

**SONY®**

BROADCAST AND PROFESSIONAL MONITORS

# BVM Series



PAL area

# Monitors You Can

*The Sony BVM E, F and G-Series of monitors have an excellent reputation in the broadcast and production industries. Combining Sony Trinitron® picture quality and reliability with a unique modular design, these monitors provide broadcast professionals with an outstanding degree of flexibility. They serve equally well in a variety of tasks, from critical image evaluation to multi-channel viewing. Whatever your application, this range of Sony BVM models provides you with the ideal monitor.*





# Believe In



## ◆ **Picture Quality based on a Tradition of Excellence**

BVM E, F and G-Series monitors are fitted with CRTs manufactured by Sony to meet the exacting standards necessary in the broadcast and production industries. Utilizing Trinitron technology and EBU standard phosphors, these CRTs are able to provide the highest possible picture quality.

## ◆ **Modular Design for Greater Ease of Use**

This range of BVM Series monitors is based upon the concept of modular design—separate display and control units. This allows for greater system integration flexibility, while maintaining cost effectiveness. Modular design enables the control of multiple monitors with a single control unit, or more traditional configurations with the control unit attached to the display unit. Optional decoder and expansion boards also expand the configuration options by increasing the number of input signals available.

## ◆ **Flexibility Beyond Your Expectations**

Outstanding picture quality and modular design provide the basis on which the flexibility of these BVM monitors are built. The wide variety of optional decoder and expansion boards, together with other accessories, increases the versatility of this monitor range. Finally, sophisticated, menu-driven monitor set-up and memory cards allow parameters to be easily set, saved and transferred to other monitors. Clearly, with this amount of flexibility, these BVM monitors can be configured to meet any system needs you can imagine. Exactly what you would expect from Sony—monitors that perform beyond your expectations.

# PRODUCT LINE-UP

## ◆ E-Series

E-Series monitors are designed to meet the most critical and demanding picture evaluation criteria. The 20-inch display unit provides a spectacular resolution of over 1,000 TV lines. E-Series monitors are most suitable for situations and environments where picture resolution, stability, colour reproduction and consistency are of the utmost importance.

Photo courtesy of The Warehouse, Copenhagen, Denmark.



## ◆ F-Series

F-Series monitors guarantee high picture performance combined with an extremely wide range of operational capabilities. F-Series monitors are tailored to fully meet the demanding requirements of reference monitors in high quality programme production.

Photo courtesy of 4.2.2 Videographics, London, United Kingdom.



## ◆ G-Series

The new G-Series monitors have the picture quality and precision expected of Sony BVM monitors, with features selected to target specific applications. These monitors are well suited to provide broadcast-standard monitoring in studios and similar installations requiring multiple monitors.

Systems Integration by Sony—technical fit of the OB truck for Videotime, Italy.



## ◆ A Monitor for Every Broadcast Application

The BVM broadcast monitor family has recently been expanded with the introduction of G-Series models, complementing the existing E and F-Series monitors. Each series differs, depending on the performance of the CRT and the range of features available.

### **20-inch display units**

BVM-20E1E/20E1A	More than 1,000 TV lines
BVM-20F1E/20F1A	900 TV lines
BVM-20G1E/20G1A	800 TV lines



### **14-inch display units**

BVM-14E1E/14E1A	900 TV lines
BVM-14F1E/14F1A	800 TV lines
BVM-14G1E/14G1A	800 TV lines



### **14-inch stand-alone monitors**

BVM-14E5E/14E5A	900 TV lines
BVM-14F5E/14F5A	800 TV lines
BVM-14G5E/14G5A	800 TV lines



All models are equipped with HR Trinitron CRTs, assuring very high resolution and picture contrast.

All CRTs are manufactured by Sony. They incorporate EBU standard phosphors to guarantee precise colour reproduction and consistency, as well as accurate colour matching. Also, beam current feedback maintains stable colour temperature.

Display units can be controlled by optional BKM-10R and BKM-11R Control Units. The BKM-10R can be mounted in a 19-inch EIA standard rack, but can also be attached to any of the 20-inch displays for stand-alone operation. The BKM-11R, operationally identical to the BKM-10R, is a hand-held unit that is very useful for quick, individual adjustment of monitors in large installations.



BKM-10R Control Unit attached to 20-inch monitor



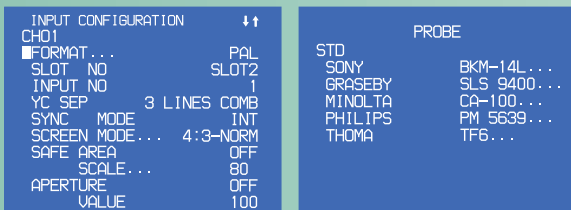
# FEATURES

## Superb Picture Reproduction

- HR Trinitron provides high resolution pictures
- EBU standard phosphors
- Sony manufactured CRTs provide excellent uniformity of performance
- Beam current feedback for stable colour temperature

## Operating Features

- Precise colour temperature adjustment using external colour probes: Sony BKM-14L, Graseby SLS 9400, Minolta CA-100, Philips PM 5639, Thoma TF6
- Built-in auto set-up system for chroma, phase and white balance
- On screen menus for adjustment and operation
- Safe area display
- Adjustable colour temperature (factory preset to D65)
- VITC reader (available on E and F-Series models only)
- Aspect ratio switchable between 4:3 and 16:9, with optional 16:9 widescreen masks available



- Data transfer between monitors using an optional BKM-12Y Memory Card or via an RS-485 link
- ISR (Interactive Status Reporting) for system diagnostics



BKM-33H20 widescreen mask attached to 20-inch monitor

## System

### Integration

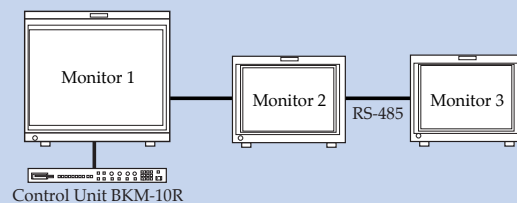
- Modular design with separate display and control units
- Parallel and RS-485 serial remote control capability
- Optional rack mounting kits for fitting all models into a 19-inch EIA standard rack
- Analogue component Y/R-Y/B-Y or RGB inputs included as standard
- Option slots in the rear panel for quick insertion of decoder and expansion boards

4 Slots: BVM-20E1E/20E1A, BVM-20F1E/20F1A  
BVM-14E5E/14E5A, BVM-14F5E/14F5A

2 Slots: BVM-14E1E/14E1A, BVM-14F1E/14F1A

1 Slot: BVM-20G1E/20G1A, BVM-14G1E/14G1A  
BVM-14G5E/14G5A

#### ◆ Remote control over multiple display units



Up to 32 of these BVM Series monitors can be controlled via RS-485 which enables mutual communication between the monitors and one control unit.

# Decoder and Expansion Boards

Another facet of the modularity of these BVM monitors becomes apparent when using the optional decoder and expansion boards. Depending on the particular system requirements, the most appropriate boards can simply be inserted in the option slots in the rear panel of the monitor. A range of input decoder and expansion boards is available to provide many different input configurations. Although each decoder board has a primary function, when two or more boards are installed at the same time they combine to provide a much wider range of signal inputs and standards.



## ◆ Comparison Chart

		Digital			Analogue					
		BKM-20D SDI 4:2:2 Decoder Adaptor	BKM-21D SDI Multi Decoder Adaptor	BKM-22X*1 SDI Expansion Adaptor	BKM-24N NTSC Decoder Adaptor	BKM-25P PAL Decoder Adaptor	BKM-26M PAL-M Decoder Adaptor	BKM-27T Tri-Standard Decoder Adaptor	BKM-28X Analogue Input Expansion Adaptor	BKM-48X*2 Analogue Input Expansion Adaptor
Serial digital input	Component 525/625	●	●	●	-	-	-	-	-	-
	Composite NTSC	●	●	●	-	-	-	-	-	-
	Composite PAL	●	●	●	-	-	-	-	-	-
Analogue input	Composite NTSC	●	●	●	●	●	●	●	●	●
	Composite PAL	●	●	●	●	●	●	●	●	●
	Composite PAL-M	●	●	●	●	●	●	●	●	●
	Composite SECAM	●	●	●	●	●	●	●	●	●
	Y/R-Y/B-Y 525/625	●	●	●	●	●	●	●	●	●
	RGB 525/625	●	●	●	●	●	●	●	●	●
	Y/C NTSC	-	-	-	●	●	●	●	●	●
	Y/C PAL	-	-	-	●	●	●	●	●	●
Y/C PAL-M	-	-	-	●	●	●	●	●	●	
Number of digital inputs		3	3	3	-	-	-	-	-	-
Number of analogue inputs		3	3	3	6	6	6	6	6	6

\*1 Not available for G-Series monitors

\*2 Equipped with floating/non-floating ground mode selector for hum reduction

● Signal can be reproduced with this adaptor

● Signal can be reproduced when combined with an appropriate decoder

## ◆ Typical Input Configurations

These BVM models are equipped as standard with one set of analogue component Y/R-Y/B-Y or RGB inputs. The following four optional plug-in decoder boards are commonly used to display other signal formats.

### **SDI (D1) Input Decoder Board, BKM-20D**

This provides three SDI 4:2:2 inputs (525/625-line) and one analogue component input.

### **SDI (D1, D2) / PAL/NTSC Decoder Board, BKM-21D**

This optional board provides three SDI and three analogue composite PAL/NTSC inputs.

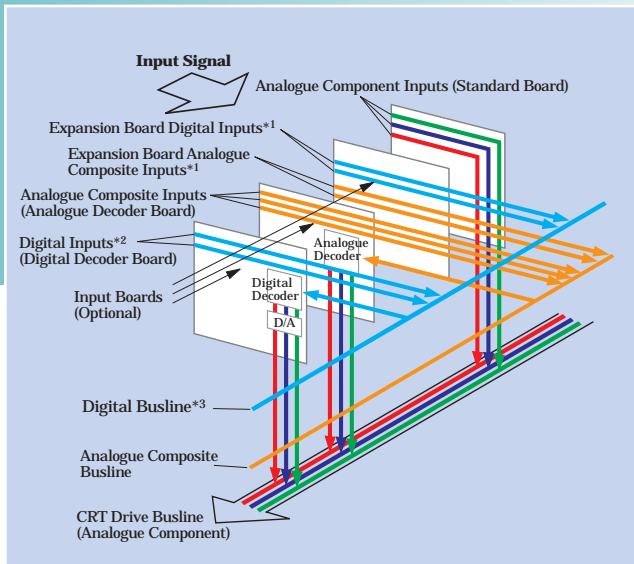
### **Analogue Composite PAL Input Board with Precision Decoding, BKM-25P**

With this board installed, six analogue PAL inputs are available.

### **Multi-standard Analogue Composite Input Board, BKM-27T**

This board provides six analogue PAL, NTSC, or SECAM inputs.

## ◆ Busline Structure



The internal busline structure of these BVM monitors increases their operational flexibility and eliminates redundant signal decoders. Provided that a suitable analogue or digital decoder board is installed in one of the option slots, all corresponding analogue or digital input signals from other optional boards can access that decoder via the appropriate busline. Decoded signals are then sent directly from the decoder to the CRT Drive Busline.

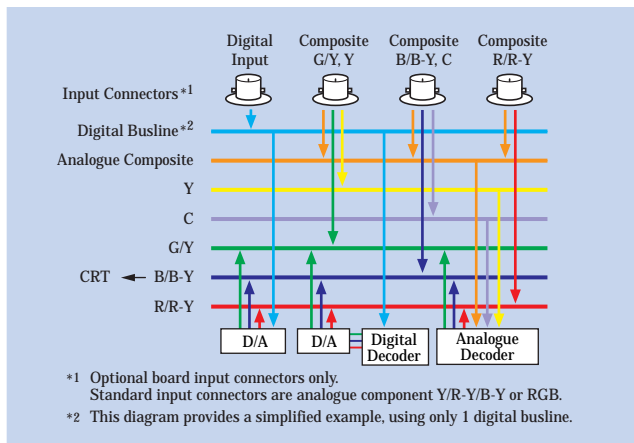
Note: Expansion boards cannot be used independently. They must be used together with an appropriate decoder board. Because G-series monitors have only one option slot, multiple input boards cannot be used.

The busline structure shown in this diagram has been simplified for explanatory purposes.

\*1 In reality, digital and analogue expansion boards are separate (BKM-22X/28X/48X)

\*2 The analogue input terminals of the Digital Decoder Board have been omitted from this diagram

\*3 This diagram provides a simplified example, showing only one digital busline



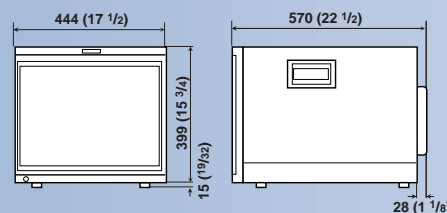
\*1 Optional board input connectors only. Standard input connectors are analogue component Y/R-Y/B-Y or RGB.

\*2 This diagram provides a simplified example, using only 1 digital busline.

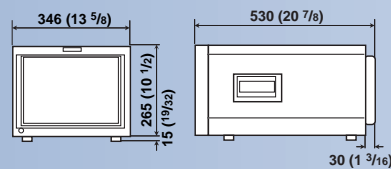
The input connectors, as shown in the second diagram, are connected to multiple buslines. Therefore, the appropriate input signal can be selected from the on-screen menu settings.

## ◆ Dimensions

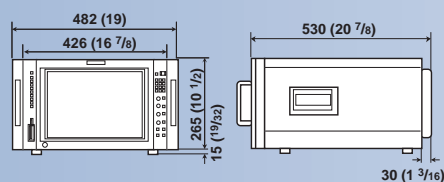
Unit: mm (inches)



- ◆ BVM-20E1E/A
- ◆ BVM-20F1E/A
- ◆ BVM-20G1E/A



- ◆ BVM-14E1E/A
- ◆ BVM-14F1E/A
- ◆ BVM-14G1E/A



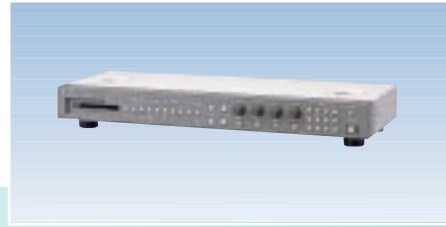
- ◆ BVM-14E5E/A
- ◆ BVM-14F5E/A
- ◆ BVM-14G5E/A



# OPTIONAL ACCESSORIES

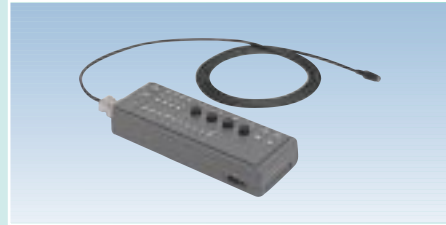
## Central Control Unit, BKM-10R

The BKM-10R controls any of the display units in this monitor range. Up to 32 displays can be controlled from one control unit when linked via the RS-485 serial remote.



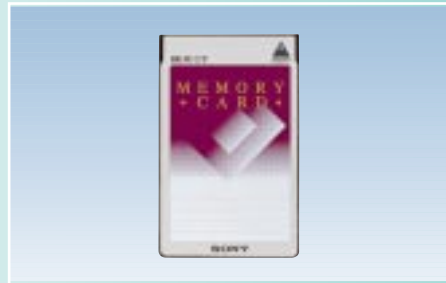
## Hand-held Control Unit, BKM-11R

The BKM-11R is operationally identical to the BKM-10R. However, it can be plugged into the front of a monitor to make quick settings. This is particularly useful in large installations with many display units.



## Memory Card, BKM-12Y

The BKM-12Y is a standard PCMCIA card that is used to save and download monitor set-ups. These include input configuration, control preset adjustment, white balance settings, maintenance parameters, etc. The BKM-12Y can be used with both BKM-10R and BKM-11R Control Units as well as with the stand-alone monitors.

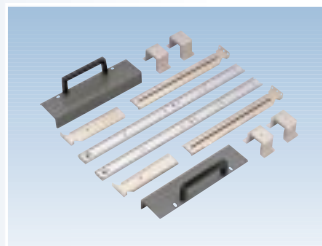


## Auto Set-up Probe, BKM-14L

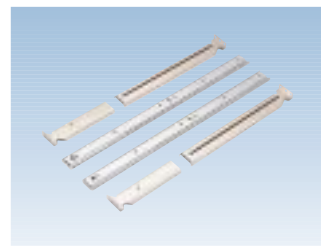
The BKM-14L is an external probe required for colour temperature auto alignment. It plugs into the front of a monitor. It can also plug into the socket of a BKM-11R for use with this hand-held unit.



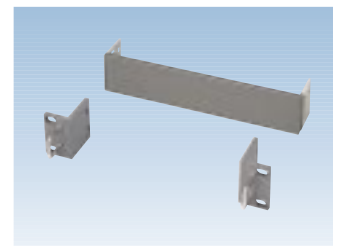
19-inch EIA standard rack mount kit  
**BKM-30E20**  
for 20-inch monitors



19-inch EIA standard rack mount kit  
**BKM-31E14**  
for 14-inch monitors



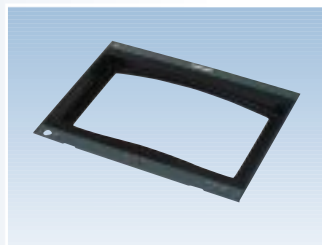
19-inch EIA standard rack mount kit  
**BKM-30E14**  
for 14-inch stand-alone monitors



19-inch EIA standard rack mount kit  
**MB-510**  
for BKM-10R Control Unit



16:9 widescreen mask  
**BKM-30H20**  
for 20-inch monitors



16:9 widescreen mask  
**BKM-30H14**  
for 14-inch monitors and stand-alone monitors



Control Unit attachment kit  
**BKM-32H**  
for BKM-10R Control Unit



9-pin control cable  
**RS-5G/10G/30G**  
for RS-485/422 serial remote control

# SPECIFICATIONS

	BVM-20E1E/A	BVM-20F1E/A	BVM-20G1E/A
<b>General</b>			
System	625 lines 50 fields or 525 lines 60 fields interlaced		
Power requirements	AC 100-120 V/220-240 V; 2.0/1.0 A, 50/60 Hz		AC 100-120 V/220-240 V; 1.6/0.7 A, 50/60 Hz
Power consumption (max. *)	200 W		140 W
Dimensions	444 (W) × 414 (H) × 570 (D)		
mm	17 1/2 × 16 3/8 × 22 1/2		
inches	approx. 37 kg (81 lb 9 oz)		
Mass	approx. 37 kg (81 lb 9 oz)		
<b>CRT performance</b>			
CRT type	HR Trinitron CRT with EBU phosphors AG pitch: 0.25 mm, 90° deflection, Ø30.6 in-line gun Centre resolution more than 1000 TV lines	HR Trinitron CRT with EBU phosphors AG pitch: 0.30 mm, 90° deflection, Ø30.6 in-line gun Centre resolution 900 TV lines	HR Trinitron CRT with EBU phosphors AG pitch: 0.30 mm, 90° deflection, Ø30.6 in-line gun Centre resolution 800 TV lines
Screen size	386 mm (15 1/4 inches)		
Width	291 mm (11 1/2 inches)		
Height	482 mm (19 inches)		
Diagonal	D65 / D93 / Adjustable to other colour temperatures		
Colour temperature	100 cd/m <sup>2</sup> (when a 1 Vp-p 100% white signal is input)		
Preset brightness	100 cd/m <sup>2</sup> (when a 1 Vp-p 100% white signal is input)		
<b>Input performance</b>			
Inputs	Loop-through BNC (×3)		
RGB	R/B	0.7 Vp-p ± 6 dB, positive, high impedance	
	G	1.0 Vp-p ± 6 dB, sync negative, high impedance	
Analogue	Y	1.0 Vp-p ± 6 dB, positive, high impedance	
Component	R-Y/B-Y	0.7 Vp-p ± 6 dB, positive, high impedance	
External sync	Loop-through BNC (×1) Composite sync: 0.3 to 8 Vp-p, negative, high impedance		
Return loss	More than 46 dB (7 MHz, when 75 Ω terminated)		More than 46 dB (6 MHz, when 75 Ω terminated)
Remote control inputs	Remote 1: Loop-through D-sub 9-pin (for RS-485 serial remote control) Remote 2: D-sub 9-pin; Option: Mini-DIN 8-pin Control unit: D-sub 9-pin		
ISR	D-sub 9-pin		
<b>Video signal performance</b>			
Differential gain	Within 2% (for luminance from 0 to 100 cd/m <sup>2</sup> )		Within 5% (for luminance from 0 to 100 cd/m <sup>2</sup> )
Differential phase	Within 2° (for luminance from 0 to 100 cd/m <sup>2</sup> )		Within 5° (for luminance from 0 to 100 cd/m <sup>2</sup> )
Frequency response	50 Hz to 10 MHz ± 1 dB		50 Hz to 7 MHz, +1 dB/-3 dB
DC restoration	Back porch type, black level fluctuation, within 1% for 10 to 90% APL input signal variation		
<b>Synchronization</b>			
AFC time	Fast mode: 0.5 ms Normal mode: 2 ms		Constant 2 ms
Horizontal hold	Greater than ± 500 Hz (when AFC 0.5 ms)		Greater than ± 500 Hz
Retrace time	Vertical: within 1 ms (Normal), within 0.8 ms (Underscan) Horizontal: within 10 µs		Vertical: within 1 ms Horizontal: within 10 µs
<b>Raster and picture performance</b>			
Normal scan	5% over scan of the effective picture area		
Under scan	3% under scan of the effective picture area		
Stability of raster size	Less than 1% of picture height (at 100 cd/m <sup>2</sup> peak luminescence, 10 to 90% APL)		
Linearity	Less than 0.5% within a central area bounded by a circle; 1% at any other point		Less than 1% within a central area bounded by a circle and about 2% at any other point
Convergence error	Less than 0.4 mm within a central area bounded by a circle; 0.7 mm at any other point		Less than 0.5 mm within a central area bounded by a circle; less than 0.9 mm at any other point
<b>Operating conditions</b>			
Operating temperature range	0 to 35 °C (32 to 95 °F) Optimum operating range 20 to 30 °C (68 to 86 °F)		
Humidity	0 to 90% (no condensation)		
Altitude	Approx. 3,050 m (10,000 ft)		

\*with all option slots filled

	BVM-14E1E/A	BVM-14F1E/A	BVM-14G1E/A
<b>General</b>			
System	625 lines 50 fields or 525 lines 60 fields interlaced		
Power requirements	AC 100-120 V/220-240 V; 1.5/0.7 A, 50/60 Hz		AC 100-120 V/220-240 V; 1.3/0.6 A, 50/60 Hz
Power consumption (max.*)	145 W		120 W
Dimensions mm	346 (W) × 280 (H) × 530 (D)		
inches	13 5/8 × 11 1/8 × 20 7/8		
Mass	23 kg (50 lb 11 oz)		approx. 22 kg (48 lb 8 oz)
<b>CRT performance</b>			
CRT type	HR Trinitron CRT with EBU phosphors AG pitch: 0.22 mm, 90° deflection, Ø29.4 in-line gun Centre resolution 900 TV lines	HR Trinitron CRT with EBU phosphors AG pitch: 0.25 mm, 90° deflection, Ø29.4 in-line gun Centre resolution 800 TV lines	
Screen size	Width	268 mm (10 5/8 inches)	
	Height	201 mm (8 inches)	
	Diagonal	332 mm (13 1/8 inches)	
Colour temperature	D65 / D93 / Adjustable to other colour temperatures		
Preset brightness	100 cd/m <sup>2</sup> (when a 1 Vp-p 100% white signal is input)		
<b>Input performance</b>			
Inputs	Loop-through BNC (×3)		
RGB	R/B	0.7 Vp-p ± 6 dB, positive, high impedance	
	G	1.0 Vp-p ± 6 dB, sync negative, high impedance	
Analogue	Y	1.0 Vp-p ± 6 dB, positive, high impedance	
Component	R-Y/B-Y	0.7 Vp-p ± 6 dB, positive, high impedance	
External sync	Loop-through BNC (×1) Composite sync: 0.3 to 8 Vp-p, negative, high impedance		
Return loss	More than 46 dB (7 MHz, when 75 Ω terminated)		More than 46 dB (6 MHz, when 75 Ω terminated)
Remote control inputs	Remote 1: Loop-through D-sub 9-pin (for RS-485 serial remote control) Remote 2: D-sub 9-pin; Option: Mini-DIN 8-pin		
	Control unit: D-sub 9-pin		
ISR	D-sub 9-pin		
<b>Video signal performance</b>			
Differential gain	Within 2% (for luminance from 0 to 100 cd/m <sup>2</sup> )		Within 5% (for luminance from 0 to 100 cd/m <sup>2</sup> )
Differential phase	Within 2° (for luminance from 0 to 100 cd/m <sup>2</sup> )		Within 5° (for luminance from 0 to 100 cd/m <sup>2</sup> )
Frequency response	50 Hz to 10 MHz ± 1 dB		50 Hz to 7 MHz, +1 dB/-3 dB
DC restoration	Back porch type, black level fluctuation, within 1% for 10 to 90% APL input signal variation		
<b>Synchronization</b>			
AFC time	Fast mode: 0.5 ms Normal mode: 2 ms		Constant 2 ms
Horizontal hold	Greater than ± 500 Hz (when AFC 0.5 ms)		Greater than ± 500 Hz
Retrace time	Vertical: within 1 ms (Normal), within 0.8 ms (Underscan) Horizontal: within 10 µs		Vertical: within 1 ms Horizontal: within 10 µs
<b>Raster and picture performance</b>			
Normal scan	5% over scan of the effective picture area		
Under scan	3% under scan of the effective picture area		
Stability of raster size	Less than 1% of picture height (at 100 cd/m <sup>2</sup> peak luminescence, 10 to 90% APL)		
Linearity	Less than 0.5% within a central area bounded by a circle; 1% at any other point		Less than 1% within a central area bounded by a circle and about 2% at any other point
Convergence error	Less than 0.3 mm within a central area bounded by a circle; 0.6 mm at any other point		Less than 0.4 mm within a central area bounded by a circle; less than 0.8 mm at any other point
<b>Operating conditions</b>			
Operating temperature range	0 to 35 °C (32 to 95 °F) Optimum operating range 20 to 30 °C (68 to 86 °F)		
Humidity	0 to 90% (no condensation)		
Altitude	Approx. 3,050 m (10,000 ft)		

\*with all option slots filled



# SPECIFICATIONS

	BVM-14E5E/A	BVM-14F5E/A	BVM-14G5E/A
<b>General</b>			
System	625 lines 50 fields or 525 lines 60 fields interlaced		
Power requirements	AC 100-200 V/220-240 V; 1.8/0.8 A, 50/60 Hz		AC 100-120 V/220-240 V; 1.3/0.6 A, 50/60 Hz
Power consumption (max.*)	175W		120 W
Dimensions	482 (W) × 280 (H) × 530 (D)		
mm			
inches	19 × 11 1/8 × 20 7/8		
Mass	26 kg (57 lb)		approx. 24 kg (52 lb 14 oz)
<b>CRT performance</b>			
CRT type	HR Trinitron CRT with EBU phosphors AG pitch: 0.22 mm, 90° deflection, Ø29.4 in-line gun Centre resolution 900 TV lines	HR Trinitron CRT with EBU phosphors AG pitch: 0.25 mm, 90° deflection, Ø29.4 in-line gun Centre resolution 800 TV lines	
Screen size	268 mm (10 5/8 inches)		
Width			
Height	201 mm (8 inches)		
Diagonal	332 mm (13 1/8 inches)		
Colour temperature	D65 / D93 / Adjustable to other colour temperatures		
Preset brightness	100 cd/m <sup>2</sup> (when a 1 Vp-p 100% white signal is input)		
<b>Input performance</b>			
Inputs	Loop-through BNC (×3)		
RGB	R/B	0.7 Vp-p ± 6 dB, positive, high impedance	
	G	1.0 Vp-p ± 6 dB, sync negative, high impedance	
Analogue	Y	1.0 Vp-p ± 6 dB, positive, high impedance	
Component	R-Y/B-Y	0.7 Vp-p ± 6 dB, positive, high impedance	
External sync	Loop-through BNC (×1) Composite sync: 0.3 to 8 Vp-p, negative, high impedance		
Return loss	More than 46 dB (7 MHz, when 75 Ω terminated)		More than 46 dB (6 MHz, when 75 Ω terminated)
Remote control inputs	Remote 1: Loop-through D-sub 9-pin (for RS-485 serial remote control) Remote 2: D-sub 9-pin; Option: Mini-DIN 8-pin		
ISR	D-sub 9-pin		
<b>Video signal performance</b>			
Differential gain	Within 2% (for luminance from 0 to 100 cd/m <sup>2</sup> )		Within 5% (for luminance from 0 to 100 cd/m <sup>2</sup> )
Differential phase	Within 2° (for luminance from 0 to 100 cd/m <sup>2</sup> )		Within 5° (for luminance from 0 to 100 cd/m <sup>2</sup> )
Frequency response	50 Hz to 10 MHz ± 1 dB		50 Hz to 7 MHz, +1 dB/-3 dB
DC restoration	Back porch type, black level fluctuation, within 1% for 10 to 90% APL input signal variation		
<b>Synchronization</b>			
AFC time	Fast mode: 0.5 ms Normal mode: 2 ms		Constant 2 ms
Horizontal hold	Greater than ± 500 Hz (when AFC 0.5 ms)		Greater than ± 500 Hz
Retrace time	Vertical: within 1 ms (Normal), within 0.8 ms (Underscan) Horizontal: within 10 µs		Vertical: within 1 ms Horizontal: within 10 µs
<b>Raster and picture performance</b>			
Normal scan	5% over scan of the effective picture area		
Under scan	3% under scan of the effective picture area		
Stability of raster size	Less than 1% of picture height (at 100 cd/m <sup>2</sup> peak luminescence, 10 to 90% APL)		
Linearity	Less than 0.5% within a central area bounded by a circle; 1% at any other point		Less than 1% within a central area bounded by a circle and about 2% at any other point
Convergence error	Less than 0.3 mm within a central area bounded by a circle; 0.6 mm at any other point		Less than 0.4 mm within a central area bounded by a circle; less than 0.8 mm at any other point
<b>Operating conditions</b>			
Operating temperature range	0 to 35 °C (32 to 95°F) Optimum operating range 20 to 30 °C (68 to 86 °F)		
Humidity	0 to 90% (no condensation)		
Altitude	Approx. 3,050 m (10,000 ft)		

\*with all option slots filled

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