepared as required for the connection to the DC-power supply.

Operating System and Hardware Components Drivers

The M@C57 can be optionally supplied with installed Windows CE.NET or Embedded LINUX operating system. All drivers are installed, corresponding to the ordered M@C57 configuration (hardware components, soft touch keys and touch screen). Your M@C57 is fully functional when you power it on for the first time.

Maintenance and Prevention

Kontron Embedded Computers systems require minimal maintenance and care to keep them operating correctly.

- ❑ Occasionally wipe the system with a soft dry cloth.
- ❑ You should only remove persistent dirt by use of a soft, slightly damp cloth (use only a mild detergent).

☞ Use no abrasives, abrasion sponges, steel wool, metal threads, or solvent like alcohol, acetone, or gasoline to clean the touch screen surface (display and soft-touch-keys area).

Lithium Battery

The Micro Client M@C57 is equipped with a lithium battery.
The lithium battery can be replaced only in the factory (the battery is soldered on the board).

Please observe the safety instruction described in the section „Instructions for the Lithium Battery“.

Installation Instructions

Leave sufficient space at the interface side for connecting the peripheral devices.

Important Instructions!

Ensure there is sufficient air circulation around the device when installing the M@C57. The air openings on the device must not be obstructed.

Leave at least 5 cm of space free around the M@C57 to prevent the device from possibly overheating!

The voltage feeds must not be overloaded. Adjust the cabling and the external overcharge protection to correspond with the electrical data indicated on the type label.

The type label is located on the front side of the M@C57.

M@C57 Mounting

The four mount clamps with screws (supplied), allow the easy and fast mounting of the M@C57 in an instrument panel or other cabinets.

The applicable mounting panel thickness, to mount the M@C57 is 12 mm.

Before you install the M@C57, verify the perfect condition of the rubber seal at the back of the front plate.

To attach the M@C57 to a industrial cabinet please follow the steps below:

1. The device must be powered down and disconnected from the main power supply.
2. Prepare the panel cutout corresponding the specified dimension (see *fig. 15*).

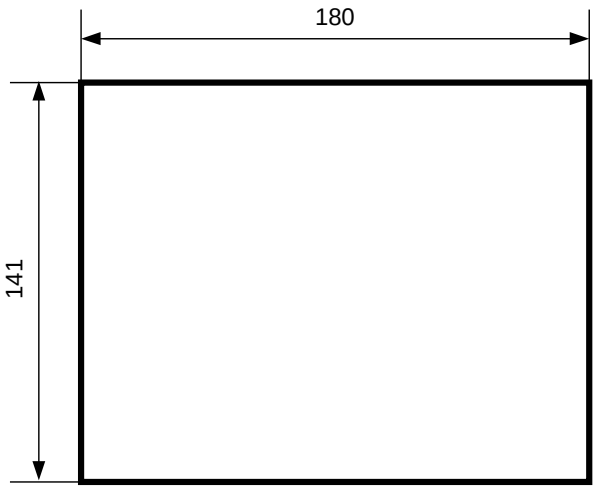


Fig. 15: Cutout dimensions (all values mm)

3. Insert the M@C57 body from the panel front.

4. Depending on the panel thickness, hook the four mount clamps with screws, (provided) from the rear side of the panel, into the corresponding pairs of slots.

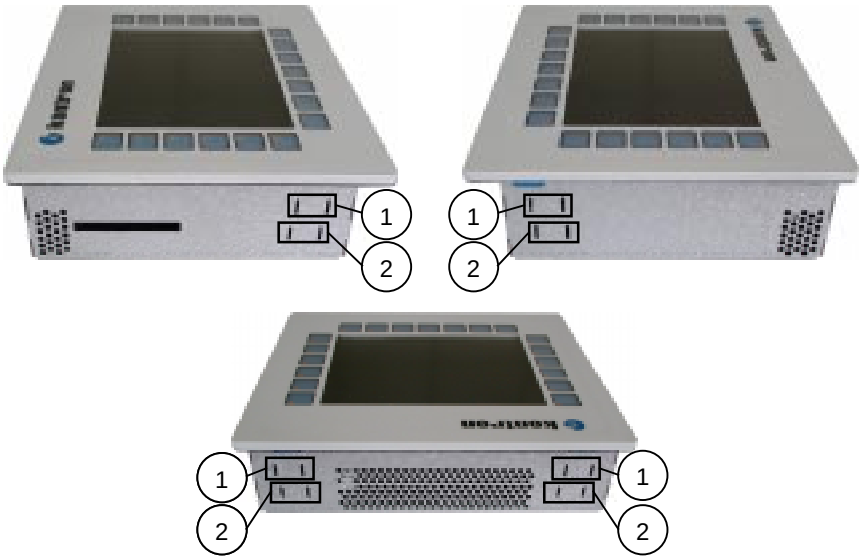


Fig. 16: Pairs of slots on the left, right and top side

1 First pair of slots

2 Second pair of slots

5. In order to ensure the protection class IP65 on the front side, in the installed condition, the contact surface with the rubber seal must be clean and flush.

6. The system must be attached firmly with the screws.

Installation Fastener

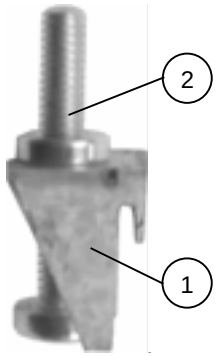


Fig. 17: Mount clamp with screw (side view)

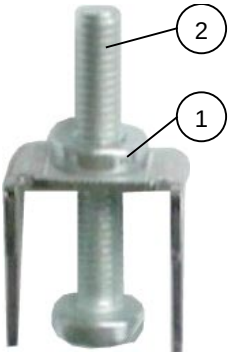


Fig. 17a: Mount clamp with screw (90° rotated))

1 Mount clamp

2 Screw (M4x25) of the installation fastener

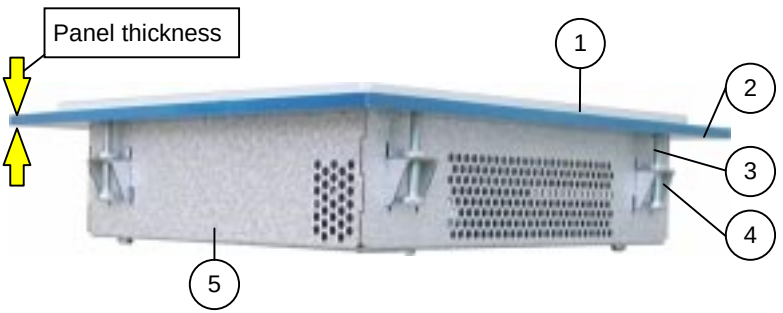


Fig. 18: Installation example to fasten M@C57 to a panel (example)

1 M@C57 – Front plate

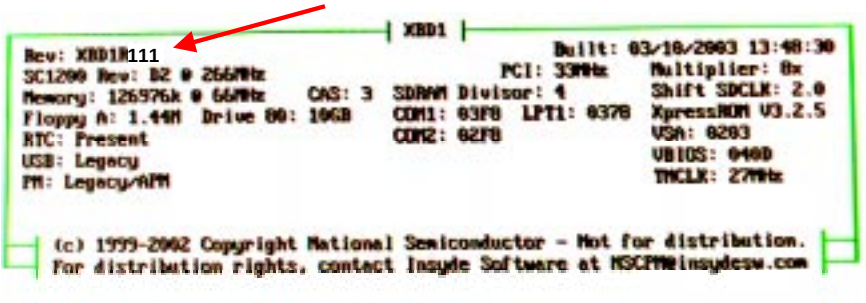
2 Panel (example)

3 Screw of the installation fastener

4 Mount clamp

BIOS Configuration

The M@C57 is equipped with an Insyde XpressROM™ BIOS, which is located in an onboard Flash EEPROM.
To determine the BIOS version, the summery screen in the BIOS setup must be activated. The information is located in the summery screen (marked here with a red arrow):



Start BIOS Setup Utility

M@C57 boots upon the connection to a corresponding power source and the Insyde XpressROM™ BIOS is activated. During the Power on Self Test (POST) will appear the following message on the screen:

```
Press F1 to enter Setup
```

To start the setup utility, press <**F1**> during boot up. The Main Menu appears.

BIOS Setup Navigation

Navigation through the setup can be done either by using the cursor keys ← or → and ↑ or ↓, or by pressing the character keys that are shown in front of every menu item.
The key **<ENTER>** is used to select a menu or a submenu, the keys ← or → and ↑ or ↓, to to change entries. To jump back from a submenu press the **<ESC>** key.

☞ In this BIOS description the corresponding BIOS settings for Windows CE.Net at M@C57 are ***bold*** highlighted.
It cannot be ensured that the equipment functions reliably if these initial settings are changed.

Main Menu

Character	Menu	Option	Description
A.	Time	HH:MM:SS	Set the system time
B.	Date	MM/DD/YYYY	Set the system date
C.	Motherboard Device Configuration		Submenu for “Device Configuration”
F.	Power Management		Leave the current settings
H.	Miscellaneous Configuration		Submenu for “Miscellaneous Configuration”
L.	Load Defaults		Loads the setup defaults
S.	Saves Values Without Exit		Save all values and stay in Setup Utility
Q.	Exit Without Save		Quit Setup Utility without saving the changes
X.	Save Values and Exit		Saves all changes and exit Setup Utility

Time

This field indicates the time of the device. If you change the time setting, enter the time in the format *HH:MM:SS* (hours: minutes: seconds)

Date

This field indicates the date of the device. If you change the date setting, enter the date in the format *MM.DD.YYYY* (month/day/year).

Motherboard Device Configuration

Character	Submenu	Description
A.	Drive Configuration	Submenu for “Drive Configuration”
B.	Onboard Super I/O Configuration	Submenu for “Super I/O Configuration”
C.	LPC Super I/O Configuration	Submenu for “LPC Super I/O Configuration”
E.	Legacy Audio Configuration	Submenu for “Legacy Audio Configuration”
F.	Video and Flat Panel Configuration	Submenu for “Video and Flat Panel Configuration”
G.	PCI Configuration	Submenu for “PCI Configuration”
R.	Return to Main Page	Returns to Main Menu

Drive Configuration

Option	Settings	Description
IDE Configuration		
Chipset IDE Channel	***Primary*** Disabled	Switch the single IDE channel ON and OFF
DMA/UDMA support in BIOS	Enabled ***Disabled***	Enable and disable DMA/UDMA support by BIOS for usage under DOS
Max PIO/MDAM/UDMA mode for Drive 1:	**Enabled** Disabled	Leave the current setting
Max PIO/MDAM/UDMA mode for Drive 2:	***Enabled*** Disabled	Leave the current setting
Boot ROM Configuration		
CD-ROM Boot-ROM	***Enabled*** Disabled	Enable and disable the possibility to boot from IDE CD-ROM devices
USB Mass Storage Boot-ROM	***Enabled*** Disabled	Enable and disable the possibility to boot from USB mass storage devices
PXE Lanboot Option ROM	Enabled Flag Control ***Disabled***	Enable and Disable the possibility to boot from LAN
Boot Order Configuration		
1.	USB Mass Storage	Selects the 1st boot device
2.	Hard Drive #2	Selects the 2nd boot device
3.	Hard Drive #1	Selects the 3rd boot device
4.	Network Boot	Selects the 4th boot device
5.	None	Selects the 5th boot device
6.	None	Selects the 6th boot device
7.	***None***	Selects the 7th boot device

Onboard Super I/O Configuration

Option	Settings	Description
Serial Port A	***0x3f8 IRQ 4*** 0x2f8 IRQ 3 0x3e8 IRQ 4 0x2e8 IRQ 3 Disabled	Selects the resources (I/O address and interrupt) of 1st onboard serial port
Serial Port B	0x3f8 IRQ 4 ***0x2f8 IRQ 3*** 0x3e8 IRQ 4 0x2e8 IRQ 3 Disabled	Selects the resources (I/O address and interrupt) of 2nd onboard serial port

LPC Super I/O Configuration

Option	Settings	Description
Serial Port 1	***Disabled*** 0x3f8 IRQ 4 0x2f8 IRQ 3 0x3e8 IRQ 4 0x2e8 IRQ 3	Selects the resources (I/O address and interrupt) of 1st LPC serial port
Serial Port 2	***Disabled*** 0x3f8 IRQ 4 0x2f8 IRQ 3 0x3e8 IRQ 4 0x2e8 IRQ 3	Selects the resources (I/O address and interrupt) of 2nd LPC serial port
Parallel Port	***Disabled*** 0x378 0x278 0x3BC	Selects the I/O address of 2nd onboard parallel port
Mode	**Compatible** PS/2 Bidirectional EPP 1.7 EPP 1.9	Sets the mode for the parallel port
IRQ	***IRQ 7*** Disabled IRQ 5	Sets the interrupt for the parallel port
DMA	***None*** Channel 3 Channel 1	Sets the DMA channel for the parallel port

Legacy Audio Configuration

Option	Settings	Description
Audio Enable	***Enabled*** Disabled	Enables the audio interface
Audio Base	***0x220*** 0x240 0x260 0x280	Selects the I/O address of the audio interface
Audio IRQ	***IRQ 5*** IRQ 7 IRQ 9 IRQ 10 Disabled	Selects the IRQ of the audio interface
Audio 8-bit DMA	***Channel 1*** Channel 3 Disabled Channel 0	Sets the DMA channel for 8-bit audio transfers
Audio 16-bit DMA	***Channel 5*** Channel 6 Channel 7 Disabled	Sets the DMA channel for 16-bit audio transfers

Video and Flat Panel Configuration

Option	Settings	Description
Video Configuration		
Video Memory	***4.0 MB*** 1.5 MB 2.0 MB 2.5 MB 3.0 MB 3.5 MB	Selects the size of video memory. This value is reducing the RAM
Flat Panel Mode	***Enabled*** Disabled	Enables and disables the flat panel interface
Flat Panel Type	***QVGA (panel only)*** VGA SVGA XGA Auto Detect Panel Adapter ID Flat Panel ID	Leave the current setting
Panel ID	***0x0000***	Leave the current setting
Backlight Configuration		
Backlight Control	***Enabled*** Disabled	Enable and disable the control of brightness
Initial Brightness	***100% (Full On)*** Last Value 0% (Off) 10% 20% 90%	Select the initial brightness if the backlight control is enabled
Contrast Configuration		
Contrast Control	***Enabled*** Disabled	Is not supported on CE.NET
Initial Contrast	***100% (Full On)*** Last Value 0% (Off) 10% 20% 90%	Is not supported on CE.NET

PCI Configuration

Option	Settings	Description
PCI INTA#	***IRQ 9*** IRQ 10 IRQ 11 IRQ 12 IRQ 14 IRQ 15 Disabled IRQ 3 IRQ 4 IRQ 5 IRQ 6 IRQ 7	Fixes an interrupt to PCI INT line A
PCI INTB#	***IRQ 10*** IRQ 11 IRQ 12 IRQ 14 IRQ 15 Disabled IRQ 3 IRQ 4 IRQ 5 IRQ 6 IRQ 7 IRQ 9	Fixes an interrupt to PCI INT line B
PCI INTC#	***IRQ 5*** IRQ 6 IRQ 7 IRQ 9 IRQ 10 IRQ 11 IRQ 12 IRQ 14 IRQ 15 Disabled IRQ 3 IRQ 4	Fixes an interrupt to PCI INT line C
PCI INTD#	***IRQ 11*** IRQ 12 IRQ 14 IRQ 15 Disabled IRQ 3 IRQ 4 IRQ 5 IRQ 6 IRQ 7 IRQ 9 IRQ 10	Fixes an interrupt to PCI INT line D

Power Management Configuration

Option	Settings	Description
Power Management Configuration		
Power Management Mode:	***Legacy & APM*** Disabled Legacy	Leave the current setting
Wakeup Mask Configuration		
Wakeup Mask PIC1	***0x12***	Leave the current setting
Wakeup Mask PIC2	***0x10***	Leave the current setting
Timeout Configuration		
Idle/Doze Mode	***Disabled*** 1 Second 5 Seconds 10 Seconds 15 Seconds 30 Seconds 45 Seconds 1 Minute 5 Minutes 10 Minutes 15 Minutes 30 Minutes 45 Minutes 60 Minutes 90 Minutes 120 Minutes	Leave the current setting
Video Timeout	***Disabled*** 1 Second 5 Seconds 10 Seconds 15 Seconds 30 Seconds 45 Seconds 1 Minute 5 Minutes 10 Minutes 15 Minutes 30 Minutes 45 Minutes 60 Minutes 90 Minutes 120 Minutes	Leave the current setting

Standby Timeout	***Disabled*** 1 Second 5 Seconds 10 Seconds 15 Seconds 30 Seconds 45 Seconds 1 Minute 5 Minutes 10 Minutes 15 Minutes 30 Minutes 45 Minutes 60 Minutes 90 Minutes 120 Minutes	Leave the current setting
HDD Timeout	***Disabled*** 1 Second 5 Seconds 10 Seconds 15 Seconds 30 Seconds 45 Seconds 1 Minute 5 Minutes 10 Minutes 15 Minutes 30 Minutes 45 Minutes 60 Minutes 90 Minutes 120 Minutes	Leave the current setting

Miscellaneous Configuration

Option	Settings	Description
Splash Screen Configuration		
Splash Screen	***Disabled*** Enabled	Leave the current setting
Clear Splash Screen	***Enabled*** Disabled	Leave the current setting
Splash Screen Timeout	***00000***	Leave the current setting
Summary Screen Configuration		
Summary Screen	***Enabled*** Disabled	If *Enabled* a summary screen is being displayed at the end of POST.
Summary Screen Timeout	***05000***	Time until summary screen times out in milliseconds
Watchdog Configuration		
Watchdog	***Disabled*** Reset	Leave the current setting
Watchdog Delay	***10 Seconds*** 30 Seconds 1 Minute 2 Minutes 5 Minutes 10 Minutes 15 Minutes 30 Minutes	Leave the current setting
Watchdog Timeout	***10 Seconds*** 30 Seconds 1 Minute 2 Minutes 5 Minutes 10 Minutes 15 Minutes 30 Minutes	Leave the current setting

The table is continued on the next page.

Legacy USB Configuration		
Legacy USB Support	***Enabled*** Disabled During Post	Enabling “Legacy USB Support” allows to use USB devices under DOS and other non-Plug & Play operating systems.
Customer ROM	***Disabled*** Enabled Flag Control	

Load Defaults

This field reverts all settings to the default values.

Save Values Without Exit

This field allow you to save the settings you have made without exit BIOS Setup

Exit Without Save

This field allows you to exit BIOS Setup without save the settings you have made.

Save Values and Exit

This field allows you to save the settings you have made and exit BIOS Setup.

Main Specifications

Processor	NS Geode™ SC1200, up to 266 MHz		
Storage Media	On board: SDRAM	**Option I**	**Option II**
		32 MB	128MB
Storage Media and Supplementary Drive Bay	On board: 1x Flash (IDE)	32 MB	128 MB
	External accessible: 1x CompactFlash (IDE)	Type I / II	Type I / II
External interface	On the bottom side: 2x USB (Vers. 1.1), type A (female) 1x LAN 1x COM1		
Operating elements	On the bottom side: 1x reset button On the front side: 19x touch functional keys with (free configurable) with customised labelled key-symbol-strips		
DC power plug	On the bottom side		
Display		**TFT**	**STN**
	Diagonally (size) active area	5.7” 115.17x86.37 mm	5.7” 115.17x86.37mm
	Resolution	320 x 240	320 x 240
	Colors	262144	262144
	Backlight	CCFL	CCFL
	Brightness	350 cd/m^2	201 cd/m^2
	Viewing angle	12 o’clock	6 o’clock
	Control signal	Digital (TTL)	Digital (TTL)
	Contrast ratio	300:1	
Touch Screen	4 wire resistive analog		
Operating system	Information about the applicable operating systems refer to the website: www.kontron.com or: techsupport@kontron.com		

Electrical Specifications

System Version	Integrated PSU	Input
M@C57	without	24 VDC (12 – 31 V) 0.4 A

Mechanical Specifications

Dimensions	Overall	Panel
Height	156 mm (6.142“)	156 mm (6.142“)
Width	189 mm (7.441")	189 mm (7.441")
Depth	49.5 mm (1.949“); required fitting depth: 45.5 mm (1.791“)	4 mm (0.157”)
Weight	Approx. 1. 35kg (2.976 lbs) (without packaging)	
Material	steel zinc-plated	ALU-front panel coated with plastic foil

Environmental Specifications

Thermal management	Without CPU fan
Operating temperature / relative humidity	5 … +50 °C (non condensing) (41 … 122 °F (non condensing)
Storage / transit temp. / relative humidity	–10 … +60°C (non condensing) (14 … 140°F (non condensing)
Operating altitude	5,000 m (15,000 ft)
Storage / transit altitude	15,240 m (50,000 ft)
Operating shock	5 G, 11 ms duration, half-sinus
Storage / transit vibration	15 G, 11 ms duration, half-sinus
Operating vibration	10–58 Hz ± 0.0375 mm 58–500 Hz; 0.5G
Storage / transit vibration	10–58 Hz ± 0.075 mm 58–500 Hz; 1.0 G
Acoustic noise	0 dB
Protection class	Front side: IP65

CE-Directives and Standards

CE -Directives	
Low Voltage directive (Electrical Safety)	73/23/EEC
EMC Directive	89/336/EEC

Electrical Safety	**Standards**
EUROPE	EN 60950, 3rd edition IEC 60950, 3rd edition

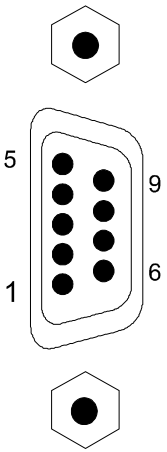
EMC	**Standards**
EUROPE	EN 50081-1/ -2 (emission) EN 50082-1/ EN 61000-6-2 (immunity) EN 55022/ A: 1994 (CISPR22) FCC 47 CFR Part 15, Class A

Technical Appendix – Interfaces

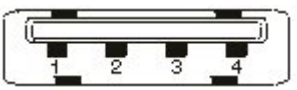
In the following tables are specified the interfaces plug assignments of the M@C57.

Low-active signals are indicated by a minus sign.

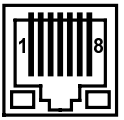
Serial Interface - Connector (COM1)

Pin	Signal name		9-pin SUB D-plug
1	DCD	(Data Carrier Detect)	
2	RXD	(Receive Data)	
3	TXD	(Transmit Data)	
4	DTR	(Data Terminal Ready)	
5	GND	(Signal Ground	
6	DSR	(Data Set Ready)	
7	RTS	(Request to Send)	
8	CTS	(Clear to Send)	
9	RI	(Ring Indicator)	

USB – Connector

Pin	Signal name	4 pin USB-socket Type A Version 1.1
1	VCC	
2	Data–	
3	Data+	
4	GND	

LAN Ethernet Connector

PIN#	LAN 10/100 Signal Name	RJ45 (female)
1	TX+	
2	TX-	
3	RX+	
4	NC	
5	NC	
6	RX-	
7	NC	
8	NC	
LEFT LED	LINK / ACTIVE	
RIGHT LED	100/10	

Technical Support

For any technical questions, please contact our Technical Support department.

German headquarter Hotline:
TEL: (+49) 8165-77 112
FAX: (+49) 8165-77 110
E-mail: techsup@kontron.com

Make sure you have the following on hand when you call:

- the unit part number (P/No #),
- and the serial number (S/No #) of the defective unit (provide the serial number found on the type label, placed on the rear side of the system).

Be ready to explain the nature of your problem to the service technician.

If you have any questions about Kontron Embedded Computers or our products and services, you may reach us at the aforementioned numbers, or at: www.kontron.com or by writing to:

Kontron Embedded Computers GmbH
Oskar-von-Miller-Str. 1

85386 Eching near Munich
Germany

Returning Defective Merchandise

Before returning any merchandise please do the following if your Kontron Embedded Computers product malfunctions:

1. Contact our Service and request an
   RMA number (Return Material Authorization) by:
   Fax: (+49) 8165-77 311
   E-mail: service@kontron.com
2. Make sure that you receive an RMA number from Kontron Embedded Computers-Service before returning any merchandise. Clearly write or mark this number on the outside of the package you are returning.
3. Describe the device failure behavior as precisely as possible.
4. Include the name and telephone number of a person whom we can contact for further explanations if necessary when returning goods. Where applicable, always include all duty papers and invoice(s) associated with the item(s) in question.
5. When returning a Kontron Embedded Computers unit.
   - Ensure that the unit is packed in the original box.
   - include a copy of the RMA form.