

IMPACT™ MONITOR KIT

Industrial-/Military-Grade, Open Frame LCD Monitor Kit

In its native form, the **IMPACT™ MK SERIES** is intentionally designed as the most basic turnkey monitor General Digital™ can produce. Unlike many of our other LCD monitor offerings, the Impact™ Monitor Kit is comprised of the bare necessities and does not include features such as a protective enclosure, thermal management, etc. The kit is intended to offer our OEM (Original Equipment Manufacturer) customers with an economical, turnkey product that can be easily integrated into your existing products, consoles, protective enclosures or kiosks.

Integrated into every unit are the latest advances in LCD display technology, while providing the equivalent viewing area of much larger CRTs. All of our active matrix TFT LCD screens offer up to 16.7 million colors, wide viewing angles, and fast response times (suitable for live video). We qualify multiple sources of supply to ensure product availability and long life.

The LCD display, control electronics and cabling are all secured to a sturdy, metal mounting frame, which facilitates installation.

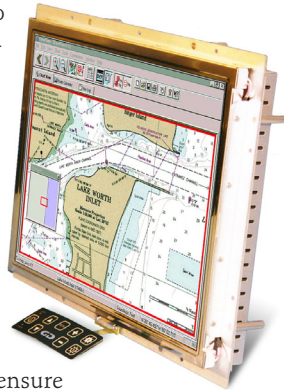
Modular adaptability is the **IMPACT™ CM SERIES'** domain. Their lightweight enclosures have been optimized to reduce cost, protect the monitors' electronics and facilitate a variety of mounting schemes. This inherent flexibility permits Integrators and VARs (Value Added Resellers) to quickly and easily design and manufacture their end-products around our fully functional display modules.

For OEMs/End Users, General Digital™ offers a series of optional bezels and enclosures that allow the Impact™ Monitor Kit to be transformed into standalone, panel mount or rack mount monitor units.

The low power Impact™ CM Series is designed to operate from a single +12V regulated source. Customers can provide their own power supply, request a custom supply, or choose our standard power supply configuration, featuring a power-factor-corrected AC switching supply. Additionally, this series is designed with the intent to meet UL 60950 and FCC Class A Certification.

Sunlight readability is achieved using our **GENFLECTIVE™** technology, which is a passive approach to brightness and contrast enhancement. Using a proprietary combination of reflective, brightness and contrast enhancing films, sunlight readable performance is achieved. General Digital™ developed GenFlective™ technology to improve daylight and sunlight readable brightness and contrast performance without increased power consumption, heat emission, and backlight augmentation. Another benefit is increased backlight bulb life expectancy.

Please feel welcome to consult with a General Digital™ Sales Engineer for additional information, or visit our web site at www.GeneralDigital.com.



QUICK LOOK

ENCLOSURE

- » Light Weight, Modular Enclosure of CM Series Facilitates Customer Integration
- » Pre-designed Bezels & Enclosures Available with the CM Series to Transform Into a Panel Mount, Rack Mount or Standalone Device
- » Low Cost, Open Frame Design of MK Series is Ideal for OEMs
- » Sturdy Metal Mounting Frames/Panels Simplify OEM Integration
- » Versatile Enclosures may be Mounted from the Front or the Rear
- » Rugged, All-Metal Construction
- » Seamless Replacement for CRTs

DISPLAY

- » 6.4" to 24.0" Diagonal Active Matrix TFT LCD Display
- » VGA (640 x 480 pixels) to WUXGA (1920 x 1200 pixels) Resolution
- » Wide Viewing Angle (Horizontal & Vertical)
- » High Brightness and Contrast Enhances Display Quality

VIDEO CONTROLLER

- » Support for Interlaced and Non-Interlaced Video Sources
- » Support for Separate, Composite, Sync-On-Green, DVI-D, SDI Standards
- » Support for NTSC, SECAM, PAL, RS-170 Video Input
- » Resolutions to 1920 x 1200 @ 60 Hz (Native); Sub-resolutions to 85 Hz
- » Intuitive On-screen Menus for Display Calibration and User's Control
- » Advanced Imaging Features
 - Auto Adjust, Brightness/Contrast/Color Adjustments, Image Expansion, Image Zoom, Foreign Languages, PIP, PBP, More

POWER

- » Separate AC Input Supply Provides +12 VDC to Monitor
- » Low Power Consumption (<50 Watts)

OPTIONS

- » Protective Glass Display Overlay
- » Capacitive and Resistive Touch Screens
- » Support for DVI-D Video, HDMI Video, NTSC Video (Composite)
- » External Power Supplies (AC, DC, Power Factor Correction, More)
- » Audio Add-on Board for Stereo Speaker Control

CERTIFICATIONS

- » The Impact™ CM Series is Designed with the Intent to Meet UL 60950 and FCC Class A Certification when Configured with the General Digital-Supplied Power-Factor-Corrected AC Power Supply

Designed and Manufactured in the U.S.A.

DISPLAY

	Size (Diagonal)	Viewing Area (W x H)	Resolution (Pixels)	Number of Colors	Luminance (0° Max.)	Contrast	Response Time (Rise/Decay)	Horizontal Viewing Angle	Vertical Viewing Angle	Shock ¹	Vibration ¹
MK-06V-102	6.5"	5.2" x 3.9"	640 x 480	262,144	400 Nits	400:1	8/17 ms	± 80°	+ 80°, -60°	54 G, 11 ms ½ Sine Wave	2.0 G (5–100 Hz)
MK-08V-170	8.4"	6.7" x 5.1"	640 x 480	262,144	400 Nits	500:1	6/19 ms	± 65°	+ 50°, -60°	150 G, 2 ms ½ Sine Wave	1.0 G (5–500 Hz)
MK-10V-200	10.4"	8.3" x 6.2"	640 x 480	262,144	300 Nits	300:1	20/40 ms	± 70°	+ 40°, -70°	50 G, 11 ms ½ Sine Wave	1.0 G (58–500 Hz)
MK-10S-220	10.4"	8.3" x 6.2"	800 x 600	262,144	230 Nits	300:1	5/25 ms	± 60°	± 50°	220 G, 2 ms ½ Sine Wave	1.5 G (10–300 Hz)
MK-12S-309	12.1"	9.7" x 7.3"	800 x 600	262,144	370 Nits	450:1	15/30 ms	± 70°	+ 50°, -60°	50 G, 11 ms ½ Sine Wave	1.0 G (58–500 Hz)
CM-15X-405	15.0"	11.97" x 8.98"	1024 x 768	16.2 Million	550 Nits	700:1	6/2 ms	± 70°	+ 65°, -60°	50 G, 20 ms ½ Sine Wave	1.5 G (10–200 Hz)
CM-17W-508	17.0"	13.30" x 10.64"	1280 x 1024	16.7 Million	300 Nits	1000:1	2/4 ms	± 80°	± 80°	50 G, 11 ms ½ Sine Wave	1.5 G (10–300 Hz)
CM-19W-702	19.0"	14.81" x 11.85"	1280 x 1024	16.7 Million	250 Nits	600:1	13/7 ms	± 85°	± 85°	50 G, 11 ms ½ Sine Wave	1.5 G (10–300 Hz)
CM-20U-810	20.1"	16.06" x 12.05"	1600 x 1200	16.7 Million	300 Nits	800:1	7/9 ms	± 89°	± 89°	100 G, 2 ms ½ Sine Wave	1.0 G (10–500 Hz)
CM-24D-815	24.0"	20.41" x 12.76"	1920 x 1200	16.7 Million	500 Nits	1000:1	16 ms	± 89°	± 89°	50 G, 11 ms ½ Sine Wave	1.0 G (10–300 Hz)

¹ Shock and Vibration data reflect parameters for baseline industrial monitors. Military-grade monitors could sustain even greater shock and vibration levels. Please inquire with a Sales Engineer for more information.

VIDEO CONTROLLER⁴

dd	Display Supported	Resolution/Frequency ²							Scaling	NTSC / SECAM / PAL / RS-170	Video Supported
		640 x 480 VGA	800 x 600 SVGA	1024 x 768 XGA	1366 x 768 WXGA	1280 x 1024 SXGA	1600 x 1200 UXGA	1920 x 1200 WUXGA			
50	6.5"/8.4"	60, 75 Hz	60, 75 Hz	60, 75 Hz	—	60, 75 Hz	—	—	—	Analog Processor, No RS-170	Separate, Composite, S-Video
53	6.5"/8.4"	60 Hz	56, 60 Hz	60 Hz	60 Hz	60 Hz	—	—	—	—	Separate, Composite, Sync-on-Green, DVI-D
57	6.5"/8.4"	60 Hz	56, 60 Hz	60 Hz	60 Hz	60 Hz	—	—	—	—	Separate, Composite, Sync-on-Green
60 ³	All	60, 72, 75 Hz	56, 60, 72, 75 Hz	60, 70, 75 Hz	60 Hz	60, 75 Hz	60 Hz	60 Hz	On/Off	Digital Processor, Picture-in-Picture	Separate, Composite, Sync-on-Green, DVI-D
61 ³	All	60, 72, 75 Hz	56, 60, 72, 75 Hz	60, 70, 75 Hz	60 Hz	60, 75 Hz	60 Hz	60 Hz	On/Off	—	Separate, Composite, Sync-on-Green
62 ³	All	60, 72, 75 Hz	56, 60, 72, 75 Hz	60, 70, 75 Hz	60 Hz	60, 75 Hz	60 Hz	60 Hz	On/Off	Digital Processor, Picture-in-Picture	Separate, Composite, Sync-on-Green
63 ³	All	60, 72, 75 Hz	56, 60, 72, 75 Hz	60, 70, 75 Hz	60 Hz	60, 75 Hz	60 Hz	60 Hz	On/Off	Digital Processor, Picture-in-Picture	DVI-D
64 ³	All	60, 72, 75 Hz	56, 60, 72, 75 Hz	60, 70, 75 Hz	60 Hz	60, 75 Hz	60 Hz	60 Hz	On/Off	—	Separate, Composite, Sync-on-Green, DVI-D

² Most common video modes listed. Other video modes supported. Speak with a Sales Engineer for more information.

³ Supports advanced features such as Live Video, Picture-in-Picture (multiple user-selectable sizes), and Picture-by-Picture.

⁴ Most common video inputs listed. See below for a comprehensive list of supported video standards. Speak with a Sales Engineer for more information.

VIDEO STANDARDS SUPPORTED All Models

Analog Computer Video	Digital Computer Video	Composite (Live) Video	HD Video	Others
VGA, SVGA, ARGB, RGB, Separate Sync, Composite Sync, Sync-on-Green, DVI-A, STANAG 3350 A / B / C	DVI-D, DVI-I, SD-SDI, HD-SDI	NTSC, PAL, SECAM, RS-170, S-Video, CCTV	HD-SDI, HDMI	CGI, CCIR, EGA, RS-343A, EIA-343A, Custom Sync

MTBF

	Display	Backlight ⁵	Inverter	Power Supply (Optional)
MK-06V-102	> 50,000 Hours (Minimum)	> 50,000 Hours (Typical)	182,000 Hours	Depends on Supply Selected
MK-08V-170	> 50,000 Hours (Minimum)	> 50,000 Hours (Typical)	182,000 Hours	Depends on Supply Selected
MK-10V-200	> 50,000 Hours (Minimum)	> 50,000 Hours (Typical)	182,000 Hours	Depends on Supply Selected
MK-10S-220	> 50,000 Hours (Minimum)	> 20,000 Hours (Typical)	182,000 Hours	Depends on Supply Selected
MK-12S-309	> 50,000 Hours (Minimum)	> 50,000 Hours (Typical)	182,000 Hours	Depends on Supply Selected
CM-15X-405	> 50,000 Hours (Minimum)	> 50,000 Hours (Typical)	182,000 Hours	Depends on Supply Selected
CM-17W-508	> 50,000 Hours (Minimum)	> 50,000 Hours (Typical)	182,000 Hours	Depends on Supply Selected
CM-19W-702	> 50,000 Hours (Minimum)	> 50,000 Hours (Typical)	182,000 Hours	Depends on Supply Selected
CM-20U-810	> 50,000 Hours (Minimum)	> 45,000 Hours (Typical)	182,000 Hours	Depends on Supply Selected
CM-24D-815	> 50,000 Hours (Minimum)	> 50,000 Hours (Typical)	> 100,000 Hours	Depends on Supply Selected

⁵ The hours for Backlight MTBF refer to the half-life of the bulbs; that is, the point at which the bulbs reach half of their original brightness. *It does not indicate the life expectancy of the bulbs.*

ENVIRONMENTAL

	Temperature, Operating	Temperature, Storage	Humidity, Operating	Humidity, Storage	Altitude, Operating	Altitude, Storage
MK-06V-102	-10° C to 70° C	-20° C to 80° C	20% to 95% RH Non-condensing	5% to 95% RH Non-condensing	10,000 Feet	24,000 Feet
MK-08V-170	-20° C to 70° C	-20° C to 80° C	20% to 90% RH Non-condensing	5% to 90% RH Non-condensing	10,000 Feet	24,000 Feet
MK-10V-200	-10° C to 60° C	-30° C to 70° C	20% to 95% RH Non-condensing	5% to 95% RH Non-condensing	10,000 Feet	24,000 Feet
MK-10S-220	0° C to 50° C	-20° C to 60° C	20% to 90% RH Non-condensing	5% to 90% RH Non-condensing	10,000 Feet	40,000 Feet
MK-12S-309	-10° C to 65° C	-30° C to 70° C	20% to 95% RH Non-condensing	5% to 95% RH Non-condensing	10,000 Feet	24,000 Feet
CM-15X-405	-30° C to 85° C	-30° C to 85° C	8% to 90% RH Non-condensing	8% to 90% RH Non-condensing	10,000 Feet	30,000 Feet
CM-17W-508	0° C to 50° C	-25° C to 60° C	20% to 90% RH Non-condensing	5% to 90% RH Non-condensing	10,000 Feet	40,000 Feet
CM-19W-702	0° C to 50° C	-20° C to 60° C	20% to 95% RH Non-condensing	5% to 95% RH Non-condensing	10,000 Feet	40,000 Feet
CM-20U-810	0° C to 50° C	-20° C to 60° C	8% to 95% RH Non-condensing	8% to 95% RH Non-condensing	12,000 Feet	40,000 Feet
CM-24D-815	0° C to 50° C	-20° C to 60° C	5% to 90% RH Non-condensing	5% to 90% RH Non-condensing	10,000 Feet	30,000 Feet

MECHANICAL

	Dimensions (H x W x D)	Construction	Finish	Weight, Operating ⁶	Weight, Shipping ⁶
MK-06V-102	7.50" x 9.25" x 1.43"	5052-H32 Aluminum Mounting Panel	Clear Iridite	3 Pounds	8 Pounds
MK-08V-170	7.50" x 10.50" x 1.48"	5052-H32 Aluminum Mounting Panel	Clear Iridite	4 Pounds	8 Pounds
MK-10V-200	8.81" x 11.81" x 1.38"	5052-H32 Aluminum Mounting Panel	Clear Iridite	4 Pounds	8 Pounds
MK-10S-220	9.50" x 11.63" x 2.50"	5052-H32 Aluminum Mounting Panel	Clear Iridite	4 Pounds	8 Pounds
MK-12S-309	9.00" x 14.00" x 2.04"	5052-H32 Aluminum Mounting Panel	Clear Iridite	6 Pounds	12 Pounds
CM-15X-405	11.22" x 14.22" x 1.99"	5052-H32 Aluminum Mounting Panel	Clear Iridite	8 Pounds	14 Pounds
CM-17W-508	12.18" x 16.23" x 2.22"	5052-H32 Aluminum Mounting Panel	Clear Iridite	11 Pounds	17 Pounds
CM-19W-702	13.12" x 16.04" x 2.94"	5052-H32 Aluminum Mounting Panel	Clear Iridite	13 Pounds	19 Pounds
CM-20U-810	14.25" x 17.29" x 2.95"	5052-H32 Aluminum Mounting Panel	Clear Iridite	14 Pounds	20 Pounds
CM-24D-815	15.3" x 21.7" x 2.5"	5052-H32 Aluminum Mounting Panel	Clear Iridite	19 Pounds	26 Pounds

⁶ Add 2 pounds to the weight when a Separate Power Supply is included.

I/O CONNECTIONS

	Power (DC)	Analog Video	On/Standby (DC)	S-Video	Composite Video	Touch Screen
MK-06V-102	2-pin, 0.156" sp., Molex	High Density 15-pin Socket	LED on Membrane Pad	4-pin Mini DIN	RCA Jack	DE-9, Socket
MK-08V-170	2-pin, 0.156" sp., Molex	High Density 15-pin Socket	LED on Membrane Pad	4-pin Mini DIN	RCA Jack	DE-9, Socket
MK-10V-200	2-pin, 0.156" sp., Molex	High Density 15-pin Socket	LED on Membrane Pad	4-pin Mini DIN	RCA Jack	DE-9, Socket
MK-10S-220	2-pin, 0.156" sp., Molex	High Density 15-pin Socket	LED on Membrane Pad	4-pin Mini DIN	RCA Jack	DE-9, Socket
MK-12S-309	2-pin, 0.156" sp., Molex	High Density 15-pin Socket	LED on Membrane Pad	4-pin Mini DIN	RCA Jack	DE-9, Socket
CM-15X-405	3-pin Circular	High Density 15-pin Socket	LED on Membrane Pad	4-pin Mini DIN	RCA Jack	DE-9, Socket
CM-17W-508	3-pin Circular	High Density 15-pin Socket	LED on Membrane Pad	4-pin Mini DIN	RCA Jack	DE-9, Socket
CM-19W-702	3-pin Circular	High Density 15-pin Socket	LED on Membrane Pad	4-pin Mini DIN	RCA Jack	DE-9, Socket
CM-20U-810	3-pin Circular	High Density 15-pin Socket	LED on Membrane Pad	4-pin Mini DIN	RCA Jack	DE-9, Socket
CM-24D-815	2W2	High Density 15-pin Socket	LED on Membrane Pad	4-pin Mini DIN	RCA Jack	DE-9, Socket

CALIBRATION All Models

dd	Interface	Functions	Advanced
50	On-screen Displays Navigated by 8-button Membrane Pad	Brightness, Contrast, Hue, Saturation, Sharpness, Color, Phase, Clock, Scheme, Highlight Window, Language, Auto Color, Color Temperature, R/G/B Color Gain	Auto Configuration (On/Off), Video Source, Reset, OSD Position (Horizontal & Vertical), OSD Timeout, Backlight Dimming
53, 57	On-screen Displays Navigated by 8-button Membrane Pad	Brightness, Contrast, Sharpness, Color Temperature, Gamma, Frequency, Phase, Image Position (Horizontal & Vertical), Input Source Select	Auto Source Seek, Auto RGB Calibration, Auto Setup Position/Frequency/Phase, OSD (Position, Timeout), Reset
60/61/62/63/64	On-screen Displays Navigated by 8-button Membrane Pad	Volume, Brightness, Contrast, Saturation, Hue, Sharpness, Backlight Brightness, Input Signal, Aspect Size (Scaling), Image Position (Horizontal & Vertical)	Picture-In-Picture (PIP), PIP Size, PIP Position, PIP Transparency, Picture-by-Picture (PBP), Auto Picture Setup, Auto Color Gain, Wide Screen Mode Detection, Manual Clock/Phase, Auto Source Seek, Auto Power Off, Video Standard, Gamma, OSD (Position, Timeout, Language [English, Spanish, French, German, Chinese], Transparency, Display Input), Image Freeze, Image Zoom & Pan, Color Temperature, Hot Keys, Monochrome Mode, Backlight Setup



POWER SUPPLY⁷

<i>hijj</i>	Input Voltage Range	Output				Frequency Range	Line Entry Module/Filter	Power Factor
		6.5"/8.4"/10.4"/12.1"	15.0"/17.0"/19.0"	20.1"	24.0"			
SA30 (Separate)	90–264 VAC	—	66 W /±12 VDC	—	—	47–63 Hz	—	—
SA49 (Separate)	100–264 VAC	30 W /+12 VDC	—	—	—	50–60 Hz	—	—
SP07 (Separate)	85–264 VAC	—	—	—	150W /+12 VDC	47–63 Hz	Yes	0.95
SP31 (Separate)	90–264 VAC	—	—	100 W /±12 VDC	—	47–63 Hz	—	0.95
0092 (None)	+12 VDC	Filtering and regulation provided by customer						

⁷ Includes 6'7" AC Power Cable.

OPTIONS

All Models (Ordered Separately – Please Inquire with a Sales Engineer for Additional Options and Accessories)

DISPLAY OVERLAY (Other Overlays Available – Please Inquire with a Sales Engineer)

<i>gg</i>	Description	<i>gg</i>	Description
00	None	23	Vandal Shield, Clear Float Glass, Antiglare Etch Two Sides, 2 Panes Bonded (Laminated) Together (Not Bonded to LCD)
02	Clear Float Glass, Antiglare Etch Two Sides	24	Vandal Shield, Soda Lime Glass, Chemically Strengthened (Tempered), Antireflective Coating Two Sides
04	Clear Float Glass, Antireflective Coating Two Sides	35	Capacitive Touch Screen, Ideal Etch
21	Vandal Shield, Polycarbonate or Acrylic	51	Resistive Touch Screen

OTHER

Optical Enhancements	Bonding of Filter and Display Using Indice-Matched Optical Materials; Brightness and Contrast Enhancing Films and Laminations
Power Supplies	AC and DC Supplies; Various Input Ranges, Input Frequencies; Separate or Attached; Power Factor Correction; AC and DC Power Cables
Video Accessories	Video Cables, Signal Extenders, NTSC/PAL/SECAM/RS-170/S-Video/DVI-D/HD-SDI/ SD-SDI/HDMI/HD Component Support, Picture-in-Picture, Picture-by-Picture
Remote Control	IR or Serial Calibration/Control Interface
Customization	Custom Mechanical and Electrical Modifications; Custom Finishing; Custom Software and Performance Modifications; Private Labeling

MODEL NUMBER CONFIGURATOR⁸

Model Style	Size & Resolution (<i>aab</i>)	Display (<i>ccc</i>)	Video Controller (<i>dd</i>)	Keyboard/Pointer (<i>ee</i>)	Industrial Enclosure (<i>ff</i>)	Display Overlay (<i>gg</i>)	Power Supply (<i>hijj</i>)
MK-	06V-	102-	# #-	00-	00-	# #-	### #
MK-	08V-	170-	# #-	00-	00-	# #-	### #
MK-	10V-	200-	# #-	00-	00-	# #-	### #
MK-	10S-	220-	# #-	00-	00-	# #-	### #
MK-	12S-	309-	# #-	00-	00-	# #-	### #
CM-	15X-	405-	# #-	00-	00-	# #-	### #
CM-	17W-	508-	# #-	00-	00-	# #-	### #
CM-	19W-	702-	# #-	00-	00-	# #-	### #
CM-	20U-	810-	# #-	00-	00-	# #-	### #
CM-	24D-	815-	# #-	00-	00-	# #-	### #

⁸ The pound symbol (#) indicates customer-defined values.

ORDERING

Model Number ⁹	Description
MK-06V-102- dd -00-00- gg-hijj	Impact Monitor Kit™, 6.5" Diagonal, VGA, Open Frame, Ruggedized LCD Monitor
MK-08V-170- dd -00-00- gg-hijj	Impact Monitor Kit™, 8.4" Diagonal, VGA, Open Frame, Ruggedized LCD Monitor
MK-10V-200- dd -00-00- gg-hijj	Impact Monitor Kit™, 10.4" Diagonal, VGA, Open Frame, Ruggedized LCD Monitor
MK-10S-220- dd -00-00- gg-hijj	Impact Monitor Kit™, 10.4" Diagonal, SVGA, Open Frame, Ruggedized LCD Monitor
MK-12S-309- dd -00-00- gg-hijj	Impact Monitor Kit™, 12.1" Diagonal, SVGA, Open Frame, Ruggedized LCD Monitor
CM-15X-405- dd -00-00- gg-hijj	Impact Monitor Kit™, 15.0" Diagonal, XGA, Open Frame, Ruggedized LCD Monitor
CM-17W-508- dd -00-00- gg-hijj	Impact Monitor Kit™, 17.0" Diagonal, SXGA, Open Frame, Ruggedized LCD Monitor
CM-19W-702- dd -00-00- gg-hijj	Impact Monitor Kit™, 19.0" Diagonal, SXGA, Open Frame, Ruggedized LCD Monitor
CM-20U-810- dd -00-00- gg-hijj	Impact Monitor Kit™, 20.1" Diagonal, UXGA, Open Frame, Ruggedized LCD Monitor
CM-24D-815- dd -00-00- gg-hijj	Impact Monitor Kit™, 24.0" Diagonal, UXGA, Open Frame, Ruggedized LCD Monitor

⁹ **Bold Italicized letters** refer to standard customer-defined configurations (see Model Number Configurator above).

