

# 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.



#### 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 MI4 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

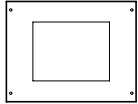
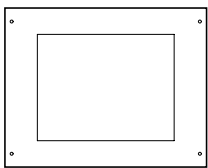
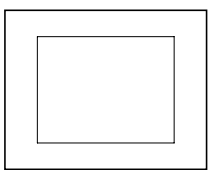
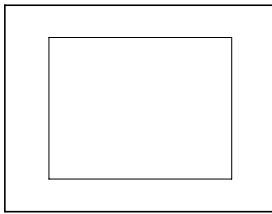
With the MV4 configurator MV4-CFG-1 (Galileo).

#### Documentation

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

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Display	Resolution		Screen diagonal	Memory		PCMCIA slots	Interfaces on board
	Pixels	Inches		MByte	MByte		
<b>Touch operator panel</b>							
<ul style="list-style-type: none"> <li>• Infra-red touch function</li> <li>• Alarm management, history memory, trend display</li> <li>• Language selection</li> </ul>							
	Passive mono-chrome (STN)	320 × 240	5.7	4	–	–	1 × slot for communication modules 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	–	–	2 × slots for communication modules 1 × system port RS232C (programming, SUCOM A or serial printer connection)
	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	
	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 1 × Ethernet 10/100 Mbps 1 × System port RS232C (SUCOM-A or serial printer) 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	

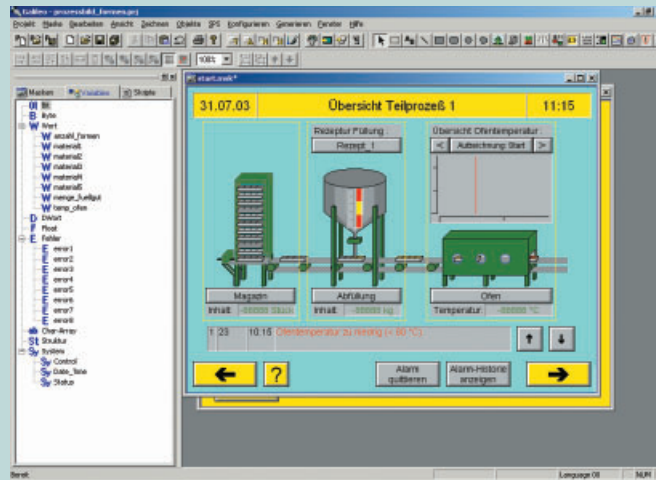
**Notes** Interfaces on board: see driver list for other connections.  
Slots for communication cards: communication cards must be ordered separately.

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 210531		1 off	–
	Stainless steel, brushed matt		MV4-150-TA1-XX1 227725			
	Aluminium, powder coated, RAL 7031 (blue-grey)	100 – 240 V AC	MV4-450-TA1 210532			–
	Stainless steel, brushed matt		MV4-450-TA1-XX1 227726			
	Aluminium, powder coated, RAL 7031 (blue-grey)	100 – 240 V AC	MV4-170-TA1 210533			–
	Stainless steel, brushed matt		MV4-170-TA1-XX1 227729			
	Aluminium, powder coated, RAL 7031 (blue-grey)	100 – 240 V AC	MV4-570-TA5 272249			–
	Stainless steel, brushed matt		MV4-570-TA1 210535			
	Aluminium, powder coated, RAL 7031 (blue-grey)	100 – 240 V AC	MV4-570-TA1-XX1 227731			Memory card for project/recipe memory: the PCMCIA memory cards must be ordered separately.
	Stainless steel, brushed matt		MV4-570-TA2 210560			
	Aluminium, powder coated, RAL 7031 (blue-grey)	100 – 240 V AC	MV4-570-TA2-XX1 227732			
	Stainless steel, brushed matt		MV4-670-TA1 224466			
	Aluminium, powder coated, RAL 7031 (blue-grey)	100 – 240 V AC	MV4-670-TA1-XX1 227735			
	Stainless steel, brushed matt		MV4-670-TA2 224465			
	Aluminium, powder coated, RAL 7031 (blue-grey)	100 – 240 V AC	MV4-670-TA2-XX1 227736			
	Stainless steel, brushed matt		MV4-690-TA1 224467			
Aluminium, powder coated, RAL 7031 (blue-grey)	100 – 240 V AC	MV4-690-TA1-XX1 227737				
Stainless steel, brushed matt		MV4-690-TA2 224468				
Aluminium, powder coated, RAL 7031 (blue-grey)	100 – 240 V AC	MV4-690-TA2-XX1 227738				
Stainless steel, brushed matt						

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### 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)

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

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		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		–	–	–	–

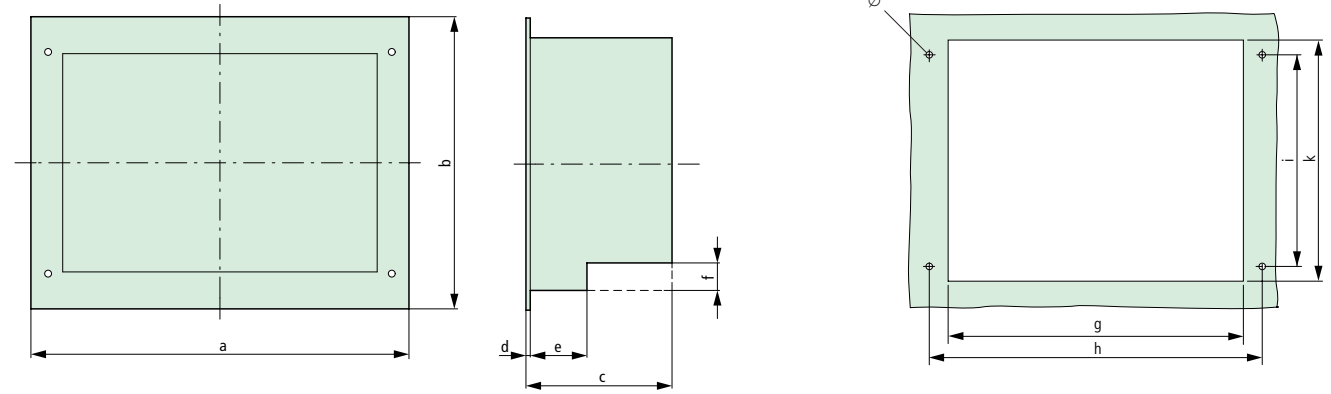
		Touch operator panel					
		MV4-570-TA1(-XX1)	MV4-570-TA2(-XX1)	MV4-670-TA1(-XX1)	MV4-670-TA2(-XX1)	MV4-690-TA1(-XX1)	MV4-690-TA2(-XX1)
<b>General</b>							
Ambient temperature	°C	0/50	0/50	0/50	0/50	0/50	0/50
Ambient temperature for storage	°C	20/60	20/60	20/60	20/60	-20/60	20/60
Relative humidity, 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		–	–	●	●	●	●

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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

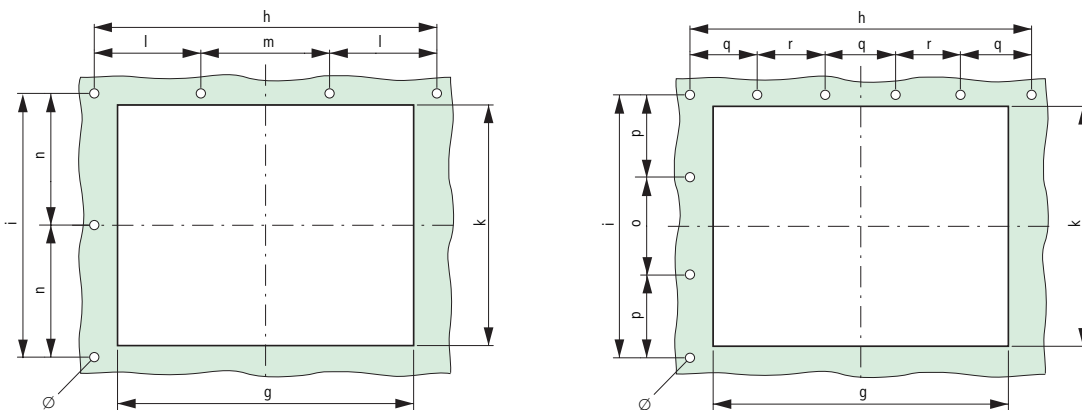
MV4-570-TA5  
MV4-570-TA1/-TA2

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

