

# **HMI**

Industrial Panel PCs

IPC Terminals

Users Manual

# **IPC-MC1121, IPC-MC1151**



**User's Manual  
IPC-MC1000  
Art no:**

<b>Version</b>			<b>Revisions / Additions / Corrections</b>
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# About This Manual

The texts, illustration, diagrams and examples in this manual are provided for information purposes only. They are intended as aids to help explain the installation, operation, programming and use of the IPC-Terminals IPC-MC1000.

If you have any questions about the installation and operation of any of the products described in this manual please contact your local sales office or distributor (see back cover). You can find the latest information and answers to frequently asked questions on our website at *[www.mitsubishi-automation.com](http://www.mitsubishi-automation.com)*.

MITSUBISHI ELECTRIC EUROPE BV reserves the right to make changes to this manual or the technical specifications of its products at any time without notice.

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# Safety Guidelines

## General safety information and precautions

### For use by qualified staff only

This manual is only intended for use by properly trained and qualified electrical technicians who are fully acquainted with the relevant automation technology safety standards. All work with the hardware described, including system design, installation, configuration, maintenance, service and testing of the equipment, may only be performed by trained electrical technicians with approved qualifications who are fully acquainted with all the applicable automation technology safety standards and regulations. Any operations or modifications to the hardware and/or software of our products not specifically described in this manual may only be performed by authorised Mitsubishi Electric staff.

### Proper use of the products

The IPC-Terminals IPC-MC1121 and IPC-MC1151 are only intended for the specific applications explicitly described in this manual. All parameters and settings specified in this manual must be observed. The products described have all been designed, manufactured, tested and documented in strict compliance with the relevant safety standards. Unqualified modification of the hardware or software or failure to observe the warnings on the products and in this manual may result in serious personal injury and/or damage to property. Only peripherals and expansion equipment specifically recommended and approved by Mitsubishi Electric may be used with the IPC-Terminals IPC-MC1121 and IPC-MC1151.

All and any other uses or application of the products shall be deemed to be improper.

### Relevant safety regulations

All safety and accident prevention regulations relevant to your specific application must be observed in the system design, installation, configuration, maintenance, servicing and testing of these products. The regulations listed below are particularly important in this regard. This list does not claim to be complete, however; you are responsible for being familiar with and conforming to the regulations applicable to you in your location.

- VDE Standards
  - VDE 0100  
Regulations for the erection of power installations with rated voltages below 1000 V
  - VDE 0105  
Operation of power installations
  - VDE 0113  
Electrical installations with electronic equipment
  - VDE 0160  
Electronic equipment for use in power installations
  - VDE 0550/0551  
Regulations for transformers
  - VDE 0700  
Safety of electrical appliances for household use and similar applications
  - VDE 0860  
Safety regulations for mains-powered electronic appliances and their accessories for household use and similar applications.

- Fire safety regulations
- Accident prevention regulations
  - VBG Nr.4  
Electrical systems and equipment

### **Safety warnings in this manual**

In this manual warnings that are relevant for safety are identified as follows:



**DANGER:**

*Failure to observe the safety warnings identified with this symbol can result in health and injury hazards for the user.*



**WARNING:**

*Failure to observe the safety warnings identified with this symbol can result in damage to the equipment or other property.*

**REMARK**

| This indicates general information about the product and the user manual.

| This indicates detail information about the specific product configuration.

| This precedes helpful hints and tips for daily use.

**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 which case the user will be required to correct the interference at his own expense.

**CE-CONFORMITY**

The following requirements, standards, specifications constitute part of the declaration:

- EN 55022 class A
- EN 55024
- EN 60950-1
- EN 61000-3-2
- EN 61000-3-3
- EN 61000-6-2

The validation of this declaration depends on the properly use of the product.

## Specific safety information and precautions

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 device has been built and tested in accordance to EN 60950-1 and left the company 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.

**DANGER:**

- *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.*
- *Take care that there are no cables, particularly power cables, in areas where persons can trip over them.*
- *Take care that there are no cables, particularly power cables, in areas where persons can trip over them.*
- *Only use the power cord supplied.*
- *Only devices and components which fulfill the requirements of an SELV circuit (safety extra low voltage) in accordance with EN60950 may be connected to the interfaces of the system.*
- *All plugs on the connection cables must be screwed or locked to the housing.*
- *The device is designed to be used in vertical position with the interfaces downwards.*
- *Repairs may only be carried out by a person authorized by Mitsubishi Electric.*
- *Maintenance or repair on the open device may only be done out by qualified personnel authorized by Mitsubishi Electric which is aware of with the associated dangers.*
- *The device may only be opened for the installation and removal of PCI cards in accordance with the description in this manual. These procedures have to be carried-out only by qualified specialist personnel.*
- *If extensions are made to the device the legal stipulations and the device specifications must be observed.*
- *The device must be switched off before installation and removal of any PCI and Compact-Flash™ cards.*
- *Only original accessories approved by Mitsubishi Electric may be used.*
- *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.*
- *The DC-input must fulfill SELV requirements of EN60950-1 standard.*
- *DC/DC-supplies do not fulfill the requirements for centralized DC power systems as required for use in the USA.*



## Electrostatic Discharge (ESD)

A sudden discharge of electrostatic electricity can destroy static-sensitive devices or micro-circuitry. Therefore proper packaging and grounding techniques are necessary precautions to prevent damage. Always take the following precautions:



### WARNING:

- ***Transport boards in ESD-safe containers such as boxes or bags.***
- ***Keep electrostatic sensitive parts in their containers until they arrive at the ESD-safe workplace.***
- ***Always be properly grounded when touching a sensitive board, component, or assembly.***
- ***Store electrostatic-sensitive boards in protective packaging or on antistatic mats.***

### Grounding Methods

The following measures help to avoid electrostatic damages to the device:



### WARNING:

- ***Cover workstations with approved antistatic material. Always wear a wrist strap connected to workplace as well as properly grounded tools and equipment.***
- ***Use antistatic mats, heel straps, or air ionizers for more protection.***
- ***Always handle electrostatic sensitive components by their edge or by their casing.***
- ***Avoid contact with pins, leads, or circuitry.***
- ***Turn off power and input signals before inserting and removing connectors or connecting test equipment.***
- ***Keep work area free of non-conductive materials such as ordinary plastic assembly aids and Styrofoam.***
- ***Use field service tools such as cutters, screwdrivers, and vacuum cleaners which are conductive.***
- ***Always place drives and boards PCB-assembly-side down on the foam.***

## Instructions for the Lithium Battery

The device is equipped with a lithium battery.



**WARNING:**

*There is a danger of explosion if the wrong type of battery is used for replacement. Replace only with the same or equivalent type of battery as recommended by the manufacturer. Dispose of used batteries according to the manufacturers instructions.*

# Table of Contents

<b>1</b>	<b>Introduction</b>	
1.1	Appropriate use.....	1-1
1.2	Item Checklist.....	1-1
<b>2</b>	<b>Overview</b>	
<b>3</b>	<b>Hardware installation</b>	
3.1	Installation / Mounting .....	3-2
3.1.1	Mount IPC-MC1121.....	3-2
3.1.2	Mount IPC-MC1151.....	3-2
3.2	Connect external devices.....	3-3
<b>4</b>	<b>Software Installation</b>	
4.1	Application software and operating system .....	4-1
4.2	Hardware drivers.....	4-1
4.2.1	Install Touch driver .....	4-2
4.2.2	Windows touch calibration procedure .....	4-4
4.2.3	LINUX touch calibration procedure .....	4-5
4.2.4	Fieldbus driver installation.....	4-5
<b>5</b>	<b>Technical details</b>	
5.1	Mechanical .....	5-1
5.2	Electrical .....	5-1
5.3	Environment.....	5-1
5.4	CE directives and standards .....	5-1
5.5	Connector pinout .....	5-2
5.5.1	Power Connector.....	5-2
5.5.2	Fieldbus CAN interface .....	5-2
5.5.3	RS232 Connector COM1 .....	5-2
5.5.4	Network LAN 1 interface.....	5-2
5.5.5	USB interface.....	5-2
5.5.6	VGA interface .....	5-3
5.5.7	Reset switch.....	5-3
5.5.8	Grounding point .....	5-3
5.6	Block diagram.....	5-4
<b>6</b>	<b>Maintenance</b>	
6.1	Customer service.....	6-1
6.2	Cleaning .....	6-1
6.3	Returning Defective Material .....	6-2
<b>7</b>	<b>Troubleshooting</b>	
7.1	FAQ .....	7-1
<b>8</b>	<b>Disposal</b>	
<b>9</b>	<b>Appendix</b>	
9.1	Illustration contents.....	9-1



# 1 Introduction

## 1.1 Appropriate use

The main purpose of the MicroClient is the use and operation with 24 V DC power sources. The surrounding area are dry rooms. The Panel is intended for industrial applications in machine and plant control engineering. The user is not entitled to change the system components or open the body without consultation to Mitsubishi Electric.

## 1.2 Item Checklist

Your Micro Client comes securely packaged in solid shipping carton(s). Upon receiving your system, open the carton(s) and remove the contents carefully. The shipping carton should contain the following items:

- IPC-MC1121 or IPC-MC1151
- CPU Support CD (optional)
- 24 V DC Power cord (optional)
- This user manual (optional)
- Software installation CD if implemented

Carefully inspect each component to ensure that nothing is missing and/or damaged. If any of these items is missing or damaged, please contact Mitsubishi Electric immediately. Preserve of of the packing material for future transportation.



## 2 Overview

Mitsubishi Electric MicroClients (Thin Clients) used as web-based display and operator panels with all the application programs running on a central web server are very low-maintenance and also highly flexible. The advantages of this thin client architecture include centralized administration and software maintenance, maximum data security through centralized data storage and backup, and high reliability and availability (high MTBF values) through the elimination of rotating mass storage devices and fans, which reduces the total cost of ownership to the minimum.

Designed to meet the performance requirements of visualization and communications over ethernet, the new IPC-MC1121 and IPC-MC1151 have high-performance ETX-based x86 CPU modules that can be scaled inexpensively to meet changing performance needs. The innovative fanless cooling concept allows for a compact, spacesaving system. Shock and vibration resistance, thermal stability and compliance with the strictest EMC standards are standard features for all MicroClients. 24 V DC, 5.4 A is required as external power supply!

### Features:

- Scalable display sizes: 12.1" /15"
- Resistive analog touch screen
- X86 processor
- Small depth of <50 mm
- Compact Flash
- CAN bus on board
- Up to 256 MB SDRAM
- Optional: 1x RS 232, 1x LAN, 2x USB
- IP 65 front (NEMA 250 type 12 and 13)
- Power supply: 24 V DC and fanless cooling concept
- Meets toughest industrial requirements
- Windows XP Professional Multilanguage
- All connectors build for industrial standards
- Shock and vibration tested
- Embedded architecture long-life electronic components



## 3 Hardware installation

**WARNING:**

*The weight of the Panel is about 7 kg. Carry it on with both hands!*

The MicroClient of this type is developed to work in a control cabinet. Thereby it must be pointed that all the environmental conditions must be considered. When installing the Panel take care that there is enough area for ventilations on rear side. For details go to item housing dimensions.

If your Panel was delivered without software install a keyboard and mouse. If operating system and software is installed, the touch is working and calibrated.

Look up for further settings e.g. BIOS on the CPU board manuals.

**Mount Panel PC**

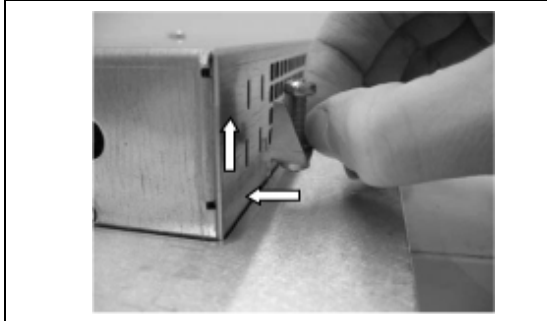
The MicroClient is designed to meet a specific on the protection class. In order to fulfill the requirements of this class it is important to install the panel pc in the right way. Outline drawing could be downloaded from: <http://mitsubishi-automation.com>

Please always ensure the following items.

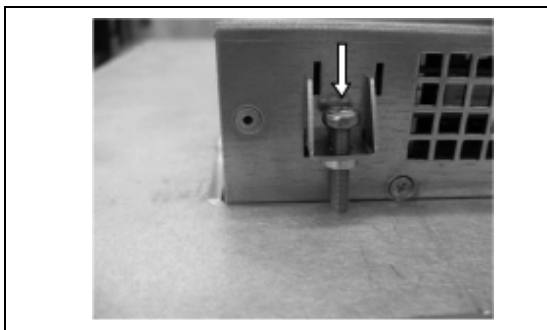
- Place the panel planar on the to be mounted surface.
- Controll o-ring placement on the backside of the front bezel.

## 3.1 Installation / Mounting

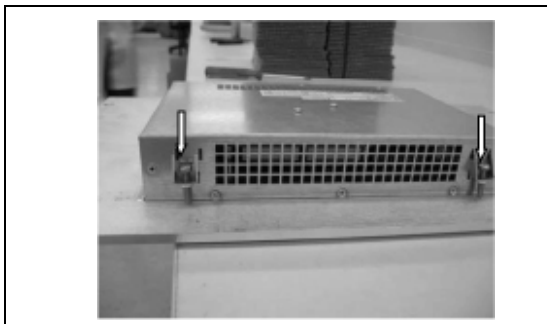
### 3.1.1 Mount IPC-MC1121



**Fig. 3-1:** Insert holder in the prepared holes



**Fig. 3-2:** Fasten the holder and the MicroClient to the front plate



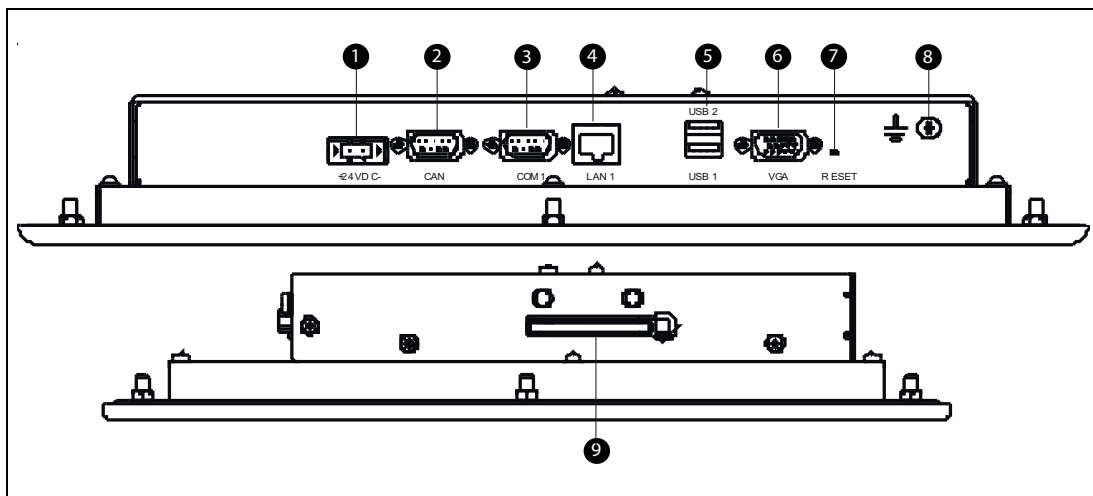
**Fig. 3-3:** Do this installation for all fastening points

### 3.1.2 Mount IPC-MC1151

Installation of this type of display sizes is more easier. Please use the M4 Stunts that you find on the backside of the Bezel. To fasten this stunt please use M4 nut. All outline drawings for all display sizes are available on the web.

## 3.2 Connect external devices

To get detailed information about pinout of each connector please look to chapter "Technical Data"



**Fig. 3-4:** View on interfaces and connectors

- 1** Main power IN  
Use this connector to connect the power supply of 24VDC. Please note the power requirements (See chapter technical details).
- 2** Fieldbus interface CAN  
External connector of internal fieldbus controller. Interface to connect CAN devices.
- 3** Serial Interface COM1  
One serial interfaces enables you to connect a external device with 9 pin DSUB connector such as mouse or modem.
- 4** LAN 1 interface  
This connector provides a external interfaces 10/100 BaseT on RJ45 to connect your Panel to other devices in a network.
- 5** LAN 2 interface  
This connector provides a external interfaces 10/100 BaseT on RJ45 to connect your Panel to other devices in a network.
- 6** USB port 1/2  
This connector provides two external USB 2.0 interfaces
- 7** CRT Monitor interface  
Connector and interface to VGA/CRT monitor.
- 8** Reset  
Reset Switch reset the hole unit.
- 9** Compact flash slot  
This Slot is used to save the compact flash for storing operating system



## 4 Software Installation

### 4.1 Application software and operating system

The panel is designed to work with different operating systems. To install operating system or application software follow the installation instructions of the software. In most cases the MicroClient will be delivered with a preinstalled operating system. This could be WindowsXP embedded, Windows CE or Mitsubishi Electric embedded Linux. All this operating systems are created to fulfill the requirements of most automation applications. But they are also reduced to the needs of this.

If you want to install your own application software be careful during installation routine. We advise you to save the image of the system into an independent storage system. Please test your backup image one time if the backup is complete and functional.

If you got problems during backup or restore please contact our customer service. Images for systems are not available on the WEB.

### 4.2 Hardware drivers

On preinstalled systems no drivers had to be installed by a technician or user. If no operating system was installed, you have to install drivers for the implemented hardware to get full function of the panel.

For technical support, please contact our Technical Support department:

FA-EBG Support E-mail:

*fa.ebg.assist@meg.mee.com*

## 4.2.1 Install Touch driver

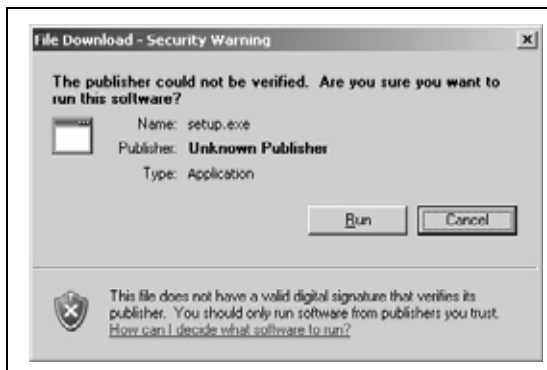
### Preparations of system

Before installing the driver please check the following items.

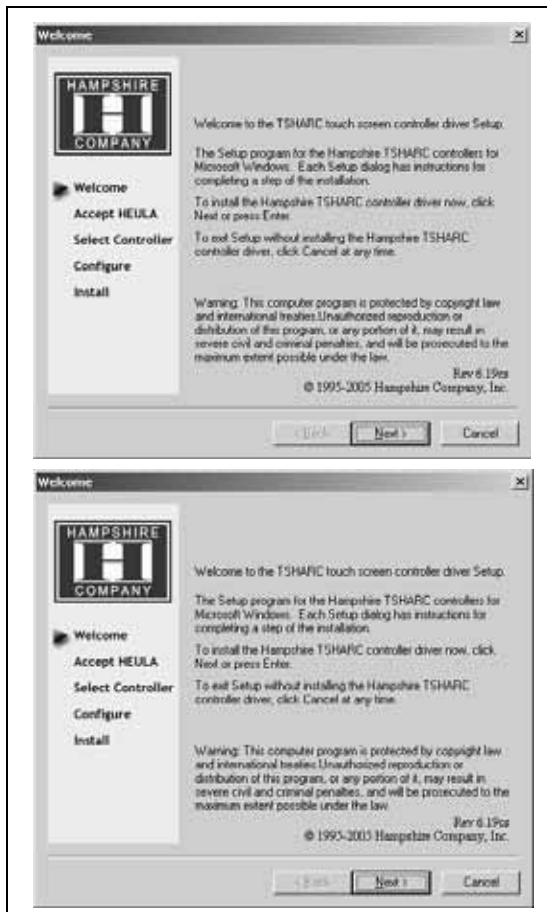
- Serial port in BIOS enabled
- Serial port driver for operating system installed.
- Boot or install device are not write protected ( EWFmgr )
- Device for loading the drivers is installed
- Optional: download driver from WEB

### Windows installation procedure

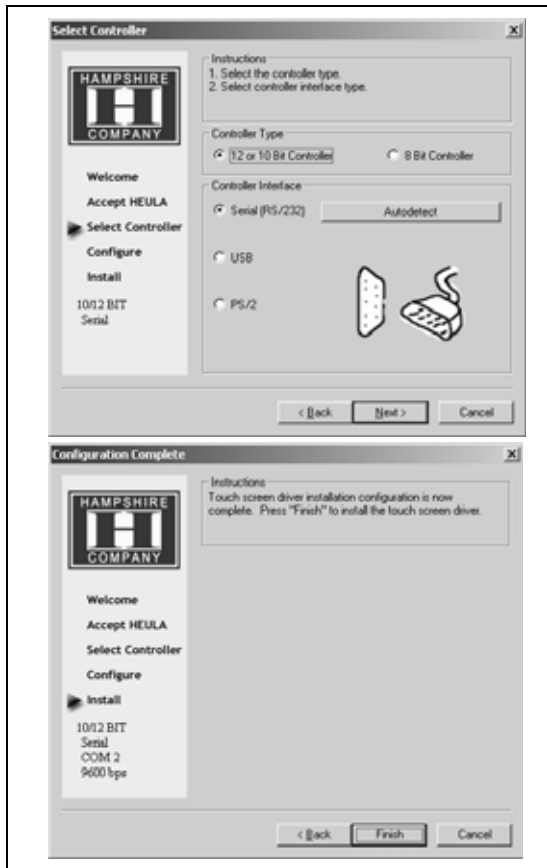
To start driver installation please go to the folder where all the driver files are stored. Start driver installation by double click on file “\*\*\*.ZIP” in the respective folder. Confirm each opened window with “NEXT” when choice is done. Please observe that during installation no error occurs.



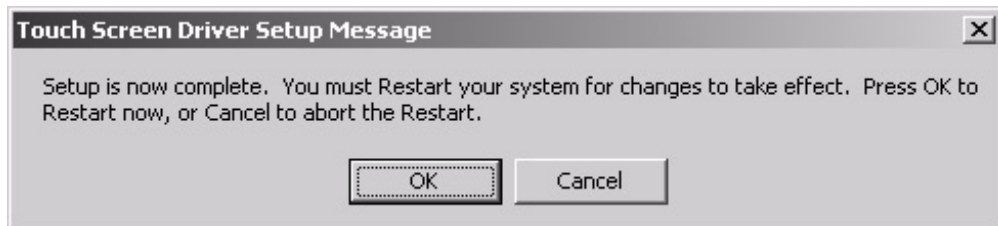
**Fig. 4-1:** Press "RUN" Button to start Installation



**Fig. 4-2:** Confirm license agreement



**Fig. 4-3:** Choose:  
Controller Type: 12 or 10  
Interface: "SERIAL"



### 4.2.2 Windows touch calibration procedure

To get full and well working touch you had to calibrate the touch driver to the mounted touch foil and his positions. If you did not the procedure the cursor on the screen did not follow the exact point of touch.

Please start touch calibration tool for your system with

>>>Program>>>“Hampshire TSHARC Control Panel”

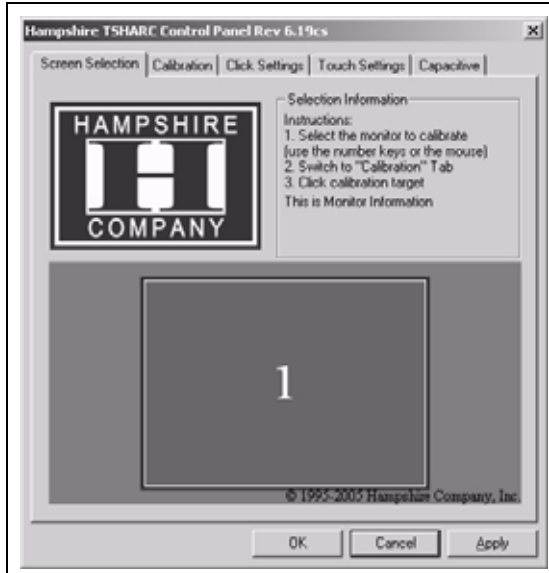


Fig. 4-4: Choose register CALIBRATION

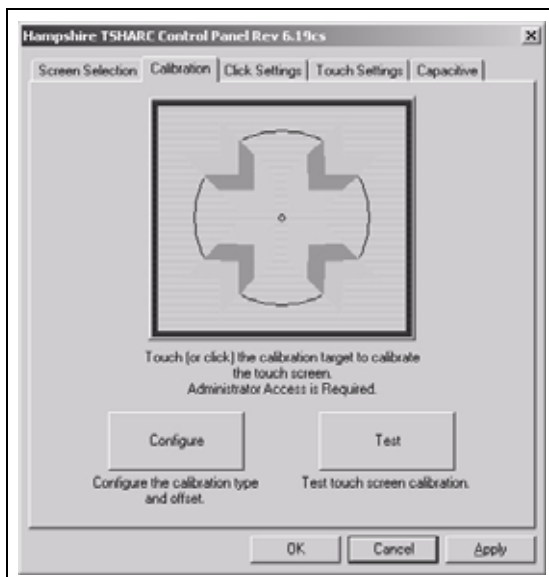


Fig. 4-5: Start calibration with double click on window with red arrows

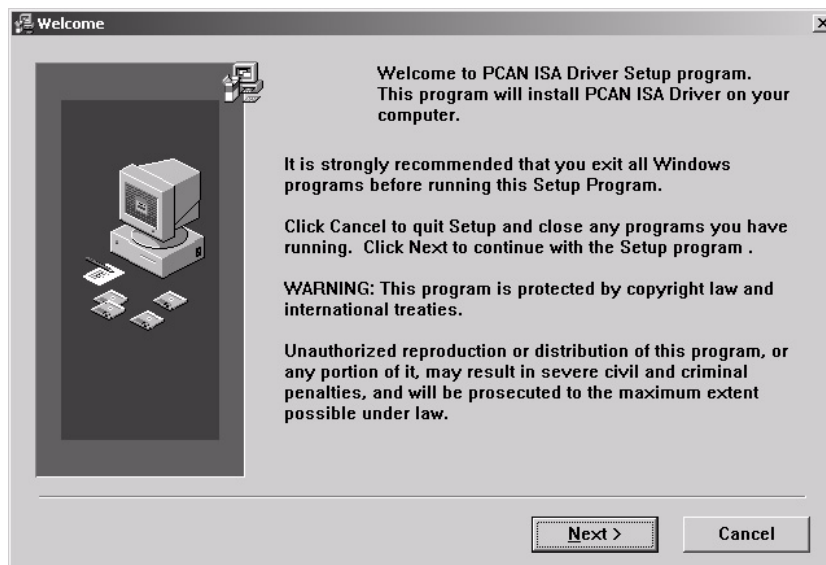
### 4.2.3 LINUX touch calibration procedure

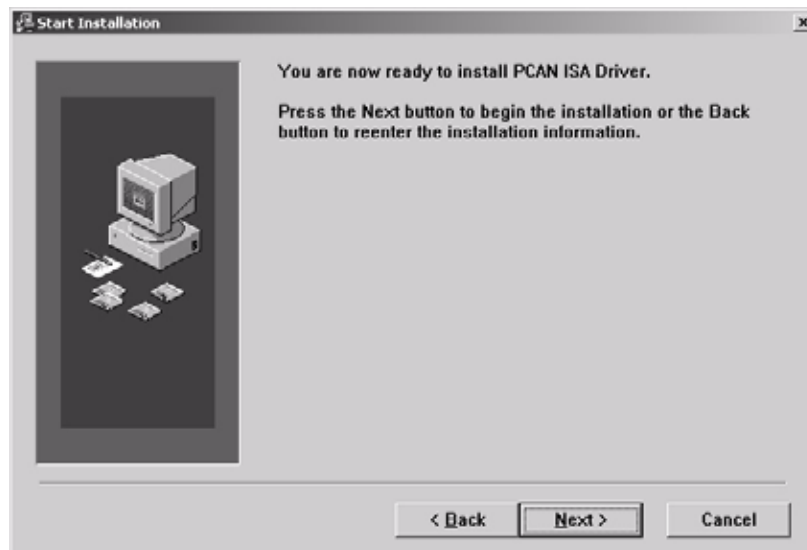
The Micro Client could be ordered with an Mitsubishi Electric embedded linux therefore a installation of drivers is not needed. During operation it is sometimes needed to recalibrate the touch. Press **<Ctrl><Esc>** on the keyboard to get a drop down menu with all important menus.

Choose "TouchCalib" from the drop down menu or press **<Alt><Ctrl><c>** on the keyboard.

### 4.2.4 Fieldbus driver installation

One of the option of the Micro Client is the CAN fieldbus option. This option enables the user to create an CAN fieldbus network with other devices. Please download installation file from Web before install drivers and software.





## 5 Technical details

### 5.1 Mechanical

Features	Micro Client	
Model	IPC-MC1121	IPC-MC1151
Display size	8.4"	10.4"
Dimension panelmount H x W x D	188 x 257 x 47 mm	252 x 325 x 47 mm
Front Bezel	ALU	
Weight	2.3 kg	3.3 kg
Protection class	IP65 Front (NEMA 250 type 12 and 13)	

### 5.2 Electrical

Features	Micro Client	
Model	IPC-MC1121	IPC-MC1151
Max. resolution	800 x 600	800 x 600
Brightness	300 cd/m <sup>2</sup>	300 cd/m <sup>2</sup>
Front Bezel	ALU or stainless steel optional	
Touch screen	Resistive analog	
Processor	Up to Celeron M600 MHz	
Main memory	Up to 1024 MByte	
External interfaces	1x CAN BUS interface; 1x Serial RS 232 interface; 1x LAN 10/100; 2x USB; 1x VGA	
Field Buses	CAN	
Internal Drives	CompactFlash up to 2 GByte	
Verified OS	Windows XP, Windows XP embedded, Linux	
Power Supply	24 V DC, +/-20 % with protection against reverse polarity.	
Power consum.	32 W max	
I max	1.8 A max	
Battery	External Lithium 3.5 V, 750 mAh	
MTBF	> 40000 h	

### 5.3 Environment


Features	All Models
Temperature	Operating: 0 to +50 °C Storage: -25 to +60 °C
Humidity	Operation: 5 to 95 % non condensing Storage: 5 to 95 % non condensing
Cooling	Fanless cooling concept
Shock acc. DIN EN 60068-2-27	Operating: 15 G, 11 ms duration Storage: 30 G, 11 ms duration (half-sine)
Vibration acc. DIN EN 60068-2-27	Operating: 10–500 Hz: 1 G / 3 axis Storage: 10–500 Hz: 2 G / 3 axis
Altitude	Operating: 10000 ft (3048 m) Storage: 15000 ft (4622 m)

### 5.4 CE directives and standards

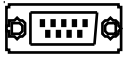
Features	All Models
EMC	US: FCC47 CFR PART 15; Class A level CE: EN61000-6-2; EN550 22/A (CISPR22)
Approvals	CE, FCC, cUL us
RoHS Compliant	Yes

## 5.5 Connector pinout

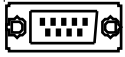
### 5.5.1 Power Connector

Pin	Signal Name
	1 +24 V
	2 GND


### 5.5.2 Fieldbus CAN interface

PIN	Signal Name
	1 NC
	2 CANL
	3 ISOLATED GND
	4 NC
	5 NC
	6 NC
	7 CANH
	8 NC
	9 NC

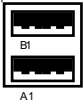
### 5.5.3 RS232 Connector COM1

PIN	Signal Name
	1 DCD (Data Carrier Detect)
	2 RXD (Receive Data)
	3 TXD (Transmit Data)
	4 DTR (Data Terminal Ready)
	5 GND
	6 DSR (Data Set Ready)
	7 RTS (Request To Send)
	8 CTS (Clear To Send)
	9 RI (Ring Indicator)


### 5.5.4 Network LAN 1 interface

PIN	Signal Name	PIN	Signal Name
	1 TX+	2 TX-	
	3 RX+	4 NC	
	5 NC	6 RX-	
	7 NC	8 NC	

### 5.5.5 USB interface

PIN	Signal Name	PIN	Signal Name
	A1 VCC	B1 VCC	
	A2 Data-	B2 Data-	
	A3 Data+	B3 Data+	
	A4 GND	B4 GND	

### 5.5.6 VGA interface

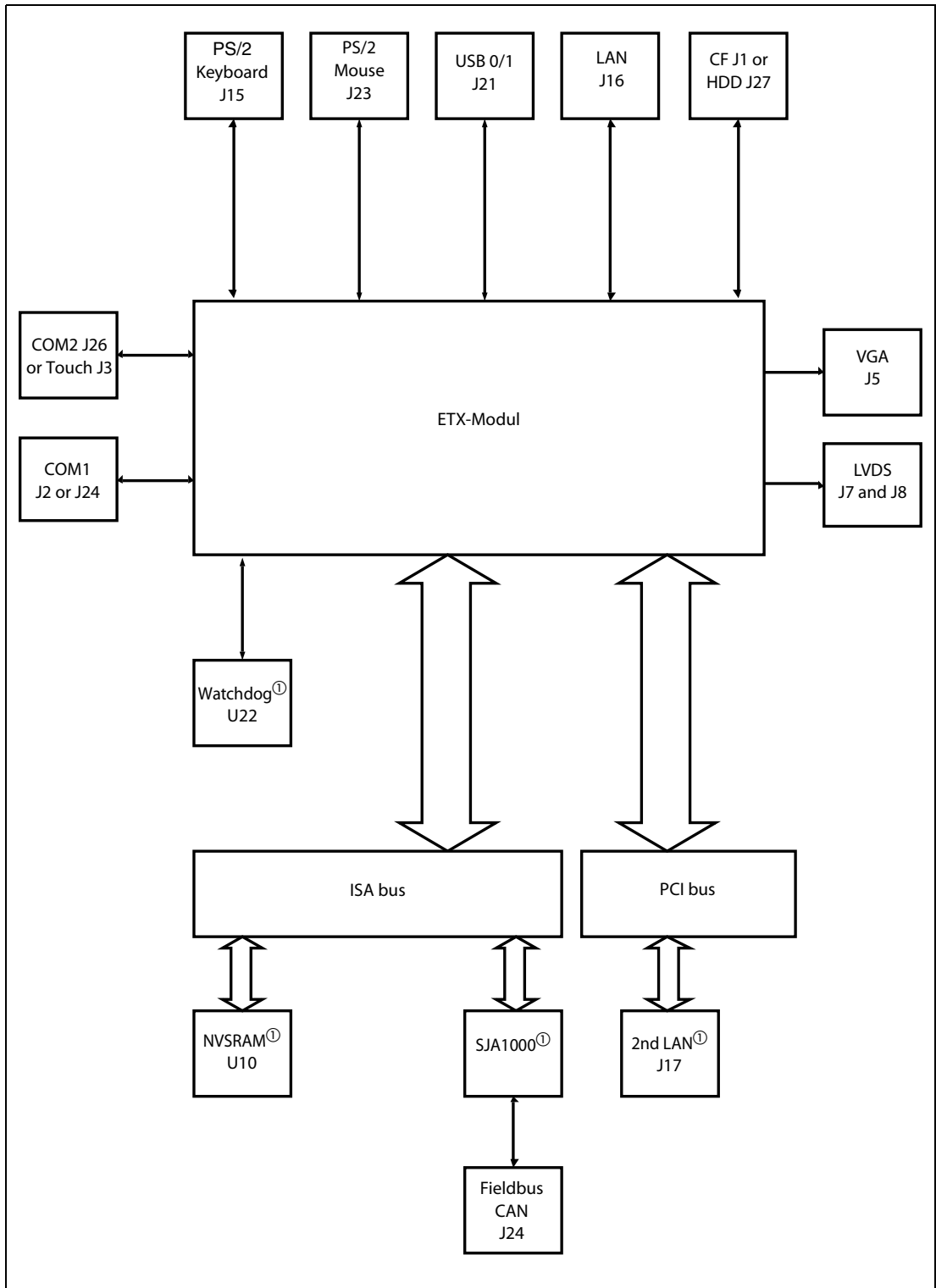
PIN		Signal Name	PIN	Signal Name
	1	RED	2	GREEN
	3	BLUE	4	NC
	5	CRT GND	6	CRT GND
	7	CRT GND	8	CRT GND
	9	VCC	10	CRT GND
	11	NC	12	DDC DAT
	13	HSYNC	14	VSYNC
	15	DDC CLK	—	—

### 5.5.7 Reset switch

### 5.5.8 Grounding point

## 5.6 Block diagram

The diagram displayed below shows the main internal function blocks of the Micro ClientPanel.



① optional populated

## 6 Maintenance

The Micro Client is designed and produced according to DIN EN ISO 9000:2000. One of the main development intentions was to minimize service requirements. As a result, with exception changing CMOS-Ram battery and cleaning, no great service is to do. In case of any error kindly note the remarks below. To analyze the error please check first all connections and configuration of the software. Don't try to repair the hardware inside.

No warranty if improper operated.

### 6.1 Customer service

To get more technical information and help concerning errors on the Panel please contact Technical Support department FA-EBG Support .

E-Mail: [fa.ebg.assist@meg.mee.com](mailto:fa.ebg.assist@meg.mee.com)

Internet: [www.mitsubishi-automation.com](http://www.mitsubishi-automation.com)

If you have questions about Mitsubishi or our products and services, you may reach us at:  
[www.mitsubishi-automation.com](http://www.mitsubishi-automation.com)

or by writing to:

Mitsubishi Electric EUROPE B.V.

Gothaer Str. 8

D-40880 Ratingen

### 6.2 Cleaning

To clean the surface of the Panel use a soft lint-free cloth. It should be slightly moist with a mild detergent solution or any computer cleaning kit. Never use alcohol, petroleum-based solvents or aggressive agents to clean the Panel. Also never pour any liquids directly in the Panel PC Box. To clean the liquid-crystal display (LCD) screen use soft clean lintfree cloth, moist with a mild glass cleaner, and gently wipe the surface. Never apply liquids directly on the screen surface. Do not use paper towels to clean the display screen. Paper can scratch the display touch film.

## 6.3 Returning Defective Material

Before returning any material, please:

- ① Contact our Service and request an RMA number (Return Material Authorization) at:  
E-Mail: *GER-Repair-Coordination@meg.mee.com*
- ② Describe the device failure behavior.
- ③ When returning goods, include the name and telephone number of a person whom we can contact for further explanations if necessary. Where applicable, always include all duty papers and invoice(s) associated with the item(s) in question.
- ④ When returning a unit.
  - Ensure that the unit is properly packed in the original box.
  - Include a copy of the RMA form.

**REMARK**

Make sure that you receive an RMA number from Mitsubishi-Service before returning any material. Clearly write or mark this number on the outside of the package you are returning.

# **7 Troubleshooting**

## **7.1 FAQ**

Please look to the online support at [www.mitsubishi-automation.com](http://www.mitsubishi-automation.com).



## 8 Disposal

In order to dispose your Panel, it must be removed from the plant and fully dismantled. Electronic parts such as disc drives and circuit boards must be disposed of in accordance with national electronic scrap regulations. For details ask your local waste disposal department.



# 9 Appendix

## 9.1 Illustration contents

Abb. 3-1 Connect external devices

Abb. 3-2 Connect internal devices

Fig. 5-1 Block diagram



# Index

<b>B</b>		<b>M</b>	
Block diagram .....	5-4	Mounting .....	3-2
<b>C</b>		<b>O</b>	
CAN .....	3-3	Outline drawing .....	3-1
COM1 .....	3-3	<b>P</b>	
Connector pinout .....	5-2	Product Description .....	1-1
Connectors .....	3-3	<b>R</b>	
<b>D</b>		Reset Switch .....	3-3
Drivers .....	4-1	<b>S</b>	
<b>F</b>		Software installation	
FAQ .....	7-1	Fieldbus driver .....	4-4
Features .....	2-1	Touch driver .....	4-2
<b>I</b>		<b>T</b>	
Interfaces .....	3-3	Technical data .....	5-1
<b>L</b>		Touch calibration .....	4-4
LAN .....	3-3	<b>U</b>	
		USB .....	3-3





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