

|  | Page |
|--|------|
| <b>Description</b>                         |      |
| Text/graphics/touch operator panel MI4     | 5/4  |
| Configuration software MI4-CFG-1           | 5/12 |
| Touch operator panel MV4                   | 5/15 |
| Configuration software MV4-CFG-1 (Galileo) | 5/18 |
| <b>Basic Units</b>                         |      |
| Text/graphics/touch operator panel MI4     | 5/6  |
| Touch operator panel MV4                   | 5/16 |
| <b>Accessories</b>                         |      |
| Text/graphics/touch operator panel MI4     | 5/13 |
| Touch operator panel MV4                   | 5/19 |
| <b>Technical data</b>                      |      |
|  | 5/20 |
| <b>Dimensions</b>                          |      |
|  | 5/26 |



# HMI

## Brilliant Displays of Processing Sequences



With its MI4 and MV4 operator and display units, Moeller offers you a product range for Man/machine communication that allows you to implement solutions quickly and in the optimum fashion. The offering includes units from graphics-capable Text Operator panels with 4 x 20 characters and 11 keys, up to 15" TFT Touch Operator panels with a resolution of 1024 x 768 pixels.

With the Touch Operator panels you have a choice between devices with analog resistive (MI4 series) or infrared touch technology (MV4 series).

When equipped with a communication module, these operator and display units become bus-capable and can be connected via CANopen, PROFIBUS-DP, Suconet, MPI, DeviceNet and many other protocols.



The graphics-capable MI4 Operator panels are designed for simple and economical machine operation. There is a choice of units offering differing combinations of display and key configuration, depending on requirement for information and operator task. New features offered are the options of showing pictograms, logos and schematic drawings on the screen. The MI4-140-KF1 Text Operator panel even offers the possibility of mobile operation that is ideal for use during commissioning of machines and systems.



Visualisation plus operation of complex machine control systems. This is the challenge to modern monitoring technology, because the user has to be kept up-to-date with what is happening at the machine at all times, and has to be able to intervene if necessary.

The Moeller MV4 series of products is capable of optimally meeting all the demands on Man/machine communication. These Touch Operator panels offer perfect control while guaranteeing short reaction times, whether individual signals or complete production sequences are involved.



### Text Operator Panel

The MI4 Text Operator panels are designed for simple and economical machine operation. The monochrome, yet clearly contrasting, LCD displays are back-lit by durable LEDs. All the displays are graphics-capable, which means that various character sets, diagrams and bar-graphs, etc. can be shown on the screen. Each of the keys can be configured as the project requires, and insert strips for the function keys allow these to be individually inscribed.



### Grafik Operator Panel

The MI4 Graphics Operator panels offer a clear representation of machine and processing systems sequences. The values of any PLC variables can be shown in the form of a trend curve, a bar graph or as an analog pointer-type instrument. The engineer has a comprehensive graphics and object library at his disposal. The wide range of functions also includes others such as the automatic temperature compensation of the display contrast and a screen saver. As far as configuration of the keys, as well as labelling with insert strips is concerned, the Graphics Operator panel offers the same features as the Text Operator panel.

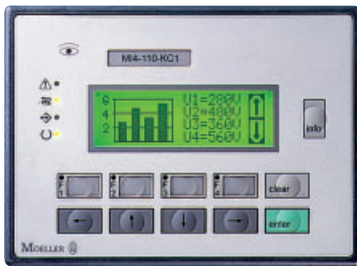


### Touch Operator Panel

The Touch Operator panels enable menu-guided, intuitive operation of complex machines or systems. Two product ranges are available: the MI4 Touch Operator panels use analog-resistive touch technology with a full-screen film surface. The MV4 Touch Operator panels use infrared touch technology with scratchproof and impact-resistant glass screen surface. Both ranges include units from 3.8" STN displays (monochrome) with 320 x 240 pixel resolution (MV4: 5,7") to 15" TFT displays (256 colours) with 1024 x 768 pixel resolution.

Graphics-capable text operator panel

MI4-110-KC1, MI4-117-KC1



MI4-110-KD1, MI4-117-KD1



MI4-110-KG1-KG2



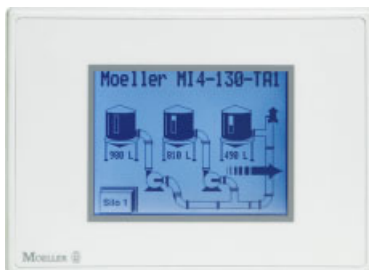
Graphic operator panel

MI4-450-K11

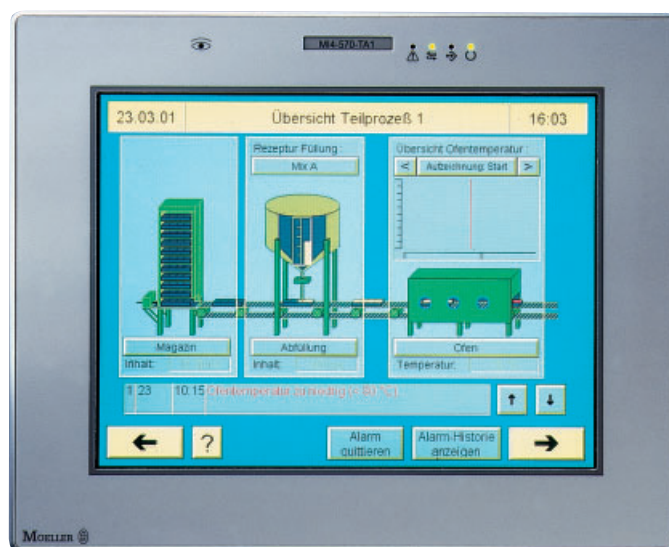


Touch operator panel

MI4-130-TA1, MI4-137-TA1



MI4-570-TA1



Moeller HPL0213-2004/2005

**Product description**

The MI4 spectrum ranges from a graphics-capable text operator panel with a 4 × 20 character LCD display and 11 keys up to a touch operator panel with a 15" TFT display and a resolution of 1024 × 768 pixels. All these devices can be project-programmed with the MI4 configurator MI4-CFG-1.

**Application**

The MI4 graphic text operator panels are designed for simple and economical machine operation. Units with different display types and key combinations are available, depending on the information requirements and the operating task at hand. A new feature of these units, however, is the possibility of displaying pictographs, logos and diagrams.

The text operator panel MI4-140-KF1 even allows mobile operation, as may be required for setting up operations on widely spread out machinery.

The MI4 graphic and touch operator panels are designed for user-friendly display and operation. Impressive visualization displays are possible thanks to the flexible design capability of the display user interface using bitmaps, trend curves, analog pointer-type instruments and other moving displays. This also enables the user to obtain more quickly the current status data of machines and systems.

Touch operator panels also enable the menu-driven and intuitive operation of complex machines and systems.

**Features**

- Display of system states and process variables via numeric data fields, bar graphs or text messages.
- Setpoint entry via numeric data fields
- Display and storage of alarms with date and time
- History memory
- Recipe management
- Recipe memory, battery-buffered (not with MI4-110-KC1/-KG2)
- Real-time clock, battery-buffered (not with MI4-110-KC1/-KG2)
- Time synchronisation (with PLC and/or other MI4 units)
- Language selection via MI4 and/or PLC
- Password protection (issue of up to 8 different access rights)
- Serial printer interface (not with MI4-110-KC1/-KD1/-KG2, MI4-117-KC1/-KD1 and MI4-130-TA1, MI4-137-TA1) for printing out messages, alarm lists and history memories.
- 24 V DC connection, protected against reverse polarity
- IP65 degree of protection at front
- Backlit LCD display
- Display contrast setting
- Freely configurable keys
- Insert labels for free user inscription of function keys and logos
- Function key LEDs actuated by the MI4 and/or the PLC

Additional features for graphic and touch operator panels:

- Display of variable values as analog dial instruments and trend curves (no trend curves with MI4-130-TA1, MI4-137-TA1)
- Display brightness setting (only for STN displays)
- Automatic temperature compensation of display contrast
- Screen saver
- Object and symbol libraries
- Resistive-Touch technology

**Engineering/programming**

Project planning for all MI4 operator panels is carried out with the MI4 configurator MI4-CFG-1. The software runs under Windows 98SE, ME, NT, 2000 and XP. A user-friendly panel setup dialog is used at first to select the unit for which the project is designed, as well as its particular properties. The PLC connection can also then be configured by means of simple dialogs. The contents displayed on the MI4 screen pages can be created page by page using drag and drop operations. The final project can then be transferred via the serial interface or using the available PC drive accessory for units with an SSFDC memory card.

**Communication/networking**

All MI4 units are provided with an interface for connection to a fieldbus. Different fieldbus interfaces are possible thanks to the different interface module accessories that are available. These are simply fitted on a socket in the MI4 unit. The MI4-117-KC1, MI4-117-KD1 and MI4-137-TA1 are fitted with an integrated CAN interface. Additional interface modules can be plugged into these devices.

Furthermore, all MI4 units can also be connected to Moeller PLC systems directly via SUCOM-A without the use of an interface module. Connection to easy800 and the DF5/6 and DV5/6 frequency inverters is also possible, without an additional interface module.

**Documentation**

Documentation in the form of PDF files in English and German is included in the MI4 configurator MI4-CFG-1.

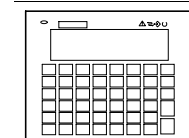
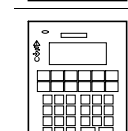
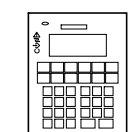
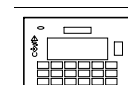
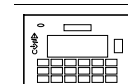
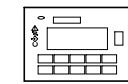
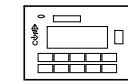


Moeller HPL0213-2004/2005

| Display    | Operation          |                      |                    | User LED |    |    |    |
|------------|--------------------|----------------------|--------------------|----------|----|----|----|
|            | Lines × characters | Resolution<br>Pixels | Display area<br>mm |          |    |    |    |
| Monochrome | 4 × 20             | 120 × 32             | 70 × 21            | –        | 4  | 11 | 4  |
| Monochrome | 4 × 20             | 120 × 32             | 70 × 21            | –        | 4  | 11 | 4  |
| Monochrome | 4 × 20             | 120 × 32             | 70 × 21            | ●        | 9  | 19 | 10 |
| Monochrome | 4 × 20             | 120 × 32             | 70 × 21            | ●        | 9  | 19 | 9  |
| Monochrome | 4 × 20             | 120 × 32             | 70 × 21            | ●        | 12 | 35 | 12 |
| Monochrome | 4 × 20             | 120 × 32             | 70 × 21            | ●        | 12 | 35 | 12 |
| Monochrome | 8 × 20             | 120 × 64             | 66 × 33            | ●        | 9  | 27 | 21 |
| Monochrome | 8 × 40             | 240 × 64             | 127 × 34           | ●        | 23 | 46 | 24 |

**Graphics-capable text operator panel**

- LCD monochrome
- Background lighting LED
- Project memory 512 kByte
- Graphic
- Scalable font
- Password protection



**Notes** Device feature: fieldbus interface. The modules for fieldbus connection must be ordered separately.

Moeller HPL0213-2004/2005

| Memory                 | History memory messages           | Alarm messages | Device features | Type Article no.   | Price See Price List         | Std. pack | Notes   |
|------------------------|-----------------------------------|----------------|-----------------|--|------------------------------|-----------|---|
| Recipe memory<br>kByte | Project memory expansion<br>kByte | Quantity       |                 |  |                              |           |   |
| –                      | –                                 | –              | 256             | Interface for SUCOM-A, fieldbus interface, downloadable fonts  | <b>MI4-110-KC1</b><br>229794 | 1 off     | Alphanumerical entries can be made with the cursor keys.  |
| –                      | –                                 | –              | 256             | Integrated CAN interface, SUCOM-A interface, downloadable fonts  | <b>MI4-117-KC1</b><br>283397 | 1 off     | Alphanumerical entries can be made with the cursor keys. No addition fieldbus modules can be plugged in.  |
| 16                     | –                                 | 256            | 1024            | Interface for SUCOM-A, fieldbus interface, battery, buffered real-time clock, downloadable fonts                       | <b>MI4-110-KD1</b><br>274308 | 1 off     | –   |
| 16                     | –                                 | 256            | 1024            | Integrated CAN interface, SUCOM-A interface, battery, buffered real-time clock, downloadable fonts                     | <b>MI4-117-KD1</b><br>283398 | 1 off     | No addition fieldbus modules can be plugged in.   |
| –                      | 512                               | –              | 256             | Interface for SUCOM-A, fieldbus interface, downloadable fonts  | <b>MI4-110-KG2</b><br>229795 | 1 off     | –   |
| 16                     | 512                               | 256            | 1024            | Battery, buffered real-time clock, serial printer interface, SUCOM-A interface, fieldbus interface, downloadable fonts | <b>MI4-110-KG1</b><br>229796 | 1 off     | –   |
| 16                     | –                                 | 256            | 1024            | Battery, buffered real-time clock, serial printer interface, SUCOM-A interface, fieldbus interface, downloadable fonts | <b>MI4-140-KF1</b><br>229797 | 1 off     | Fieldbus interface: MI4-140-KF1: only modules ZB4-505-IF1 (Siemens MPI) or ZB4-501-IF1 (Suconet K) can be plugged in. Including hooks and 5 m connection cable. |
| 16                     | 512                               | 256            | 1024            | Battery, buffered real-time clock, serial printer interface, SUCOM-A interface, fieldbus interface, downloadable fonts | <b>MI4-140-KI1</b><br>229798 | 1 off     | –   |

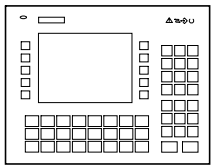
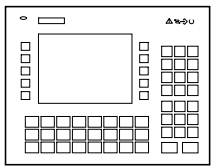
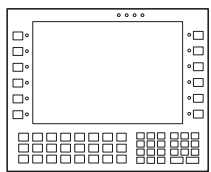
HMI



| Display |            | Operation    |                 |                 |                                      |                          |          |
|---------|------------|--------------|-----------------|-----------------|--------------------------------------|--------------------------|----------|
| LCD     | Resolution | Display area | Screen diagonal | Numerical block | Function keys, can be user-inscribed | Freely programmable keys | User LED |
|         | Pixels     | mm           | Inches          |                 |                                      |                          |          |

**Graphics operator panel**

- CCFL backlight
- Project memory: Flash (SSFDC card) 8 MB
- Graphic
- Scalable font
- Password protection
- Battery

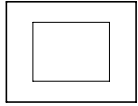
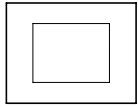
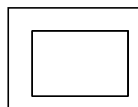
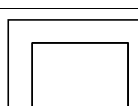
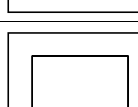




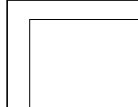
|  |             |           |           |      |   |    |    |    |
|--|-------------|-----------|-----------|------|---|----|----|----|
|   | Monochrome  | 320 × 240 | 121 × 91  | 5.6  | ● | 23 | 56 | 24 |
|   | Color (STN) | 320 × 240 | 121 × 91  | 5.6  | ● | 23 | 56 | 24 |
|  | Color (TFT) | 640 × 480 | 212 × 159 | 10.4 | ● | 23 | 58 | 24 |

**Notes** Device feature: fieldbus interface. The modules for fieldbus connection must be ordered separately.

| Memory        | History memory messages | Alarm messages | Device features   | Type Article no.   | Price See Price List | Std. pack | Notes   |
|---------------|-------------------------|----------------|---|--------------------|----------------------|-----------|---|
| Recipe memory |                         |                |   |                    |                      |           |   |
| kByte         |                         | Quantity       |   |                    |                      |           |   |
| 32            | 1024                    | 1024           | Buffered real-time clock, screen saver, serial printer interface, SUCOM-A interface, fieldbus interface | MI4-150-KI1 229800 |                      | 1 off     | Function keys, suitable for user inscription: 10 additional function keys available, not suitable for user inscription. |
| 32            | 1024                    | 1024           | Buffered real-time clock, screen saver, serial printer interface, SUCOM-A interface, fieldbus interface | MI4-450-KI1 229801 |                      | 1 off     | Function keys, suitable for user inscription: 10 additional function keys available, not suitable for user inscription. |
| 32            | 1024                    | 1024           | Buffered real-time clock, screen saver, serial printer interface, SUCOM-A interface, fieldbus interface | MI4-570-KH1 229804 |                      | 1 off     | Function keys, suitable for user inscription: 12 additional function keys available, not suitable for user inscription. |



Moeller HPL0213-2004/2005

|  | Display LCD | Resolution Pixels | Display area mm | Screen diagonal Inches | Operation Numerical block        |
|--|-------------|-------------------|-----------------|------------------------|----------------------------------|
| <b>Touch operator panel</b>  |             |                   |                 |                        |                                  |
| <ul style="list-style-type: none"> <li>• Resistive touch functions</li> <li>• Project memory: Flash (SSFDC card) 8 MB (except MI4-130-TA1, MI4-137-TA1)</li> <li>• Graphic</li> <li>• Scalable font</li> <li>• Password protection</li> <li>• Battery</li> </ul> |             |                   |                 |                        |                                  |
|   | Monochrome  | 320 × 240         | 77 × 58         | 3.8                    | Implemented through touch fields |
|   | Monochrome  | 320 × 240         | 77 × 58         | 3.8                    | Implemented through touch fields |
|   | Monochrome  | 320 × 240         | 121 × 91        | 5.6                    | Implemented through touch fields |
|   | Monochrome  | 320 × 240         | 121 × 91        | 5.6                    | Implemented through touch fields |
|    | Color (STN) | 320 × 240         | 121 × 91        | 5.6                    | Implemented through touch fields |
|   | Color (TFT) | 320 × 240         | 121 × 91        | 5.6                    | Implemented through touch fields |
|   | Monochrome  | 640 × 480         | 196 × 146       | 9.6                    | Implemented through touch fields |
|   | Color (TFT) | 640 × 480         | 218 × 159       | 10.4                   | Implemented through touch fields |
|   | Color (TFT) | 800 × 600         | 246 × 184       | 12.1                   | Implemented through touch fields |
|   | Color (TFT) | 1024 × 768        | 304 × 228       | 15                     | Implemented through touch fields |

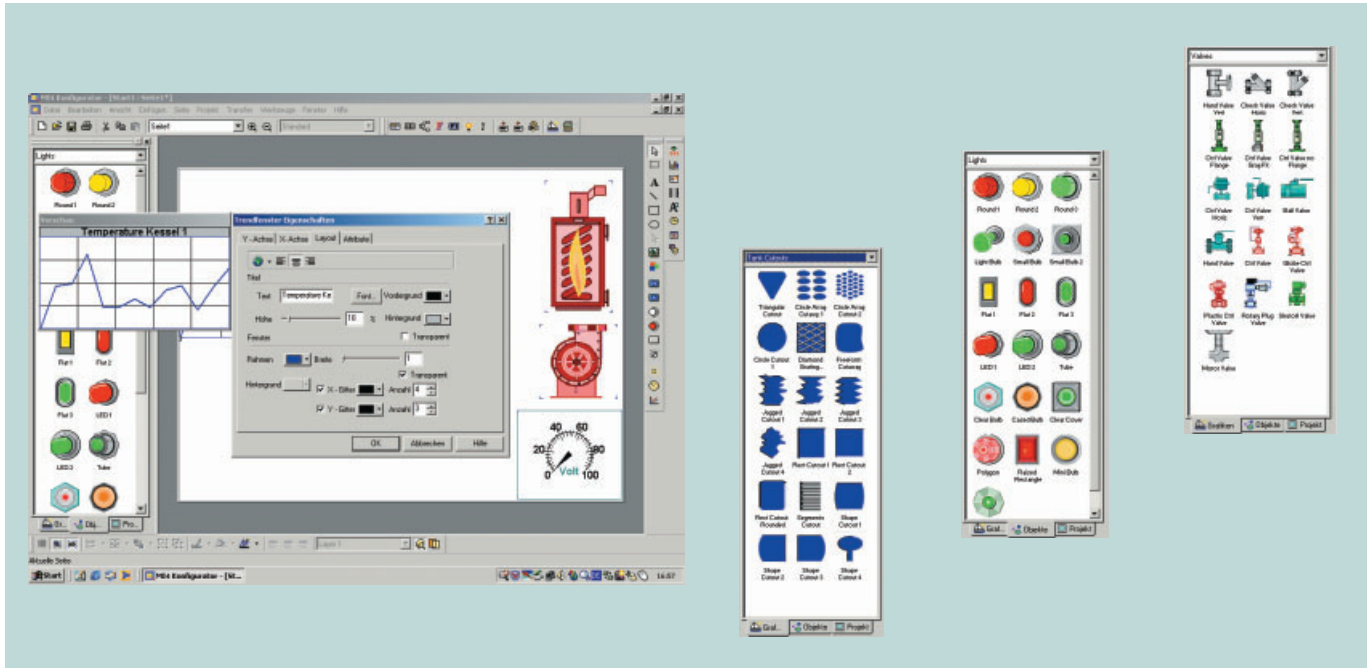
Moeller HPL0213-2004/2005

| Memory Recipe memory kByte | History memory messages | Alarm messages Quantity | Device features  | Type Article no.             | Price See Price List | Std. pack |
|----------------------------|-------------------------|-------------------------|--|------------------------------|----------------------|-----------|
| 32                         | 256                     | 1024                    | Buffered real-time clock, screen saver, SUCOM-A interface, fieldbus interface, LED background lighting   | <b>MI4-130-TA1</b><br>274330 |                      | 1 off     |
| 32                         | 256                     | 1024                    | Buffered real-time clock, screen saver, SUCOM-A interface, integrated CAN interface, no additional fieldbus modules can be plugged in, LED background lighting | <b>MI4-137-TA1</b><br>283399 |                      | 1 off     |
| 32                         | 1024                    | 1024                    | Buffered real-time clock, screen saver, buzzer, SUCOM-A interface, fieldbus interface, serial printer interface, LED background lighting                       | <b>MI4-140-TA1</b><br>258434 |                      | 1 off     |
| 32                         | 1024                    | 1024                    | Buffered real-time clock, screen saver, buzzer, SUCOM-A interface, fieldbus interface, serial printer interface, CCFL background lighting                      | <b>MI4-150-TA1</b><br>229805 |                      | 1 off     |
| 32                         | 1024                    | 1024                    | Buffered real-time clock, screen saver, buzzer, SUCOM-A interface, fieldbus interface, serial printer interface, CCFL background lighting                      | <b>MI4-450-TA1</b><br>229806 |                      | 1 off     |
| 32                         | 1024                    | 1024                    | Buffered real-time clock, screen saver, buzzer, SUCOM-A interface, fieldbus interface, serial printer interface, CCFL background lighting                      | <b>MI4-550-TA1</b><br>229807 |                      | 1 off     |
| 32                         | 1024                    | 1024                    | Buffered real-time clock, screen saver, buzzer, SUCOM-A interface, fieldbus interface, serial printer interface, CCFL background lighting                      | <b>MI4-160-TA1</b><br>229808 |                      | 1 off     |
| 32                         | 1024                    | 1024                    | Buffered real-time clock, screen saver, buzzer, SUCOM-A interface, fieldbus interface, serial printer interface, CCFL background lighting                      | <b>MI4-570-TA1</b><br>229810 |                      | 1 off     |
| 32                         | 1024                    | 1024                    | Buffered real-time clock, screen saver, buzzer, SUCOM-A interface, fieldbus interface, serial printer interface, CCFL background lighting                      | <b>MI4-580-TA1</b><br>229811 |                      | 1 off     |
| 32                         | 1024                    | 1024                    | Buffered real-time clock, screen saver, buzzer, SUCOM-A interface, fieldbus interface, serial printer interface, CCFL background lighting                      | <b>MI4-590-TA1</b><br>229812 |                      | 1 off     |

HMI

HMI





### Application

The configuration software MI4-CFG-1 is used for the creation of application forms for all MI4 devices, and runs under Windows 98SE, ME, NT, 2000. The software is supplied on CD-ROM together with German and English documentation in PDF format.

### Features

- Pixel and vector oriented graphics
- Import and editing of graphics
- Object levels
- Switch color to transparent
- Object grouping and object libraries
- Variables management (Variables Editor)
- Export/import of all project texts (CSV format)
- Context-sensitive Help – 100% identical to documentation
- Keypad macro editor for generating application specific key/touch functions
- Recipe management
- Synchronize the PLC clock
- User-defined report printouts
- Download and upload of projects
- Upload protection of projects
- Scaling and limit value scan of variables in MI4
- Initiation of functions via the PLC (e.g. language selection, print functions, clock setting, recipe loading)
- Password protection (issue of up to 8 different access rights)
- Curve diagrams with time axis (not with MI4-130-TA1, MI4-137-TA1)
- Zoom function in trend diagrams (in X, Y axes)
- Scaling of variable tags
- Configurable display instruments (meters)

### System requirements

- IBM PC or compatible systems
- Windows 98SE, ME, NT, 2000, XP
- 70 MByte hard disk memory
- VGA graphics card
- Pentium processor
- 32 MB RAM working memory
- CD-ROM drive

Moeller HPL0213-2004/2005

| Description  | For use with   | Type Article no.   | Price See Price List     | Std. pack |
|--|--|--|--------------------------|-----------|
| <b>MI4 accessories</b>   |  |  |                          |           |
| Memory module  | 512 kB Flash-RAM memory expansion  | MI4-110-KG1/-KG2<br>MI4-140-KI1  | ZB4-512-SF1<br>200857    | 1 off     |
| Memory card  | 8 MB (SSFDC)   | All graphics and touch operator panels (except MI4-130-TA1, MI4-137-TA1) | ZB4-908-SF1<br>223100    |           |
| Drive for memory card  | Drive for connection to PC parallel port, for fast project download  | All graphics and touch operator panels (except MI4-130-TA1, MI4-137-TA1) | ZB4-510-EG1<br>230617    |           |
| Bus terminating resistor (Suconet K)   | Bus termination for the last station on the line Plug design   | Suconet K interface  | ZB4-043-AD1<br>203512    |           |
| Battery  | Spare battery for data memory backup<br>3 V lithium<br>Not rechargeable<br>Operating life at least 1 year<br>Replaceable | All MI4 devices, except MI4-110-KC1/-KG2                                 | ZB4-280-BT1<br>203513    | 2 off     |
| Insert labels  | Insert labels for free user inscription (for 5 units of a given device type), Labeling software                          | All MI4 devices, except touch operator panels MI4-130-TA1, MI4-137-TA1   | ZB4-301-BS2<br>230610    | 1 off     |
| Magnetic hook  | Magnet fixing  | MI4-140-KF1  | ZB4-502-GZ2<br>230616    | 1 off     |
| MI4-CFG-1-... software package Windows 98SE/ME/NT/2000/XP<br>Software for configuration of all MI4 devices.<br>Package: one CD incl. electr. documentation for the configurator and equipment manuals, as well as short-form instructions. |  |  |                          |           |
| German   | -  | -  | MI4-CFG-1-D<br>200632    | 1 off     |
| English  | -  | -  | MI4-CFG-1-GB<br>200633   | 1 off     |
| Upgrades <sup>1)</sup><br>Package as for initial purchase, observe ordering conditions   |  |  |                          |           |
| German   | -  | -  | MI4-CFG-1-D-U<br>200634  | 1 off     |
| English  | -  | -  | MI4-CFG-1-GB-U<br>200635 | 1 off     |

**Notes**

<sup>1)</sup> **Ordering conditions for upgrades:**  
To use an upgrade, a previous version must be installed.  
When the upgrade is installed, the system searches for a previous version.  
The upgrade is the same as the standard version.

HMI



| Description                           | For use with   | Type<br>Article no.  | Price<br>See Price<br>List                                      | Std. pack |
|---------------------------------------|--|--|---|-----------|
| <b>MI4 accessories</b>                |  |  |   |           |
| <b>Fieldbus interface</b>             |  |  |   |           |
| <b>Plug-in interface module</b>       |  |  |   |           |
| Suconet K                             | –  | All MI4 devices  | <b>ZB4-501-IF1</b><br>229813                                    | 1 off     |
| PROFIBUS-DP                           | 9600 Bit/s – 12 MBit/s                                   |  | <b>ZB4-504-IF1</b><br>206858                                    |           |
| PROFIBUS-DP                           | 9600 Bit/s – 1.5 MBit/s                                  |  | <b>ZB4-504-IF2</b><br>232146                                    |           |
| Siemens MPI                           | Electrical isolation; 1.5 Mbit/s                         |  | <b>ZB4-505-IF1</b><br>224461                                    |           |
| Siemens MPI                           | Without electrical isolation; 1.5 MBit/s                 |  | <b>ZB4-505-IF2</b><br>229816                                    |           |
| DeviceNet                             | –  |  | <b>ZB4-506-IF1</b><br>229814                                    |           |
| CANopen                               | –  |  | <b>ZB4-507-IF1</b><br>229815                                    |           |
| <b>Data plug</b>                      |  |  |   |           |
| <b>Assembly kit without cable</b>     |  |  |   |           |
| –                                     | Socket, 9-pole<br>Straight cable entry                   | –  | <b>ZB4-409-DS1</b><br>203506                                    | 1 off     |
| –                                     | Pins, 9-pole<br>Straight cable entry                     | Suconet K interface  | <b>ZB4-209-DS1</b><br>203507                                    |           |
| –                                     | Pins, 9-pole<br>Cable entry, angled 90                   | PROFIBUS-DP  | <b>ZB4-209-DS2</b><br>206982                                    |           |
| <b>Connection cable for MI4 units</b> |  |  |   |           |
| • Length 2 m                          |  |  |   |           |
| With PC                               | –  | For configuration  | <b>ZB4-24A-KP1</b><br>200625                                    | 1 off     |
| With XC100/200                        | –  | SUCOM-A protocol   | <b>XT-SUB-D15/RJ45</b><br>283450                                |           |
| With PS4-300 PS4-200 PS4-150          | –  | SUCOM-A protocol (RS 232C)                                 | <b>ZB4-2B7-KB1</b><br>200627                                    |           |
| With PS4-300, PS4-200, PS4-150        | –  | Suconet-K protocol (RS485)                                 | <b>ZB4-231-KB1</b><br>200630                                    |           |
| With PS416                            | –  | Suconet-K protocol (RS485) and<br>SUCOM-A protocol (RS485) | <b>ZB4-233-KB2</b><br>200631                                    |           |
| With easy                             | Adapter, 9-pole plug connector,<br>35-pole socket, cable | easy800 protocol   | <b>ZB4-03B-AD1</b><br>257176<br><b>EASY800-PC-CAB</b><br>256277 |           |





#### Product description

The MV4 series consists of touch operator panels based on infra-red technology. The spectrum ranges from a monochrome 5.7" STN display with a resolution of 320 × 240 pixels up to a color 15" TFT display with a resolution of 1024 × 768. All units have full graphics capability, with 256 colors/grey levels. All units feature a real glass front panel that is highly robust and resistant to scratches and chemicals. All these devices can be project-programmed with the M14 configurator MI4-CFG.

#### Application

The MV4 touch operator panels have been designed for economical machine and system control. They offer various different displays, memory sizes and interfaces, depending on the information requirements and the task at hand.

#### Features

- Infra-red touch technology
- Non-reflective, scratchproof glass front
- Full graphics, 256 colors/grey levels
- Revers-polarity protected 24 V DC or 100 – 240 V AC supply connection
- IP65 degree of protection at front
- Brightness and contrast controls for the display
- Screen saver
- Touch deactivation
- Gateway function for MV4 units with 2 communication modules
- Bar graph and trend diagrams
- Up to 100 trend diagrams (32 curves per diagram) with time axis
- Zoom function for trend diagrams
- Standard keypads and user-defined keypads can be displayed
- Error/history memory
- Recipe management (up to 5 MB recipe memory)
- Password management (200 levels, 500 users)
- Up to 100 project languages
- Real-time clock
- Synchronize the PLC clock
- Serial printer interface
- Parallel interface (600 series)
- Ethernet interface (600 series)

#### Engineering

Manufacturer-specific function blocks support the connection of MV4 units to Moeller PLC systems. A function block is also available for communication with Siemens PLC systems (S7-300/S7-400 via PROFIBUS-DP), which is can be downloaded from the Internet free of charge, in the form of an Application Note. For communication with Allen-Bradley PLC systems via DeviceNet, there is another function block available as an Application Note that can be downloaded from the Internet free of charge. No function block is necessary for communication with Siemens PLC systems via MPI. The connection via PROFIBUS-DP and the Siemens MPI interface is made with the cable ZB4-900-DS2 and the corresponding plug ZB4-209-DS2. Communication modules and PCMCIA cards must be ordered separately. A demo version of the MV4 configurator can be downloaded from the Internet.

#### Communication/networking

All MV4 units can be connected to Moeller PLC systems through the PROG PORT/ SYSTEM PORT interface, using SUCOM-A. The communication cards ZB4-601-IF1, ZB4-609-IF1, ZB4-604-IF1, ZB4-606-IF1 and ZB4-607-IF1 allow the MV4 units to be connected to a very wide range of control systems. MV4 units in the 600 series are also fitted with an Ethernet interface. The Ethernet interface can be used for uploads and downloads of projects, recipes and password data. In addition, graphics data (trend data) can be loaded into the PC from the MV4.

#### Programming

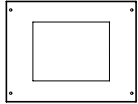
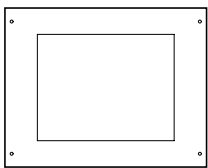
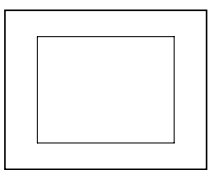
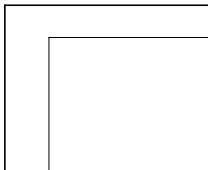
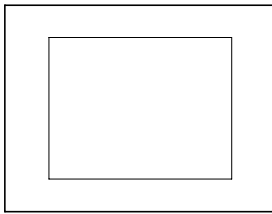
With the MV4 configurator MV4-CFG-1 (Galileo).

#### Documentation

Documentation in the form of PDF files in English and German is included in the M14 configurator MI4-CFG-1.

Moeller HPL0213-2004/2005

Moeller HPL0213-2004/2005

| Display   | Resolution                |            | Screen diagonal | Memory |        | PCMCIA slots | Interfaces on board  |   |
|---|---------------------------|------------|-----------------|--------|--------|--------------|--|---|
|   | Pixels                    | Inches     |                 | MByte  | MByte  |              |  | Quantity  |
|    | Passive mono-chrome (STN) | 320 × 240  | 5.7             | 4      | –      | –            | 1 × slot for communication modules<br>1 × system port RS232C (programming, SUCOM A or serial printer connection)   |   |
|   | Passive mono-chrome (STN) | 320 × 240  | 5.7             | 4      | –      | –            |  |   |
|   | Passive color (STN)       | 320 × 240  | 5.7             | 4      | –      | –            |  |   |
|   | Passive color (STN)       | 320 × 240  | 5.7             | 4      | –      | –            |  |   |
|    | Passive mono-chrome (STN) | 640 × 480  | 10.4            | 4      | –      | –            |  |   |
|   | Passive mono-chrome (STN) | 640 × 480  | 10.4            | 4      | –      | –            |  |   |
|   | TFT                       | 640 × 480  | 10.4            | 4      | –      | –            |  |   |
|   | Active color (TFT)        | 640 × 480  | 10.4            | –      | 4 – 64 | 1            |  |   |
|  | Active color (TFT)        | 640 × 480  | 10.4            | –      | 4 – 64 | 1            |  | 2 × slots for communication modules<br>1 × system port RS232C (programming, SUCOM A or serial printer connection) |
|   | Active color (TFT)        | 640 × 480  | 10.4            | –      | 4 – 64 | 1            |  |   |
|   | Active color (TFT)        | 640 × 480  | 10.4            | –      | 4 – 64 | 1            |  |   |
|   | Active color (TFT)        | 640 × 480  | 10.4            | –      | 4 – 64 | 1            |  |   |
|  | Active color (TFT)        | 640 × 480  | 10.4            | –      | 4 – 64 | 2            | 2 × slot for communication modules<br>1 × Ethernet 10/100 Mbps<br>1 × System port RS232C (SUCOM-A or serial printer)<br>1 × parallel interface (printer) |   |
|   | Active color (TFT)        | 640 × 480  | 10.4            | –      | 4 – 64 | 2            |  |   |
|   | Active color (TFT)        | 640 × 480  | 10.4            | –      | 4 – 64 | 2            |  |   |
|   | Active color (TFT)        | 640 × 480  | 10.4            | –      | 4 – 64 | 2            |  |   |
|  | Active color (TFT)        | 1024 × 768 | 15              | –      | 4 – 64 | 2            |  |   |
|   | Active color (TFT)        | 1024 × 768 | 15              | –      | 4 – 64 | 2            |  |   |
|   | Active color (TFT)        | 1024 × 768 | 15              | –      | 4 – 64 | 2            |  |   |
|   | Active color (TFT)        | 1024 × 768 | 15              | –      | 4 – 64 | 2            |  |   |

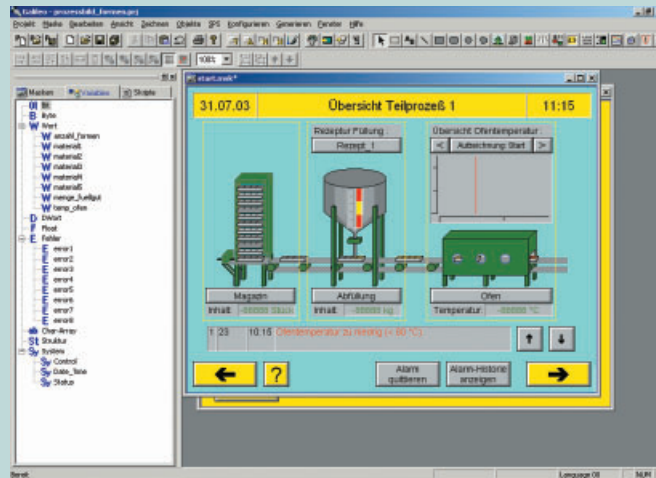
**Notes** Interfaces on board: see driver list for other connections.  
Slots for communication cards: communication cards must be ordered separately.

| Device features  | Front implementation                           | Input voltage             | Type Article no.          | Price See Price List | Std. pack | Notes |
|--|--|---------------------------|---------------------------|----------------------|-----------|-------|
| Passwort management, project simulation on a PC, battery-buffered real-time clock, trend display, alarm management, history memory, language selection | Aluminium, powder coated, RAL 7031 (blue-grey) | 24 V DC                   | MV4-150-TA1<br>210531     |                      | 1 off     | –     |
|  | Stainless steel, brushed matt                  |                           | MV4-150-TA1-XX1<br>227725 |                      |           |       |
|  | Aluminium, powder coated, RAL 7031 (blue-grey) | 100 – 240 V AC            | MV4-450-TA1<br>210532     |                      |           |       |
|  | Stainless steel, brushed matt                  |                           | MV4-450-TA1-XX1<br>227726 |                      |           |       |
|  | Aluminium, powder coated, RAL 7031 (blue-grey) | 100 – 240 V AC            | MV4-170-TA1<br>210533     |                      |           |       |
|  | Stainless steel, brushed matt                  |                           | MV4-170-TA1-XX1<br>227729 |                      |           |       |
|  | Aluminium, powder coated, RAL 7031 (blue-grey) | 24 V DC                   | MV4-570-TA5<br>272249     |                      |           |       |
|  | Aluminium, powder coated, RAL 7031 (blue-grey) |                           | MV4-570-TA1<br>210535     |                      |           |       |
|  | Stainless steel, brushed matt                  | 24 V DC                   | MV4-570-TA1-XX1<br>227731 |                      |           |       |
|  | Aluminium, powder coated, RAL 7031 (blue-grey) |                           | MV4-570-TA2<br>210560     |                      |           |       |
|  | Stainless steel, brushed matt                  | 100 – 240 V AC            | MV4-570-TA2-XX1<br>227732 |                      |           |       |
|  | Aluminium, powder coated, RAL 7031 (blue-grey) | 24 V DC                   | MV4-670-TA1<br>224466     |                      |           |       |
| Stainless steel, brushed matt  | 24 V DC  | MV4-670-TA1-XX1<br>227735 |                           |                      |           |       |
| Aluminium, powder coated, RAL 7031 (blue-grey)   | 100 – 240 V AC                                 | MV4-670-TA2<br>224465     |                           |                      |           |       |
| Stainless steel, brushed matt  | 100 – 240 V AC                                 | MV4-670-TA2-XX1<br>227736 |                           |                      |           |       |
| Aluminium, powder coated, RAL 7031 (blue-grey)   | 24 V DC  | MV4-690-TA1<br>224467     |                           |                      |           |       |
| Stainless steel, brushed matt  | 24 V DC  | MV4-690-TA1-XX1<br>227737 |                           |                      |           |       |
| Aluminium, powder coated, RAL 7031 (blue-grey)   | 100 – 240 V AC                                 | MV4-690-TA2<br>224468     |                           |                      |           |       |
| Stainless steel, brushed matt  | 100 – 240 V AC                                 | MV4-690-TA2-XX1<br>227738 |                           |                      |           |       |

Memory card for project/recipe memory: the PCMCIA memory cards must be ordered separately.

HMI

HMI



### Application

The configuration software MV4-CFG-1 (Galileo) is used for the creation of application forms for all MV4 devices, and runs under Windows 98SE, ME, NT, 2000, XP. The software is supplied on CD-ROM together with German and English documentation in PDF format.

### Features

- Online project simulation on the PC
- User-definable printout forms with any variables
- Context-sensitive Help – 100% identical to documentation
- Error/history memory
- Recipe management
- Password management (200 levels, 500 users)
- Design tool for creating and managing 100 project languages
- 100 trend diagrams (32 curves per diagram) with time axis
- Zoom function in trend diagrams (in X, Y axes)
- Character sets: Roman, Cyrillic, Greek, Hebrew, Hiragana/Katakana
- Scaling of variable tags
- Dynamic limit values
- Value conversion and unit of measure conversion
- Standard keypads and user-defined keypads
- Drawing editor (line, rectangle, ellipse, polygon, text, bitmap)
- Import of 15 different graphic formats (.bmp, .tif, .jpg, .gif, ... etc.)
- Real-time clock (synchronisation with PLC clock)
- Parameter list, Script language
- Script functions (cyclic and event-controlled)

### System requirements

- IBM PC or compatible systems
- Windows 98SE, ME, NT, 2000, XP
- 50 MByte hard disk memory
- Recommended resolution XGA (at least SVGA)
- Pentium processor
- 32 MB RAM working memory
- CD-ROM drive
- PCMCIA drive (for MV4-5... and MV4-6... project programming)

Moeller HPL0213-2004/2005

| For use with  |   | Type<br>Article no.            | Price<br>See Price<br>List | Std. pack |
|---|---|--------------------------------|----------------------------|-----------|
| <b>MV4 accessories</b>  |   |                                |                            |           |
| Software package MV4-CFG-1-... Windows 98SE/ME/NT/2000/XP<br>Software for configuration of all MV4 devices.<br>Package: one CD incl. electr. documentation for the configurator and equipment manuals in English and German |   |                                |                            |           |
| -   | -   | <b>MV4-CFG-1</b><br>224459     |                            | 1 off     |
| Upgrades<br>Package as for initial purchase, observe ordering conditions  |   |                                |                            |           |
| -   | -   | <b>MV4-CFG-1-U</b><br>224460   |                            | 1 off     |
| Memory cards  |   |                                |                            |           |
| PCMCIA PC card ATA  |   |                                |                            |           |
| 8 MByte Flash   | MV4-5..., MV4-6...  | <b>ZB4-908-SC1</b><br>210542   |                            | 1 off     |
| 16 MByte Flash  |   | <b>ZB4-916-SC1</b><br>210544   |                            |           |
| 32 MByte Flash  |   | <b>ZB4-932-SC1</b><br>216370   |                            |           |
| Communication cards   |   |                                |                            |           |
| Plug-in card  |   |                                |                            |           |
| Multi-protocol card   | Communication using Suconet K, SUCOM-A and more than 40 other communication protocols<br>Electrically isolated and selectable interfaces:<br>RS232C/RS422/RS485/TTY                     | <b>ZB4-601-IF1</b><br>210546   |                            | 1 off     |
| Multi-protocol card   | Communication through Suconet K, SUCOM-A, Siemens MPI, and more than 40 other PLC communication protocols<br>Electrically isolated and selectable interfaces:<br>RS232C/RS422/RS485/TTY | <b>ZB4-609-IF1</b><br>210548   |                            |           |
| PROFIBUS-DP   | Communication via PROFIBUS-DP   | <b>ZB4-604-IF1</b><br>210547   |                            |           |
| DeviceNet   | Communication via DeviceNet   | <b>ZB4-606-IF1</b><br>210900   |                            |           |
| CANopen   | Communication via CANopen   | <b>ZB4-607-IF1</b><br>267421   |                            |           |
| Data plug for PROFIBUS-DP and MV4 MPI interface   |   |                                |                            |           |
| • Assembly kit without cable<br>• Pins, 9-pole  |   |                                |                            |           |
| -   | PROFIBUS-DP   | <b>ZB4-209-DS2</b><br>206982   |                            | 1 off     |
| Connection cable for MV4 units  |   |                                |                            |           |
| Length 2 m  |   |                                |                            |           |
| With PC, serial printer   | Configuration, serial printer   | <b>ZB4-244-PK1</b><br>210549   |                            | 1 off     |
| With PS4-300, PS4-200, PS4-150  | SUCOM-A protocol (RS 232C)  | <b>ZB4-237-KB1</b><br>210554   |                            |           |
| With PS4-300, PS4-200, PS4-150  | Suconet-K protocol (RS485)  | <b>ZB4-231-KB1</b><br>200630   |                            |           |
| With PS416  | Suconet-K protocol (RS485) and SUCOM-A protocol (RS485)   | <b>ZB4-233-KB2</b><br>200631   |                            |           |
| With XC100/200, length 3 m  | Sucom-A protocol  | <b>XT-SUB-D/RJ45</b><br>262186 |                            |           |
| Adapter   |   |                                |                            |           |
| 9-pole SUB-D socket to 9-pol SUB-D socket   |   |                                |                            |           |
| -   | SUCOM-A protocol (RS232C) via MV4 programming interface   | <b>LT307.512.1</b><br>232147   |                            | 1 off     |

HMI



|   |                     | Text operator panel         |                                 |                      |                                 |                                |                     |
|---|---------------------|-----------------------------|---------------------------------|----------------------|---------------------------------|--------------------------------|---------------------|
|   |                     | MI4-110-KC1                 | MI4-117-KC1                     | MI4-110-KD1          | MI4-117-KD1                     | MI4-110-KG1                    | MI4-110-KG2         |
| <b>General</b>  |                     |                             |                                 |                      |                                 |                                |                     |
| Standards   |                     | IEC/EN 61131-2, EN 50178    |                                 |                      |                                 |                                |                     |
| Ambient temperature   |                     |                             |                                 |                      |                                 |                                |                     |
| Operation   | °C                  | 0 – 50                      | 0 – 50                          | 0 – 50               | 0 – 50                          | 0 – 50                         | 0 – 50              |
| Storage   | °C                  | -20/70                      | -20/70                          | -20/70               | -20/70                          | -20/70                         | -20/70              |
| Electromagnetic compatibility (EMC)   |                     | → Page 4/59                 |                                 |                      |                                 |                                |                     |
| Degree of protection  |                     | IP65, front                 |                                 |                      |                                 |                                |                     |
| Vibration resistance  | g                   | Constant 1g/f = 0 to 150 Hz |                                 |                      |                                 |                                |                     |
| Shock resistance, shock duration 11 ms  | g                   | > 15                        | > 15                            | > 15                 | > 15                            | > 15                           | > 15                |
| Keyboard/touch screen reliability   | Operations          | > 3000000                   | > 3000000                       | > 3000000            | > 3000000                       | > 3000000                      | > 3000000           |
| Terminal capacity   | mm <sup>2</sup>     | 2 × 1.5                     | 2 × 1.5                         | 2 × 1.5              | 2 × 1.5                         | 2 × 1.5                        | 2 × 1.5             |
| Connection type   |                     | Plug-in screw terminal      |                                 |                      |                                 |                                |                     |
| Weights   | kg                  | 1                           | 1                               | 1                    | 1                               | 1.1                            | 1.1                 |
| Power supply  |                     |                             |                                 |                      |                                 |                                |                     |
| Rated voltage   | U <sub>e</sub> V DC | 24                          | 24                              | 24                   | 24                              | 24                             | 24                  |
| Admissible range  | V DC                | 18 – 30                     | 18 – 30                         | 18 – 30              | 18 – 30                         | 18 – 30                        | 18 – 30             |
| Rated current   | I <sub>e</sub> mA   | 250                         | 250                             | 250                  | 250                             | 300                            | 300                 |
| Fuse  |                     | Electronic                  |                                 |                      |                                 |                                |                     |
| <b>Display</b>  |                     |                             |                                 |                      |                                 |                                |                     |
| Back-lighting   |                     | LED                         |                                 |                      |                                 |                                |                     |
| Type  |                     | Monochrome                  |                                 |                      |                                 |                                |                     |
| Operating life of the background lighting in 1000 hrs. (without screen saver) |                     | –                           |                                 |                      |                                 |                                |                     |
| Colors/grey scales  |                     | –                           |                                 |                      |                                 |                                |                     |
| Lines × characters  |                     | 4 × 20                      | 4 × 20                          | 4 × 20               | 4 × 20                          | 4 × 20                         | 4 × 20              |
| Resolution  | Pixels              | 120 × 32                    | 120 × 32                        | 120 × 32             | 120 × 32                        | 120 × 32                       | 120 × 32            |
| Display area  | mm                  | 70 × 21                     | 70 × 21                         | 70 × 21              | 70 × 21                         | 70 × 21                        | 70 × 21             |
| Screen diagonal   | Inches              | –                           |                                 |                      |                                 |                                |                     |
| User-definable characters   |                     | 256                         | 256                             | 256                  | 256                             | 256                            | 256                 |
| <b>Memory</b>   |                     |                             |                                 |                      |                                 |                                |                     |
| Project flash memory  | kByte               | 512                         | 512                             | 512                  | 512                             | 512                            | 512                 |
| Recipe memory   | kByte               | –                           | –                               | 16                   | 16                              | 16                             | –                   |
| Project memory expansion  | kByte               | –                           | –                               | –                    | –                               | 512                            | 512                 |
| <b>Interfaces</b>   |                     |                             |                                 |                      |                                 |                                |                     |
| PLC port (RS232C/RS485)   |                     | SUCOM-A, Programming        | SUCOM-A, Programming            | SUCOM-A, Programming | SUCOM-A, Programming            | SUCOM-A                        | SUCOM-A Programming |
| PC/printer port (RS232C)  |                     | –                           | –                               | –                    | –                               | Programming Printer connection | –                   |
| AUX port (fieldbus interface) <sup>1)</sup>                                   |                     | Yes                         | No, CAN interface is integrated | Yes                  | No, CAN interface is integrated | Yes                            | Yes                 |

Notes <sup>1)</sup> One slot is available for modules. The modules for fieldbus connection must be ordered separately

|   |                     | Graphic operator panel  |             |             |             |             |
|---|---------------------|---|-------------|-------------|-------------|-------------|
|   |                     | MI4-140-KF1   | MI4-140-KI1 | MI4-150-KI1 | MI4-450-KI1 | MI4-570-KH1 |
| <b>General</b>  |                     |   |             |             |             |             |
| Standards   |                     | IEC/EN 61131-2, EN 50178  |             |             |             |             |
| Ambient temperature   |                     |   |             |             |             |             |
| Operation   | °C                  | 0 – 50  | 0 – 50      | 0 – 50      | 0 – 50      | 0 – 50      |
| Storage   | °C                  | -20/70  | -20/70      | -20/70      | -20/70      | -20/70      |
| Electromagnetic compatibility (EMC)   |                     | → Page 4/59   |             |             |             |             |
| Degree of protection  |                     | IP65, front   |             |             |             |             |
| Vibration resistance  | g                   | Constant 1g/f = 0 to 150 Hz   |             |             |             |             |
| Shock resistance, shock duration 11 ms  | g                   | > 15  | > 15        | > 15        | > 15        | > 15        |
| Keyboard/touch screen reliability   | Operations          | > 3000000   | > 3000000   | > 3000000   | > 3000000   | > 3000000   |
| Terminal capacity   | mm <sup>2</sup>     | 2 × 1.5   | 2 × 1.5     | 2 × 1.5     | 2 × 1.5     | 2 × 1.5     |
| Connection type   |                     | Plug-in screw terminal  |             |             |             |             |
| Weights   | kg                  | 1.5 incl. cable   | 2           | 1.9         | 1.9         | 2.5         |
| Power supply  |                     |   |             |             |             |             |
| Rated voltage   | U <sub>e</sub> V DC | 24  | 24          | 24          | 24          | 24          |
| Admissible range  | V DC                | 18 – 30   | 18 – 30     | 18 – 30     | 18 – 30     | 18 – 30     |
| Rated current   | I <sub>e</sub> mA   | 300   | 400         | 600         | 600         | 700         |
| Fuse  |                     | Electronic  | Electronic  | 2 A (slow)  | 2 A (slow)  | Electronic  |
| <b>Display</b>  |                     |   |             |             |             |             |
| Back-lighting   |                     | LED   | LED         | CCFL        | CCFL        | CCFL        |
| Type  |                     | Monochrome  | Monochrome  | Monochrome  | STN color   | TFT         |
| Operating life of the background lighting in 1000 hrs. (without screen saver) |                     | –   | –           | 20          | 25          | 50          |
| Colors/grey scales  |                     | –   | –           | –           | 16          | 256         |
| Lines × characters  |                     | 8 × 20  | 8 × 40      | 16 × 40     | 16 × 40     | 30 × 80     |
| Resolution  | Pixels              | 120 × 64  | 240 × 64    | 320 × 240   | 320 × 240   | 640 × 480   |
| Display area  | mm                  | 66 × 33   | 127 × 34    | 121 × 91    | 121 × 91    | 212 × 159   |
| Screen diagonal   | Inches              | –   | –           | 5.6         | 5.6         | 10.4        |
| User-definable characters   |                     | 256   | 256         | 256         | 256         | 256         |
| <b>Memory</b>   |                     |   |             |             |             |             |
| Project flash memory  | kByte               | 512   | 512         | 8000        | 8000        | 8000        |
| Recipe memory   | kByte               | 16  | 16          | 32          | 32          | 32          |
| Project memory expansion  | kByte               | –   | 512         | –           | –           | –           |
| <b>Interfaces</b>   |                     |   |             |             |             |             |
| PLC port (RS232C/RS485)   |                     | SUCOM-A   | SUCOM-A     | SUCOM-A     | SUCOM-A     | SUCOM-A     |
| PC/printer port (RS232C)  |                     | Programming Printer connection                                      |             |             |             |             |
| AUX port (fieldbus interface) <sup>1)</sup>                                   |                     | Yes, only fieldbus interfaces ZB4-501-IF1, ZB4-505-IF1 are possible | Yes         | Yes         | Yes         | Yes         |

HMI

HMI

Moeller HPL0213-2004/2005

|   |                     | Touch operator panel        |                                 |                                |             |
|---|---------------------|-----------------------------|---------------------------------|--------------------------------|-------------|
|   |                     | MI4-130-TA1                 | MI4-137-TA1                     | MI4-140-TA1                    | MI4-150-TA1 |
| <b>General</b>  |                     |                             |                                 |                                |             |
| Standards   |                     | IEC/EN 61131-2, EN 50178    |                                 |                                |             |
| Ambient temperature   |                     |                             |                                 |                                |             |
| Operation   | °C                  | 0 – 50                      | 0 – 50                          | 0 – 45                         | 0 – 45      |
| Storage   | °C                  | -20/70                      | -20/70                          | -20/70                         | -20/70      |
| Electromagnetic compatibility (EMC)   |                     | → Page 4/59                 | → Page 4/59                     | → Page 4/59                    | → Page 4/59 |
| Degree of protection  |                     | IP65, front                 |                                 |                                |             |
| Vibration resistance  | g                   | Constant 1g/f = 0 to 150 Hz |                                 |                                |             |
| Shock resistance, shock duration 11 ms  | g                   | > 15                        | > 15                            | > 15                           | > 15        |
| Keyboard/touch screen reliability   | Operations          | > 3000000                   | > 3000000                       | > 3000000                      | > 3000000   |
| Terminal capacity   | mm <sup>2</sup>     | 2 × 1.5                     | 2 × 1.5                         | 2 × 1.5                        | 2 × 1.5     |
| Connection type   |                     | Plug-in screw terminal      |                                 |                                |             |
| Weights   | kg                  | 1                           | 1                               | 1.3                            | 1.4         |
| Power supply  |                     |                             |                                 |                                |             |
| Rated voltage   | U <sub>e</sub> V DC | 24                          | 24                              | 24                             | 24          |
| Admissible range  | V DC                | 18 – 30                     | 18 – 30                         | 18 – 30                        | 18 – 30     |
| Rated current   | I <sub>e</sub> mA   | 400                         | 400                             | 600                            | 600         |
| Fuse  |                     | Electronic                  | Electronic                      | Electronic                     | Electronic  |
| <b>Display</b>  |                     |                             |                                 |                                |             |
| Back-lighting   |                     | LED                         | LED                             | LED                            | CCFL        |
| Type  |                     | Monochrome                  | Monochrome                      | Monochrome                     | Monochrome  |
| Operating life of the background lighting in 1000 hrs. (without screen saver) |                     | 50                          | 50                              | 50                             | 25          |
| Colors/grey scales  |                     | –                           | –                               | –                              | –           |
| Lines × characters  |                     | 16 × 40                     | 16 × 40                         | 16 × 40                        | 16 × 40     |
| Resolution  | Pixels              | 320 × 240                   | 320 × 240                       | 320 × 240                      | 320 × 240   |
| Display area  | mm                  | 77 × 58                     | 77 × 58                         | 121 × 91                       | 121 × 91    |
| Screen diagonal   | Inches              | 3.8                         | 3.8                             | 5.6                            | 5.6         |
| User-definable characters   |                     | 256                         | 256                             | 256                            | 256         |
| <b>Memory</b>   |                     |                             |                                 |                                |             |
| Project flash memory  | kByte               | 512                         | 512                             | 8000                           | 8000        |
| Recipe memory   | kByte               | 32                          | 32                              | 32                             | 32          |
| <b>Interfaces</b>   |                     |                             |                                 |                                |             |
| PLC port (RS232C/RS485)   |                     | SUCOM-A, Programming        | SUCOM-A, Programming            | SUCOM-A                        | SUCOM-A     |
| PC/printer port (RS232C)  |                     | –                           | –                               | Programming Printer connection | –           |
| AUX port (fieldbus interface) <sup>1)</sup>                                   |                     | Yes                         | No, CAN interface is integrated | Yes                            | Yes         |

**Notes** <sup>1)</sup> One slot is available for modules. The modules for fieldbus connection must be ordered separately

Moeller HPL0213-2004/2005

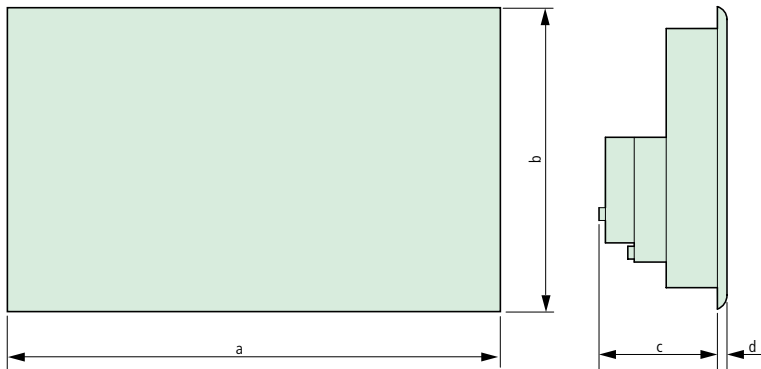
|   |  | MI4-450-TA1 | MI4-550-TA1 | MI4-160-TA1 | MI4-570-TA1 | MI4-580-TA1 | MI4-590-TA1 |
|---|--|-------------|-------------|-------------|-------------|-------------|-------------|
| <b>General</b>  |  |             |             |             |             |             |             |
| Standards   |  |             |             |             |             |             |             |
| IEC/EN 61131-2, EN 50178  |  |             |             |             |             |             |             |
| Ambient temperature   |  |             |             |             |             |             |             |
| Operation   |  |             |             |             |             |             |             |
| 0 – 45  |  |             |             |             |             |             |             |
| Storage   |  |             |             |             |             |             |             |
| -20/70  |  |             |             |             |             |             |             |
| Electromagnetic compatibility (EMC)   |  |             |             |             |             |             |             |
| → Page 4/59   |  |             |             |             |             |             |             |
| Degree of protection  |  |             |             |             |             |             |             |
| IP65, front   |  |             |             |             |             |             |             |
| Vibration resistance  |  |             |             |             |             |             |             |
| Constant 1g/f = 0 to 150 Hz   |  |             |             |             |             |             |             |
| Shock resistance  |  |             |             |             |             |             |             |
| > 15  |  |             |             |             |             |             |             |
| Keyboard/touch screen reliability   |  |             |             |             |             |             |             |
| > 3000000   |  |             |             |             |             |             |             |
| Terminal capacity   |  |             |             |             |             |             |             |
| 2 × 1.5   |  |             |             |             |             |             |             |
| Connection type   |  |             |             |             |             |             |             |
| Plug-in screw terminal  |  |             |             |             |             |             |             |
| Weights   |  |             |             |             |             |             |             |
| 1.4   |  |             |             |             |             |             |             |
| Power supply  |  |             |             |             |             |             |             |
| Rated voltage   |  |             |             |             |             |             |             |
| 24  |  |             |             |             |             |             |             |
| Admissible range  |  |             |             |             |             |             |             |
| 18 – 30   |  |             |             |             |             |             |             |
| Rated current   |  |             |             |             |             |             |             |
| 600   |  |             |             |             |             |             |             |
| Fuse  |  |             |             |             |             |             |             |
| Electronic  |  |             |             |             |             |             |             |
| <b>Display</b>  |  |             |             |             |             |             |             |
| Back-lighting   |  |             |             |             |             |             |             |
| CCFL  |  |             |             |             |             |             |             |
| Type  |  |             |             |             |             |             |             |
| Color (TFT)   |  |             |             |             |             |             |             |
| Operating life of the background lighting in 1000 hrs. (without screen saver) |  |             |             |             |             |             |             |
| 25  |  |             |             |             |             |             |             |
| Colors/grey scales  |  |             |             |             |             |             |             |
| –   |  |             |             |             |             |             |             |
| Lines × characters  |  |             |             |             |             |             |             |
| 16 × 40   |  |             |             |             |             |             |             |
| Resolution  |  |             |             |             |             |             |             |
| 320 × 240   |  |             |             |             |             |             |             |
| Display area  |  |             |             |             |             |             |             |
| 121 × 91  |  |             |             |             |             |             |             |
| Screen diagonal   |  |             |             |             |             |             |             |
| 5.6   |  |             |             |             |             |             |             |
| User-definable characters   |  |             |             |             |             |             |             |
| 256   |  |             |             |             |             |             |             |
| <b>Memory</b>   |  |             |             |             |             |             |             |
| Project flash memory  |  |             |             |             |             |             |             |
| 8000  |  |             |             |             |             |             |             |
| Recipe memory   |  |             |             |             |             |             |             |
| 32  |  |             |             |             |             |             |             |
| <b>Interfaces</b>   |  |             |             |             |             |             |             |
| PLC port (RS232C/RS485)   |  |             |             |             |             |             |             |
| SUCOM-A   |  |             |             |             |             |             |             |
| PC/printer port (RS232C)  |  |             |             |             |             |             |             |
| Programming Printer connection  |  |             |             |             |             |             |             |
| AUX port (fieldbus interface) <sup>1)</sup>                                   |  |             |             |             |             |             |             |
| Yes   |  |             |             |             |             |             |             |

**Notes** <sup>1)</sup> One slot is available for modules. The modules for fieldbus connection must be ordered separately

|  |                     | Touch operator panel                             |                         |                               |                        |
|--|---------------------|--|-------------------------|-------------------------------|------------------------|
|  |                     | MV4-150-TA1(-XX1)                                | MV4-450-TA1(-XX1)       | MV4-170-TA1(-XX1)             | MV4-570-TA5            |
| <b>General</b>                                       |                     |  |                         |                               |                        |
| Ambient temperature                                  | °C                  | 0/50   | 0/50                    | 0/50                          | 0/50                   |
| Ambient temperature for storage                      | °C                  | 20/60  | 20/60                   | 20/60                         | 20/60                  |
| Relative humidity, no condensation (IEC 60 068-2-30) | %                   | 10 – 85  | 10 – 85                 | 10 – 85                       | 10 – 85                |
| Shock resistance (half sinewave, 50 g/20 ms)         |                     | IEC 60068-2-27                                   | IEC 60068-2-27          | IEC 60068-2-27                | IEC 60068-2-27         |
| Vibration resistance (10 - 200 - 10 Hz/1.5 g)        |                     | IEC 60068-2-6                                    | IEC 60068-2-6           | IEC 60068-2-6                 | IEC 60068-2-6          |
| Electromagnetic compatibility (EMC)                  |                     | → Page 4/59                                      | → Page 4/59             | → Page 4/59                   | → Page 4/59            |
| RFI voltage  |                     | –  | –                       | –                             | –                      |
| RFI radiation  |                     | CISPR 11, EN 55011 Class A                       |                         |                               |                        |
| Degree of protection                                 |                     |  |                         |                               |                        |
| Front (NEMA 12) IEC/EN 60529                         |                     | IP65   | IP65                    | IP65                          | IP65                   |
| Rear   |                     | IP20   | IP20                    | IP20                          | IP20                   |
| Weight   | kg                  | Approx. 2.2                                      | Approx. 2.2             | Approx. 3.6                   | Approx. 3.6            |
| <b>Display</b>                                       |                     |  |                         |                               |                        |
| Screen diagonal                                      | Inches              | 5.7  | 5.7                     | 10.4                          | 10.4                   |
| Type   |                     | LCD passive mono-chrome (STN)                    | LCD passive color (STN) | LCD passive mono-chrome (STN) | LCD active color (TFT) |
| Resolution   | Pixels              | 320 × 240  | 320 × 240               | 640 × 480                     | 640 × 480              |
| Display area   | mm                  | 115 × 86   | 115 × 86                | 212 × 158                     | 212 × 158              |
| Colors/grey scales                                   |                     | –/256  | 256/–                   | –/256                         | 256/–                  |
| Contrast ratio (Normally)                            |                     | 24   | 25                      | 18                            | 30                     |
| Brightness (Normally)                                | cd/m <sup>2</sup>   | 140  | 110                     | 75                            | 70                     |
| Service life of back-lighting                        | Op. hours           | 20000  | 25000                   | 25000                         | 25000                  |
| <b>Front plate</b>                                   |                     |  |                         |                               |                        |
| Glass, non-reflective                                | mm                  | 2  | 2                       | 3                             | 3                      |
| <b>Operation</b>                                     |                     |  |                         |                               |                        |
| Operation  |                     | Optical grid in infra-red wavelengths (IR-Touch) |                         |                               |                        |
| Resolution   |                     |  |                         |                               |                        |
| Physical   | Pixels              | 24 × 16 (13 × 15)                                | 24 × 16 (13 × 15)       | 40 × 30 (16 × 16)             | 40 × 30 (16 × 16)      |
| Logical  | Pixels              | 47 × 31 (7 × 8)                                  | 47 × 31 (7 × 8)         | 79 × 59 (8 × 8)               | 79 × 59 (8 × 8)        |
| <b>Memory</b>  |                     |  |                         |                               |                        |
| Project/recipe memory                                | MByte               | 4 (for project and recipe data)                  |                         |                               |                        |
| <b>Power supply</b>                                  |                     |  |                         |                               |                        |
| Rated voltage  | V                   | 24 DC  | 24 DC                   | 24 DC                         | 24 DC                  |
| Admissible range                                     | V                   | 20.4 – 28.8 DC                                   | 20.4 – 28.8 DC          | 20.4 – 28.8 DC                | 20.4 – 28.8 DC         |
| Absolute value with ripple                           | V DC                | 18.5 – 30.5                                      | 18.5 – 30.5             | 18.5 – 30.5                   | 18.5 – 30.5            |
| Nominal frequency                                    | Hz                  | –  | –                       | –                             | –                      |
| Power consumption                                    | P <sub>max.</sub> W | 20   | 20                      | 20                            | 20                     |
| Fuse (externally accessible)                         | A slow              | 2.5  | 2.5                     | 2.5                           | 2.5                    |
| <b>Interfaces</b>                                    |                     |  |                         |                               |                        |
| Progr. port/system port/printer                      |                     | RS232, not isolated or floating                  |                         |                               |                        |
| Slots for communication modules                      |                     | 1  | 1                       | 1                             | 1                      |
| Communication interface on board                     |                     | SUCOM-A  | SUCOM-A                 | SUCOM-A                       | SUCOM-A                |
| Parallel printer interface                           |                     | –  | –                       | –                             | –                      |

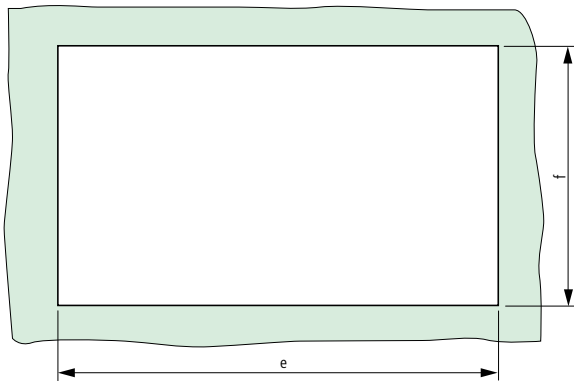
|  |                     | Touch operator panel  |                            |  |                            |                        |                            |
|--|---------------------|---|----------------------------|--|----------------------------|------------------------|----------------------------|
|  |                     | MV4-570-TA1(-XX1)   | MV4-570-TA2(-XX1)          | MV4-670-TA1(-XX1)                              | MV4-670-TA2(-XX1)          | MV4-690-TA1(-XX1)      | MV4-690-TA2(-XX1)          |
| <b>General</b>                                       |                     |   |                            |  |                            |                        |                            |
| Ambient temperature                                  | °C                  | 0/50  | 0/50                       | 0/50   | 0/50                       | 0/50                   | 0/50                       |
| Ambient temperature for storage                      | °C                  | 20/60   | 20/60                      | 20/60  | 20/60                      | -20/60                 | 20/60                      |
| Relative humidity, no condensation (IEC 60 068-2-30) | %                   | 10 – 90   | 10 – 90                    | 10 – 90  | 10 – 90                    | 10 – 90                | 10 – 90                    |
| Shock resistance (half sinewave, 50 g/20 ms)         |                     | IEC 60068-2-27  | IEC 60068-2-27             | IEC 60068-2-27                                 | IEC 60068-2-27             | IEC 60 068-2-27        | IEC 60068-2-27             |
| Vibration resistance (10 - 200 - 10 Hz/1.5 g)        |                     | IEC 60068-2-6   | IEC 60068-2-6              | IEC 60068-2-6                                  | IEC 60068-2-6              | IEC 60 068-2-6         | IEC 60068-2-6              |
| Electromagnetic compatibility (EMC)                  |                     | → Page 4/59   | → Page 4/59                | → Page 4/59                                    | → Page 4/59                | → Page 4/59            | → Page 4/59                |
| RFI voltage  |                     | –   | CISPR 11, EN 55011 Class A | –  | CISPR 11, EN 55011 Class A | –                      | CISPR 11, EN 55011 Class A |
| RFI radiation  |                     | CISPR 11, EN 55011 Class A  |                            |  |                            |                        |                            |
| Degree of protection                                 |                     |   |                            |  |                            |                        |                            |
| Front (NEMA 12) IEC/EN 60529                         |                     | IP65  | IP65                       | IP65   | IP65                       | IP65                   | IP65                       |
| Rear   |                     | IP20  | IP20                       | IP20   | IP20                       | IP20                   | IP20                       |
| Weight   | kg                  | Approx. 4.8   | Approx. 4.8                | Approx. 5.1                                    | Approx. 5.1                | Approx. 8.8            | Approx. 8.8                |
| <b>Display</b>                                       |                     |   |                            |  |                            |                        |                            |
| Screen diagonal                                      | Inches              | 10.4  | 10.4                       | 10.4   | 10.4                       | 15                     | 15                         |
| Type   |                     | LCD active color (TFT)  | LCD active color (TFT)     | LCD active color (TFT)                         | LCD active color (TFT)     | LCD active color (TFT) | LCD active color (TFT)     |
| Resolution   | Pixels              | 640 × 480   | 640 × 480                  | 640 × 480                                      | 640 × 480                  | 1024 × 768             | 1024 × 768                 |
| Display area   | mm                  | 212 × 158   | 212 × 158                  | 212 × 158                                      | 212 × 158                  | 304 × 228              | 304 × 228                  |
| Colors/grey scales                                   |                     | 256/–   | 256/–                      | 256/–  | 256/–                      | 256/–                  | 256/–                      |
| Contrast ratio (Normally)                            |                     | Min. 100  | Min. 100                   | 250  | 250                        | 300                    | 300                        |
| Brightness (Normally)                                | cd/m <sup>2</sup>   | 250   | 250                        | 250  | 250                        | 200                    | 200                        |
| Service life of back-lighting                        | Op. hours           | 25000   | 25000                      | 50000  | 50000                      | 50000                  | 50000                      |
| <b>Front plate</b>                                   |                     |   |                            |  |                            |                        |                            |
| Glass, non-reflective                                | mm                  | 3   | 3                          | 3  | 3                          | 3                      | 3                          |
| <b>Operation</b>                                     |                     |   |                            |  |                            |                        |                            |
| Operation  |                     | Optical grid in infra-red wavelengths (IR-Touch)  |                            |  |                            |                        |                            |
| Resolution   |                     |   |                            |  |                            |                        |                            |
| Physical   | Pixels              | 40 × 30 (16 × 16)   | 40 × 30 (16 × 16)          | 40 × 30 (16 × 16)                              | 40 × 30 (16 × 16)          | 54 × 42 (19 × 18)      | 54 × 42 (19 × 18)          |
| Logical  | Pixels              | 79 × 59 (8 × 8)   | 79 × 59 (8 × 8)            | 79 × 59 (8 × 8)                                | 79 × 59 (8 × 8)            | 107 × 83 (10 × 9)      | 107 × 83 (10 × 9)          |
| <b>Memory</b>  |                     |   |                            |  |                            |                        |                            |
| Project/recipe memory                                | MByte               | 4 – 64 (for project and recipe data, PC card as per JEIDA/PCMCIA Type 1 or 2 ATA Flash (1 PCMCIA slot)) |                            |  |                            |                        |                            |
| <b>Power supply</b>                                  |                     |   |                            |  |                            |                        |                            |
| Rated voltage  | V                   | 24 DC   | 100 – 240 AC               | 24 DC  | 100 – 240 AC               | 24 DC                  | 100 – 240 AC               |
| Admissible range                                     | V                   | 20.4 – 28.8 DC  | 85 – 264 AC                | 20.4 – 28.8 DC                                 | 85 – 264 AC                | 20.4 – 28.8 DC         | 85 – 264 AC                |
| Absolute value with ripple                           | V DC                | 18.5 – 30.5   | –                          | 18.5 – 30.5                                    | –                          | 18.5 – 30.5            | –                          |
| Nominal frequency                                    | Hz                  | –   | 50/60                      | –  | 50/60                      | –                      | 50/60                      |
| Power consumption                                    | P <sub>max.</sub> W | max. 40   | max. 40                    | max. 40  | max. 40                    | max. 50                | max. 50                    |
| Fuse (externally accessible)                         | A slow              | 4   | 1                          | 4  | 1                          | 4                      | 1                          |
| <b>Interfaces</b>                                    |                     |   |                            |  |                            |                        |                            |
| Progr. port/system port/printer                      |                     | RS232, not isolated or floating   |                            |  |                            |                        |                            |
| Slots for communication modules                      |                     | 2   | 2                          | 2  | 2                          | 2                      | 2                          |
| Communication interface on board                     |                     | SUCOM-A   | SUCOM-A                    | Ethernet 10 Base-T/100 Base-TX, RJ-45; SUCOM-A |                            |                        |                            |
| Parallel printer interface                           |                     | –   | –                          | ●  | ●                          | ●                      | ●                          |

Display and Operator Units

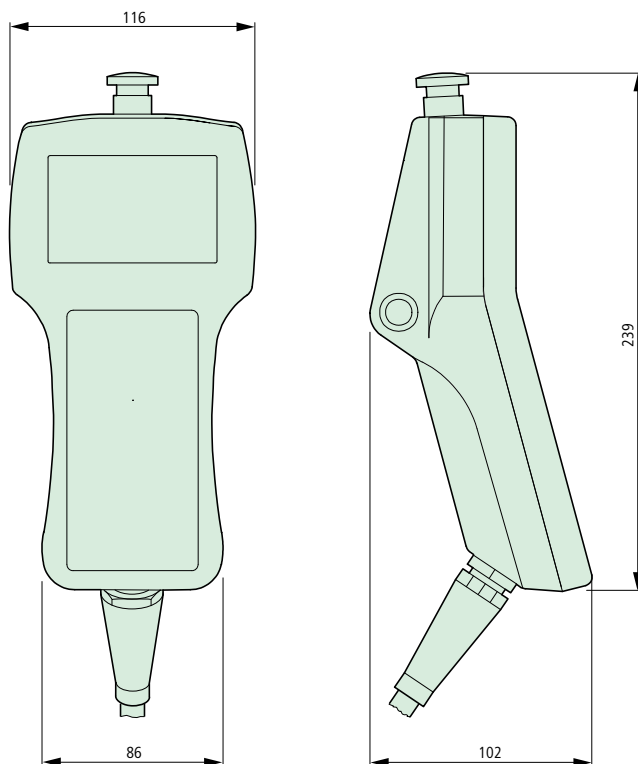


| Type        | a   | b   | c   | d | e   | f   |
|-------------|-----|-----|-----|---|-----|-----|
| MI4-110-KC1 | 149 | 109 | 60  | 5 | 136 | 96  |
| MI4-117-KC1 | 149 | 109 | 60  | 5 | 136 | 96  |
| MI4-110-KD1 | 149 | 109 | 52  | 5 | 136 | 96  |
| MI4-117-KD1 | 149 | 109 | 52  | 5 | 136 | 96  |
| MI4-110-KG1 | 141 | 176 | 76  | 5 | 128 | 163 |
| MI4-110-KG2 | 141 | 176 | 76  | 5 | 128 | 163 |
| MI4-140-KI1 | 220 | 176 | 71  | 5 | 207 | 163 |
| MI4-150-KI1 | 275 | 220 | 80  | 5 | 262 | 207 |
| MI4-450-KI1 | 275 | 220 | 80  | 5 | 262 | 207 |
| MI4-570-KH1 | 311 | 276 | 80  | 5 | 292 | 257 |
| MI4-130-TA1 | 149 | 109 | 61  | 5 | 136 | 96  |
| MI4-137-TA1 | 149 | 109 | 61  | 5 | 136 | 96  |
| MI4-140-TA1 | 187 | 147 | 79  | 5 | 176 | 136 |
| MI4-150-TA1 | 187 | 147 | 91  | 5 | 176 | 136 |
| MI4-450-TA1 | 187 | 147 | 91  | 5 | 176 | 136 |
| MI4-550-TA1 | 187 | 147 | 91  | 5 | 176 | 136 |
| MI4-160-TA1 | 287 | 232 | 91  | 5 | 276 | 221 |
| MI4-570-TA1 | 287 | 232 | 91  | 5 | 276 | 221 |
| MI4-580-TA1 | 337 | 267 | 91  | 5 | 326 | 256 |
| MI4-590-TA1 | 392 | 307 | 101 | 5 | 381 | 296 |

Mounting dimensions



MI4-140-KF1

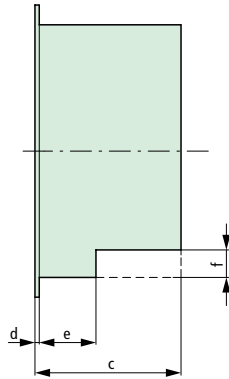
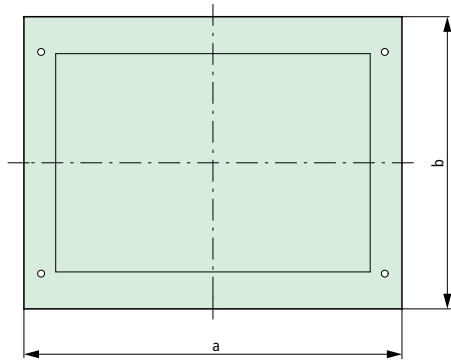


Moeller HPL0213-2004/2005

Display and Operator Units

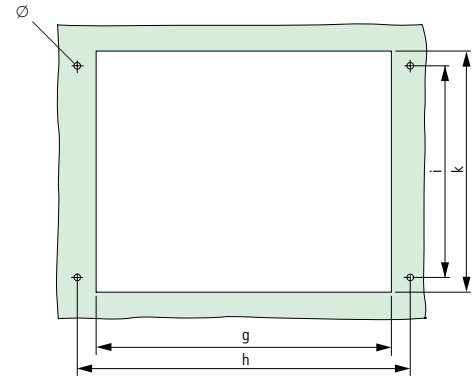
Mounting dimensions for units with holes at front at units with stud bolts

MV4 front-hole mounting



MV4-150-TA1  
MV4-450-TA1  
MV4-170-TA1

MV4-570-TA5  
MV4-570-TA1/-TA2

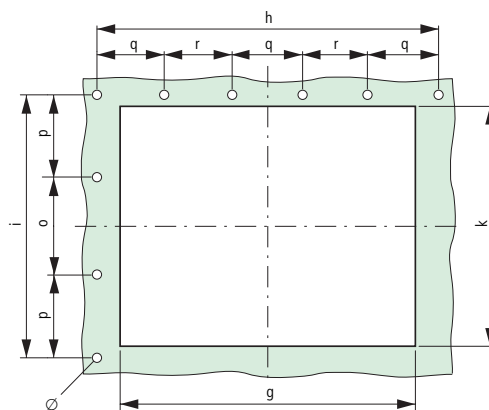
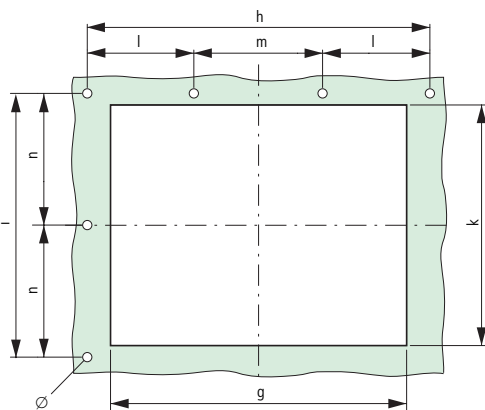


MV4 stud bolt mounting

MV4-150-TA1-XX1  
MV4-450-TA1-XX1

MV4-170-TA1-XX1  
MV4-570-TA1/-TA2-XX1  
MV4-670-TA1/-TA2-XX1  
MV4-690-TA1/-TA2-XX1

MV4-670-TA1/-TA2 (threaded stud bolts)  
MV4-690-TA1/-TA2 (threaded stud bolts)



| Type            | a   | b   | c  | d   | e  | f  | g   | h   | i   | k   | l    | m  | n    | o   | p   | q    | r    | Ø   |
|-----------------|-----|-----|----|-----|----|----|-----|-----|-----|-----|------|----|------|-----|-----|------|------|-----|
| MV4-150-TA1     | 220 | 170 | 85 | 2.5 | -  | -  | 203 | 180 | 157 | 147 | -    | -  | -    | -   | -   | -    | -    | 4.5 |
| MV4-450-TA1     | 220 | 170 | 85 | 2.5 | -  | -  | 203 | 180 | 157 | 147 | -    | -  | -    | -   | -   | -    | -    | 4.5 |
| MV4-170-TA1     | 342 | 270 | 85 | 4   | 33 | 16 | 316 | 326 | 240 | 244 | -    | -  | -    | -   | -   | -    | -    | 6   |
| MV4-570-TA5     | 342 | 270 | 85 | 4   | 33 | 16 | 316 | 326 | 240 | 244 | -    | -  | -    | -   | -   | -    | -    | 6   |
| MV4-570-TA1     | 342 | 270 | 85 | 4   | 33 | 16 | 316 | 326 | 240 | 244 | -    | -  | -    | -   | -   | -    | -    | 6   |
| MV4-570-TA2     | 342 | 270 | 85 | 4   | 33 | 16 | 316 | 326 | 240 | 244 | -    | -  | -    | -   | -   | -    | -    | 6   |
| MV4-150-TA1-XX1 | 220 | 170 | 85 | 2.5 | -  | -  | 203 | 211 | 161 | 147 | 70.5 | 70 | 80.5 | -   | -   | -    | -    | M4  |
| MV4-450-TA1-XX1 | 220 | 170 | 85 | 2.5 | -  | -  | 203 | 211 | 161 | 147 | 70.5 | 70 | 80.5 | -   | -   | -    | -    | M4  |
| MV4-170-TA1-XX1 | 342 | 270 | 85 | 4   | 33 | 16 | 316 | 328 | 256 | 244 | -    | -  | -    | 86  | 85  | 66   | 65   | M5  |
| MV4-570-TA1-XX1 | 342 | 270 | 85 | 4   | 33 | 16 | 316 | 328 | 256 | 244 | -    | -  | -    | 86  | 85  | 66   | 65   | M5  |
| MV4-570-TA2-XX1 | 342 | 270 | 85 | 4   | 33 | 16 | 316 | 328 | 256 | 244 | -    | -  | -    | 86  | 85  | 66   | 65   | M5  |
| MV4-670-TA1-XX1 | 343 | 270 | 85 | 4   | 33 | 16 | 316 | 328 | 256 | 244 | -    | -  | -    | 86  | 85  | 66   | 65   | M5  |
| MV4-670-TA2-XX1 | 343 | 270 | 85 | 4   | 33 | 16 | 316 | 328 | 256 | 244 | -    | -  | -    | 86  | 85  | 66   | 65   | M5  |
| MV4-690-TA1-XX1 | 460 | 350 | 98 | 4   | 38 | 50 | 420 | 434 | 330 | 320 | -    | -  | -    | 110 | 110 | 86.8 | 86.8 | M6  |
| MV4-690-TA2-XX1 | 460 | 350 | 98 | 4   | 38 | 50 | 420 | 434 | 330 | 320 | -    | -  | -    | 110 | 110 | 86.8 | 86.8 | M6  |
| MV4-670-TA1     | 343 | 270 | 85 | 4   | 33 | 16 | 316 | 328 | 256 | 244 | -    | -  | -    | 86  | 85  | 66   | 65   | M5  |
| MV4-670-TA2     | 343 | 270 | 85 | 4   | 33 | 16 | 316 | 328 | 256 | 244 | -    | -  | -    | 53  | 85  | 66   | 65   | M5  |
| MV4-690-TA1     | 460 | 350 | 98 | 4   | 38 | 50 | 420 | 434 | 330 | 320 | -    | -  | -    | 110 | 110 | 66   | 65   | M6  |
| MV4-690-TA1     | 460 | 350 | 98 | 4   | 38 | 50 | 420 | 434 | 330 | 320 | -    | -  | -    | 110 | 110 | 66   | 65   | M6  |

