MITSUBISHI ELECTRIC
FACTORY AUTOMATION

HMI

Visualisation Tools

Powerful Communication

Simple Words and Pictures

System and Process Visualisation /// Touch Screen and Key Operation /// Powerful Maintenance Tools /// PLC Program Display /// Direct MES Integration /// HMIs /// GOTs /// IPCs /// SCADA /// Software ///

Perfect Vision

More than a terminal

With innovative technology Mitsubishi Electric has created new standards in operator interaction. Features such as the ladder monitoring function enhance and support the work of programmers, operators and maintenance staff.

Easier operation

Simple intuitive keyboards are complimented by flexible and dynamic touch screen solutions. Each type of HMI solution allows data to be gathered from various FA devices and facilitates its access as information using powerful graphic and text tools.

Intelligent design

High performance, market leading, operator terminals are the result of intelligent yet carefully planned design. For example front mounted USB ports make programming and data access simpler and quicker than ever before.

Advanced screen design software such as GT Designer enable screens to be quickly and efficiently created.

100's of drivers are available for connection to Mitsubishi or other third party products.

Units with high IP ratings ensure easy and carefree cleaning, especially useful for situations that require full wash downs.

More design freedom through flexibl connectivity and mounting as many units can be used in portrait or landscape configurations.

High resolution screens offer bright clear displays that can be viewed from a wide range of angles.

Ultra-slim designs occupy less panel space/depth.

Flexible operation allows Mitsubishi HMIs to be used in industrial and commercial applications.

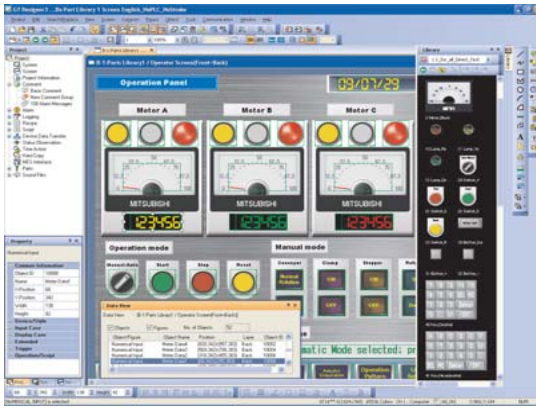
High-speed operation thanks to fast processors.

Advanced communication

Direct Connection to a SQL database through a dedicated MES interface gives users greater access to operational data from across their entire plant – and all from the shop floor.

Simple configuration

All of the HMI software packages come with pre-defined graphic libraries to help users get started quickly. Some of the software programs also have simulators so that system operation can be checked before downloading into an HMI or IPC.



Reliable and economical

Ultra slim mounting as well as optional screen orientation make Mitsubishi HMI's simple and economical to add to almost any system. Conformance to shipping approvals and standards are a clear demonstration of Mitsubishi's commitment to quality.

Vision1000 – A Complete Line

Central storage and control of FA device information with Mitsubishi HMIs

Mitsubishi's Vision 1000 concept brings together a wide range of human machine interfaces (HMIs) and software solutions that let you see what is really happening in the production process.

This combination of three visualization technologies from a single manufacturer, allows users to choose the best solution to fit their requirements.

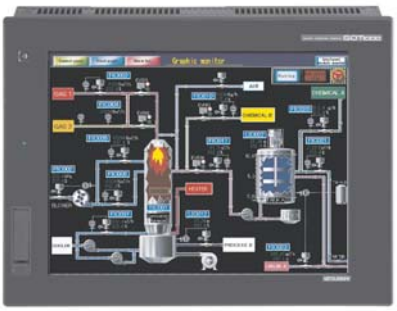
Dedicated HMI solutions

The GOT1000 series of graphic operator terminals provide the very latest in touch-screen display technology. This gives users a bright clear display of information with the flexibility of touch screen input.

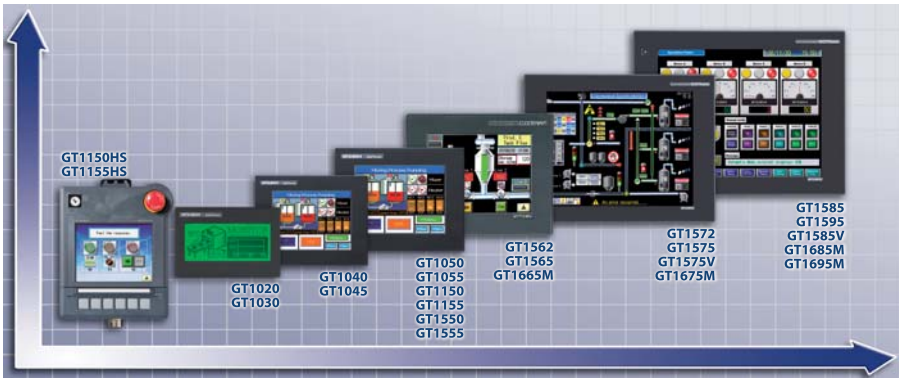
The GOT units are designed for fundamental integration with Mitsubishi automation technology. This means easier, faster project development as well as increased system performance and additional access to core functions in Mitsubishi's automation hardware.

Factory automation users want more transparency and more information on control and machine processes.

In countless applications highly flexible HMI and IPC units are an intelligent, cost-effective alternative to bulky control consoles. Both their size and their many application advantages make them the clearly superior choice.



The GOT 1000 series utilises the latest touchscreen technology



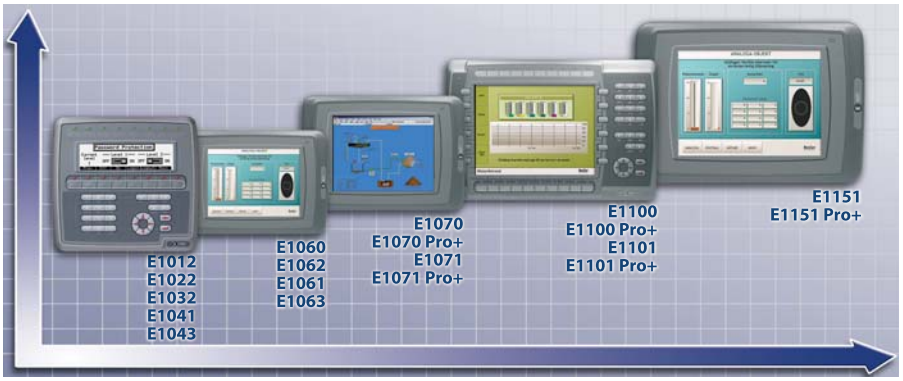
The complete product range of the GOT series

Open HMI solutions

The E1000 range of HMIs is designed and built on the latest open technology combining Microsoft's Windows CE platform with Intel Xscale processors.

This leading edge technology delivers fast and reliable operation ensuring maximum uptime for HMI users.

A wide range of open HMI solutions



The complete product range of the E series

Flexible software solutions

A range of Mitsubishi automation software called MELSOFT supports the IPCs. This provides users with a choice of software components that they can embed into their own solution or complete visualization packages such as MX4SCADA.

In addition there are software support packages for each of the HMI terminals. They offer libraries of predefined functions and images as well as an intuitive and flexible work environment.

MELSOFT is a wide range of software solutions designed to optimize your plant productivity.

Industrial PC (IPC) solutions

Mitsubishi's range of IPC1000 solutions offer customers a robust platform for developing their own solutions.They are designed to provide the flexibility of high-performance PC power but with a sturdy industrial design to protect them during operation. This means users can install an IPC1000 in their manufacturing environment with complete confidence.

High performance industrial PCs

GOT1000 – The Next Generation's

GOT HMI's can help users see what is happening anywhere in their process.

Seeing is believing

The touch-sensitive control screen, which greatly facilitates data entry and parameter editing, is one of the most popular features of the GOT operator terminals. Many users find the easy touch screen operation and flexible use enhance their HMI projects.

Mitsubishi's GOT series offers a wide range of models from small 3-colour touch screens to large TFT's and handheld units. In addition there are multiple system accessories that can add diverse capabilities such as networking, camera inputs and direct MES integration depending upon the GOT unit selected.

Powerful technology

The GOT1000 series has been designed with the needs of the user in mind. For example:

Diagnostics functions

The GOT1000 series' innovative error reporting system ensures fast trouble-shooting and minimum downtime. Predefined screens provide direct access to the PLCs I/Os and even the buffer memory of special-function modules.

Features such as alarm handling, historical trending and memory areas for storing help texts or bitmaps also contribute to rapid troubleshooting and fault correction.

Transparent Mode

GOT1000 units can also allow users to download programs to the connected Mitsubishi PLC through the existing connection established with the GOT display unit.

Flexible program storage

The GOT units can be programmed with the GT Works2 software package, which runs on any Windows® compatible PC. Programs can be stored either in the control unit's integrated non-volatile RAM, in a plug-in EPROM module or a CF card.

High resolution screens

High resolution screens, with up to 65,536 colours on selected GOT1000 units, can display complex graphics, photos, CAD drawings and even PDFs and office documents such as MS Excel and WORD. This document flexibility allows the GOT to truly become the shop floor information resource as well as a data monitoring tool.

High-speed processing

A 64-bit RISC processor is combined with a specially developed high-speed graphics processor to make the GOT1000 units fast and responsive to user inputs, changes in data and display drawing times.

Vision

Versatile

In addition to the wide ranging support for Mitsubishi PLC's, frequency inverters and servo amplifiers, GOT1000 series can also be connected to an increasing range of automation products from other manufacturers. This enables users to build a common visualization strategy for their operation independently of the control solution used.

Multilingual

Furthermore, support for Unicode 2.1 enables users to easily create multi-language displays in languages as diverse as Russian and Japanese. This is especially useful for companies who export machines. It enables them to be easily localized while still maintaining a core system for the manufacturers engineers to maintain service and support.

Brilliant colours in high resolution

GOT1000 units can be used globally with their support for Unicode characters

Information sharing

An integrated server function allows the monitoring and data collection of information by a remote personal computer. Error information can also be checked and transmitted to the PC. This feature makes data and system maintenance functions very easy as there is no longer any need to visit every factory to collect data or status information from every GOT.

GOT1000 at a glance

Display:
From Monochrome LCD to STN or TFT 65.536 colours

Resolution:
From 128 x 64 up to 1024 x 768

Function keys:
GOT operation is made exclusively, precise, and flexible on the touch-sensitive screen with free programmable grafic function keys. Mechanical keys are from yesterday, the future belongs to grafic keys.

Networks capability:
Ethernet, CC-Link, MELSECNET/10*

Interface:
RS232C, RS422, RS485, USB*

*not available for all units

E1000 – Open HMI Technology

E1000 is designed to give a window into the manufacturing process.

A modern-day control center

Mitsubishi's E1000 series of HMIs offer operator display solutions from small easy text displays to large multi-colour, high resolution, graphic displays with touch screen. These practical operator terminals can often replace an entire control console. They enable an operator to manage and if need be intervene in the application by very easily changing the process data parameters. The units in the E1000 series perfectly match the MELSEC range of controllers and are very simple to operate.

The E1000 series operator terminals provide a huge leap forward in display technology, as ergonomics and ease of use were central to the new series design. The E1000 proves again how open HMI technology can be the key to integrated automation.

Features that users value

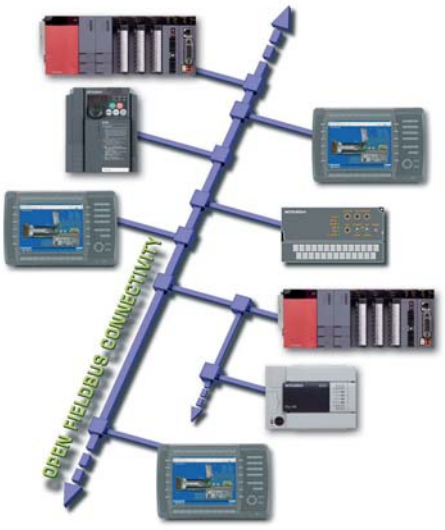
The E1000 units have a long history of pioneering HMI design. Over many years development and the accumulated experience of thousands of users has sharpened these HMIs to become the leading edge products many users are now familiar with. Features that have remained the keystone of this success include:

- **Multi-language support**

All the E1000 units support multi-language applications created within the programming software. These applications allow the operators to select the user interface language they wish to use as Unicode is supported.

- **Dual driver support**

All E series operator terminals can access two different systems simultaneously acting as a protocol converter or as an information gateway. This has enabled many users to create systems that span many third party automation products that would not normally be possible.



Highly compatible

This functionality is supported both on the standard RS232C and RS422 ports and via the extended Profibus/DP and Ethernet interfaces. For example, you can write data words from a PLC directly into the parameter settings of a frequency inverter.

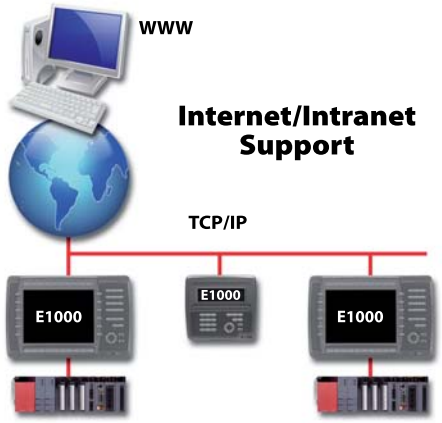
In addition, by using E1000 utilities and tools, remote "viewing" of the locally displayed screen is also possible across an intranet or internet connection making sure you know exactly what is going on at a machine level.

High performance design

By combining the latest Intel XScale RISC processor with 32 MB of Strataflash and 64 MB RAM, the E1000 not only offers high performance while running Windows CE.NET but also security and "peace of mind".

With this powerful combination of technology valuable production data and machine operational information is protected even if a power failure occurs during a file write process.

High performance in the most demanding applications



Data management

Data storage and sharing are important functions of the manufacturing process and operator terminals are quickly becoming the gateway to that data. The E1000 series makes access to data easier and more flexible than ever before. Users can choose between the use of:

- Combined Ethernet – internet connectivity for factory wide or global access to data.
- Direct connection to a modem for simple remote telemetry solution (GSM/GPRS/PSTN) where a system may be installed at an inaccessible location.
- A new external CF data card interface on the front of the E1000 also means data can be "taken" away on a removable data card for safe/permanent storage and processing.
- Local printing directly from the HMI display is also possible where a local hard copy of processed data is required.

E1000 at a glance

Display:
From Monochrome LCD to STN or TFT 65.536 colours

Resolution:
From 16 x 2 up to 80 x 60 char (1024 x 768)

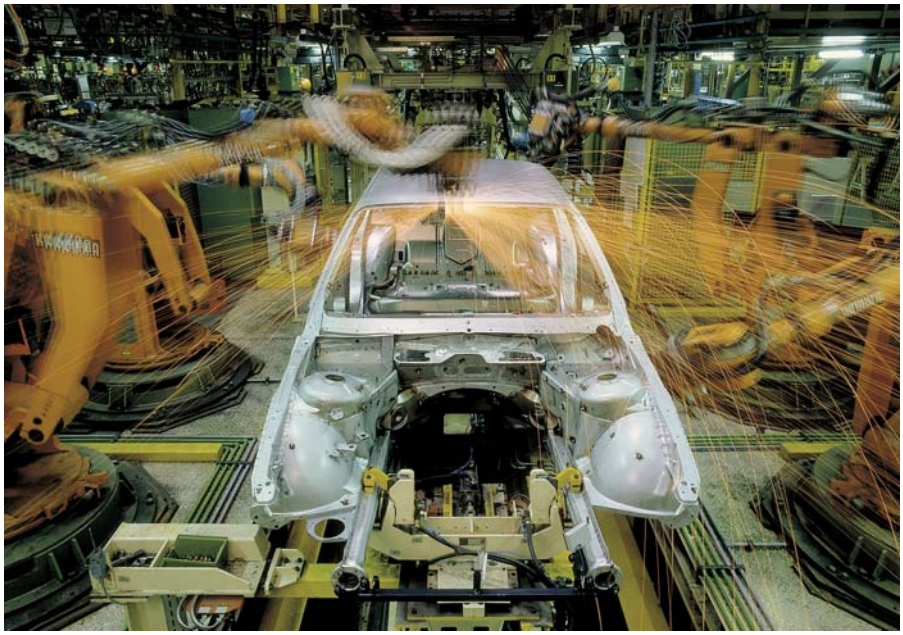
Function keys:
From 4 to 50 (physical or touch screen)

Networks capability:
Profibus/DP, Ethernet*

Interface:
RS232C, RS422, RS485, USB

*not available for all units

IPC1000 – Industrial PCs



Industrial PCs are especially contructed for heavy-duty industrial applications

The economical solution

Not all applications require full PC expansion and processing. This is exactly where the IPCs of the MicroClient series are in a class of their own. These ultra compact Panel PCs provide basic PC operation and offer a choice of 12.1" and 15" displays. The MicroClient solution provides entry level PC power and rugged design all for a budget price.

For reducing the unit size and removing one of the major moving parts that could fail, the MicroClient panels are also designed to operate without a cooling fan.

Full processing power

Mitsubishi's V-Panel Express series provides all of the traditional PC flexibility users expect. Expandable configurations including up to 2 PCI cards and a choice of 15" or 17" displays mean users can tailor their IPC to their own requirements. The V-Panel Express series does not need a cooling fan.

Rugged and industrial in design and performance with GT SoftGOT1000 and SCADA

The Mitsubishi's Industrial PC (IPC) range is ruggedly designed for heavy duty industrial applications and environments. These PCs feature high quality, fast performance, attractive design and brilliantly legible displays. They are ideal as process visualisation platforms, particularly in combination with the GT SoftGOT1000 and SCADA software packages.

When your requirements exceed the limits of a traditional HMI control unit, you need a PC-based system.

Compact yet powerful

The new IPC1000 Series terminals are available in two basic formats, the MicroClient series and the fully featured V-Panel Express series.

Rugged design

A wide operating and storage temperature range, tough vibration resistance and high IP ratings mean Mitsubishi's IPCs can be used in many locations.

IPC1000 at a glance

Display:
TFT from 12.1" to 17" touch screen

Resolution:
From 800 x 600 up to 1280 x 1024

Processor:
Intel Celeron or Celeron M

Basic memory:
512 MB (RAM)

Built in harddisk:
40 GB

Interfaces*:
1 x RS232C, 1 to 5 x USB 2.0,
1 x 10/100 MBaud Ethernet,
1 x 1000 MBaud Ethernet (only V-Panel Express)

*not available for all units

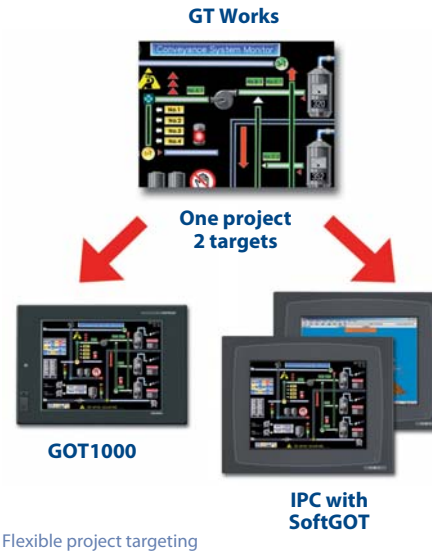
GT Works – A Complete Software Suite

IPC or HMI?

GT Works is a single software environment that can be used to develop screen designs/content for either a PC/IPC or a traditional hardware unit such as the GOT1000 series.

This flexibility from a single design tool means reduced cost of ownership as users only have to learn one software tool. In addition there is a greater re-use of existing projects.

GT Works, comprehensive yet flexible



Flexible project targeting

All in one

GT Works is a multi tool software solution which include:

- **GT Designer**

This is the core design and development software.

- **GT Simulator**

A simulation package that allows users to simulate their projects operation as if it were really installed on a GOT1000.

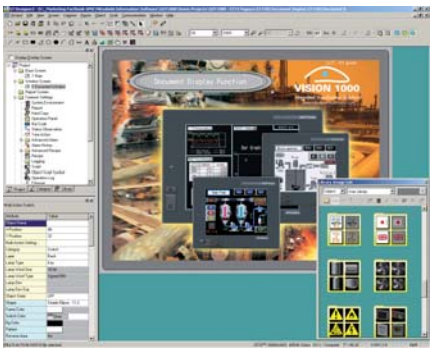
- **GT SoftGOT1000**

A PC based HMI environment that allows users to deploy their created HMI screen directly to a PC or IPC.

High function, easy to use

GT Works offers a comprehensive library of graphical elements that enable users of any skill level to quickly create the screen designs they need.

Integrated wizards, user-friendly menus and helpful dialog boxes enable users to set-up projects, complete security settings and change language settings with a minimum of fuss.



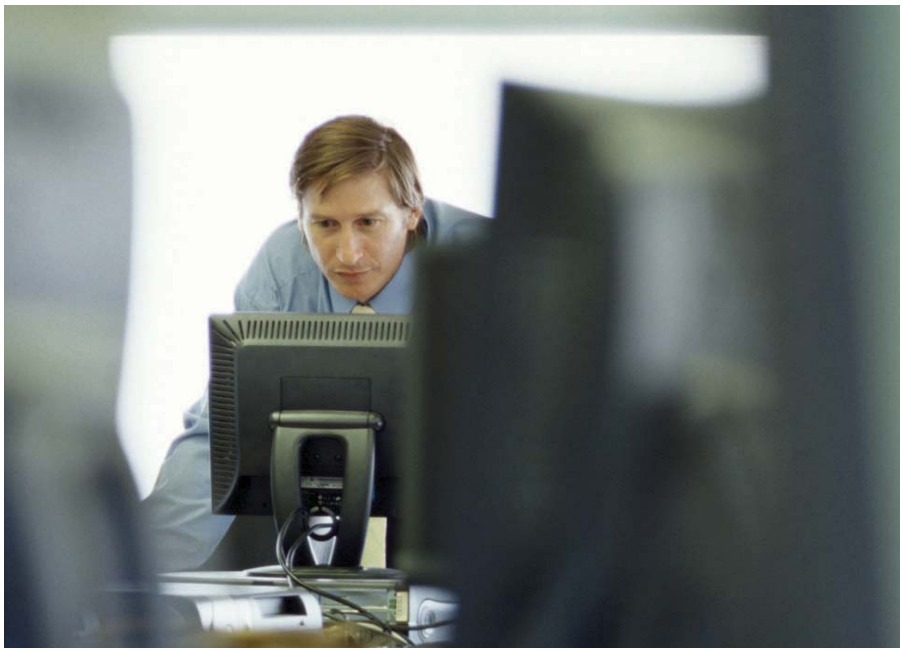
GT Designer has a comprehensive graphic library.

Advanced simulation

Debugging and commissioning can be an expensive and time consuming activity. However, with GT Works the integrated simulation software allows users to check the function and operation of their screen designs without any additional hardware. This can significantly help reduce costs and development time.

In addition if GX Developer and GX Simulator are also used then the combined PLC and HMI solution can be tested and debugged even before any electrical panels have been purchased or even wired.

E-Designer – Clear, Simple, Easy



Powerful software that enhances your productivity

This is complimented by a library of ready-to-use symbols and objects which speed up screen design and creation.

Multilingual projects

Users who export control systems with local language displays will find E-Designers multilingual project support a big benefit. Up to ten screen languages can be loaded in to a small database allowing operators to switch between any loaded languages. All text blocks from the database can be easily exported and imported with the Application Languages Manager.

Multi driver support

Communication drivers for all MELSEC PLCs and many third-party PLCs are available as standard. These can be updated online via the Internet without exiting E-Designer.

The E-Designer software helps users to quickly start creating screen designs for use on MAC E and E1000 terminal units. Its intuative design excellently supports new users but also enhances the productivity of experienced users.

Ease of use

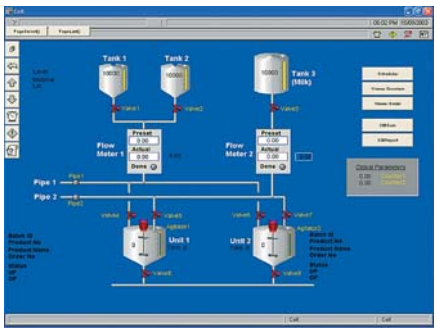
E-Designer has many features designed to improve the working process, for example the software's Block Manager gives a complete graphical overview of a project, making project management and debugguing easier and quicker.

Simultaneous connection using dual driver technology

Intuative operation aids quick project creation

MX4 – SCADA and HMI in Harmony

Increase your Return On Assets (ROA) with MX4 SCADA, delivering scalable, flexible and reliable control and monitoring systems that reduce your operating costs and improve productivity. A fully integrated package, MX4 SCADA's easy-to use configuration tools and powerful features enable you to quickly develop and deploy solutions which can handle the most complex requirements for any size enterprise.



Clear and powerul communication for all levels of application

Scalable, flexible, reliable

Tailored solutions

MX4 SCADA 's exceptional flexibility maximizes your productivity by allowing user to create optimal system architectures in the way that best suits them -giving access to both centralised and distributed processing.

Scalable solutions

Based on Microsoft technologies, MX4 SCADA has been designed with an innovative, scalable architecture. This preserves your initial investment by allowing your system to grow with your requirements, without modifying system hardware or software.

Reliable and redundant solutions

MX4 SCADA minimizes downtime by offering unrivalled reliability. It utilizes DCS style, built-in, redundancy that can tolerate system failures anywhere with no loss of functionality or performance.

Business benefits

Integrating MX4 with business systems lets users maximise productivity, improve product quality and reduce both maintenance and operating costs.

Free development package

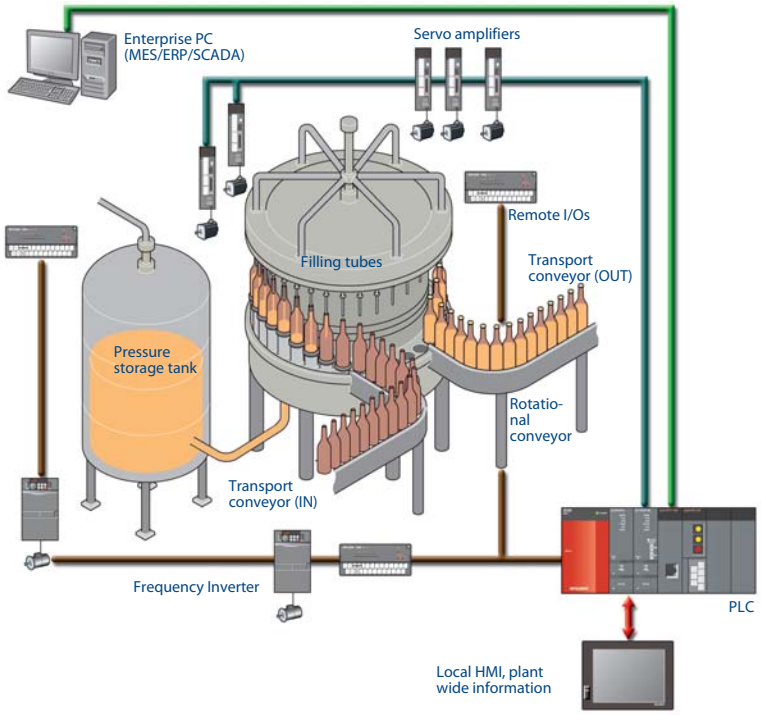
MX4 is available as a free development package, which helps to reduce the cost of usage. Key features include graphical process visualisation, historical/real time trending and advanced alarming and reporting.

The installation procedure is customisable and totally scalable - simply upgraded with a new software key. It is also fully compatible with MX4 HMI. FastLinx is included with MX4 for fast and simple interfacing to MELSEC PLCs.

Simple to configure

A full set of user expandable libraries with graphics symbols and templates are included.
There are also other time saving features such as express Wizards for PLC communications, Genies for configuration of complex animation objects and Super Genies for repetitive plant processes.

Visualisation and productivity



HMI technology can easily consolidate information at one point.

The use of HMI technology has been increasing as manufacturers increasingly demand information in realtime. The boundries between "shop floor" data and business operation/process data is fast becoming blurred and places higher demands on visualisation and data processing tools to span the wide range of "new" applications.

New challenges

Using visualisation tools to support maintenance has never been high on the agenda of machine and process engineers, but if system downtime is considered as one of the most costly problems manufacturers face, then why not? HMI screen's can be configured to easily report on all of the critical control aspects of a system aiding efficient problem diagnosis.

In fact some HMIs have the ability to report errors remotely, even contacting the maintenance team before the line operators are aware there is a problem. The potential of visualisation tools to improve process "uptime" is enormous.

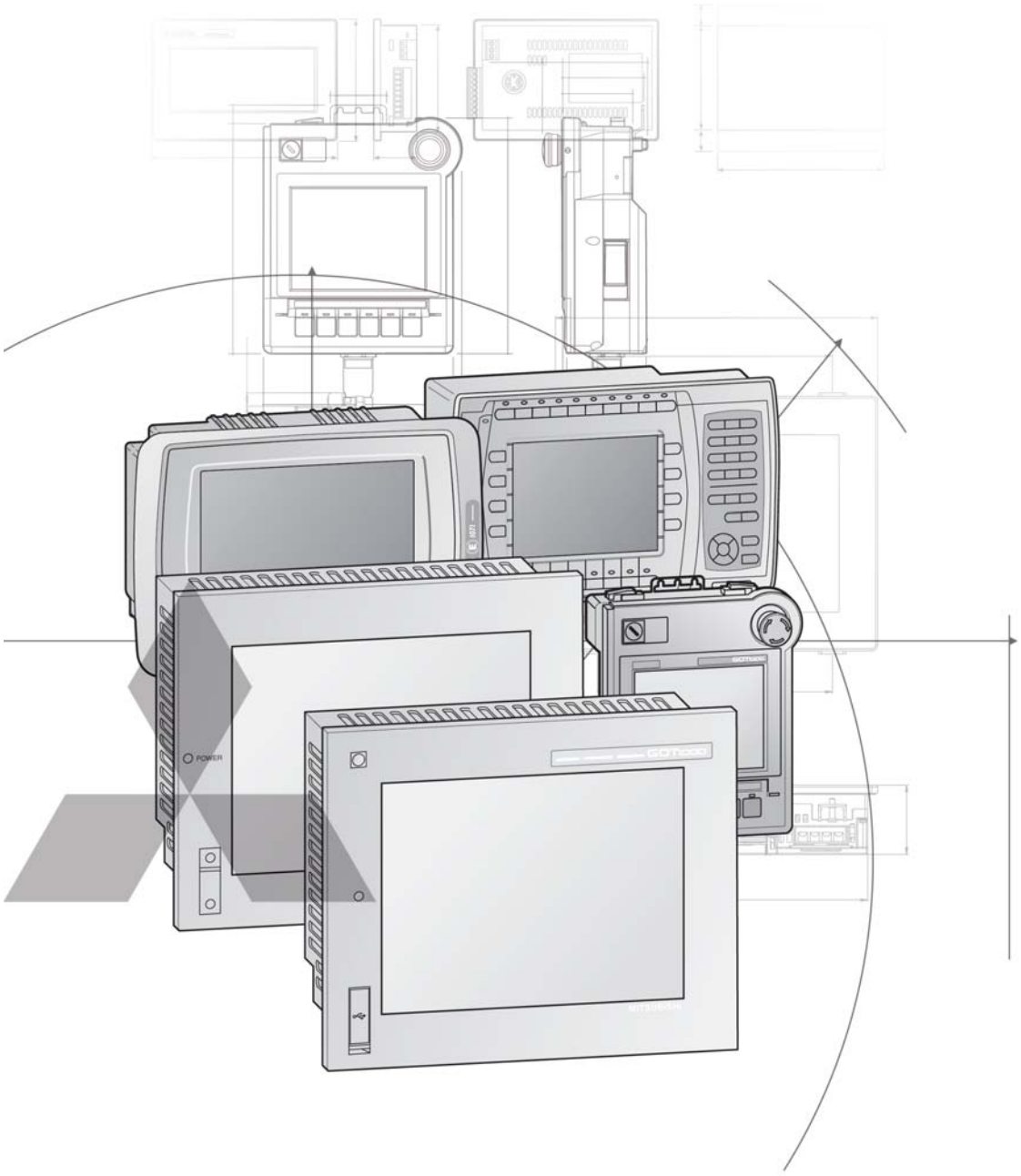
The Business Cycle

Fast data retrieval, greater transparency require simplier and more effiecient control architectures. Because of this the demand for high reliability SCADA and PC based solutions is critical especially when feeding data in to a businesses central MES and ERP systems. But even now it is possible to see a future trend for embeding direct MES functionality in to PLC stations and high function HMIs. This can provide huge gains for the manufacturer, i.e.; reducing system complexity by removing a layer of intermedary PCs; increased data security by providing quicker respose and industrialised hardware; localised control points giving increased access to vital information.

e-F@ctory

As a manufacturer and supplier of automation products Mitsubishi Electric has long recognised these key issues and has developed solutions for its own complex production needs. This has resulted in many innovations such as GOT displays that have "built in" maintetance screens as well as the ability to review and monitor PLC programs. Other advances include MES interfaces for direct connection of PLC and HMI technology to MES SQL databases.

Mitsubishi's Vision1000 visualisation solutions are a clear part of today's e-F@ctory helping manufacturers increase productivity in a scalable and reliable way.



Technical Information Section

Further Publications within the Factory Automation Range

Brochure MELSERVO and Motion Controllers

Product catalogues for servo motors and amplifiers of the MR-J2S Series and Motion Controllers with SSCNET

Brochure MELSEC SPS

Product catalogues for programmable logic controllers and accessories for the MELSEC PLC series

Brochure MELFA Roboter

Product catalogue for MELFA industrial robots and accessories

More information?

This product catalogue is designed to give an overview of the extensive range of operator terminals of the GOT1000, E1000 series and Industrial PCs and Visualization software. If you cannot find the information you require in this catalogue, there are a number of ways you can get further details on configuration and technical issues, pricing and availability.

For technical issues visit the www.mitsubishi-automation.com website.

Our website provides a simple and fast way of accessing further technical data and up to the minute details on our products and services. Manuals and catalogues are available in several different languages and can be downloaded for free.

For technical, configuration, pricing and availability issues contact our distributors and partners.

Mitsubishi partners and distributors are only too happy to help answer your technical questions or help with configuration building. For a list of Mitsubishi partners please see the back of this catalogue or alternatively take a look at the "contact us" section of our website.

About this product catalogue

This catalogue is a guide to the range of products available. For detailed configuration rules, system building, installation and configuration the associated product manuals must be read. You must satisfy yourself that any system you design with the products in this catalogue is fit for purpose, meets your requires and conforms to the product configuration rules as defined in the product manuals.

Specifications are subject to change without notice. All trademarks acknowledged.

HMI Control Units for Human-Machine Communication

The interface between human and technology

Users of today's factory automation systems want more and clearer information on the control systems of their plant and machinery. HMI control terminals and process visualisation software enable an informative dialogue between operator and machine, making them the ideal complement to the MELSEC PLC systems and other factory automation components.

HMI control units make factory system functions transparent, enabling the operator to monitor and edit process data quickly and easily.

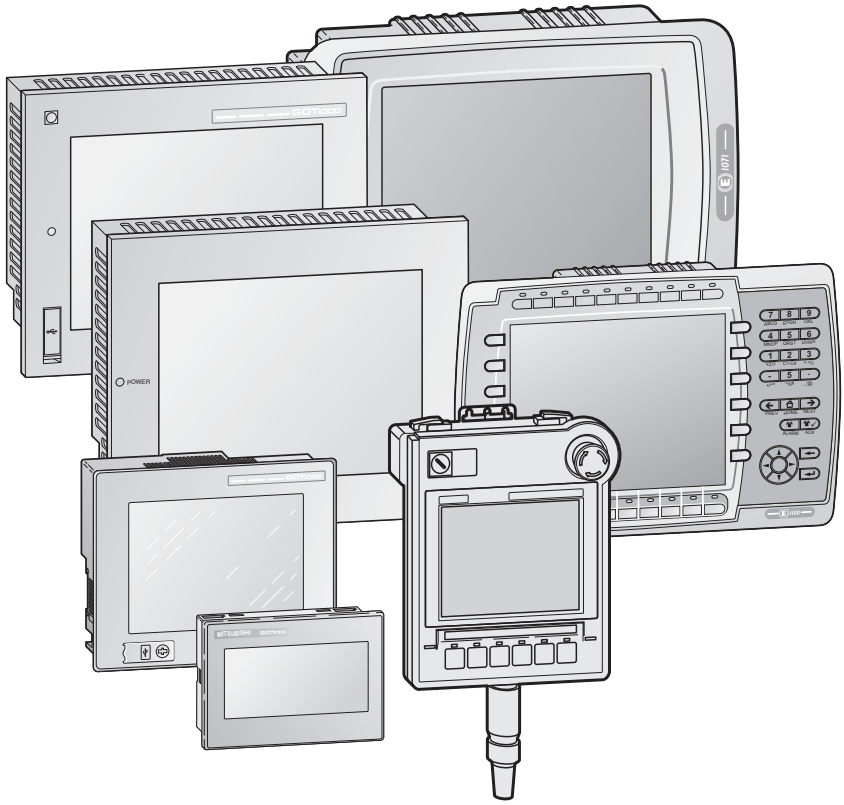
You can choose between HMI control units with text and graphical displays. Fully programmable function keys and displays make the units even more user-friendly. The units can be programmed and configured with a PC running the intuitive Windows-based programming software package.

HMI units can be installed directly on your machines and require nearly no additional modules for connection to the PLC and other factory automation components. They provide direct access to all information and process data, with text or graphical displays.

An IP65 rating (and higher) ensures that the HMIs will always perform reliably, even under the toughest conditions.

Features

- Simple installation and user-friendly operation
- Broad range of applications
- Clear text and graphics process displays
- Report generation for quality control and process data exchange
- Precise, informative messages and instructions in error situations

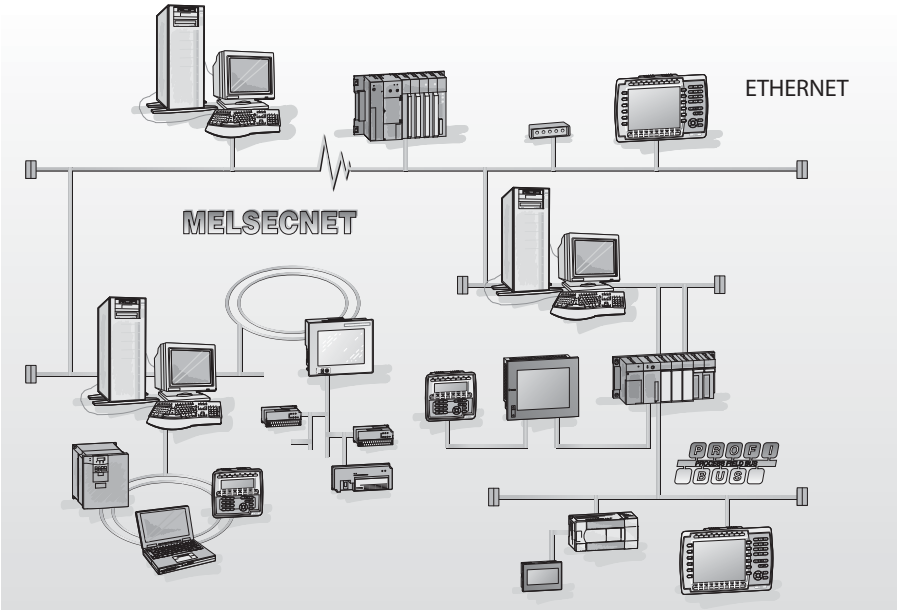


Vision 1000

Mitsubishi Electric's Vision 1000 contains different product lines for human- machine communication, e.g. operator terminals, IPCs, and visualization software, and summarizes them as a concept, with proprietary and open solutions, exactly co-ordinated with the respective application.

GOT series		GT10 (14 models)	GT11 (5 models)	GT15 (22 models)	GT16 (12 models)
Display	type	STN	STN	STN, TFT	TFT
	dimensions	3.7" / 4.5" / 4.7" / 5.7"	5.7"	5.7" – 15"	8.4" – 15"
	text (lines x characters)	User definable	User definable	User definable	User definable
	graphical resolution (pixels)	160x64 / 288x96 / 320x240	320x240	320x240 to 1024x768	680x480 to 1024x768
Power supply		5 V DC / 24 V DC	24 V DC	24 V DC / 220 V AC	24 V DC / 220 V AC
Internal memory capacity		512 KB / 1.5 MB / 3.0 MB	3 MB	5 – 9 MB (expandable up to 57 MB)	15 MB (expandable up to 57 MB)
External memory card		—	1 (Compact-Flash, 2 GB max.)	1 (Compact-Flash, 2 GB max.)	1 (Compact-Flash, 2 GB max.)
Keyboard		Touch-panel	Touch-panel	Touch-panel	Touch-panel
Function keys		Touch keys	Touch keys + 6 function keys	Touch keys	Touch keys
Interfaces	serial	2 x RS232, RS422 / RS232 (depending on model)	RS232C, RS422	RS232	RS232
	others	GT104□/GT105□: USB (back side)	USB (front)	USB (front)	USB (front), USB host for memory stick (2 GB max.)
Network possibilities		Serial	Serial	Ethernet (TCP/IP), CC-Link (IE), RS232, RS422, RS485, A-Bus, Q-Bus, MELSECNET/10/H, Modbus TCP	
IP Rating (front panel)		IP67	IP67 / IP65 (portable models)	IP67	IP67

PLC, HMI and different Networks in Cooperation



Supported Networks

- **Modem Links**
  Enables connections over larger distances.
- **Ethernet**
  For connection of multiple control units to the PLC system in installations extending over larger areas.
- **MELSECNET/10/H and CC-Link IE**
  Enables high-speed access (up to 1 Gbaud) to the PLC from multiple locations via the GT15.
- **Multi Driver support**
  The control units can be used e.g. as a gateway between 2 systems (E1000) and a gateway between 4 systems (GT15/GT16).
- **PROFIBUS/DP**
  E series control units can be connected as slaves in systems using the open field bus protocol.
- **Multidrop-Net**
  Enables programming and data logging from a central location using a PC; the individual stations operate autonomously and independently of one another.
- **No-Protocoll-Link**
  Enables connection of barcode readers and other serial devices to the PLC via the E series control units.
- **A-BUS/Q-BUS**
  Direct connection of the GT15 /GT16 to the PLC's expansion port for fast communications.

HMI and networks

Network support, communication between devices and data exchange are all standard features in today's factory automation systems. The HMI control units and process visualisation software provide full support for the commonest standard networks.

The control units are normally connected to the RS422 or RS232 port.

If you require a standard open network you can choose between PROFIBUS/DP, CC-Link and Ethernet TCP/IP.

Data communications over longer distances via modem are also possible – this means you can monitor and edit your configuration, programs and data from the comfort of your desk.

Interfaces

- RS422
- RS232C
- RS485/RS422*
- MELSEC A-BUS*
- MELSEC Q-BUS*
- PROFIBUS/DP*
- Modbus TCP*
- Ethernet TCP/IP (coaxial or twisted pair)*
- CC-Link*
- USB*

*Standard or optional dependent on the operator terminal type

E series		E1012	E1022	E1032	E1041 E1043	E1060 E1062	E1061 E1063	E1070 E1071	E1100 E1101	E1151
Display	type	LCD, mono-chrome	LCD, mono-chrome	LCD, mono-chrome	TFT	TFT	TFT	TFT	TFT	TFT
	dimensions	89.6x17.9 mm	90.2x24.0 mm	135x36 mm	3.5"	5.7"	5.7"	6.5"	10.4"	15"
	text (lines x characters)	User definable								
	graphical resolution (pixels)	160 x32	240x64	240x64	320x240	320x240	320x240	640x480	800x600	1024x768
Power supply		24 V DC (20 – 30 V)								
Internal memory capacity		512 kB	512 kB	12 MB	12 MB	12 MB	12 MB	12 MB (expandable)	12 MB (expandable)	12 MB (expandable)
External memory card		—	—	—	—	—	—	1 (CF)	1 (CF)	1 (CF)
Keyboard		Membrane	Membrane	Membrane	Touch-panel	Membrane	Touch-panel	Membrane/ Touch-panel	Membrane/ Touch-panel	Touch-panel
Function keys		Yes	Yes	Yes	Touch keys	Yes	Touch keys	Yes/Touch keys	Yes/Touch keys	Touch keys
Interfaces	serial	RS232, RS422 / RS232								
	others	—	—	USB	USB	USB	USB	USB	USB	USB
Network possibilities		Ethernet (TCP/IP) (optional)		Ethernet (TCP/IP), Modbus TCP, MPI (all integrated); Profibus/DP (optional)						
IP Rating (front panel)		IP66								

GOT1000

Complex processes displayed simply

The graphic operator terminals of the GOT1000 series represent the top products by MITSUBISHI ELECTRIC.They provide a high-resolution fully graphical display and a touch-sensitive user surface. The depth of only 50 mm makes it to one of the slimmest operator panel on the market. State changes and user inputs can be entered easily.

The 64-bit RISC processor used in the GOT1000 series is combined with a specially developed high-speed graphics processor. Together, they deliver impressive response and display drawing times.

With the GOT1000 the user accesses all MELSEC PLCs special function modules in order to test individual parts of the plant. The PLC programs can be monitored graphically (ladder diagram).

The control units are programmed with the GT Works software package running on a PC under MS Windows®.
Programs can be stored either in the control unit's integrated, battery-powered RAM, in plug-in EPROM modules or on Compact flash memory cards.

A vast number of indicating instruments like indicators, pressure gauges, analog and digital measuring devices, etc. can be replaced by corresponding graphical objects.

Lots of ready-to-use practical objects are included in the MS Windows® compatible programming software and reduce program development time.

All units feature an integrated real-time clock, password access control and alarm and recipe handling.

The GOT1000 features Unicode 2.1 support. This enables users to easily create multi-language displays.

Operator Terminals GT10

Intelligent Micro-GOTs

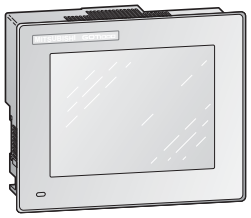
The GT1020/1030 series terminals have a bright 3.7" resp. 4.5" STN b/w liquid crystal display with touch screen and 3-color backlight (LBD**W** and LBL**W** models features white backlight) for use in a variety of display applications.

The new GT1040 and GT1050 provide a 2-colour (16 scales of blue/white) STN display, GT1045 and GT1055 a 256 colour STN display with sizes of 4.7" and 5.7". All displays feature a graphical resolution of 320x240 pixels and are designed as touch screens.

These micro units are micro only in size. They are full of high function capabilities which deliver outstanding benefits. They are available with different interfaces, i.e. LBL and LBD models provide an RS422 interface and LBL**2**, LBD**2** models provide an RS232 interface.

Many MITSUBISHI ELECTRIC automation components or third party devices can be connected and monitored, also PCs.

Both horizontal and vertical mounting is available to meet the needs of different applications.



Operator Terminals GT11

Multi-talent for Stand-alone Applications

The graphical control units of the GT11 series combines particularly easy operation with maximum functionality and modest space requirements. Portable handy types are available too.

The 5.7" STN touchscreen offers brilliant screens with up to 256 colours.

The graphic display configuration on the touch screen is variable, giving the operator quick and easily-comprehensible access to information on machine functions.

With Compact Flash cards it is easy to transfer and save project data and operation system updates. The fast USB port on the front of the units makes it possible to transfer project data without opening the cabinet or control console.

Mitsubishi PLC's, servo amplifiers, frequency inverters and several automation components can be programmed and parametrized directly via the GOT.

All GT11 units have a built-in recipe functionality.

Operator Terminals GT15/GT16

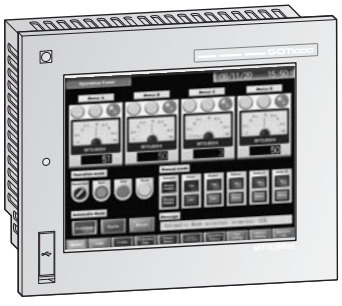
Complex processes displayed simply

Every GT15/GT16 operator panel offers a TFT colour touch screen with outstanding graphic properties. Screen sizes from 5.7" to 15" are available. The graphic display configuration on the touch screen is variable, giving the operating staff all possibilities of modern applications.

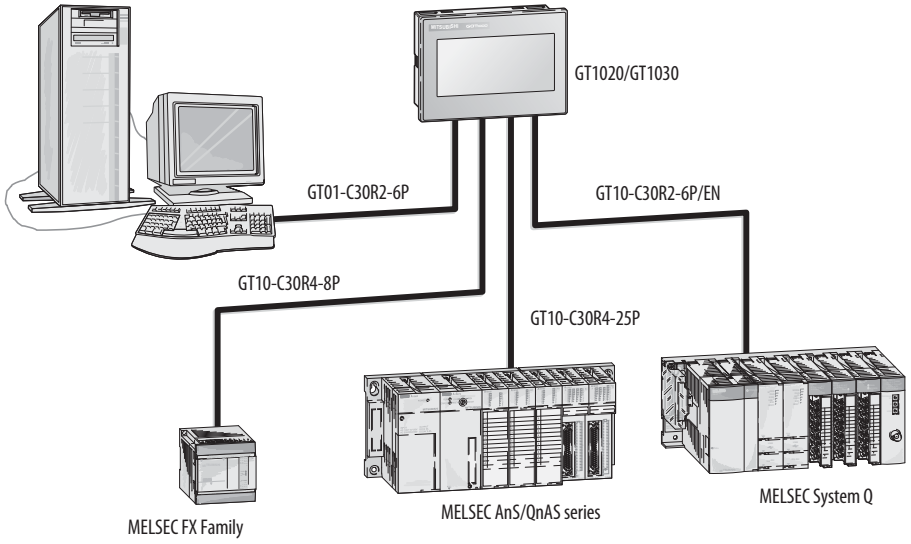
In terms of networks, the GT15/GT16 are especially powerful with options for MELSECNET/10/H, CC-Link (IE) and Ethernet as well as the four-driver-concept (4 drivers at the same time and the possibility of data exchange via gateway between the drivers as well as third party manufacturers).

All GT15/GT16 units provide all mayor interfaces, especially named is the fast USB port on the front side of the panel. It can be used for all kinds of direct data exchange or project up and downloads.

The multimedia models GT16 feature ports for microphones and cameras and are able to play helpful videos in trouble situations. In perfect interaction with the powerful iQ platform this function helps to decrease downtimes.

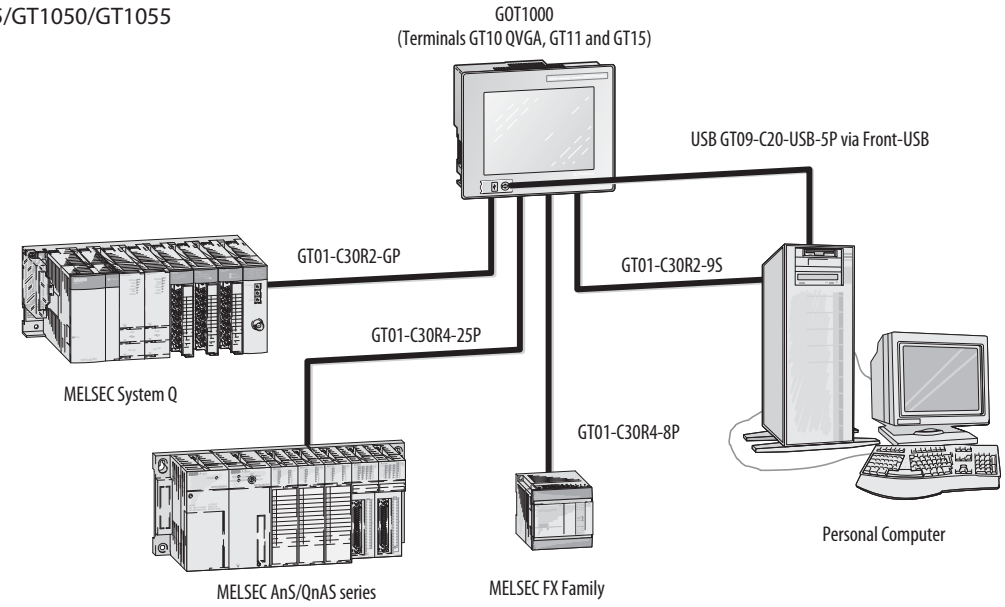


Provided Connections for GT1020/GT1030



Provided Connections for GT10*/ GT11 / GT15

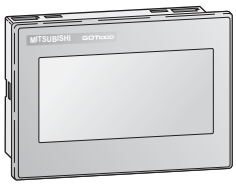
* GT1040/GT1045/GT1050/GT1055



General Operating Conditions

Operating Conditions		GT10	GT11	GT15	GT16
Ambient temperature in operation	display	0 – +50 °C			0 – +50 °C
	main body unit	0 – +55 °C (0 – +50 °C for vertical installation)		0 – +55 °C	0 – +55 °C
Storage temperature		-20 – +60 °C			-20 – +60 °C
Ambient relative humidity		10 – 90 % (non-condensing)			10 – 90 % (non-condensing)
Noise durability		1000 Vpp tested by noise generator; 1 µs at 30 – 100 Hz			1000 Vpp tested by noise generator; 1 µs at 30 – 100 Hz
Dielectric withstand voltage		1500 V AC, > 1 min / 500 V DC, > 1 min			1500 V AC, > 1 min / 500 V DC, > 1 min
Shock resistance		15 G (3 times each in 3 directions)			15 G (3 times each in 3 directions)
Vibration resistance		1 G: resistant to vibrations from 9 – 150 Hz for 80 min. along all 3 axes			1 G: resistant to vibrations from 9–150 Hz for 80 min. along all 3 axes
Altitude		Max. 2000 m above NN			Max. 2000 m above NN
Applicable installation position		Cabinet or command panel			Cabinet or command panel
Over-voltage category		Max. II			Max. II
Pollution degree		Max. 2			Max. 2
EMC		89 / 336 / EEC und 93 / 68 / EEC			89 / 336 / EEC und 93 / 68 / EEC
Environment		Avoid environments containing aggressive gases			Avoid environments containing aggressive gases
Cooling		Self-cooling			Self-cooling
Certifications		CE			CE

GT1020
GT1030

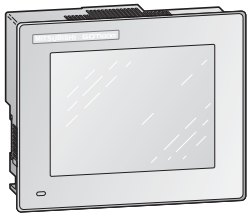


The micro GOTs **GT1020** and **GT1030** offer a bright monochrome STN 3.7" or 4.5" display with touchscreen functionality and tri-colour background illumination (LBD**W** and LBL**W** models, also with white background available) for a broad variety of applications.

Small in dimensions, the versatile micro GOTs offer a number of outstanding powerful features. Different fonts and languages can be used, and when an error occurs the background can be light-up in red as an eye catcher.

They are available with an RS422 (LBL and LBD models) or RS232 (LBL**2** and LBD**2** models) programming interface.

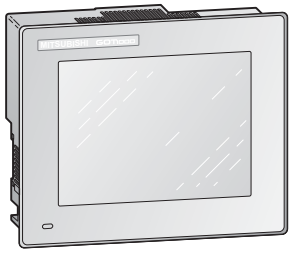
GT1040
GT1045



The new models **GT1040** and **GT1050** provide a 2-colour (16 scales of blue/white) STN display, **GT1045** and **GT1055** a 256 colour STN display. The monitor sizes of GT1040/GT1045 amount to 4.7" and of GT1050/GT1055 amount to 5.7". All displays feature a graphical resolution of 320x240 pixels and are designed as touch screens.

The internal memory, used for projects and system data, is 3 MB. This is twice as big as the memory of a GT1030. With an option module it is possible to save GOT project data. Suitable connection cables for the back side interfaces (e.g. USB, RS422, and RS232) are available, too.

GT1050
GT1055



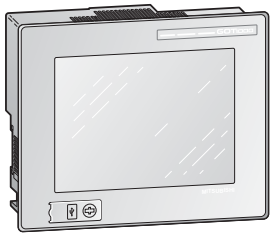
Apart from many automation components of MITSUBISHI ELECTRIC also devices of third party manufacturers and PCs can be connected. The integrated high-speed USB interface (not available for GT1020/GT1030) allows the programming of Mitsubishi PLCs, frequency inverters and servo amplifiers by using transparent mode.

All GOT1000 can be programmed easily via PC with the software package GT Designer 2.

All GOT1000 panels can be mounted and used horizontal or vertical, which increases the flexibility in planning and application.

Specifications		GT1020-LBL/-LBD/-LBD2/LBLW/-LBDW/-LBDW2 GT1030-LBD/-LBD2/-LBDW/-LBDW2	GT1040-QBBD GT1050-QBBD	GT1045-QSBD GT1055-QSBD
Display unit	type	STN, monochrome	STN, blue/white, 16 scales	STN, 256 colours
	dimensions (mm)	86.4x34.5 (3.7") / 109.4x36 (4.5")	96x72 (4.7") / 115x86 (5.7")	96x72 (4.7") / 115x86 (5.7")
	text (lines x characters)	User definable	User definable	User definable
	character height (mm)	User definable, Windows fonts	User definable, Windows fonts	User definable, Windows fonts
	graphical resolution (pixels)	160x64 / 288x96	320x240	320x240
Power supply		GT1020: 5 V DC / 24 V DC GT1030: 24 V DC	24 V DC	24 V DC
Internal memory capacity		512 kB / 1.5 MB	3.0 MB	3.0 MB
Memory card slot		—	—	—
Keyboard type		Touch-panel	Touch-panel	Touch-panel
Function keys	internal	Touch keys	Touch keys	Touch keys
	external	—	—	—
LED indicators		—	—	—
Interfaces	serial	RS232, RS422 / 2 x RS232	RS232, RS422	RS232, RS422
	parallel	—	—	—
	others	—	USB	USB
Interface slot for optional cards		—	1, for saving project data	1, for saving project data
Real-time clock		GT1020: — / GT1030: integrated	Integrated	Integrated
Network communication possibilities	type	Serial (max. 2 GOTs per FX or Q PLC), Multidrop master (max. 16 GOTs via master unit per FX or Q PLC, Modbus RTU)		
	max. no. of nodes	2	2	2
IP Rating (front panel)		IP67	IP67	IP67
Dimensions WxHxD (mm)		113x74 / 145x76	139x112 / 164x135	139x112 / 164x135
Weight (kg)		0.2 / 0.3	0.45 / 0.7	0.45 / 0.7
Order information	Art. no.	200738 / 200491 / 200492 / 208670 / 208668 / 208669 206969 / 206970 / 206971 / 206972	221929 218492	221930 218491
Accessories		Programming software (refer to page 39), cables and interface adapters (refer to page 18)		

GT1150
GT1155

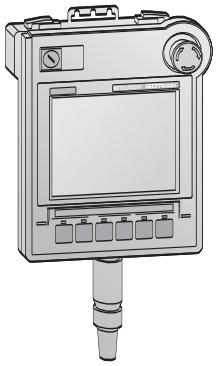


The GT11 series graphic operating terminals **GT1150-QLBD** and **GT1150HS-QLBD** (display with 16 grey scales), **GT1155-QSBD** and **GT1155HS-QSBD** (256 colours) are the standard models of the versatile GOT1000 series. They offer a wide range of basic functions for stand-alone use.

Beside their outstanding speed and performance they features a modern design and a first on the market front USB port for project download and PLC maintenance.

The panels can be mounted and used horizontally or vertically.

GT1150HS
GT1155HS

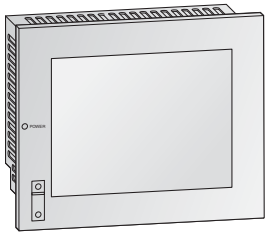


The **GT1150HS-QLBD** and **GT1155HS-QSBD** are handsome portable terminals that boast top level quality for medium sized terminals. They share the same functions as all GT11 series terminals.

Mitsubishi Electric Controllers, inverters and servo amplifiers can be easily programmed via the transparent USB functionality.

All GT11 terminals feature recipes, alarms, multi-language and Unicode support. Furthermore they offer various graphical object libraries.

GT1550
GT1555



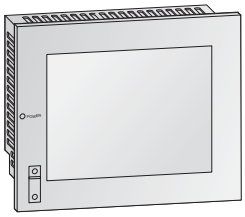
The **GT1550** and **GT1555** models provide an exceptionally clear 5.7" display comprising 16 grey scale steps over 4,096 colours up to 65,536 colours and full VGA resolution quality (640x480 pixels).

Windows fonts are utilized for clear text presentation as well as CF card interface for project operation systems and data storage are available.

These models open the door to visualization of complex processes with modern functions and full network support.

Specifications		GT1150-QLBD / GT1155-QSBD / GT1155-QTBD	GT1150HS-QLBD / GT1155HS-QSBD	GT1550-QLBD / GT1555-QSBD / GT1555-QTBD / GT1555-VTBD
Display unit	type	QL: STN, 16 grey scales QS: STN, 256 colours QT: TFT, 256 colours	QL: STN, 16 grey scales QS: STN, 256 colours	QL: STN monochrome QS: STN 4096 colours QT, VT: TFT, 65536
	dimensions (mm)	115x86 (5.7")	115x86 (5.7")	115x86 (5.7")
	text (lines x characters)	User definable	User definable	User definable
	character height (mm)	User definable, Windows fonts	User definable, Windows fonts	User definable, Windows fonts
	graphical resolution (pixels)	320x240	320x240	320x240 / VTBD: 640x480
Power supply		24 V DC	24 V DC	
Internal memory capacity		3 MB	3 MB	9 MB
Memory card slot		1 (CF)	1 (CF)	1 (CF)
Keyboard type		Touch-panel	Touch-panel	Touch-panel
Function keys	internal	Touch keys	Touch keys + 6 function keys	Touch keys (300 per screen)
	external	—	—	—
LED indicators		1 (Power ON)	1 (Power ON)	1 (Power ON)
Interfaces	serial	RS232C, RS422 (2ch)	RS232C, RS422 (1ch)	RS232
	parallel	—	—	—
	others	USB (front side)	USB (top side)	USB (front side)
Interface slot for optional cards		—	—	2
Real-time clock		Integrated	Integrated	Integrated
Network communication possibilities	type	Serial (max. 2 GOTs per FX or Q PLC), Multidrop master (max. 16 GOTs via master unit per FX or Q PLC, Modbus RTU)	—	Ethernet, Melsecnet/10/H, CC-Link IE, RS422/RS485, RS232, A-BUS, Q-BUS
	max. no. of nodes	2	—	2
IP Rating (front panel)		IP67F	IP67F	IP67F
Dimensions WxHxD (mm)		164x135x56	176x220x93	167x135x60
Weight (kg)		0.7	1.0	1.1
Order information	Art. no.	162709 / 162710 / 215077	170180 / 170181	203472 / 203471 / 203470 / 209823
Accessories		Programming software (refer to page 39), cables and interface adapters (refer to page 18)		

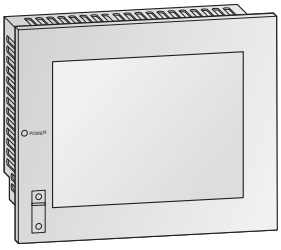
GT1562
GT1565



The proprietary operating system as well as the completely new developed hardware result in an outstanding performance and quality of the GT15 operator terminals. The user can choose between several fast project up- and download options; high-speed serial connection with 115 kBaud, USB or project transfer via CF-card is available.

In addition, the GT15 offer Ethernet project transfer via the optional Ethernet interface GT15-J71E71-100.

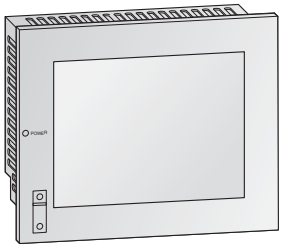
GT1572



MELSEC PLCs can easily be programmed using the front USB port with integrated Transparent Mode, so updates on PLCs, servo amplifiers, inverters and GOT terminals can be accomplished without opening the cabinet.

The file system of the CF card is PC compatible. Projects and operating system components can be downloaded to the CF card. The GT15 can load the files from the CF card. This is a crucial advantage for manufacturers of serial machines.

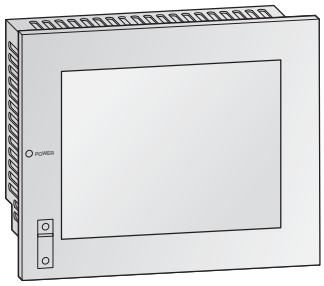
GT1575
GT1575V



In terms of networks, the GT15 are especially powerful with options for MELSECNET/10/H, CC-Link (IE) and Ethernet as well as the four-driver-concept (4 drivers at the same time and the possibility of data exchange via gateway between the drivers as well as third party manufacturers).

By using an MES option card the GT15 are able to communicate direct with Windows databases without needing a Gateway-PC.

GT1585 / GT1595
GT1585V



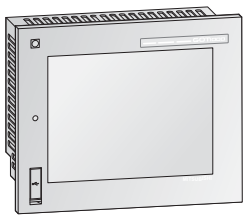
The Video models **GT1585V-STBD** and **GT1575V-STBD** additionally support video/RGB input to monitor images from PC's, cameras and vision sensors directly on the GOT.

All GT15 operator terminals listed on this page are available as AC type (-A models*) or as DC type (-D models).

*Not for the video models

Specifications		GT1562-VNBA / GT1565-VTBA GT1562-VNBD / GT1565-VTBD	GT1572-VNBA / GT1575-VNBA GT1572-VNBD / GT1575-VNBD	GT1575-VTBA / GT1575-STBA GT1575-VTBD / GT1575-STBD, GT1575V-STBD	GT1585-STBA / GT1595-XTBA GT1585-STBD / GT1595-XTBD, GT1585V-STBD
Display unit	type	TFT, 16 colours / 65536 colours	TFT, 16 colours / 256 colours	TFT, 65536 colours (expandable)	TFT, 256 colours (expandable)
	dimensions (mm)	171x128 (8.4")	211x158 (10.4")	211x158 (10.4")	246x185 (12.1") / 304x228 (15")
	text (lines x characters)	User definable	User definable	User definable	User definable
	character height (mm)	User definable, Windows fonts	User definable, Windows fonts	User definable, Windows fonts	User definable, Windows fonts
	graphical resolution (pixels)	640x480	640x480	640x480 / 800x600	800x600 / 1024x768
Power supply	A types	100 – 240 V AC	100 – 240 V AC	100 – 240 V AC	100 – 240 V AC
	D types	24 V DC	24 V DC	24 V DC	24 V DC
Internal memory capacity		VN types: 5 MB (expandable up to 53 MB) VT types: 9 MB (expandable up to 57 MB)	5 MB (expandable up to 53 MB)	9 MB (expandable up to 57 MB)	9 MB (expandable up to 57 MB)
Memory card slot		1 (compact flash 256 MB max.)	1 (compact flash 256 MB max.)	1 (compact flash 256 MB max.)	1 (compact flash 256 MB max.)
Keyboard type		Touch-panel	Touch-panel	Touch-panel	Touch-panel
Function keys	internal	Touch keys	Touch keys	Touch keys	Touch keys
	external	—	—	—	—
LED indicators		1	1	1	1
Interfaces	serial	RS232C	RS232C	RS232C	RS232C
	parallel	—	—	—	—
	others	USB (on panel front)	USB (on panel front)	USB (on panel front)	USB (on panel front)
Interface slot for optional cards		1 / 2	1	2	2
Real-time clock		Integrated	Integrated	Integrated	Integrated
Network communication possibilities		Ethernet, Melsecnet/10/H, CC-Link IE, RS422/RS485, RS232, A-BUS, Q-BUS	Ethernet, Melsecnet/10/H, CC-Link IE, RS422/RS485, RS232, A-BUS, Q-BUS	Ethernet, Melsecnet/10/H, CC-Link IE, RS422/RS485, RS232, A-BUS, Q-BUS	Ethernet, Melsecnet/10/H, CC-Link IE, RS422/RS485, RS232, A-BUS, Q-BUS
IP Rating (front panel)		IP67	IP67	IP67	IP67
Dimensions WxHxD (mm)		241x150 x56	303x214x56	303x214x56	316x242x56 / 397x296x61
Weight (kg)		1.9	2.3	2.3 / 2.4	2.8 / 4.9
Order information	Art. no.	166240 / 162705 169480 / 169481	166241 / 166242 169482 / 169483	162706 / 162707 / 169484 / 169485, video model 203496	162708 / 169464 / 169486 / 203469, video model 203495
Accessories		Programming software (refer to page 39), cables and interface adapters (refer to page 18)			

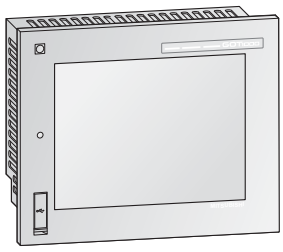
GT1665M



The new all-in-one models of the GT16 series are packed with all the solutions to meet the needs of customers. This leads GT16 terminals to become full components of system control management.

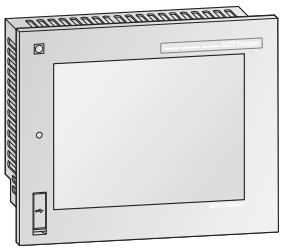
Many of the well-known useful functions are already integrated, e.g. a variety of network connections such as Ethernet and RS422/RS485 beside the generously measured project and data memory of 15 MB (with CF card expandable up to 57 MB max.).

GT1675M



Using separate expansions units it is very easy to upgrade the GT16 with special functions or additional interfaces. The high-speed USB ports on the front panel allow the user to save and restore project data and PLC programs via standard USB memory sticks. This is very helpful if the PLC CPU needs to be exchanged. The PLC program can be backuped and restored plus saving of historical information (e.g. trends, alarms) using the USB port of the GT16.

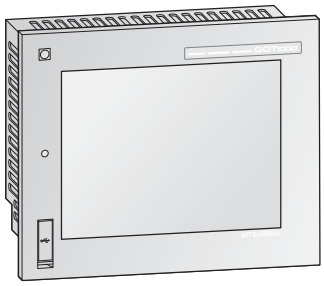
GT1685M



The high-resolution TFT monitor shows pictures, windows, diagrams and touchkeys in highest quality and up to 65536 colours. All screens can be created individually with the GT Designer 2 software, installed on a standard PC. Every item can be moved freely on the whole monitor. This makes using easier even for complex applications.

Up to four CCD cameras can be connected, and with an installed multimedia option card it is possible to play prerecorded troubleshooting videos or to record and analyze event-driven videos.

GT1695M



The build-in Self-diagnosis function recognizes problems and plays an instruction video or shows helpful hints. In perfect interaction with the powerful iQ platform this function helps to decrease downtimes.

Using an MES option card GT16 operator terminals can communicate directly with Windows databases without the need of a gateway PC.

Specifications		GT1665M-STBA, GT1665M-STBD, GT1665M-VTBA, GT1665M-VTBD	GT1675M-STBA, GT1675M-STBD, GT1675M-VTBA, GT1675M-VTBD	GT1685M-STBA, GT1685M-STBD	GT1695M-XTBA, GT1695M-XTBD
Display unit	type	8.4", TFT, 65536 colours	10.4", TFT, 65536 colours	12.1", TFT, 65536 colours	15", TFT, 65536 colours
	dimensions (mm)	171x128	211x158	249x184.5	304.1x228.1
	text (lines x characters)	User definable	User definable	User definable	User definable
	character height (mm)	User definable, Windows fonts	User definable, Windows fonts	User definable, Windows fonts	User definable, Windows fonts
	graphical resolution (pixels)	STB□: 800x600 VTB□: 640x480	STB□: 800x600 VTB□: 640x480	800x600 (SVGA)	1024x768 (XGA)
Power supply	A types	100 – 240 V AC	100 – 240 V AC	100 – 240 V AC	100 – 240 V AC
	D types	24 V DC	24 V DC	24 V DC	24 V DC
Memory capacity		15 MB	15 MB	15 MB	15 MB (expandable up to 57 MB)
Internal memory capacity		1 (compact flash)	1 (compact flash)	1 (compact flash)	1 (compact flash)
Keyboard type		Touch-panel	Touch-panel	Touch-panel	Touch-panel
Function keys	internal	Touch keys	Touch keys	Touch keys	Touch keys
	external	—	—	—	—
LED indicators		1 (POWER)	1 (POWER)	1 (POWER)	1 (POWER)
Interfaces		Ethernet (TCP/IP), RS232, RS422/485, USB (front), CF slot, Human sensor, optional: function cards			
Interface slot for optional cards		1 CF-Slot	1 CF-Slot	1 CF-Slot	1 CF-Slot
Multimedia capability		Integrated	Integrated	Integrated	Optional
Real-time clock		Integrated	Integrated	Integrated	Integrated
Network communication possibilities		Ethernet (TCP/IP), CC-Link (IE), Modbus, RS232, RS422/485, A-Bus, Q-Bus, MELSECNET/10/H			
IP Rating (front panel)		IP67	IP67	IP67	IP67
Dimensions WxHxD (mm)		241x190x52	303x214x49	316x242x52	397x296x61
Weight (kg)		1.7	2.1	2.7	5.0
Order information	Art. no.	221949 / 221950 221951 / 221952	221945 / 221946 221947 / 221948	221360 221361	221358 221359
Accessories		Programming software (refer to page 39), cables and interface adapters (refer to page 18)			

Operator Terminals E1000

The E Series - State-of-the-Art Operation and Process Design!

The E series operator terminals provide a unique concept of flexible display blocks. The dialog screen is displayed quickly and can be adopted to suit the users needs.

These operator terminals in many cases are capable of replacing a complete control console.

They permit simple alteration of process data and thus influence the particular application.

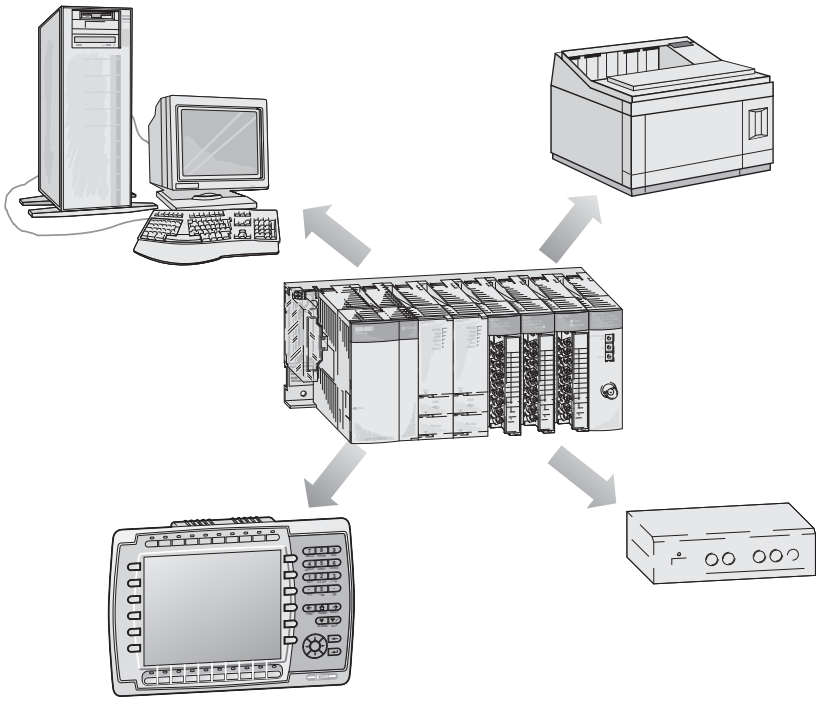
The units in the E series are perfectly matched to the range of MELSEC controllers and yet easy to operate.

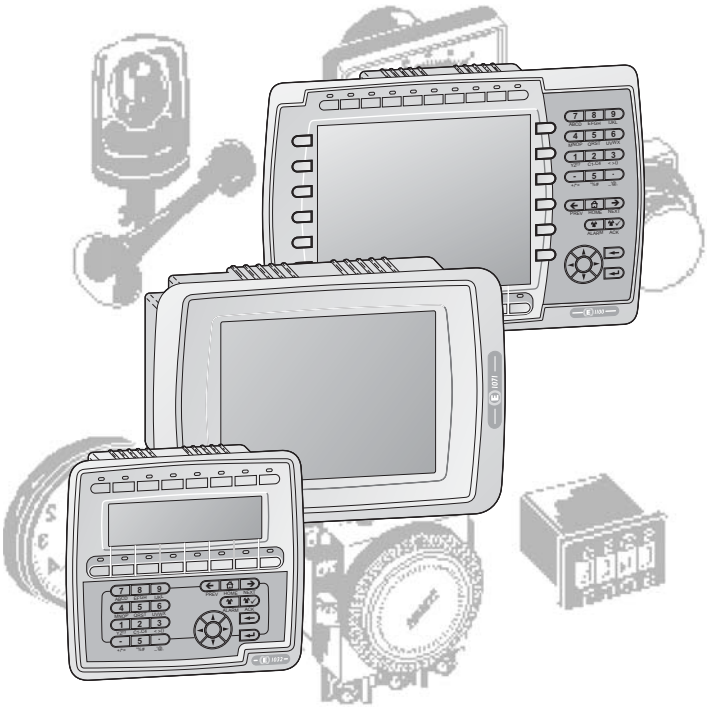
The features include user-definable text, control parameter and data editing, alarm handling, recipes and menu operation.

Programming is performed with an MS-Windows® compatible PC running the E-Designer software package.

"Dialog blocks" consisting of text and/or graphics form the basis of all E applications. Via the object-orientated programming system, each dialog block displays all signals and values allocated to the object in digital and analog form.

The individual dialog blocks that make up a E application form a hierarchical tree structure with the needed function assigned to each dialog block. Thus, they are adopted to the machine and process functions. The result is a clear operator guidance with a clear information flow and clear text messages in case of an error.





Text and graphic blocks return static or dynamic information to the operator.

Text blocks display numeric values and text. The display supports scrolling, so the size of text blocks is not limited by the number of lines on the screen.

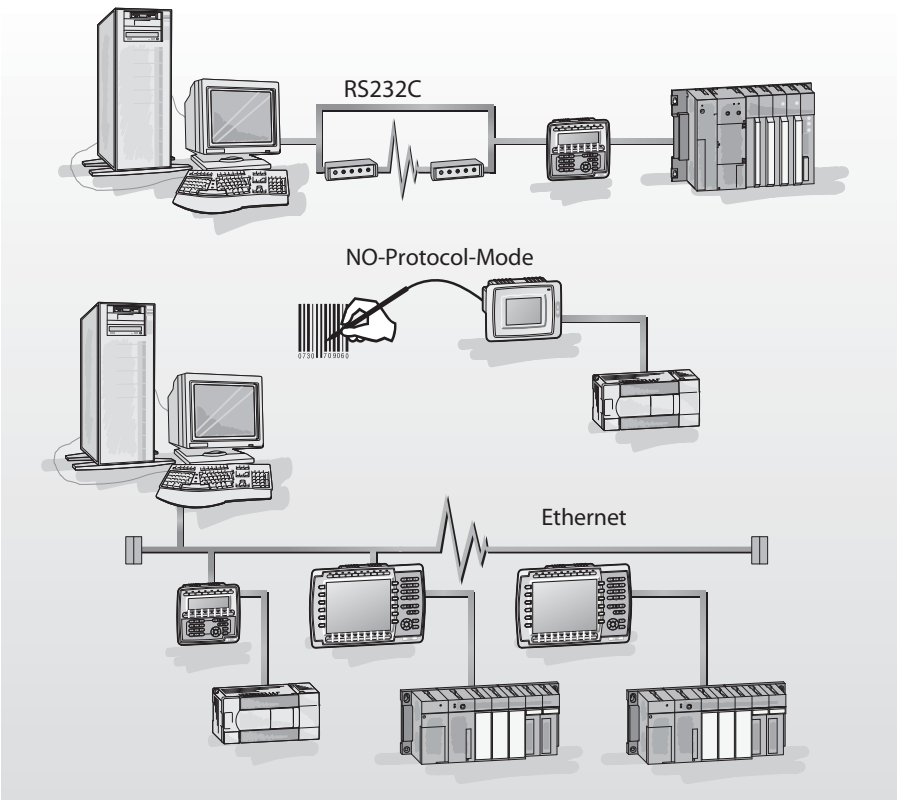
The blocks can be output to a printer under PLC control.

The graphics block size is limited by the display which has a resolution of 240x64 pixel up to 1024x768 pixel.

Static objects for example, can be displayed in different font sizes or with predefined graphic objects.

Dynamic objects are predefined as well for easier application development and can be scaled to any size.

In addition to these predefined objects self-created bitmap graphics can be imported and managed in libraries.



Communications

All E series control units are fitted with an RS422 and an RS232 interface for connection to the PLC.

This second port enables the unit to be run in transparent mode.

This means that the E series is capable of communicating simultaneously with both the connected PLC system and a PC (via the MX4 HMI or GX IEC Developer software).

The E units can also be linked to the PC via modem.

Another communications option is the no-protocol mode for the connection of serial peripheral devices (e.g. bar-code readers).

Printer, mouse, keyboard or a USB memory stick can be connected to an E1000 control unit via the integrated USB host port.

Networking

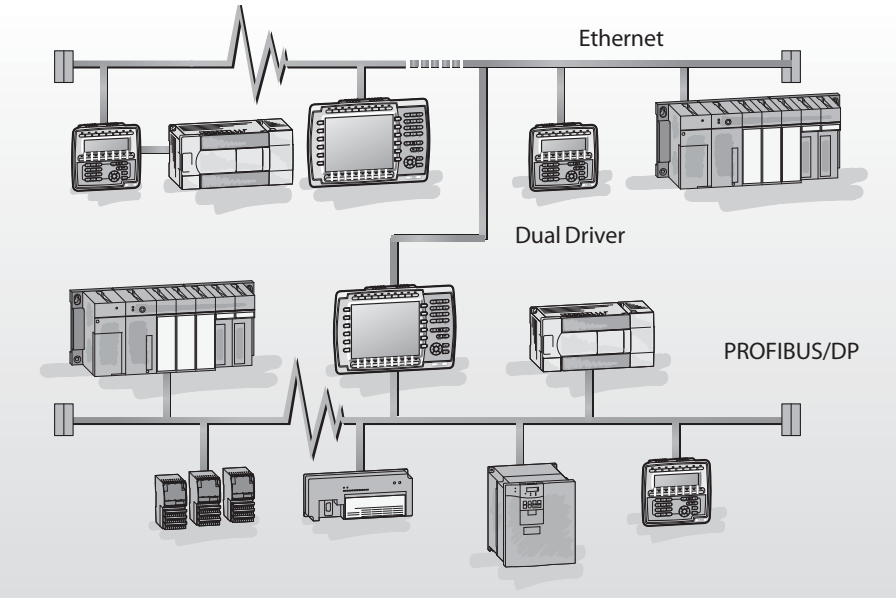
All E1000 operator terminals feature an integrated Ethernet adapter to realize an Ethernet network.

Within this network up to 30 stations can be connected to one PLC in a segment.

The connection to open networks can be established through an optional interface for PROFIBUS/DP with a transfer rate of up to 12 Mbit.

Dual Driver

The operator terminal can communicate with two components of different manufactures; also data exchange between the two drivers is possible.

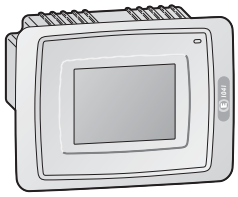


Operating Conditions	Specifications
Ambient temperature in operation	0 – +50 °C (all E series operator terminals)
Operating temperature range	Max. 90 % (non-condensing)
Storage temperature	-20 – +60 °C
Noise durability	1000 Vpp tested by noise generator; 1 µs at 30 – 100 Hz
Dielectric withstand voltage	1500 V AC, > 1 min.
Shock resistance	10 G (3 times each in 3 directions)
Vibration resistance	1 G: resistant to vibrations from 10 – 55 Hz for 2 h. along all 3 axes
Insulation resistance	> 5 MΩ (500 V DC)
Grounding	Class 3 (100 Ω)
Environment	Avoid environments containing aggressive gases, install in a dust-free location.
Cooling	Self-cooling
Certifications	UL / CSA / CE / DNV / RINA / LR

E1012
E1022
E1032

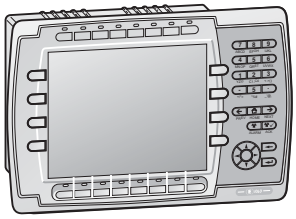
E1012, **E1022** and **E1032** have programmable function keys and a separate keypad. The graphic-capable displays illustrate symbols, alarms, line diagrams and text in arbitrary sizes. Formulas, text and changes in the sequence program can be done directly via the keys.

E1041
E1043



The **E1041** and **E1043** terminals have a 3.5" TFT touch screen (65,536 colours or 16 grey scales). Recipes, text and editing changes are entered via keys. Password levels protect the system against unauthorised access, while sixteen separate alarm groups keep you informed on all-important developments. The unit features two PLC ports, a USB host port to connect mouse, keyboard, printer and USB memory as well as an integrated Ethernet interface. Profibus/DP is available via a separate extension module.

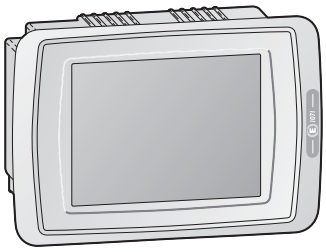
E1060
E1062



The **E1060** and **E1062** units provide a 5.7" TFT display with 65,536 colours or 2 colours (blue/white). Both models feature screen-oriented function keys for user- friendly operation.

The **E1061** and **E1063** terminals have a 5.7" TFT touch screen (65,536 colours or 16 grey scales). Recipes, text and editing changes are entered via touch keys on the display.

E1061
E1063



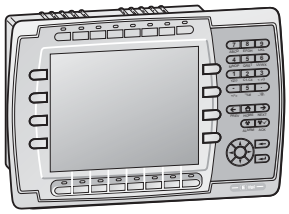
More features of the **E1060 to E1063** are: Recipes,text and editing changes are entered via keys. Password levels protect the system against unauthorised access, while sixteen separate alarm groups keep you informed on all-important developments.

Each unit features two PLC ports, one USB host port to connect mouse, keyboard, printer and USB memory sticks as well as an integrated Ethernet interface.

Profibus/DP is available via a separate extension module.

Specifications		E1012 / E1022	E1032	E1041 / E1043	E1060 / E1062	E1061 / E1063
Display unit	type	LCD monochrome	LCD monochrome	TFT colour / TFT grey scale	TFT colour / TFT grey scale	TFT colour / TFT grey scale
	dimensions (mm)	89.6x17.9 / 90.2x24.0	135x36	75x54 (3.5")	120x91 (5.7")	145x110 (5.7")
	text (lines x characters)	User definable	User definable	User definable	User definable	User definable
	character height (mm)	User definable, Windows fonts	User definable, Windows fonts	User definable, Windows fonts	User definable, Windows fonts	User definable, Windows fonts
	graphical resolution (pixels)	160x32 / 240x64	240x64	320x240	320x240	320x240
Power supply		24 V DC (20 – 30 V)	24 V DC (20 – 30 V)	24 V DC (20 – 30 V)	24 V DC (20 – 30 V)	24 V DC (20 – 30 V)
Internal memory capacity		512 kB	12 MB	12 MB	12 MB	12 MB
Flash memory		—	32 MB (Intel Strata Flash)	32 MB (Intel Strata Flash)	32 MB (Intel Strata Flash)	32 MB (Intel Strata Flash)
Keyboard type		Membrane	Membrane	Touch-panel	Membrane	Touch-panel
Function keys	internal	6	8	Touch keys	16	Touch keys
	external	—	—	—	—	—
LED indicators		6 (integrated in keys)	16 (8 integrated in keys)	1 (Power ON)	16 (8 integrated in keys)	1 (Power ON)
Interfaces	serial	RS232C, RS422/RS485	RS232C, RS422/RS485	RS232C, RS422/RS485	RS232C, RS422/RS485	RS232C, RS422/RS485
	parallel	—	—	—	—	—
	others	—	USB	USB	USB	USB
Interface slot for optional cards		1	1	1	1	1
Real-time clock		Integrated	Integrated	Integrated	Integrated	Integrated
Network communication possibilities		Ethernet (TCP/IP) (optional)	Ethernet (TCP/IP), Modbus TCP, MPI (all integrated); Profibus/DP (optional)	Ethernet (TCP/IP), Modbus TCP, MPI (all integrated); Profibus/DP (optional)	Ethernet (TCP/IP), Modbus TCP, MPI (all integrated); Profibus/DP (optional)	Ethernet (TCP/IP), Modbus TCP, MPI (all integrated); Profibus/DP (optional)
IP Rating (front panel)		IP 66	IP 66	IP 66	IP 66	IP 66
Dimensions WxHxD (mm)		155x114x40 / 155x155x41	202x187x63	156x119x63	275x168x63	201x152x63
Weight (kg)		0.4 / 0.5	0.9	0.56	1.1	0.87
Order information	Art. no.	202084 / 202085	169297	169298 / 169299	216254 / 216306	216305 / 216307
Accessories		Programming software E-Designer (refer to page 40), cables and interface adapters (refer to page 18)				

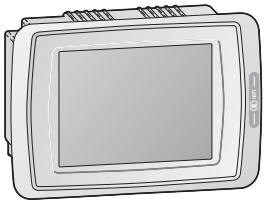
E1070
E1070 Pro+



The operator terminal **E1070** offers a 6.5" TFT display with 65,536 colours and a resolution of 640x480 pixels. 16 freely programmable function keys facilitate the inputs directly at the terminal.

The 6.5" TFT colour display of the **E1071** with 65,536 colours provides a user-friendly touch screen operation. Recipes, text and editing changes are entered via touch keys.

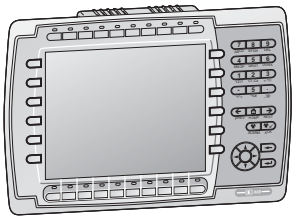
E1071
E1071 Pro+



The operator terminal **E1100** offers a 10.4" TFT display with 65,536 colours and a resolution of 800x600 pixels. Freely programmable function keys facilitate the inputs directly at the terminal.

The operator terminals **E1101** and **E1151** provide a user-friendly TFT colour touchscreen. The E1101 offers a resolution of 800x600 pixels on a 10.4" screen, the E1151 provides a 15" screen with 1024x768 pixels.

E1100
E1100 Pro+

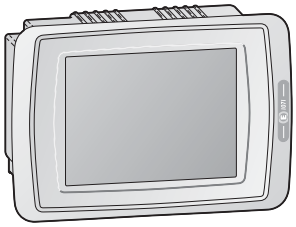


All **E1000** operator terminals on this page provide two PLC ports, a USB host port to connect mouse, keyboard, printer and USB memory as well as an integrated Ethernet interface. Profibus/DP is available via a separate extension module.

The internal memory of 12 MB can be expanded.

The integrated password protection protect the system against unauthorised access, and sixteen separate alarm groups keep you informed on all-important developments.

E1101, E1101 Pro+
E1151, E1151 Pro+
DT1151



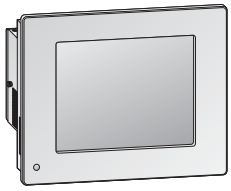
Using an **E1000 Pro**+ operator terminal gives the user all the functionality of the standard E1000 family but also makes it possible to view external files such as PDF files, HTML pages and PowerPoint presentations directly on the screen of the operator terminal.

The **DT1151** is an industrial monitor with a 15" TFT-LCD touch screen, designed to be mounted in a cabinet and connected to an industrial PC. The monitor is optimized for a max. resolution of 1024x768 pixels.

Specifications		E1070 / E1070 Pro+	E1071 / E1071 Pro+	E1100 / E1100 Pro+	E1101 / E1101 Pro+, E1151 / E1151 Pro+, DT1151
Display unit	type	TFT	TFT	TFT	TFT
	dimensions (mm)	134x100 (6.5")	134x100 (6.5")	211x158 (10.4")	211x158 (10.4") , 304x228 (15")
	text (lines x characters)	User definable	User definable	User definable	User definable
	character height (mm)	User definable, Windows fonts	User definable, Windows fonts	User definable, Windows fonts	User definable, Windows fonts
	graphical resolution (pixels)	640x480	640x480	800x600	800x600 , 1024x768
Power supply		24 V DC (20 – 30 V)	24 V DC (20 – 30 V)	24 V DC (20 – 30 V)	24 V DC (20 – 30 V)
Internal memory capacity		12 MB (expandable)	12 MB (expandable)	12 MB (expandable)	12 MB (expandable)
Memory card (intern./extern.)		2 (compact flash 4 – 1024 MB)	2 (compact flash 4 – 1024 MB)	2 (compact flash 4 – 1024 MB)	2 (compact flash 4 – 1024 MB)
Keyboard type		Membrane	Touch-panel	Membrane	Touch-panel
Function keys	internal	16 (8 with integrated LEDs)	Touch keys	20 (10 with integrated LEDs)	Touch keys
	external	Max. 64 (optional with MAC-E-Key16)	Max. 64 (optional with MAC-E-Key16)	Max. 64 (optional with MAC-E-Key16)	Max. 64 (optional with MAC-E-Key16)
LED indicators		18	1 (Power ON)	20	1 (Power ON)
Interfaces	serial	RS232C, RS422, RS485	RS232C, RS422, 485	RS232C, RS422, RS485	RS232C, RS422, 485
	parallel	—	—	—	—
	others	USB	USB	USB	USB
Interface slot for optional cards		1	1	1	1
Real-time clock		Integrated	Integrated	Integrated	Integrated
Network communication possibilities		Ethernet TCP/IP, Modbus TCP, MPI (all integrated); Profibus/DP (optional)	Ethernet TCP/IP, Modbus TCP, MPI (all integrated); Profibus/DP (optional)	Ethernet TCP/IP, Modbus TCP, MPI (all integrated); Profibus/DP (optional)	Ethernet TCP/IP, Modbus TCP, MPI (all integrated); Profibus/DP (optional)
IP Rating (front panel)		IP65	IP65	IP65	IP65
Dimensions WxHxD (mm)		285x177x62	219x154x61	382x252x64	302x228x64 , 398x304x60
Weight (kg)		1.3	1.1	2.3	2.0 / 3.7
Order information	Art. no.	156096 / 203301	156097 / 203302	156098 / 203303	156099 / 203324 156100 / 203325 / DT1151: 203326
Accessories		Programming software E-Designer (refer to page 40), cables and interface adapters (refer to page 18)			

■ Industrial Panel PCs

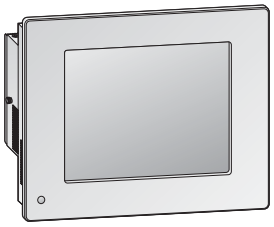
IPC-MC1121



Personal computers are a part of everyday life as Industrial PCs are a part of automation and process control.

The **IPC1000** line based on ETX technology offers supreme computing performance with processors based on Intel®'s Celeron®/ Celeron® M technology giving extremely low power consumption.

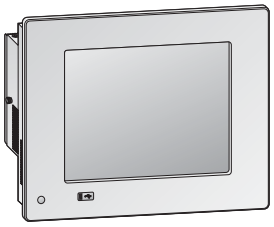
IPC-MC1151



The ETX technology permits scalable CPU performances for a wide range of industrial applications.

Ruggedly designed for heavy-duty industrial applications and environments, these PCs feature high quality, fast performance, attractive design and brilliantly legible displays.

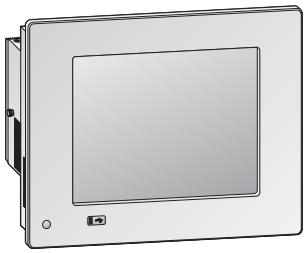
IPC-VP1151



A wide operating and storage temperature range, tough vibration resistance and high IP ratings mean these IPCs can be used in locations users could never consider before.

The integrated innovative cooling concept realizes passive and fanless cooling for the highest processor performance but at the same time reducing one of the major moving parts that could fail.

IPC-VP1171



The CANopen, DeviceNet or Profibus field buses can optionally be integrated directly on board of the V panels.

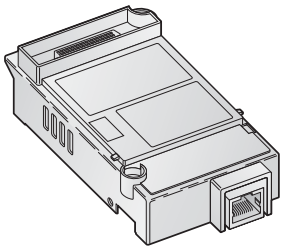
Specifications		IPC-MC1121	IPC-MC1151	IPC-VP1151	IPC-VP1171
Display unit	type	TFT	TFT	TFT	TFT
	dimensions (mm)	12.1"	15"	15"	17"
	graphical resolution (pixels)	800x600	1024x768	1024x768	1280x1024
Power supply		24 V DC	24 V DC	24 V DC	24 V DC
Processor type		Intel Celereon 800 MHz	Intel Celereon 800 MHz	Intel Celereon M	Intel Celereon M
Processor cooling system		Fanless	Fanless	Fanless	Fanless
Operating system		Windows XP Professional	Windows XP Professional	Windows XP Professional	Windows XP Professional
Internal memory capacity		512 MB RAM	512 MB RAM	512 MB RAM	512 MB RAM
Screen type		Resistive analog touch-panel	Resistive analog touch-panel	Resistive analog touch-panel	Resistive analog touch-panel
Integrated harddisk		40 GB	40 GB	40 GB	40 GB
LED indicators		1 (Power ON)	1 (Power ON)	1 (Power ON)	1 (Power ON)
Interfaces	serial	1 x RS232C	1 x RS232C	2 x RS232C	2 x RS232C
	others	2 x USB (2 x rear side)	2 x USB (2 x rear side)	5 x USB (1 x front; 4 x rear side)	5 x USB (1 x front; 4 x rear side)
LAN network interface		1 x 10/100	1 x 10/100	1 x 10/100, 1 x 100/1000	1 x 10/100, 1 x 100/1000
Free card slots		—	—	2 x PCI, PCMCIA slot optional	2 x PCI, PCMCIA slot optional
Field busses		CANopen or DeviceNet or Profibus	CANopen or DeviceNet or Profibus	CANopen or DeviceNet or Profibus	CANopen or DeviceNet or Profibus
Internal Drives		CompactFlash, HDD optional	CompactFlash, HDD optional	CompactFlash, HDD optional	CompactFlash, HDD optional
IP Rating		IP65 (front)	IP65 (front)	IP65 (front)	IP65 (front)
Operating temperature range		0 – 50 °C	0 – 50 °C	0 – 50 °C	0 – 50 °C
Storage temperature range		-20 – +60 °C	-20 – +60 °C	-20 – +60 °C	-20 – +60 °C
Operating humidity range		20 – 85 % (no condensation)	20 – 85 % (no condensation)	20 – 85 % (no condensation)	20 – 85 % (no condensation)
Vibration resistance		1 G: resistant to vibrations from 10 – 500 Hz along all 3 axes (acc. to EN 60068-2-6)			
Dimensions WxHxD (mm)		380x300x53	452x362x57	450x354x158	461x399x166
Order information	Art. no.	204305	204306	204307	204308

■ Special Interface Adapter and Cables for Operator Terminals GT15/GT16

The HMI communications and interface adapters support connection directly to a PLC or directly to a network.

All GT15 modules can be used for the new GT16 terminals, too, except the Ethernet module GT15-J71E71-100.

Further details on request.



Adapter type (use)	Interface name	Application	Order number
MELSEC A-Bus interface	**GT15-75ABUSSL**	GT15/GT16 (1 channel), slim model	166243
	GT15-ABUS	GT15/GT16 (1 channel), standard model	169467
	GT15-75ABUS2SL	GT15/GT16 (2 channels), slim model	166304
	GT15-ABUS2	GT15/GT16 (2 channels), standard model	169468
MELSEC Q-Bus interface	**GT15-75QBUSSL**	GT15/GT16 (1 channel), slim model	166305
	GT15-QBUS	GT15/GT16 (1 channel), standard model	169465
	GT15-75QBUS2SL	GT15/GT16 (2 channels), slim model	166306
	GT15-QBUS2	GT15/GT16 (2 channels), standard model	169466
Ethernet RJ45	**GT15-J71E71-100**	GT15	166309
Serial interface	**GT15-RS2-9P**	GT15/GT16 (serial interface RS232, 9-pin D-Sub)	169469
	GT15-RS2T4-9P	GT15/GT16 (converter RS232 -> RS422; 9-pin D-Sub)	166307
	GT15-RS4-9S	GT15/GT16 (serial interface RS422/485, 9-pin D-Sub)	169470
	GT15-RS4-TS	GT15/GT16 (serial interface RS422/485, screw terminals)	169471
	GT15-RS2T4-25P	GT15/GT16 (converter RS232 -> RS422; 25-pin D-Sub)	166308
CC-Link interface	**GT15-J61BT13**	GT15/GT16	203494
	GT15-J71GP23-SX	GT15/GT16, CCLink IE interface, 1 GBaud, optical ring	218576
MELSECNET/10/H	**GT15-J71BR13**	GT15/GT16 (for coaxial connection)	229843
	GT15-J71LP23-25	GT15/GT16 (for optical SI cable)	229842
USB	**GT15-PRN**	GT15/GT16 (for USB connection to pictbridge compatible printers)	170169
MES option card (for direct database connection)	**GT15-MESB48M**	GT15 option card with 48 MB expansion memory and MES functionality	203473
	GT16M-MESB	GT16 option card with MES functionality	221369

■ Option Cards for GT15

The operator terminals of the GT15 series are able to use several special functions built into the terminal. To use multi-channel communication, document display, System Q ladder monitor and MES functionality an option board is required. They are fitted in the expansion slot on the rear side of the terminal and are recognized automatically by the GT15.

Further details on request.

Option card	Application	Order number
GT15-FNB	Option card for the use of special functions (without System Q support)	166313
GT15-QFNB	Option card for the use of special functions (with System Q support)	166314
GT15-QFNB16M	Option card for the use of special functions (with System Q support and 16 MB expansion memory for project data)	166315
GT15-QFNB32M	Option card for the use of special functions (with System Q support and 32 MB expansion memory for project data)	166316
GT15-QFNB48M	Option card for the use of special functions (with System Q support and 48 MB expansion memory for project data)	166317
GT15-MESB48M	Option card for the use of additional MES functionality (with System Q support and 48 MB expansion memory for project data)	203473

■ Video Interfaces for GT15/GT16

Video interfaces can be used with the GT15/GT16 video panels to support video functions. With the help of these interfaces, images from PC's, cameras and vision sensors can be monitored on the GOT.

Further details on request.

Video unit	Application	Order number
GT15V-75V4	Video input unit for GT15 video compatible models, 4 x NTSC/PAL inputs	203497
GT15V-75R1	Video input unit for GT15 video compatible models, 1 x RGB composite input	203498
GT15V-75V4R1	Video input unit for GT15 video compatible models, 4 x NTSC/PAL inputs, 1 x RGB composite input	203499
GT15V-75ROUT	Video input unit for GT15 video compatible models, 1 x RGB composite output	203500
GT16M-MMR	GOT multimedia option board for GT16 HMIs	221362
GT16M-V4	GOT Video Input Unit for GT16 HMIs, 4x NTSC/PAL inputs 75 Ohm	221363
GT16M-V4R1	GOT Video Input Unit for GT16, 4x NTSC/PAL inputs, 1x RGB composite input	221364
GT16M-R2	GOT Video Input Unit for GT16 HMIs, 2x RGB composite input	221365
GT16M-ROUT	GOT Video Output Unit for GT16, 1x RGB composite output	221366

■ Cables

For all GOT and E series operator terminals is a wide variety of different cables available.

All cables have to be ordered separately due to the specific application.

The length for all cables is 3.0 m, if not differently indicated.

Operator terminal	Interface	Connector	Cable	Connector	Periphery	Order number
GT1000 series (except GT1020/GT1030)	Frontside USB	MINI-B USB	**GT09-C20USB-5P**	USB-A	Personal Computer	166373 (2 m length)
GT1000 series (except GT1020/GT1030)	integrated RS232	D-SUB male connector 9 pin	**GT01-C30R2-6P**	MINI-DIN male connector 6 pin	MELSEC System Q	163959
GT1000 series (except GT1020/GT1030)	integrated RS422 or GT15/GT16 adapter	D-SUB male connector 9 pin	**GT01-C30R4-8P**	MINI-DIN male connector 8 pin	MELSEC FX	163948 further lengths on request
GT1000 series (except GT1020/GT1030)	integrated RS422 or GT15/GT16 adapter	D-SUB male connector 9 pin	**GT01-C30R4-25P**	D-SUB male connector 25 pin	MELSEC AnS/QnAS and AnU/QnA	163953 further lengths on request
GT1020 / GT1030	RS232	Mini-DIN male connector 6-pin	**GT01-C30R2-6P**	D-SUB male connector 9 pin	PC	163959
			Programming cable			
GT1020 / GT1030	RS422	open terminals	**GT10-C30R4-8P**	MINI-DIN male connector 8 pin	MELSEC FX	200494 further lengths on request
GT1020 / GT1030	RS232	open terminals	**GT10-C30R2-6P**	MINI-DIN male connector 6 pin	MELSEC System Q	200498
GT1020 / GT1030	RS232	Mini-DIN male connector 6-pin	**GT10-RS2TUSB-5S**	MINI-B USB	PC + GT09-C20USB-5P	200500 + 166373
			Converter			
GT15 / GT16		A-BUS	**GT15-A1SC30B**	A-BUS	MELSEC AnS/QnAS	166358 further lengths on request
GT15 / GT16		A-BUS	**GT15-AC30B**	A-BUS	MELSEC AnS/QnAS and AnU/QnA	166380 further lengths on request
GT15 / GT16		Q-BUS	**GT15-QC30B**	Q-BUS	MELSEC System Q	166348 further lengths on request

■ Cables

Operator terminal	Interface	Connector	Cable	Connector	Periphery	Order number
GT16	RS422/RS485	female ribbon cable connector 14 pin	**GT16-C20R4-9S***	D-SUB male connector 9-pin		0.2 m: 221380
GT16	RS422/RS485	D-SUB male connector 9 pin	**FA-LTBGTR4CBL05**	Terminal block		0.5 m: 221381
GT16	RS422/RS485	D-SUB male connector 9 pin	**FA-LTBGTR4CBL10**	Terminal block		1.0 m: 221382
GT16	RS422/RS485	D-SUB male connector 9 pin	**FA-LTBGTR4CBL20**	Terminal block		2.0 m: 221383
E1000	RS232	D-SUB female connector 9 pin	**CAB30**	D-SUB female connector 9 pin	Personal Computer	163002
E1000	RS422	D-SUB male connector 25 pin	**CAB19**	MINI-DIN male connector 8 pin	MELSEC FX	146861
E1000	RS422	D-SUB male connector 25 pin	**CAB18 (MAC40-CPU-CAB-R4)**	D-SUB male connector 25 pin	MELSEC AnS/QnAS and AnU/QnA	146855 further lengths on request
E1000	RS422	D-SUB male connector 25 pin	**CAB17**	MINI-DIN male connector 6 pin	MELSEC System Q	140472
E1000	RS232	D-SUB male connector 9-pin	**CAB34/3**	MINI-DIN male connector 6 pin	MELSEC System Q	163006 further lengths on request
E1000	RS422	D-SUB male connector 25 pin	**CAB36**	D-SUB male connector 9 pin	Siemens S7/MPI direct	205178

* GOT RS422/RS485 cable adapter, 0.2 m. This adapter is to be used with a standard GOT1000 communication cable, e.g. GT01-C30R4-8P.

■ Cables for Third Party Manufacturers

These cables can only be used for the connection of an GOT1000 or E1000 operator terminal to a Third Party Manufacturer PLC.

They all have the name CAB with a specific number.

CAB30 is a connection cable for E1000 series terminals, it connects the Siemens HMI adapter for MPI with the RS232 port.

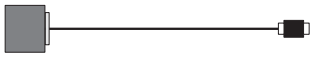
CAB8 is a communications adapter for RS485 networks by using the RS422 port.

CAB11 is an HMI adapter cable for the connection of a Siemens SIMATIC S7/MPI with CAB30 (for E1000 series).

CAB11 can also be used for GOT1000 series (with selfmade GT11+GT15 cable).

Below an example is shown.

Operator terminal	Interface	Connector	Cable	Connector	Periphery	Order number
GOT1000 or E1000 series	RS232 / RS422	D-SUB male connector	**CAB8 / CAB11 / CAB30**	Depends on the PLC of the third party manufacturer	Third party PLC	Refer to the table below



Specifications		CAB30	CAB8	CAB11	CAB36
Application for		Siemens HMI adapter for MPI	RS485 networks	Siemens S7/MPI	Siemens S7/MPI
Interfaces	HMI	RS232 (E1000)	RS422 (E series)	RS232 (all GOT1000 / E series)	RS422 (E1000)
	PLC	RS232	RS485	RS232	MPI (9 pin D sub)
Length	m	3.0	—	3.0	3.0
Order information	Art. no.	163002	124268	132351	205178

■ Special Connection Cables for the Graphic Handy Operator Terminals

Connection of the Handy Operator Terminals to the PLC CPU

The cable is connected to the plug on the back side of the GT11 handy GOT, which provides a larger operating range than fixed mounted terminals. The cable is lead into the cabinet or panel and enables the mobile connection of the Handy GOT using the interface in a cabinet or control panel. The GT11 handy terminals carry a bayonet-joint at the lower end of the unit.

From there it is easy to connect the line to the PLC.

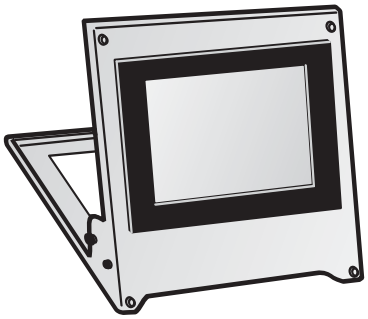
Operator terminal	Interface	Cable	Switch cabinet	Cable	Connector	Periphery
GT11 Handy	External cable	**GT11H-C30-37P GT11H-C60-37P / GT11H-C100-37P**		**GT11H-C15R4-8P**	MINI-DIN male connector 8 pin	MELSEC FX
GT11 Handy	External cable	**GT11H-C30-37P GT11H-C60-37P / GT11H-C100-37P**		**GT11H-C15R4-25P**	D-SUB male connector 25 pin	AnS/QnAS, AnU/QnA
GT11 Handy	External cable	**GT11H-C30-37P GT11H-C60-37P / GT11H-C100-37P**		**GT11H-C15R2-6P**	MINI-DIN male connector 6 pin	MELSEC System Q
GT11 Handy	External cable	**GT11H-C30 / GT11H-C60 / GT11H-C100**			open terminals	Computer-Link, Inverters, Servo amplifiers

① These cables with open terminals can be used for the connection to serial communication modules, Computer-Link, inverters, and servo amplifiers.

Specifications		GT11H-C30-37P / GT11H-C60-37P / GT11H-C100-37P	GT11H-C30 / GT11H-C60 / GT11H-C100	GT11H-C15R4-8P	GT11H-C15R4-25P	GT11H-C15R2-6P
Cable type		External cable for GT11 handy	External cable for GT11 handy	Relay cable	Relay cable	Relay cable
Connector 1		Round female connector 32 pin	Round female connector 32 pin	D-SUB female connector 37 pin	D-SUB female connector 37 pin	D-SUB female connector 37 pin
Connector 2		D-SUB male connector 37 pin	Open terminals	MINI-DIN male connector 8 pin	D-SUB male connector 25 pin	MINI-DIN male connector 6 pin
Further connections		—	—	For power supply and external signals	For power supply and external signals	For power supply and external signals
Applicable CPU type		—①	Factory automation periphery	MELSEC FX family	MELSEC AnS/QnAS and AnU/QnA	MELSEC System Q
Length	m	3.0 / 6.0 / 10.0	3.0 / 6.0 / 10.0	1.5	1.5	1.5
Order information	Art. no.	191013 / 191014 / 191015	191016 / 191017 / 191018	191019	191020	191021

① For the connection of the PLC CPU a further cable is required (GT11H-C15R4-8P for MELSEC FX CPU or GT11H-C15R4-25P for MELSEC AnS/QnAS CPU or GT11H-C15R2-6P for MELSEC System Q CPU)

General Accessories

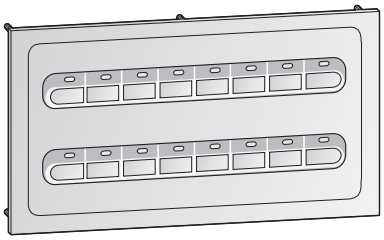


Screen surface protection

Protective film sheets protect the sensitive screen of the unit from scratches and reflections.

Stands

For the GT10/GT11 and GT15/GT16 terminals stands for table-top installation are available. The stands are useful for debugging the GOT screen data, as they can set the GOT at a proper angle on the table.



Keyboard extension X-Key-16

For all E1000 series graphical operator terminals the keyboard extension X-Key-16 is available.

Up to 4 keyboard extensions can be connected to one operator terminal.

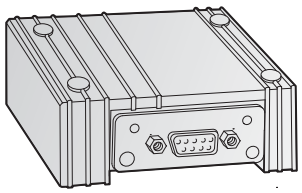
The keyboard extension provides 16 function keys and LEDs, which can be used and programmed as the standard integrated keyboard.

Specifications		GT10-20PSCB	GT10-30PSCB	GT11-50PSCB	GT11H-50PSC	GT15-50PSCB	GT15-60PSCB	GT15-70PSCB	GT15-80PSCB	GT15-90PSCB	GT16-60PSCB	GT16-70PSCB	GT16-80PSCB	GT16-90PSCB
Type of accessory		Protective film sheets for the display surface												
Use for operator terminal		GT1020	GT1030	GT11	GT11H handy GOTs	GT155x with 5.7" display	GT15 with 8.4" display	GT15 with 10.4" display	GT15 with 12.1" display	GT15 with 15" display	GT16 with 8.4" display	GT16 with 10.4" display	GT16 with 12.1" display	GT16 with 15" display
Set of		5	5	5	5	5	5	5	5	5	5	5	5	5
Order information	Art. no.	200501	206973	163645	191023	203501	166329	166333	166337	169476	221959	221958	221958	221370

Specifications		E1032 Protection Sheet	E1041/43 Touch Protection Sheet	E1060 Protection Sheet	E1061/63 Touch Protection Sheet	E1070 Protection sheet	E1071 Touch Protection sheet	E1100 Protection sheet	E1101 Touch Protection sheet	E1151 Touch Protection sheet
Type of accessory		Protective film sheets for the display surface								
Use for operator terminal		E1032	E1041/43	E1060	E1061/63	E1070	E1071	E1100	E1101	E1151
Set of		1	1	1	1	1	1	1	1	1
Order information	Art. no.	206836	206837	206838	206839	168155	168122	168156	168123	168154

Specifications		GT05-50STAND	GT15-70STAND	GT15-80STAND	GT15-90STAND	GT15-BAT	X-Key-16
Type of accessory		Stand for table-top installation				Buffer battery for realtime clock and historical data backup	External keyboard extension for E1000 series
Use for operator terminal		GOT1000 with 5.7" display	GOT1000 with 8.4" and 10.4" display	GOT1000 with 12.1" display	GOT1000 with 15" display	GT15/GT16	All E1000 series models
Set of		1	1	1	1	1	1
Details		—	—	—	—	Lithium battery	Connection via RS232C/RS422
Order information	Art. no.	203502	166341	166342	218577	166345	217656

■ Communications Adapter



Profibus/DP Communications adapter

For the E1000 series a Profibus/DP Slave adapter **E1000-EM-Profibus**/DP is available. This is attached at the extension port at the rear side of the control terminal. The parametrization and setting of the network address are made in the software E-Designer.

Specifications		E1000-EM-Profibus/DP
Use for operator terminal		E1000 series
Type		Adapter
Application		Profibus/DP Slave
Order information	Art. no.	169488

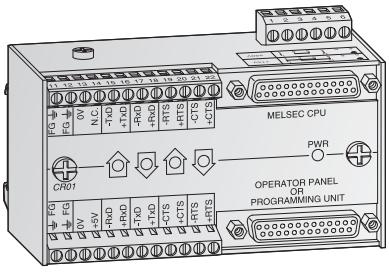
■ Interfaces and Adapters for GOT1000

Several adapters and interfaces for different GOT1000 models are available.

Further details on request.

Optional unit	Application	Order number
GT15-DIO	Optional interface for digital I/Os, 16 (max. 128) inputs, 16 outputs	209827
GT15-DIOR	Digital I/O-card for GT15/GT16, 16 inputs, 16 outputs, negative common input	221953
GT01-RS4-M	RS-485 Multi-drop master unit, 16 GOTs to one FX/Q PLC	225497
GT10-9PT5S	GOT RS-485 adapter for GT10 QVGA and GT11 QVGA models, 9-pin DSUB	225498
GT10-50FMB	GOT data transfer memory board for GT105x	218493

■ Interface Converter CR01-R2/R4 SET and CR01-R4/R4



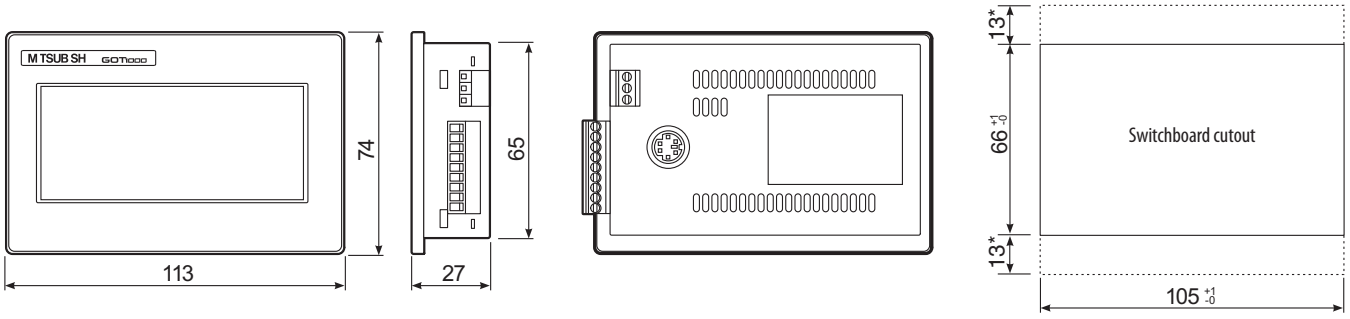
CR01-R2/R4 SET and CR01-R4/R4

These modules are signal repeater with electrical isolation for RS422 signals. The regular maximum distance between two CR01 modules is 1200 m.

If only one interface converter is in use, the maximum distance is 500 m. The modules include a DIN rail adapter and LEDs indicating the flow of data.

Specifications		CR01-R2/R4 SET	CR01-R4/R4
Conversion		RS232↔RS422	RS422↔RS422
RS422 interface		Terminal strip + 25 pin D-SUB male connector for both units	
RS232 interface		9 pin D-SUB male connector	—
Nominal voltage	V AC	115 / 230	115 / 230
Voltage range	V AC	90 – 130 / 150 – 255	90 – 130 / 150 – 255
Supply frequency range	Hz	48 – 62	48 – 62
Power consumption	VA	6	6
Protection rating		IP20	IP20
Weight	kg	0.55	0.55
Order information	Art no.	56172	56173

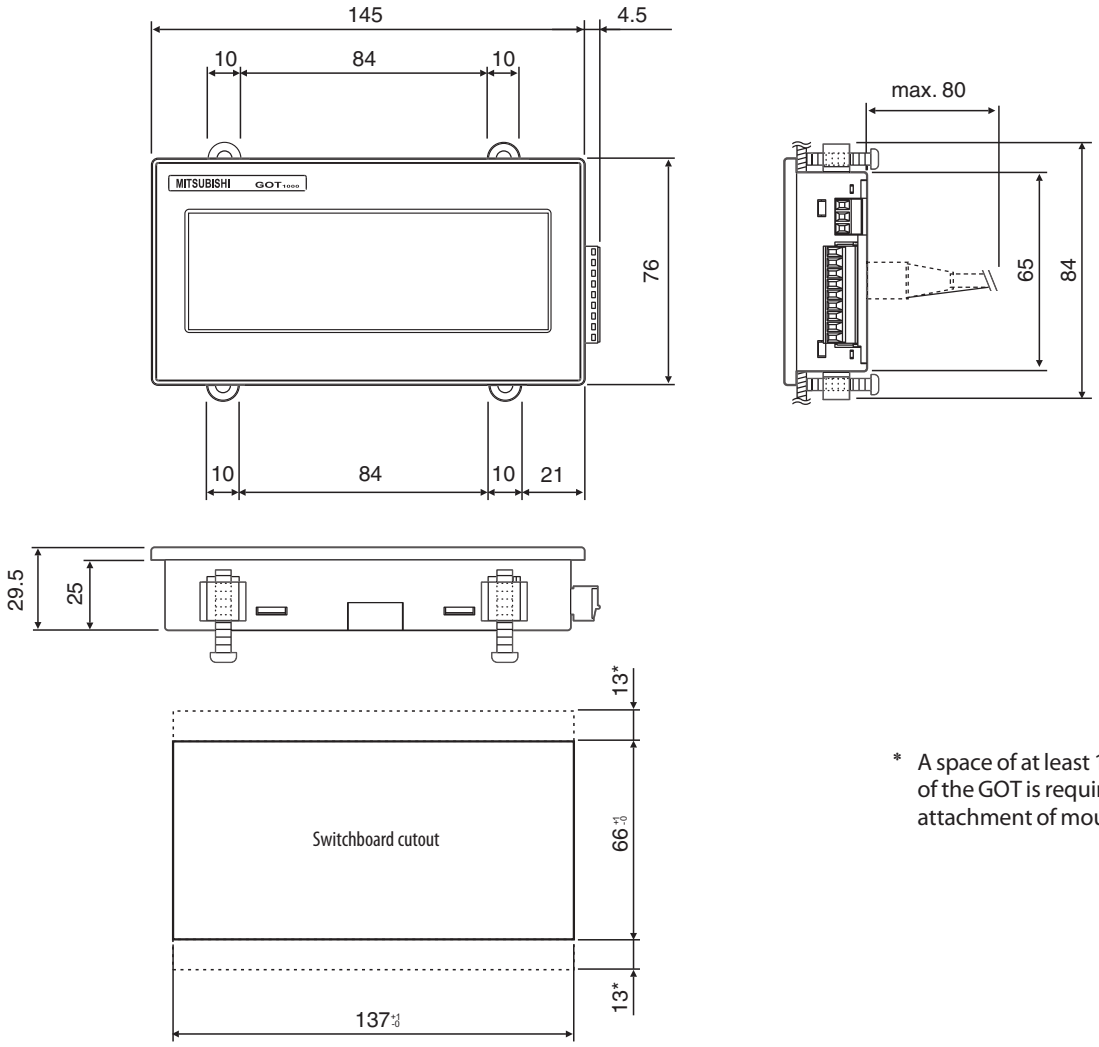
■ GT1020-LBL, GT1020-LBD, GT1020-LBD2, GT1020-LBLW, GT1020-LBDW, GT1020-LBDW2



* A space of at least 13 mm at the long side of the GOT is required to allow for the attachment of mounting fixtures.

All dimensions in mm

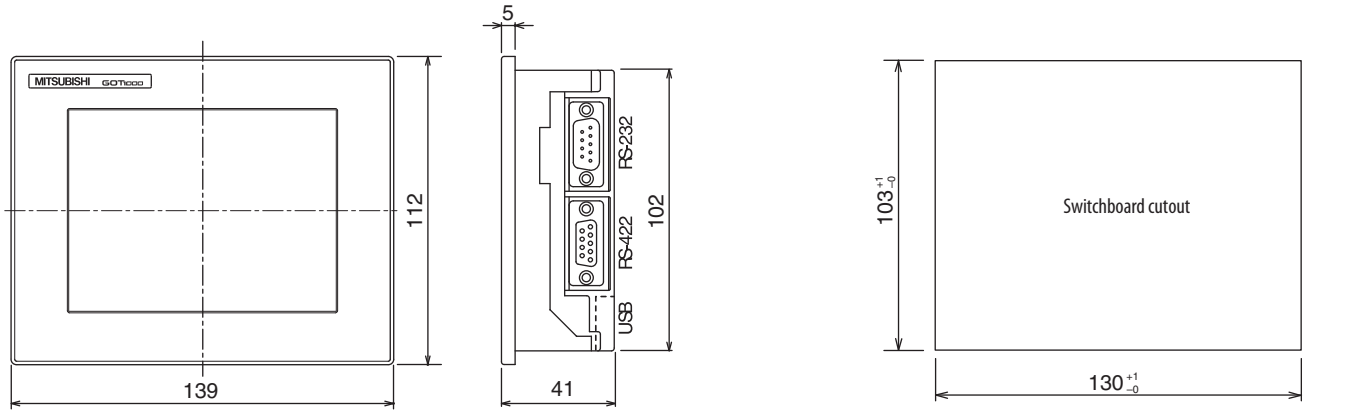
■ GT1030-LBD, GT1030-LBD2, GT1030-LBDW, GT1030-LBDW2



* A space of at least 13 mm at the long side of the GOT is required to allow for the attachment of mounting fixtures.

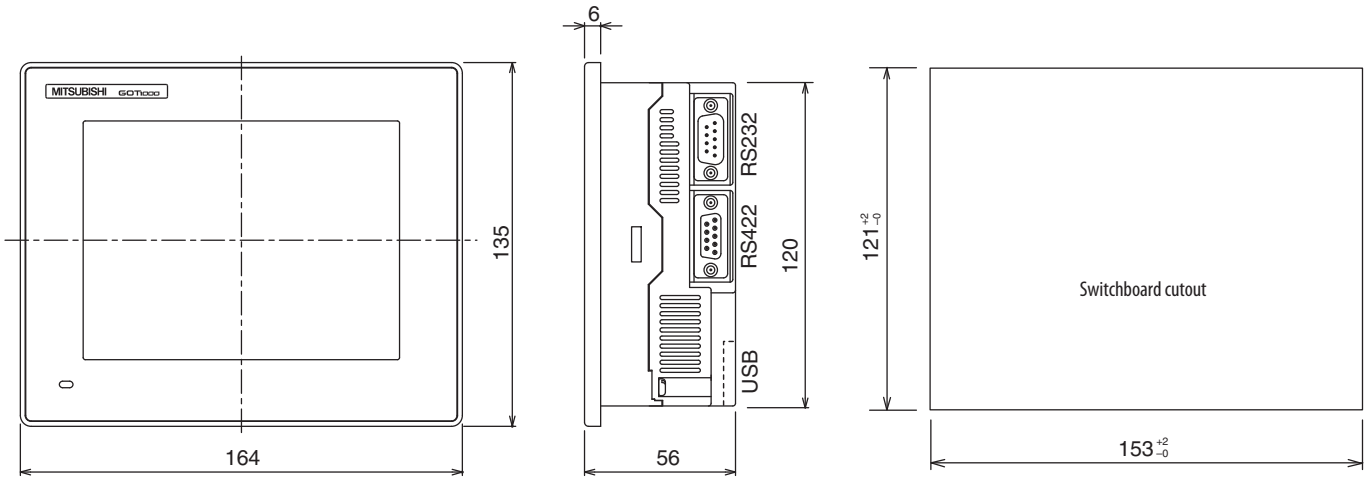
All dimensions in mm

■ GT1040, GT1045



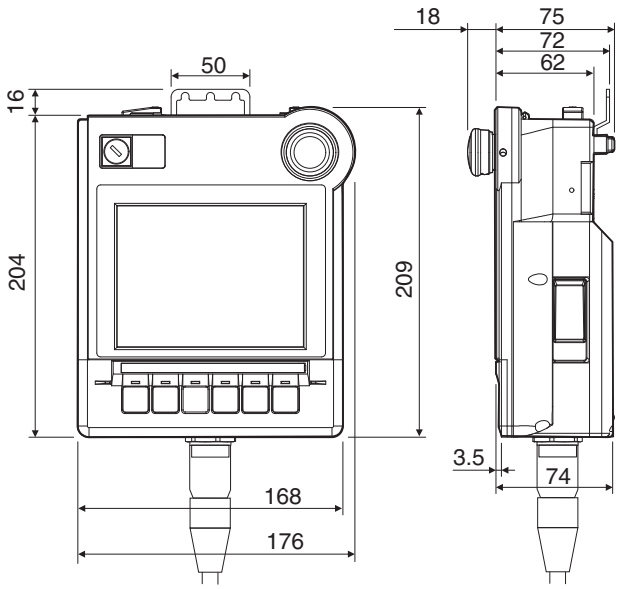
All dimensions in mm

■ GT1050, GT1055



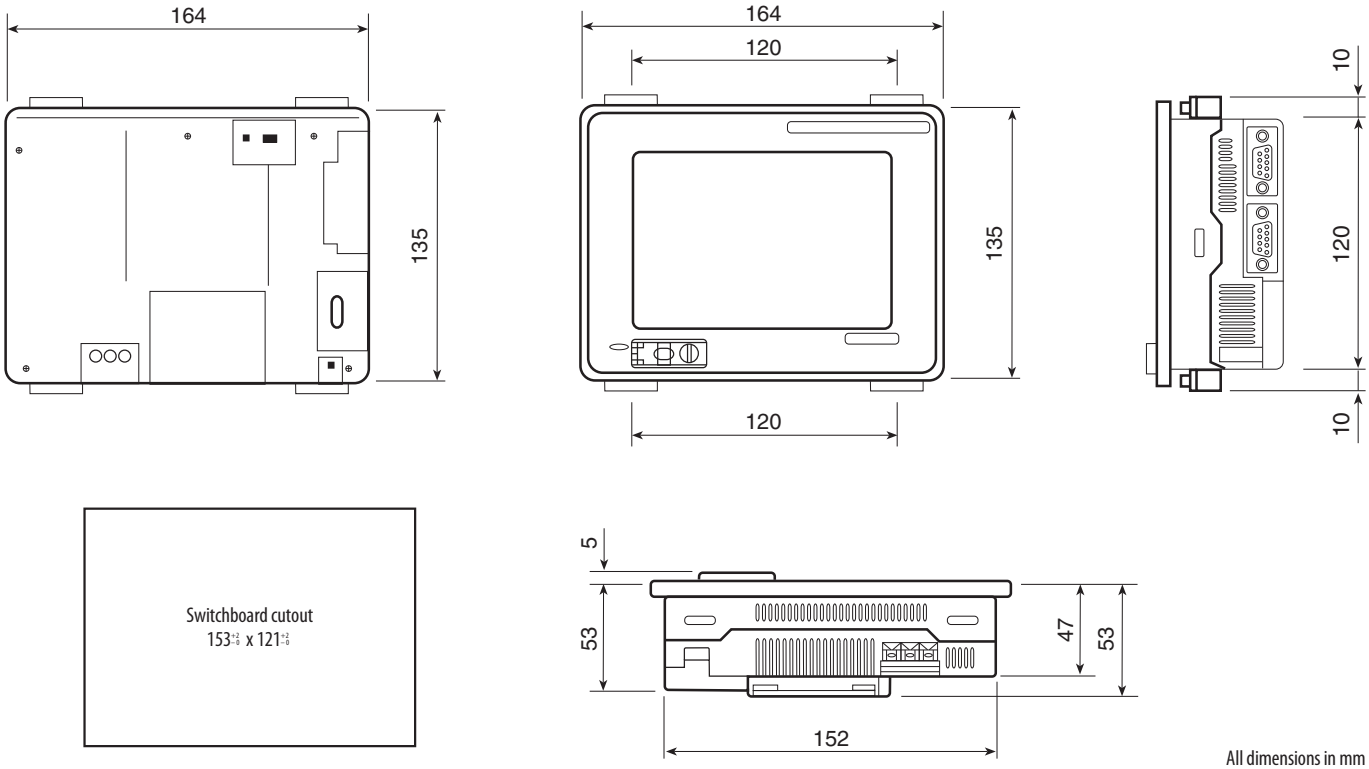
All dimensions in mm

■ GT1150HS-QLBD / GT1155HS-QSBD



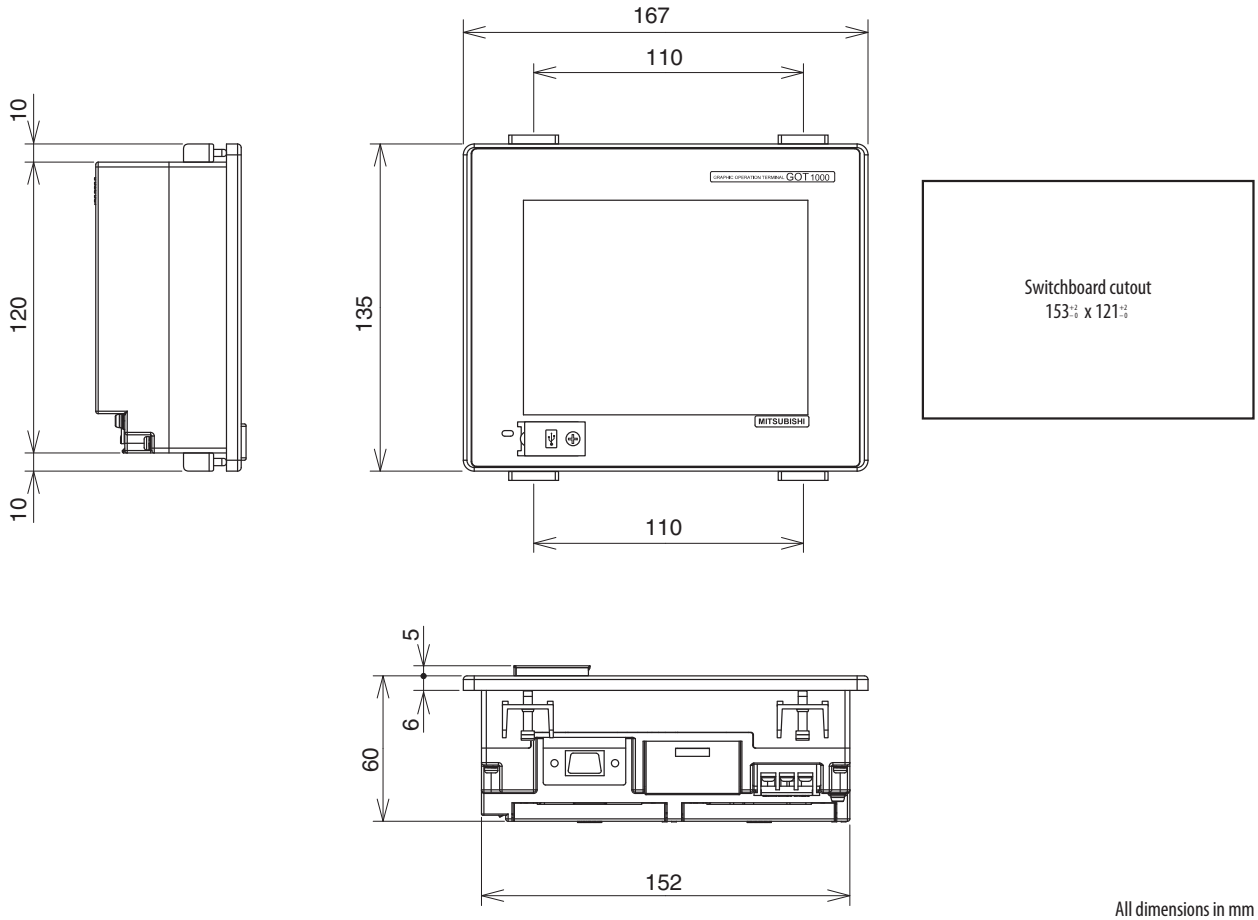
All dimensions in mm

■ GT1150-QLBD, GT1155-QSBD



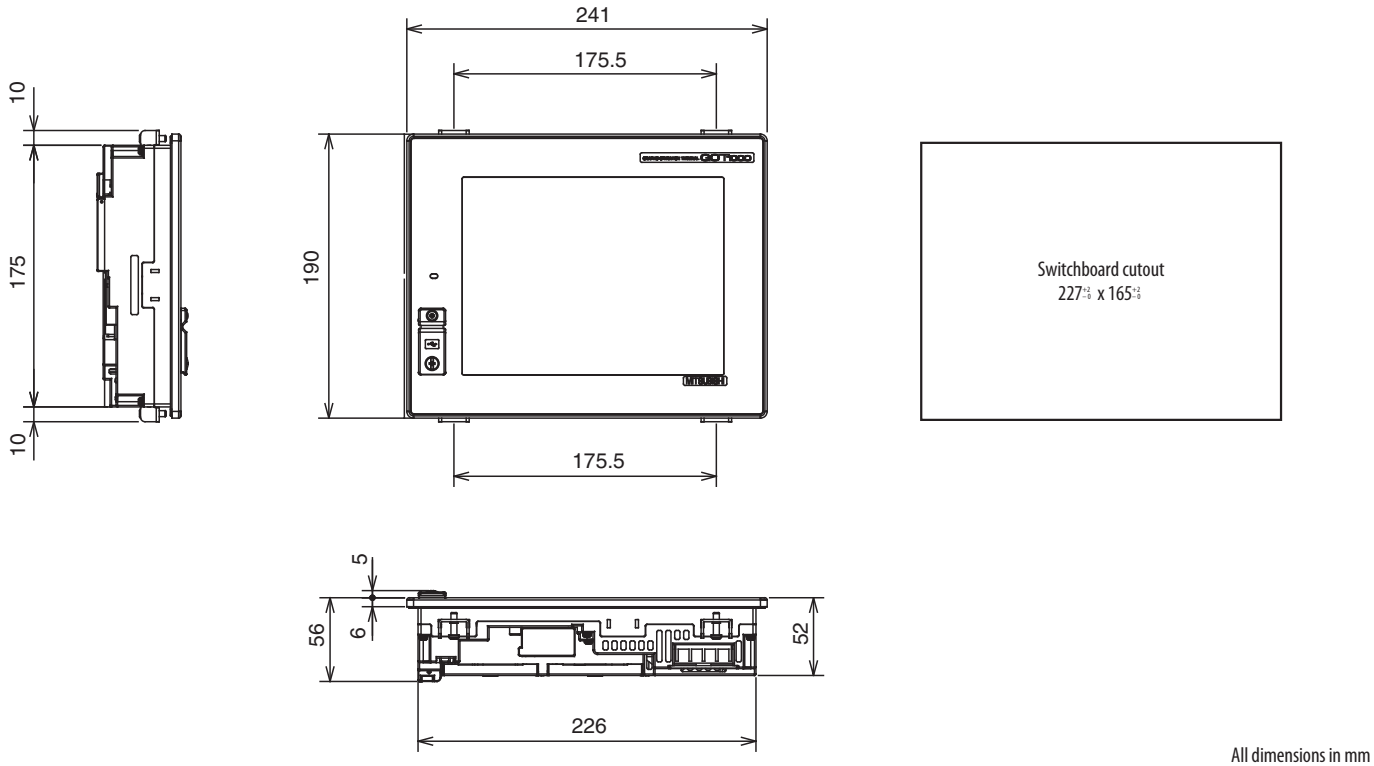
All dimensions in mm

■ GT1550-QLBD, GT1555-QSBD, GT1555-QTBD, GT1555-VTBD



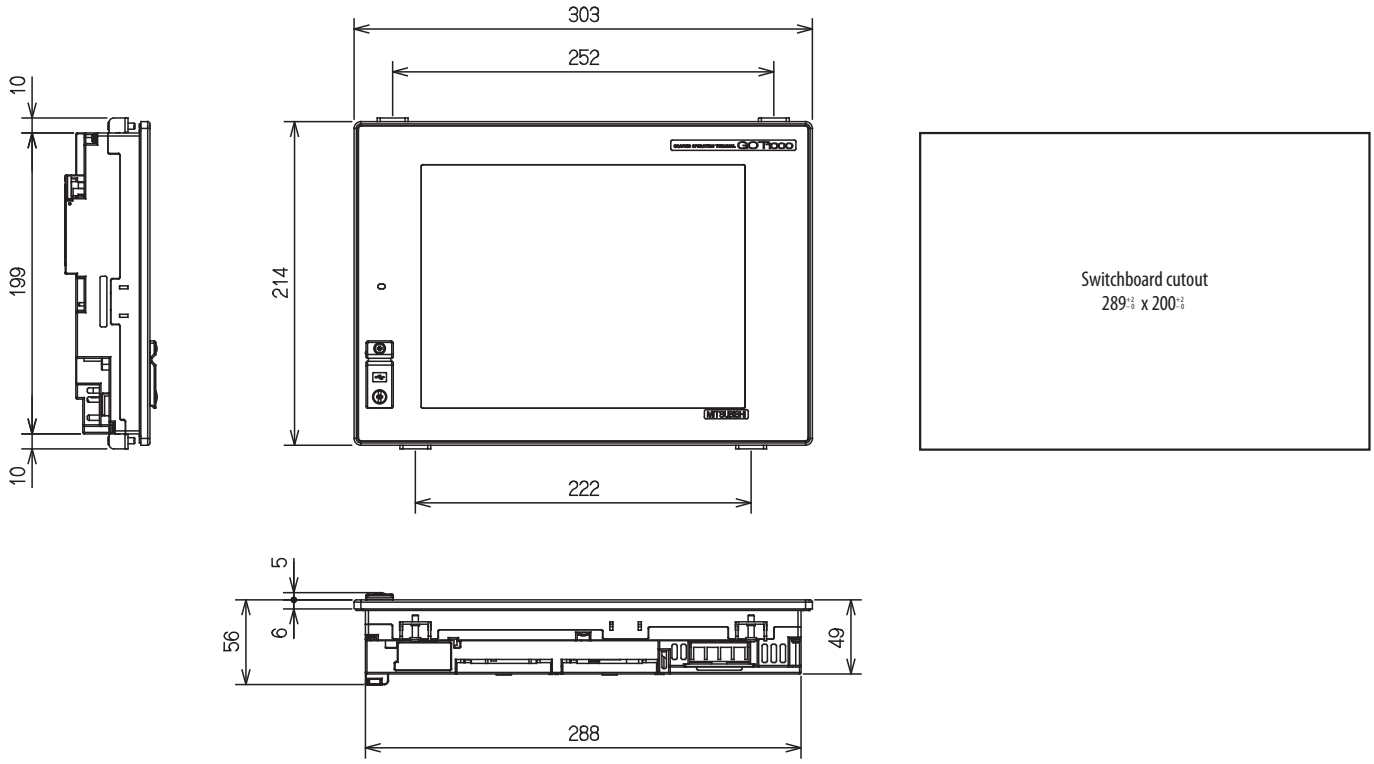
All dimensions in mm

■ GT1562-VNBA, GT1565-VTBA
GT1562-VNBD, GT1565-VTBD



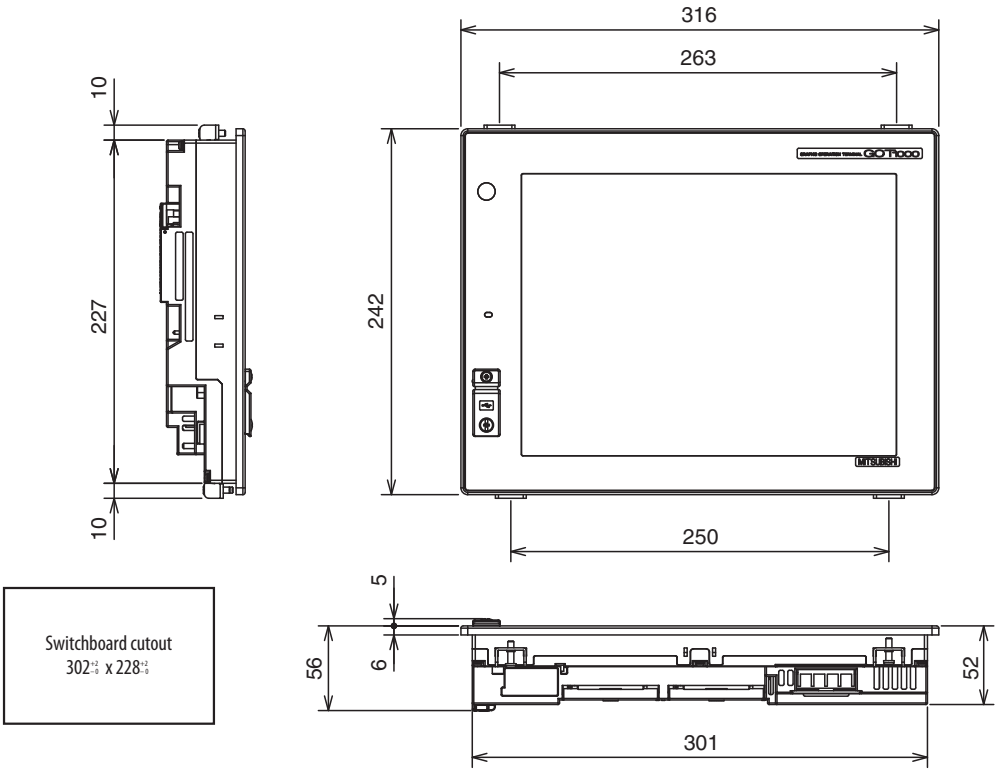
All dimensions in mm

■ GT1572-VNBA, GT1575-VNBA, GT1575-VTBA, GT1575-STBA
GT1572-VNBD, GT1575-VNBD, GT1575-VTBD, GT1575-STBD



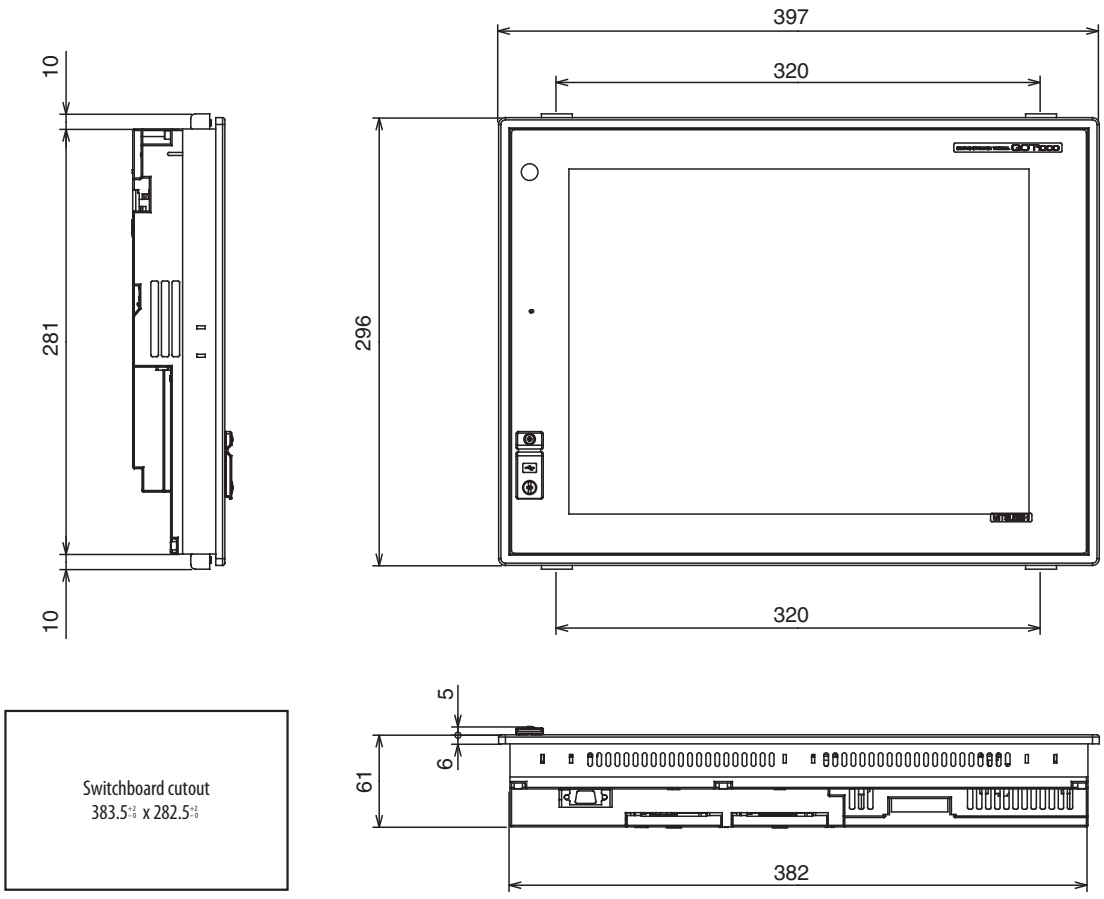
All dimensions in mm

■ GT1585-STBA, GT1585-STBD



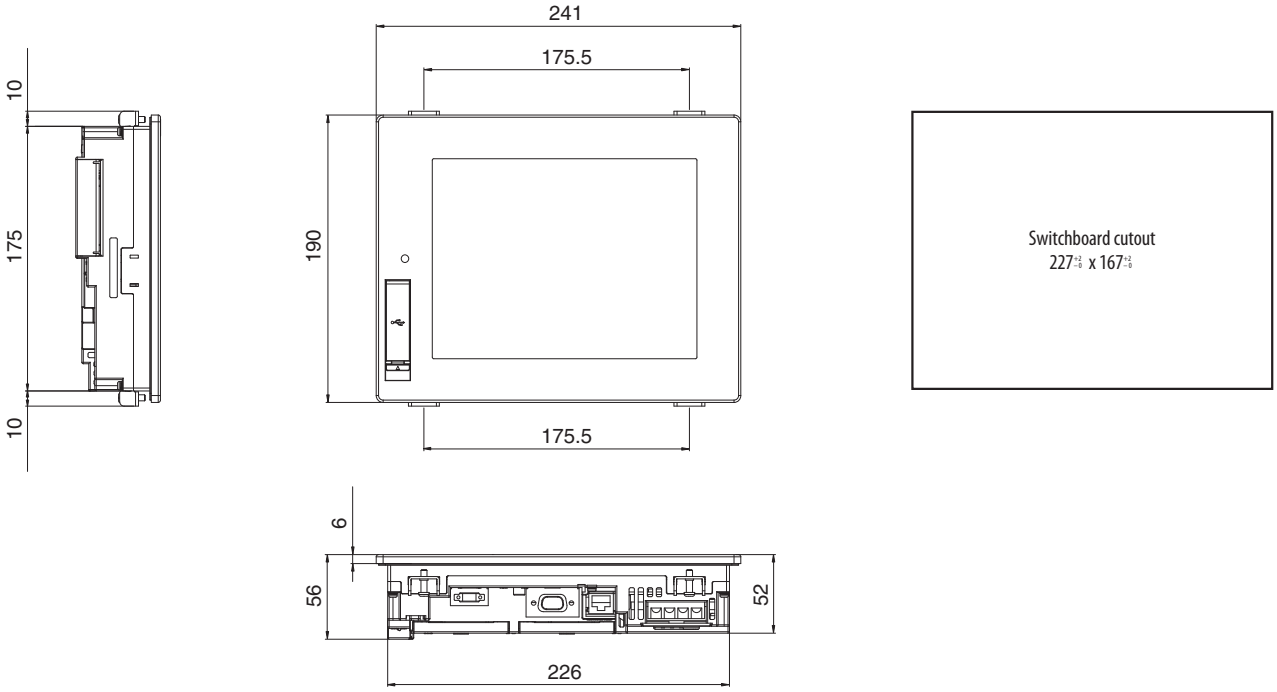
All dimensions in mm

■ GT1595-XTBA, GT1595-XTBD



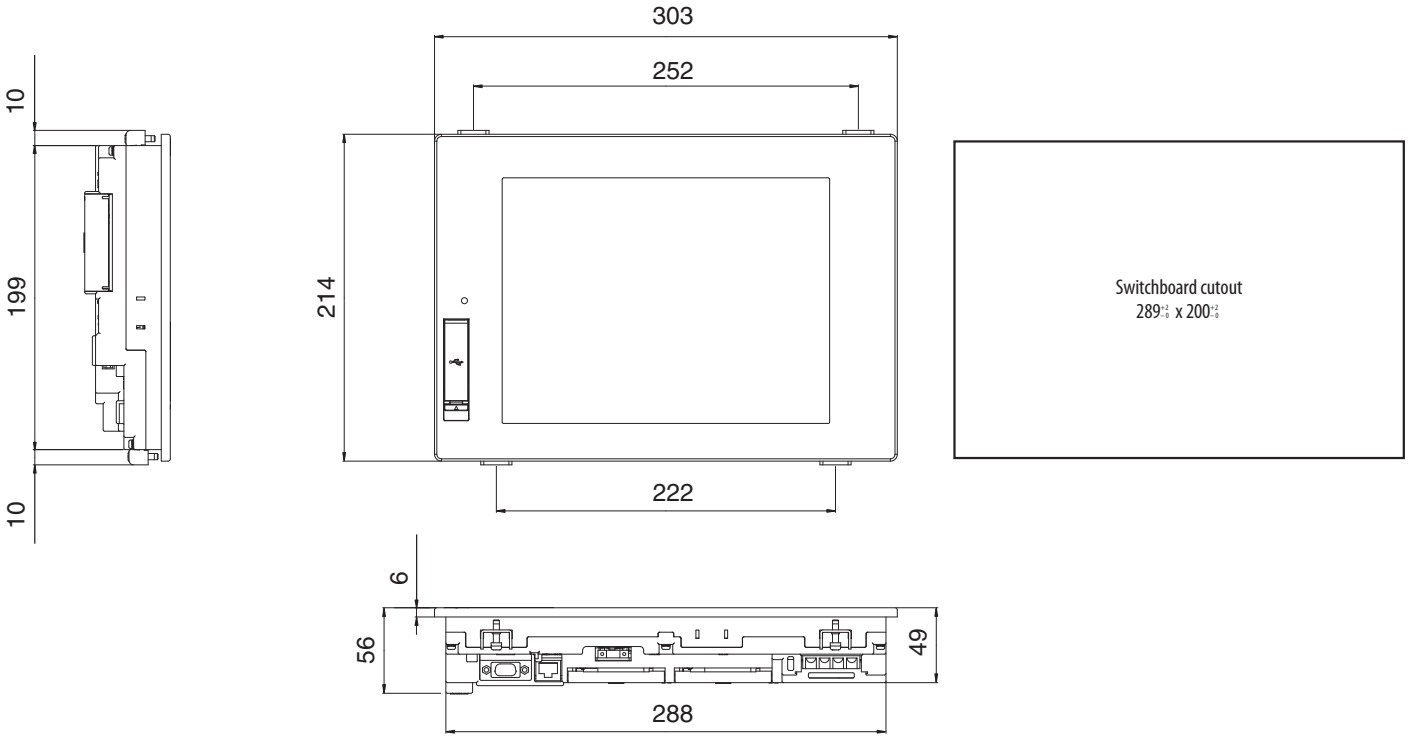
All dimensions in mm

■ GT1665M-STBA, GT1665M-STBD, GT1665M-VTBA, GT1665M-VTBD



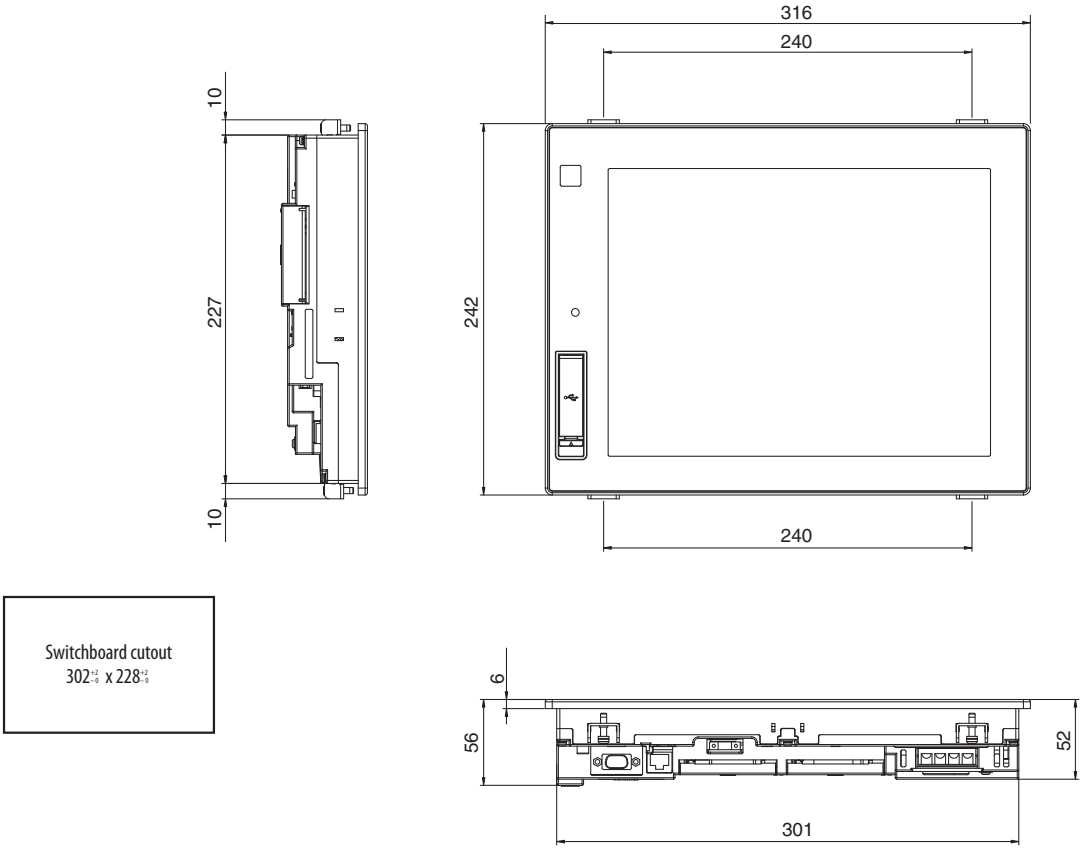
All dimensions in mm

■ GT1675M-STBA, GT1675M-STBD, GT1675M-VTBA, GT1675M-VTBD



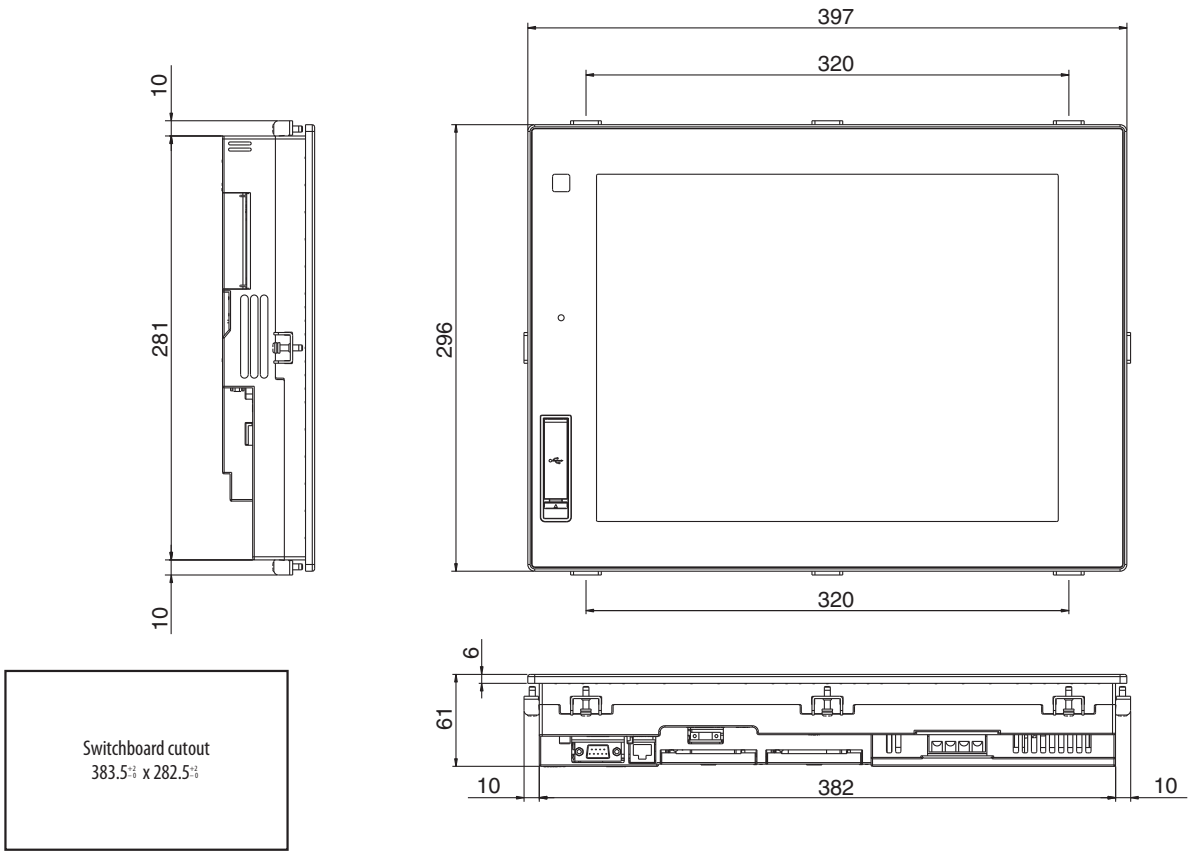
All dimensions in mm

■ GT1685M-STBA, GT1685M-STBD



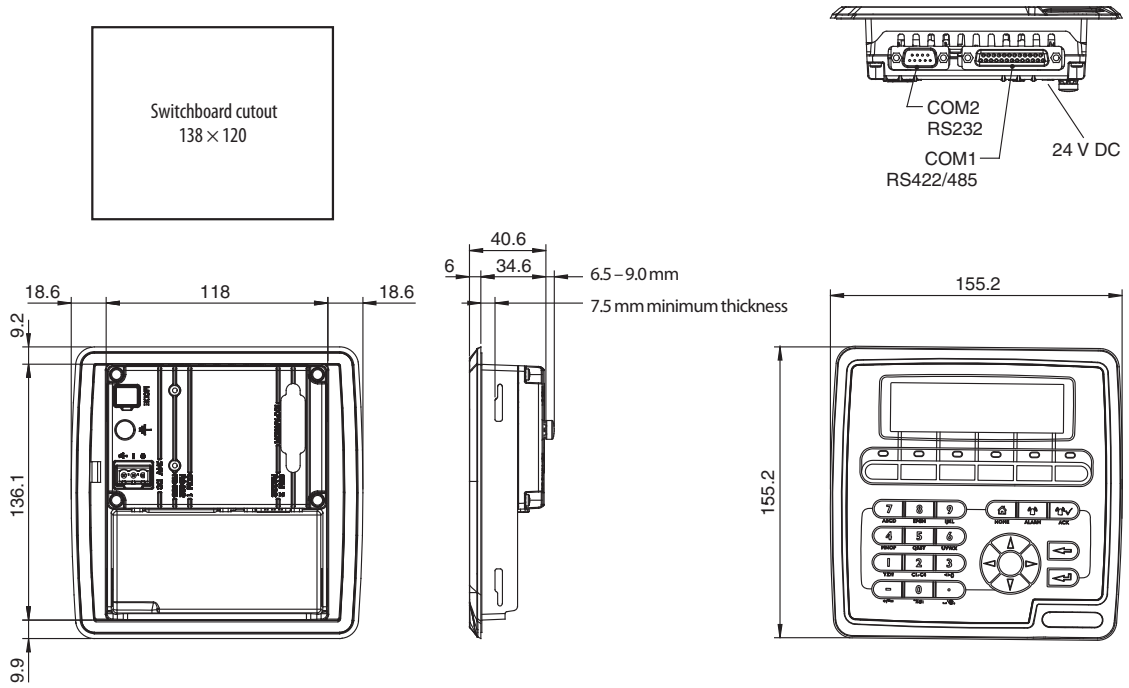
All dimensions in mm

■ GT1695M-XTBA, GT1695M-XTBD



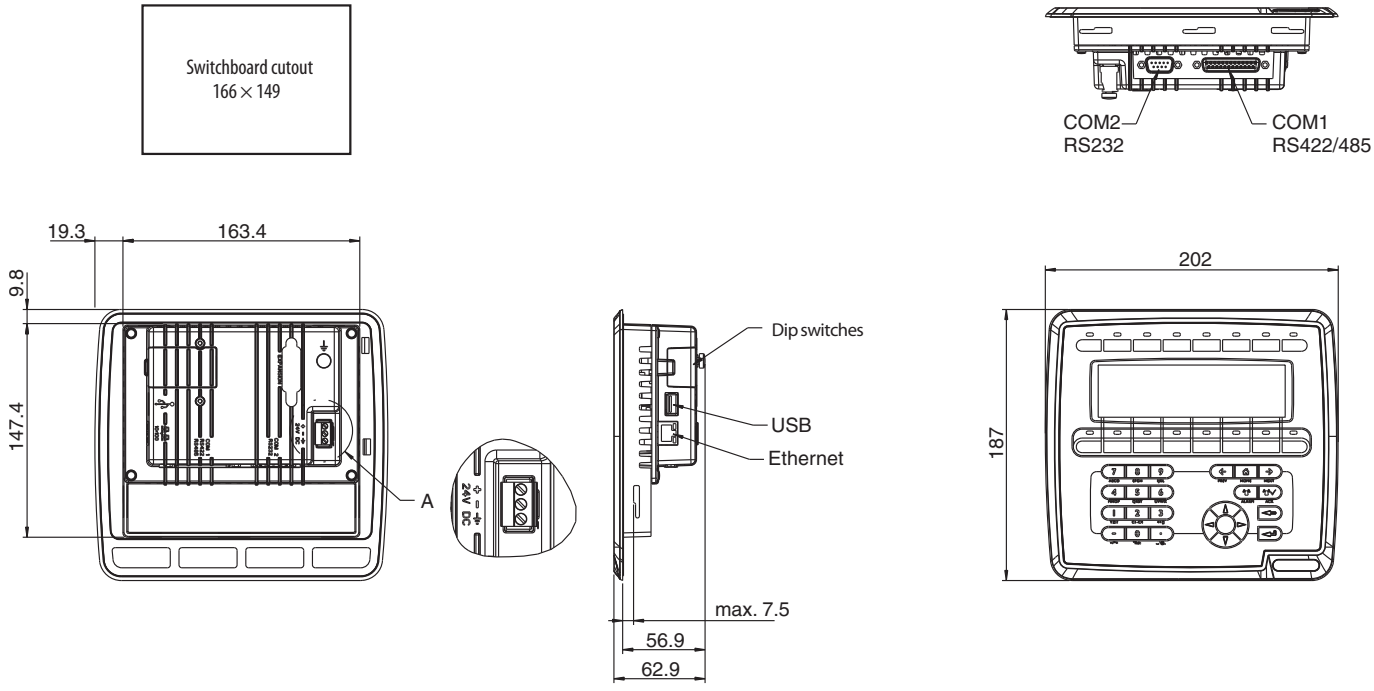
All dimensions in mm

■ E1022



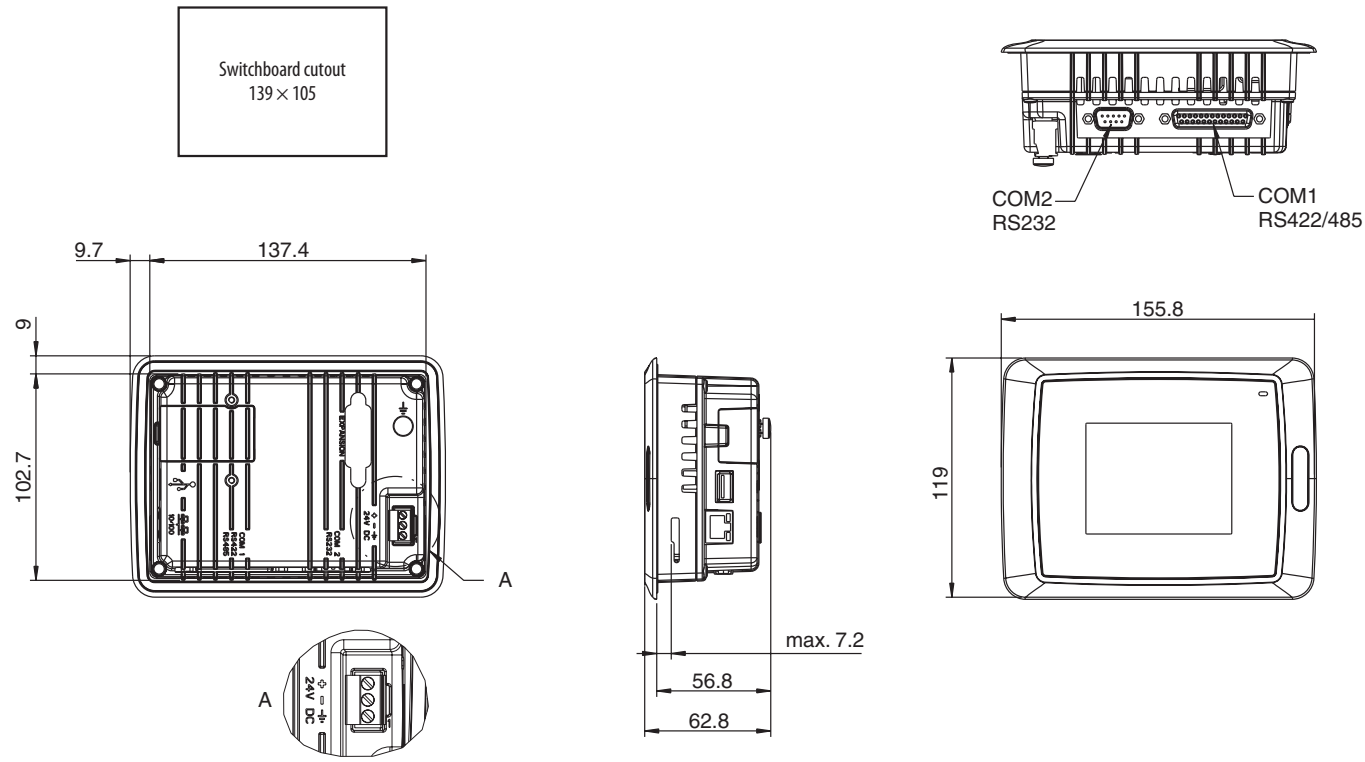
All dimensions in mm

■ E1032



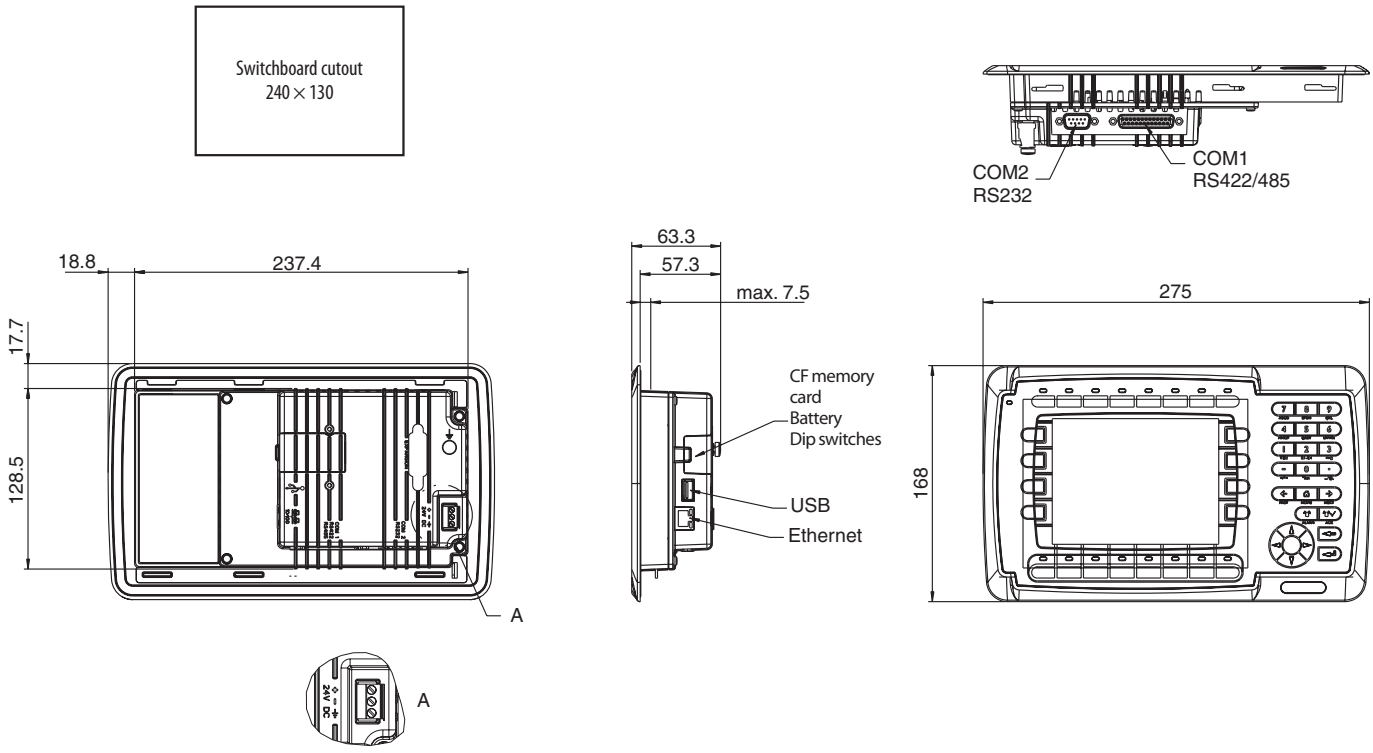
All dimensions in mm

■ E1041 / E1043



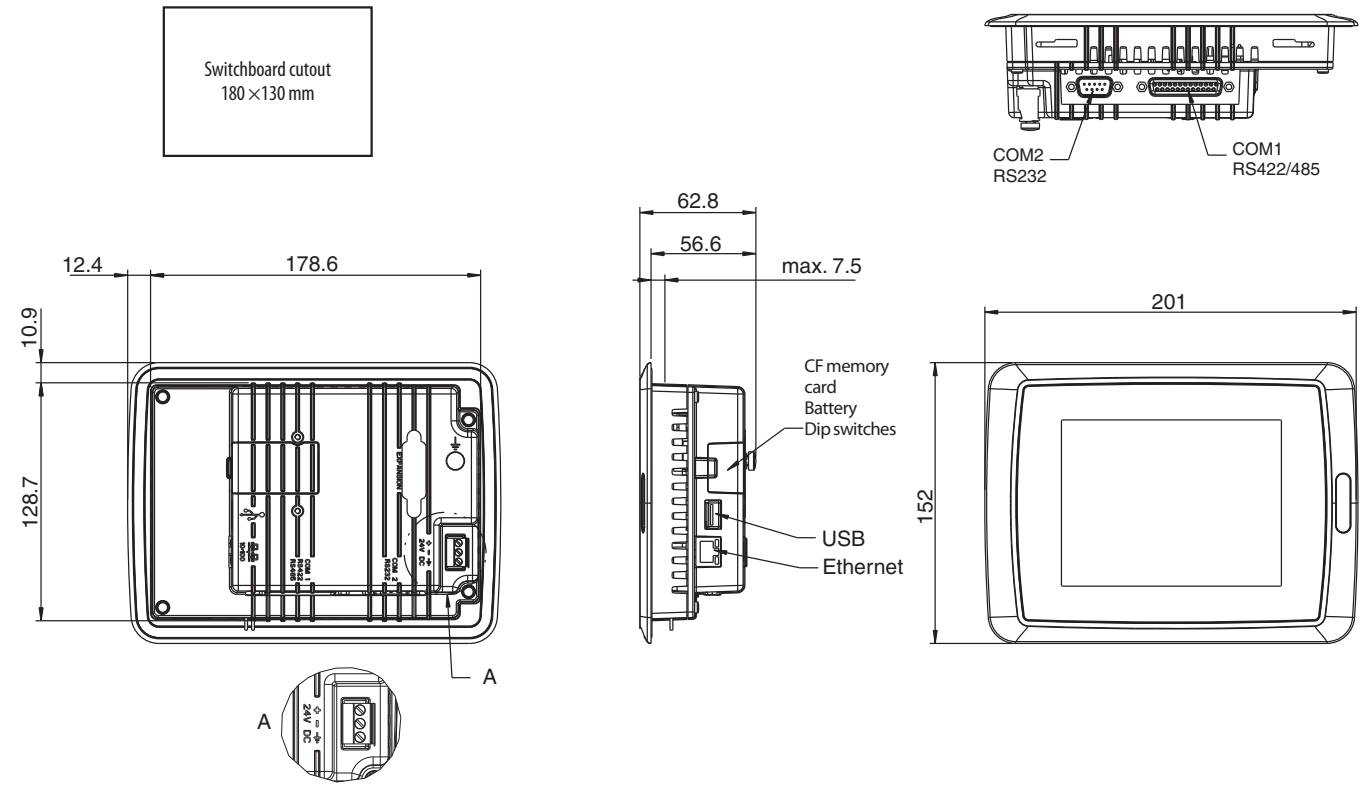
All dimensions in mm

■ E1060 / E1062



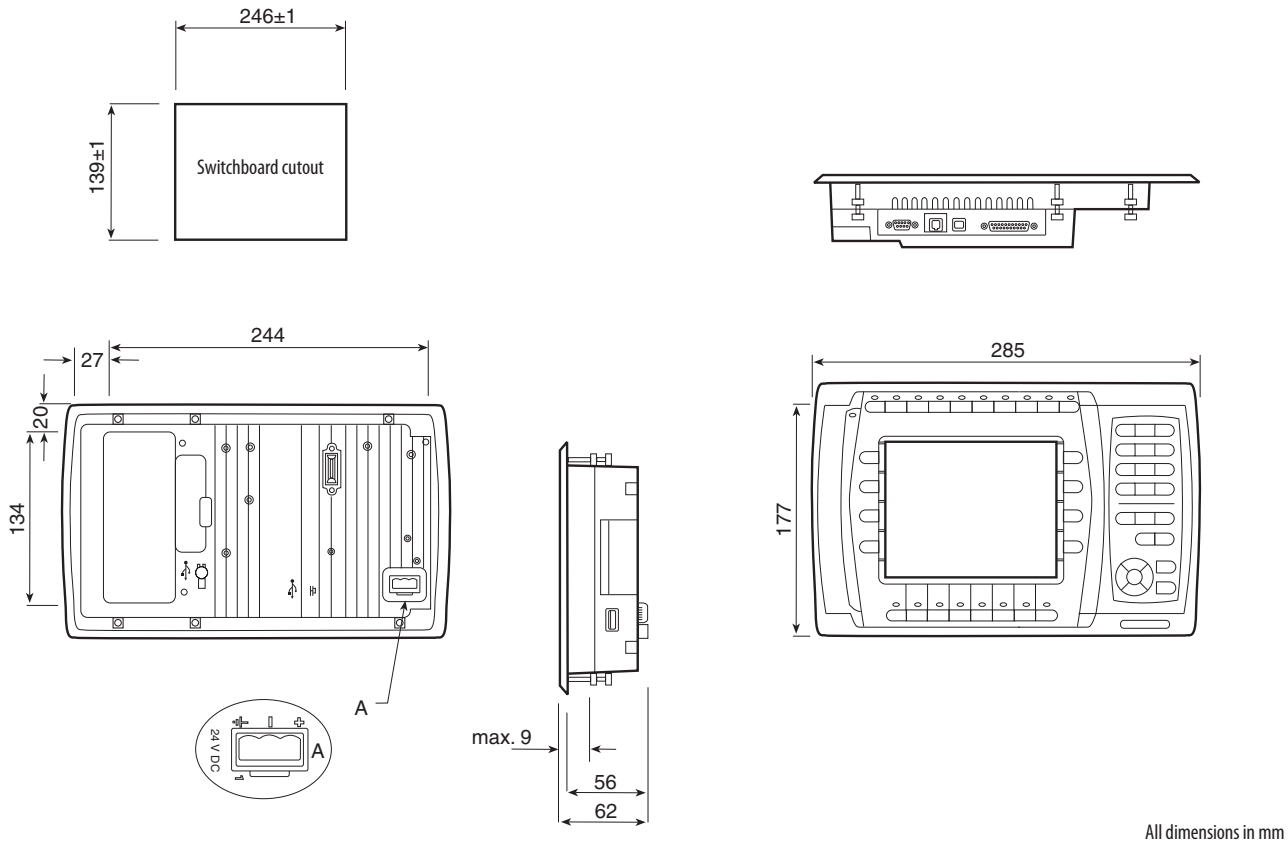
All dimensions in mm

■ E1061 / E1063



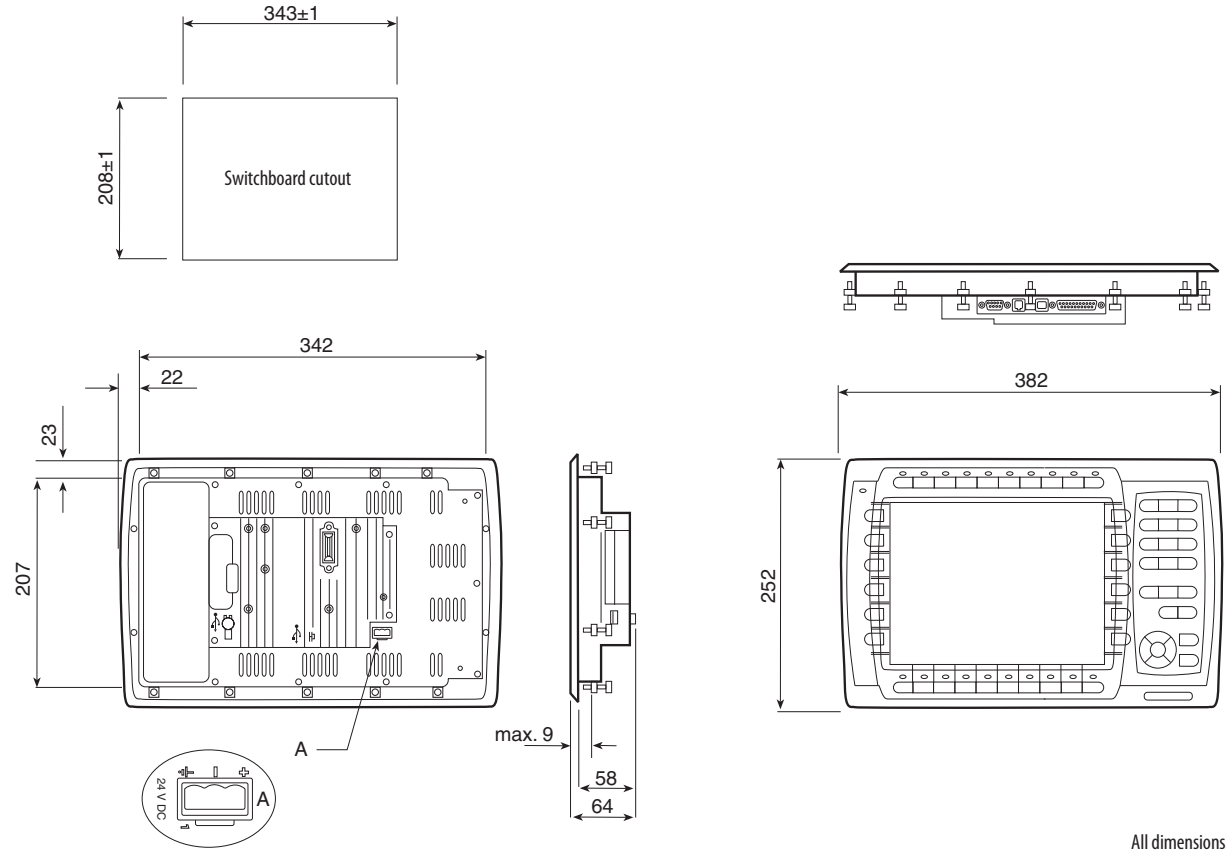
All dimensions in mm

■ E1070



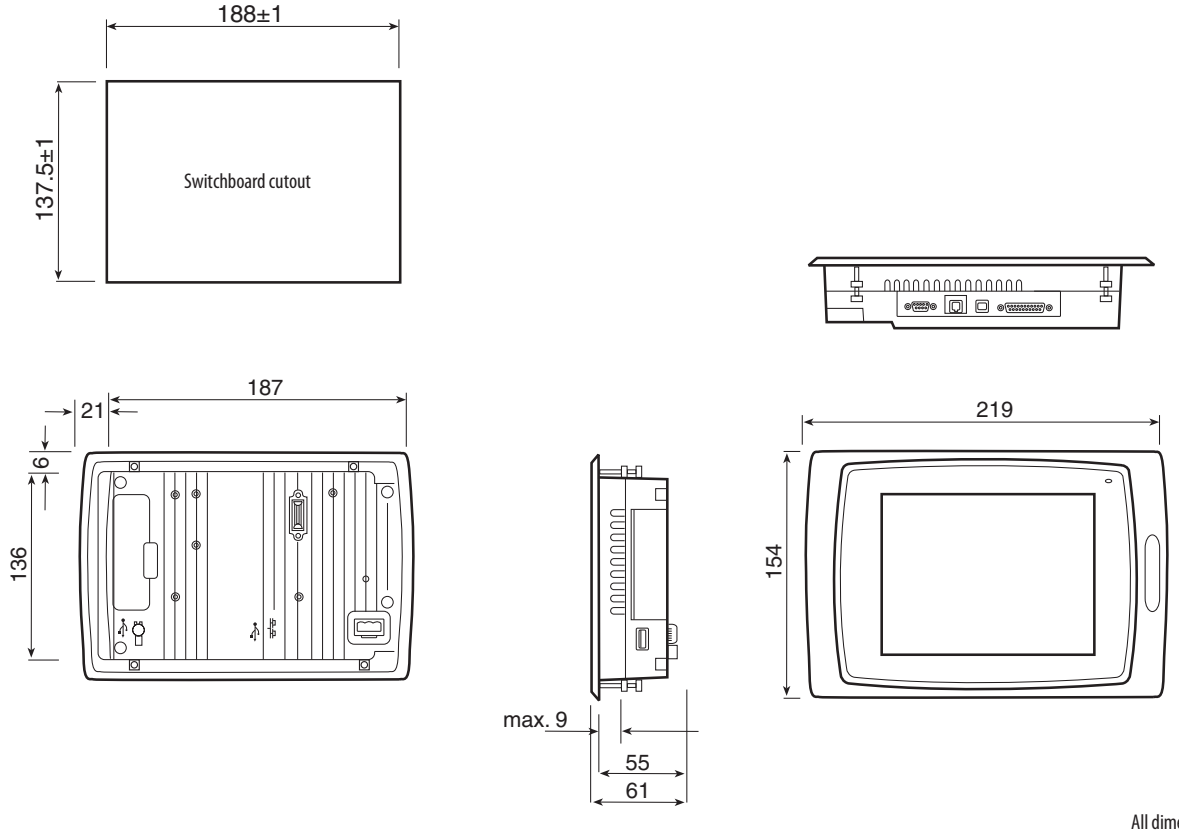
All dimensions in mm

■ E1100



All dimensions in mm

■ E1071



All dimensions in mm

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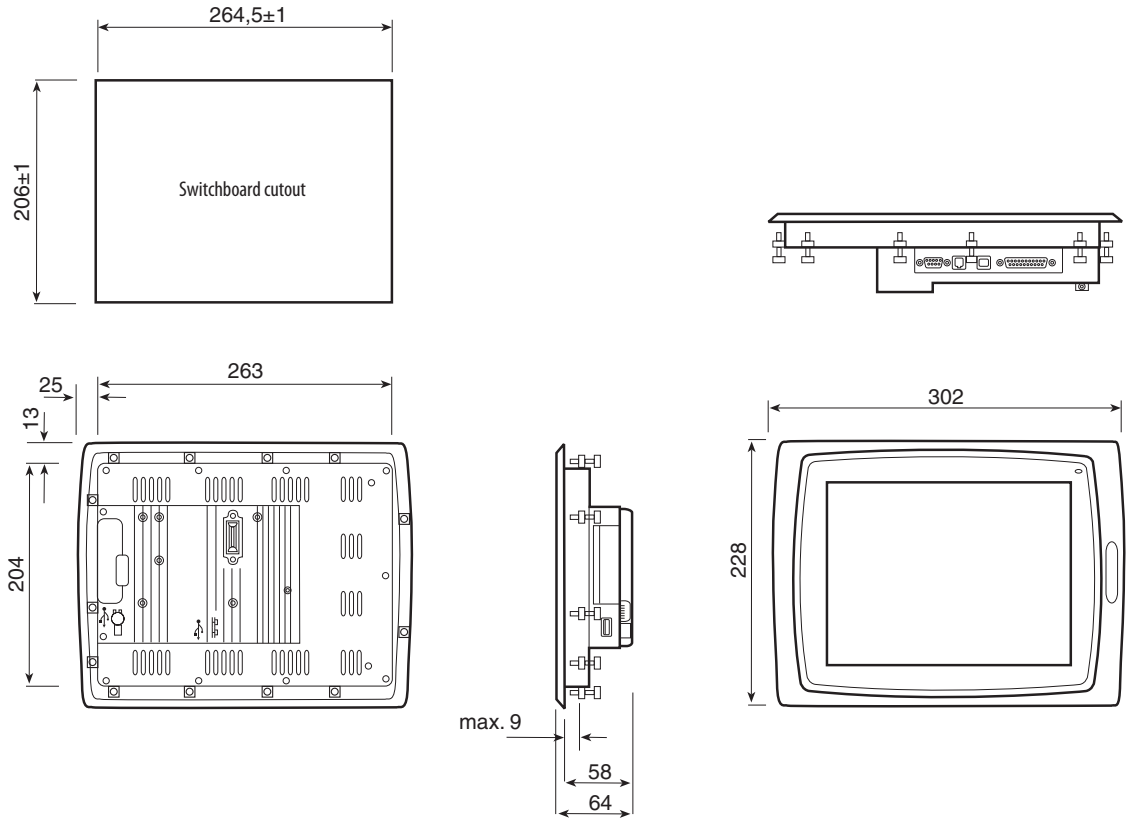
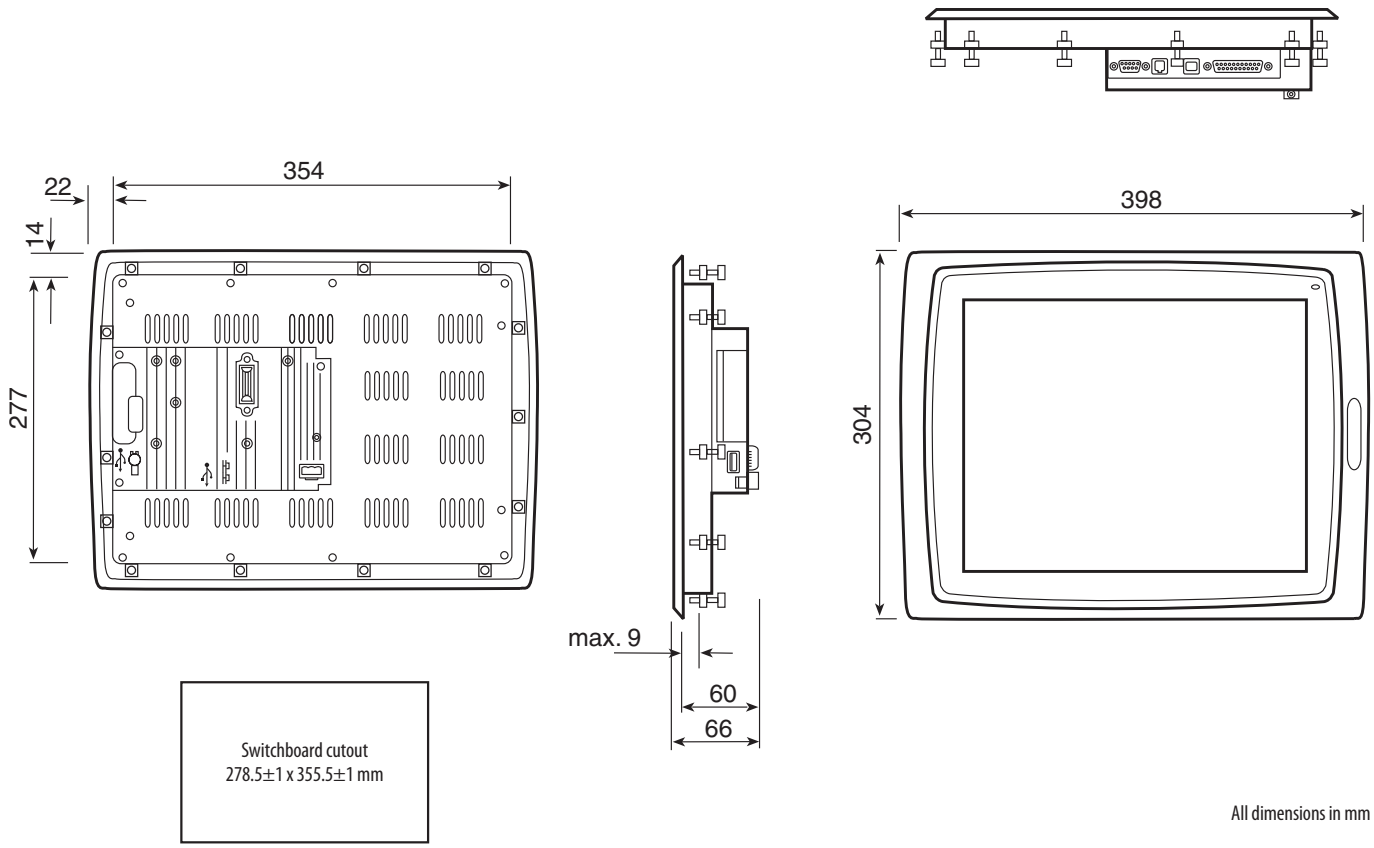


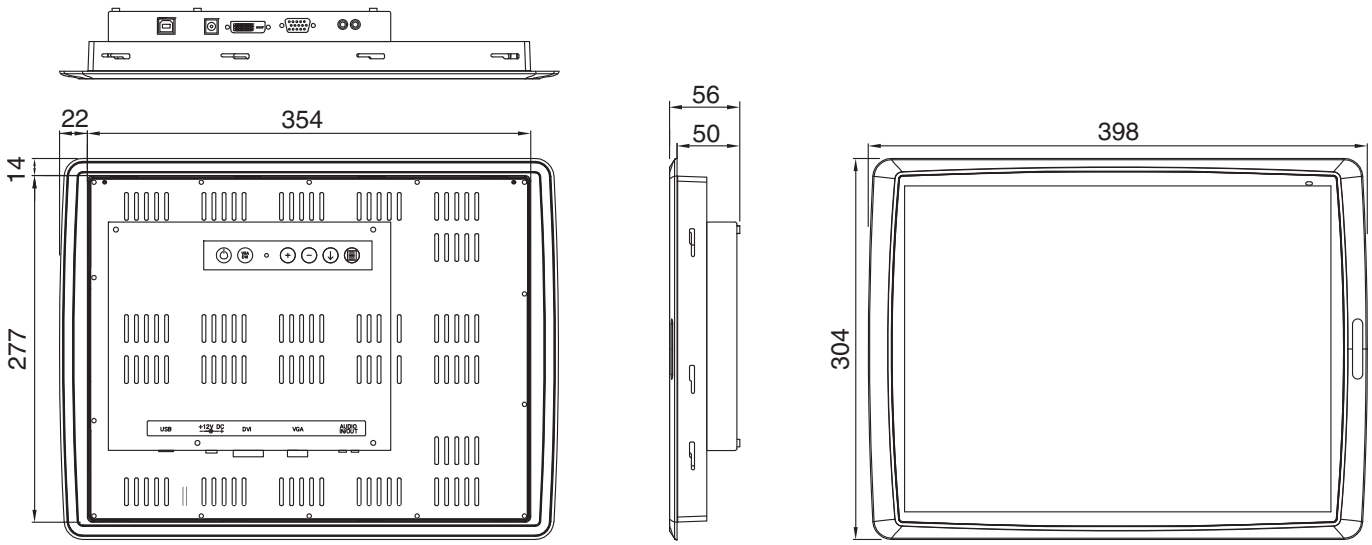
All dimensions in mm

■ E1151



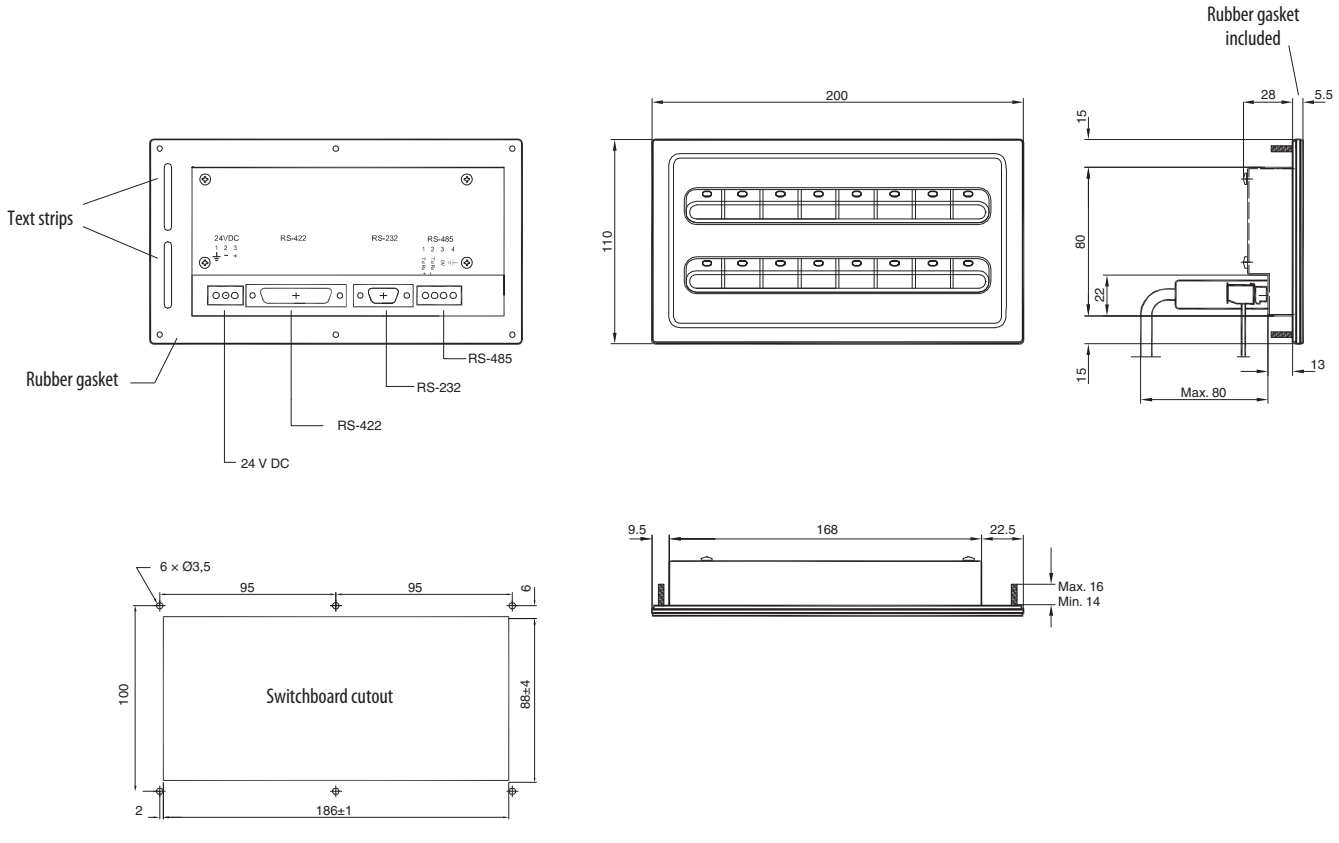
All dimensions in mm

■ DT1151



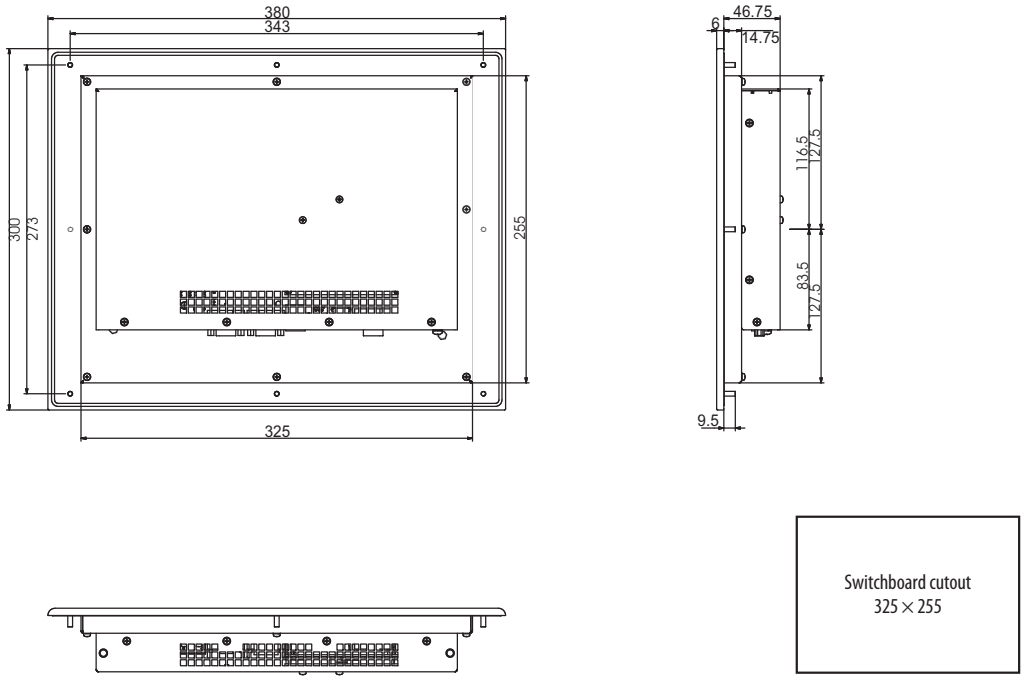
All dimensions in mm

■ Keyboard Extension X-Key-16



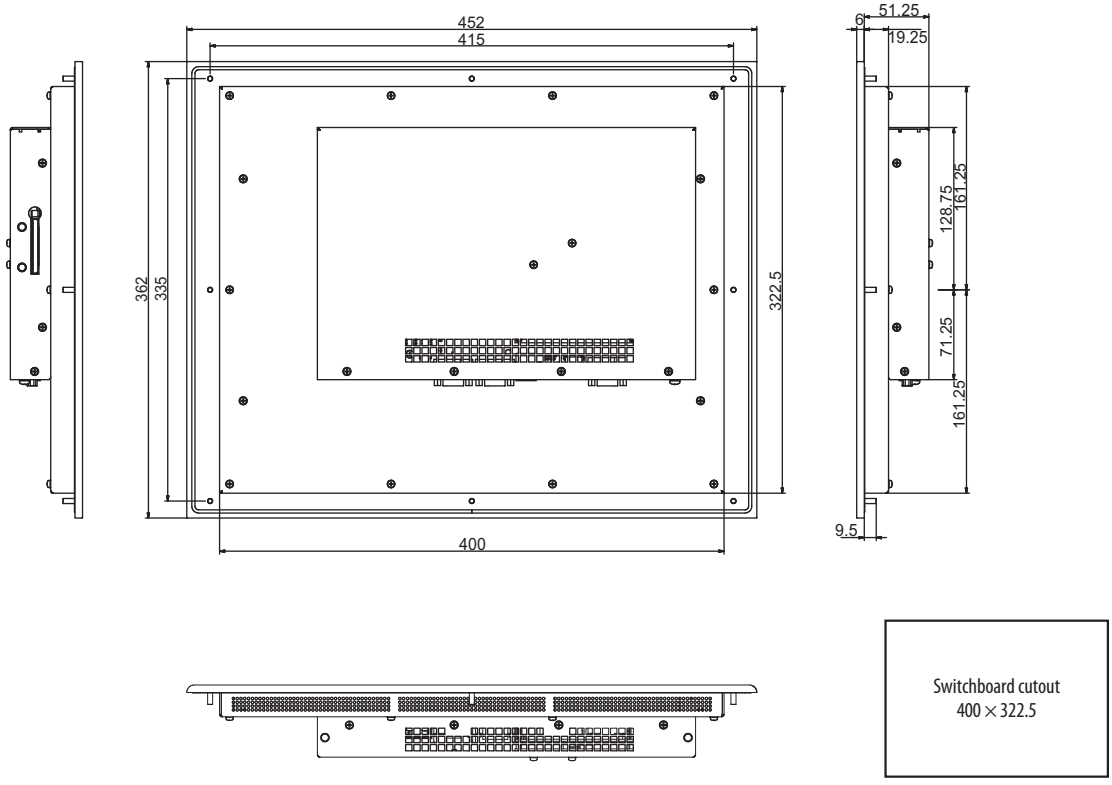
All dimensions in mm

■ IPC-MC1121



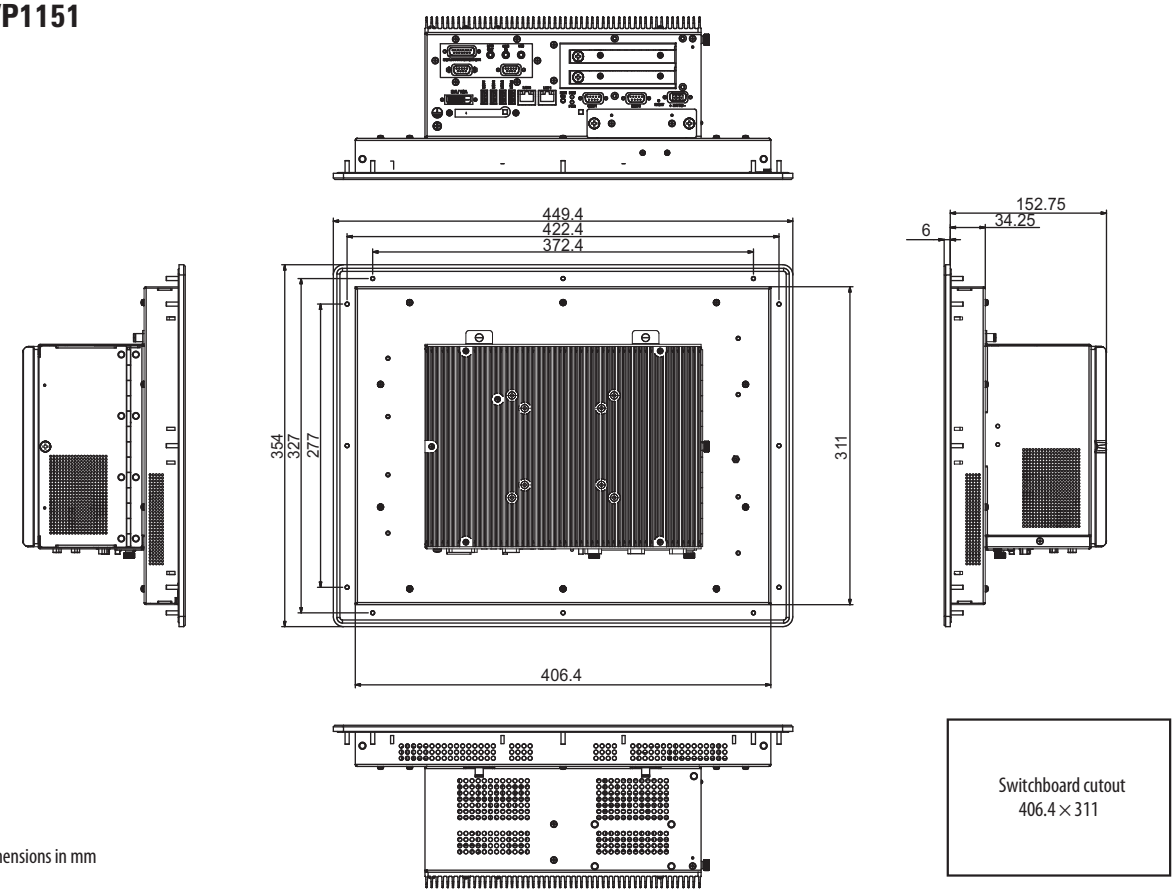
All dimensions in mm

■ IPC-MC1151



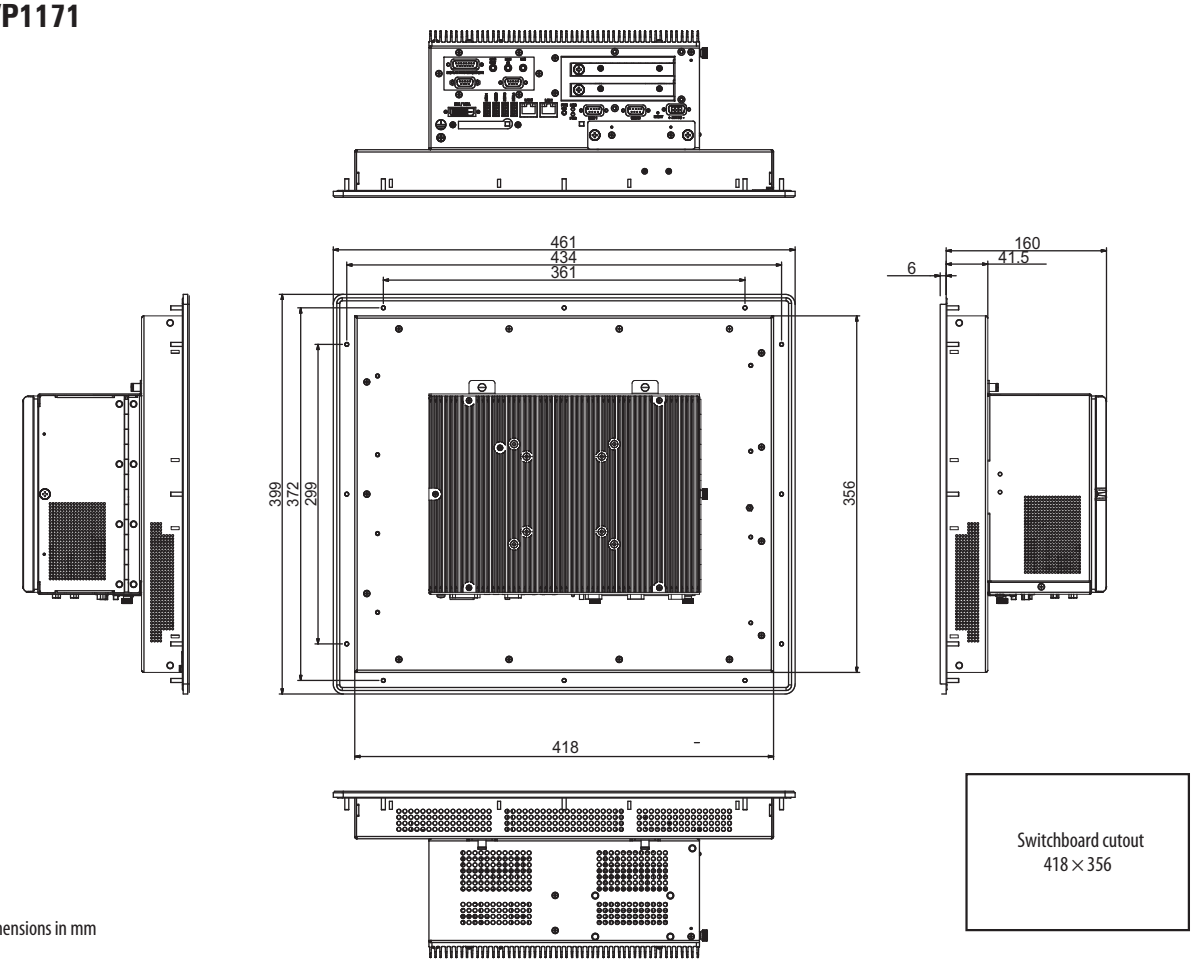
All dimensions in mm

■ IPC-VP1151



All dimensions in mm

■ IPC-VP1171



All dimensions in mm

MELSOFT – Programming and Documentation Software for Standard Personal Computers

With the MELSOFT software family Mitsubishi Electric offers efficient software packages helping to reduce programming and setup times to a high degree.

The MELSOFT software family provides instant access, direct communications, compatibility, and open exchange of variables.

The MELSOFT family comprises:

- Programming packages like GX Developer and GX IEC Developer
- Software for a dynamic data exchange like MX Change
- Visualization software like for example MX4 HMI
- Programming software for GOT operator terminals GT-Works
- Programming software for E series operator series E-Designer
- PC-based HMI systems for GOT operator terminals GT SoftGOT1000

For detailed information please order our separate MELSOFT brochure.

■ Visualization Software MX4 HMI

MX4 HMI

MX4 HMI is a reduced version of MX4 SCADA. It includes many of the functions of MX4 SCADA, but has been designed for standalone HMI applications.

The main features are:

- A large number of I/O points ranging from 100 to a maximum of 600, with the ability to connect to three different types of drivers.
- It is a scalable solution that can be upgraded from a HMI to a SCADA solution and then have additional upward connectivity to business systems.
- Basic functions like alarms, trend analysis and reports have been set-up and are ready-to-use, saving you time and the expertise needed to program them.
- The use of super genies enables you to save repetitive machinery processes, and replicate the process by a click of a button. This saves time and the cost of skilled labour, allowing a complex task to be performed much more simply.

Specifications		Development version/ Demo version	Run-Time version
System requirements	computer	Pentium based 266 MHz or compatible PC with MS Windows NT®, MS Windows 2000® or MS Windows XP®	
	memory	Min. 96 MB (MS Windows NT®)	
Free harddisk space		200 MB	
Networks		TCP/IP (using ETHERNET), UDP	
Operating system		MS Windows NT/2000® or MS Windows XP®	
Driver		FastLinx (included with MX4)	
Order information	Art. no.	153421	On request

■ GT Works (GT SoftGOT1000 and GT Designer)

GT Works

GTWorks is a wide-ranging programming and visualization control tool from Mitsubishi. Included are the two main program parts GT SoftGOT1000 and GT Designer as well as a HMI simulator and a converter for former projects. The software language is English, a German version is also available. Please remark when ordering.

GT Designer

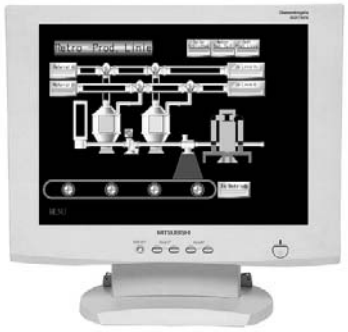
As part of GTWorks, GT Designer is a drawing program designed to create HMI screens for all GOT series. A user-friendly Windows environment provides the user with a simple and recognisable interface, reducing the time of their learning curve and the training costs associated with it. The package consists of:

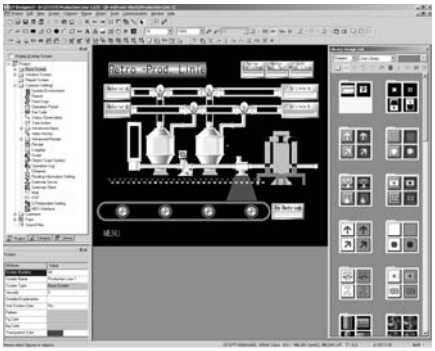
- An extensive picture and graphics library editor that enables you to modify the graphics to meet your exact specifications.
- A tree format of the project gives you an overview of the structure of the project. This gives you the opportunity to navigate through your project and add, delete or move any programs or functions, creating a more logical flow to your menu structure.

- The combination of GT Simulator and GX Simulator allows you to test both the HMI and PLC coding offline, on your PC without the need to connect to physical hardware.
- Configuration of up to ten languages in the application, easy to edit by using the open Excel format

Specifications	GTWorks: GT Designer
Application for	All GOT operator terminals
Software language	English, German*
Operating system	MS Windows 2000®, MS Windows® XP, MS Windows Vista®
System requirements	PC with at least 1 GHz CPU, 512 MB RAM and 1.5 GB free harddisk space
Required computer interface	RS232C, USB, Ethernet

Order information	Art. no.	
		Full version English: GT Works2: 220028 2 licences and more 220031 GT Works3: 230020 2 licences and more 230021 Full version German: GT Works2: 216916 2 licences and more 216917 GT Works3: in preparation, more details on request





A major benefit of GT SoftGOT1000 is that visualisation screens can be created independently of their final target platform, i. e. a hardware platform such as GOT1000 or a PC based platform such as GT SoftGOT1000. This is a PC based HMI module within GTWorks. A further benefit of GT SoftGOT1000 is that it inherits the advanced simulation features of GTWorks. It can be simulated in a stand-alone configuration or in conjunction with GX Simulator, linking both PLC and HMI simulation code for a true integrated approach.

- Platform independent, screens created can be used for software-based HMIs or hardware based GOT HMIs.
- Remote monitoring and operation by intranet LAN is possible.
- E-mail support for alarms
- Recording of historical Data in user-friendly formats
- Communication with MELSEC PLCs via serial communication, USB (to System Q port), CC-Link IE PC card or Ethernet possible
- Windows and Microsoft programs can be accessed from within GT SoftGOT1000.

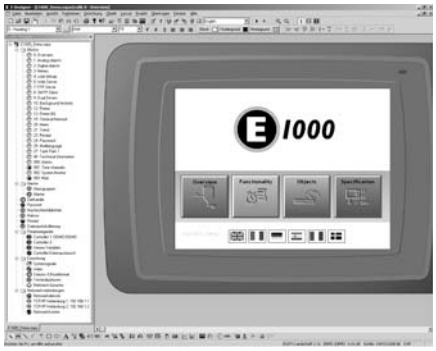
Specifications	GT Works: GT SoftGOT1000
Application for	All GOT operator terminals
Software language	English, German*
Operating system	MS Windows 2000®, MS Windows® XP, MS Windows Vista®
System requirements	PC with at least 1 GHz CPU, 512 MB RAM and 1.5 GB free harddisk space
Required computer interface	RS232C, USB, Ethernet
Required dongle interface	USB or parallel port (dongle included in the package)

Order information	Art. no.	
		Runtime version English with USB dongle: 214653 Runtime version English with parallel port dongle: 214650 Runtime version German with USB dongle: 210822 Runtime version German with parallel port dongle: 210820

*A german version of GT Works3 is in preparation.
More Details on request.

Programming HMI

■ E-Designer



Programming Software for all E Series Operator Terminals

The programming software E-Designer provides easy creation of projects for all control units in the E series.

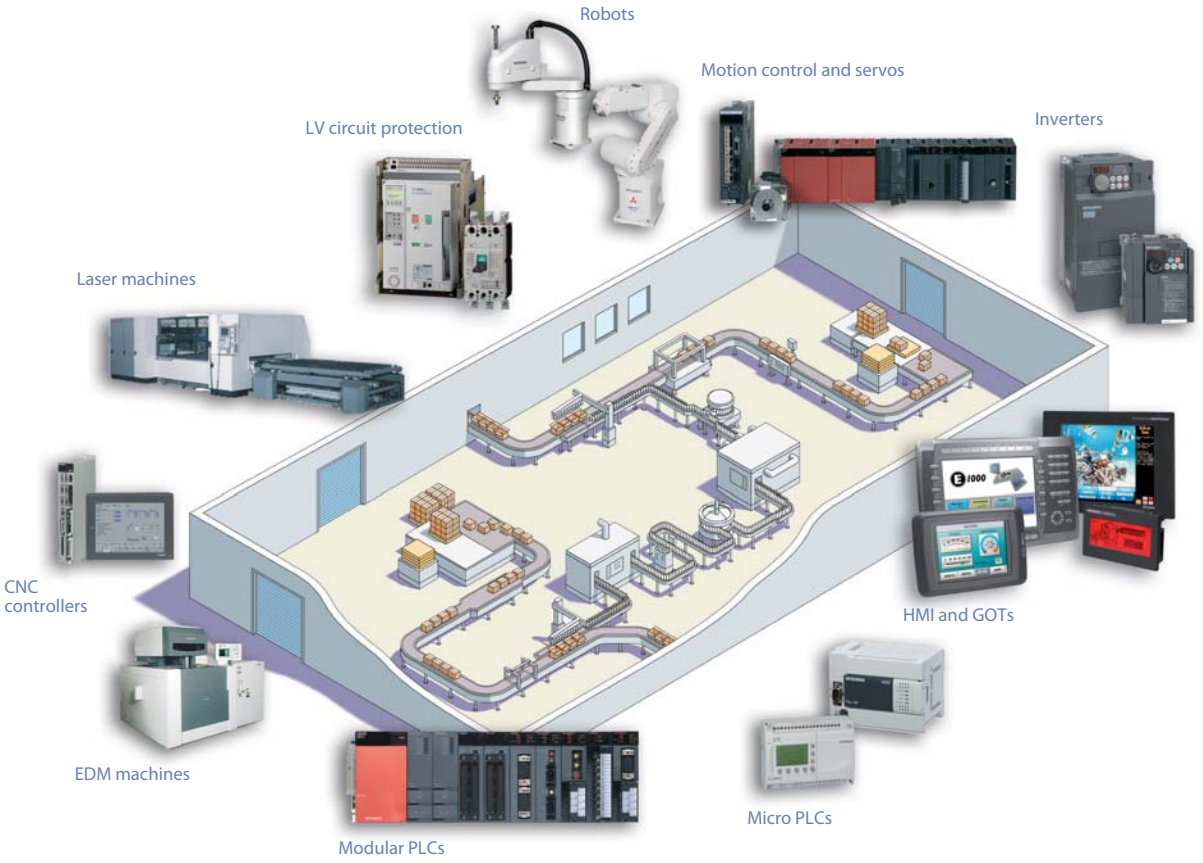
The block manager displays the application graphically and clearly and saves time for the creation.

E-Designer supports the following languages on the desktop:
english, german, spanish, italian, french, swedish

- Full support of the Windows editing functions (e.g. cut, copy, paste etc.)
- Extensive documentation and storage functions
- Different projects can be edited simultaneously.
- Multi-language support for up to 10 languages in the application
- The name list is compatible to GX IEC Developer.
- E-Designer is supported by MX-Change.
- Simulation mode for E1000 projects

Specifications		E-Designer V0750-1LOC-M	E-Designer V0750-1LOC-M-UP	E-Designer V0750-1LOC-M-UPD
Application		All E series control units		
Software language		English, german, spanish, italian, french, swedish		
Storage media		CD-ROM		
Operating system		MS Windows 98®, MS Windows ME®, MS Windows NT 4.0®, MS Windows 2000®, MS Windows® XP		
System requirements		PC with at least 32 MB RAM and 55 MB free harddisk space		
Required computer interface		RS232C, Ethernet		
Version		Full version 7.50	Upgrade version (from version 6.x to 7.x)	Update version (minor version change in version 7.x)
Order information	Art. no.	217647	217648	217649

A world of automation solutions



Mitsubishi offer a wide range of automation equipment from PLCs and HMIs to CNC and EDM machines

A name to trust

Since its beginnings in 1870, some 45 companies use the Mitsubishi name, covering a spectrum of finance, commerce and industry.

The Mitsubishi brand name is recognized around the world as a symbol of premium quality.

Mitsubishi Electric Corporation represents space development, transportation, semiconductors, energy systems, communications and information processing, audio visual equipment, home electronics, building and energy management and automation systems, and has 237 factories and laboratories worldwide in over 121 countries.

This is why you can rely on a Mitsubishi automation solution – because we know first hand about the need for reliable, efficient, easy-to-use automation and control.

As one of the world's leading companies with a global turnover of 4 trillion Yen (approximately $40 billion), employing over 100,000 people, Mitsubishi Electric has the resource and the commitment to deliver the ultimate in service and support as well as the best products.

Global partner. Local friend.

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