



Maritime Multi Displays

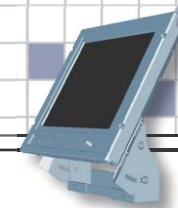
TECHNICAL DATA	JH 10T06 MMD	JH 15T03 MMD	JH 17T01 MMD	JH 19T01 MMD	JH 20T03 MMD	JH 20T04 MMD	JH 23T02 MMD
TFT Technology	Color Active Matrix TFT/LCD Thin Film Transistor RGB Vertical Stripe	Thin Film Transistor (TFT) MVA Technology	Thin Film Transistor (TFT) MVA Technology	Active Matrix Thin Film Transistor (TFT) MVA Premium™ Technology	Active Matrix Thin Film Transistor (Super-TFT)	Active Matrix Thin Film Transistor (TFT) MVA Premium™ Technology	Thin Film Transistor (TFT) MVA Premium™ Technology
Viewable Image Size & Active Area	10.4 inch 211,2 (H) x 158,4 (V) mm	15.0 inch 304,1 (H) x 228,1 (V) mm	17.4 inch 345,6 (H) x 276,48 (V) mm	19.0 inch 376,32 (H) x 301,056 (V) mm	20.1 inch 399,36 (H) x 319,49 (V) mm	20.1 inch 408,0 (H) x 306,0 (V) mm	23.1 inch 470,4 (H) x 352,8 (V) mm
Pixel Number	640 x 480	1024 x 768	1280 x 1024	1280 x 1024	1280 x 1024	1600 x 1200	1600 x 1200
Pixel Pitch	0,33 (H) x 0,33 (V) mm	0,297 (H) x 0,297 (V) mm	0,27 (H) x 0,27 (V) mm	0,294 (H) x 0,294 (V) mm	0,312 (H) x 0,312 (V) mm	0,255 (H) x 0,255 (V) mm	0,294 (H) x 0,294 (V) mm
Response Time & Contrast Ratio	20 ms (typ) / 300:1 (typ)	25 ms (typ) / 400:1 (typ)	25 ms (typ) / 400:1 (typ)	15 ms (typ) / 500:1 (typ)	25 ms (typ) / 300:1 (typ)	15 ms (typ) / 500:1 (typ)	20 ms (typ) / 500:1 (typ)
Light Intensity	350 cd/m ² (typ)	250 cd/m ² (typ)	220 cd/m ² (typ)	250 cd/m ² (typ)	250 cd/m ² (typ)	250 cd/m ² (typ)	250 cd/m ² (typ)
View Angle	+/- 70 deg. (H) +/- 40 deg. (V)	+/- 80 deg. (typ) (up/down/left/right) @ CR >10	+/- 80 deg. (typ) (up/down/left/right) @ CR >10	+/- 85 deg. (typ) (up/down/left/right) @ CR >10	+/- 85 deg. (typ) (up/down/left/right) @ CR >10	+/- 85 deg. (typ) (up/down/left/right) @ CR >10	+/- 85 deg. (typ) (up/down/left/right) @ CR >10
Max Color Output	262,144 (6-bit color)	262,144 (6-bit color)	16,777,216 (8-bit color)	16,777,216 (8-bit color)	16,777,216 (8-bit color)	16,777,216 (8-bit color)	16,777,216 (8-bit color)
Sync. Signal Auto-detect	Digital Separate Sync. Composite Sync. Sync. On Green	Digital Separate Sync. Composite Sync. Sync. On Green	Digital Separate Sync. Composite Sync. Sync. On Green	Digital Separate Sync. Composite Sync. Sync. On Green	Digital Separate Sync. Composite Sync. Sync. On Green	Digital Separate Sync. Composite Sync. Sync. On Green	Digital Separate Sync. Composite Sync. Sync. On Green
Synchronisation Range *Recommended refresh rate	31,5 kHz to 91,1 kHz (H) 60 Hz* to 85 Hz (V)	31,5 kHz to 91,1 kHz (H) 60 Hz* to 85 Hz (V)	31,5 kHz to 91,1 kHz (H) 60 Hz* to 85 Hz (V)	31,5 kHz to 91,1 kHz (H) 60 Hz* to 85 Hz (V)	31,5 kHz to 91,1 kHz (H) 60 Hz* to 85 Hz (V)	31,5 kHz to 106,259 kHz (H) 60 Hz* to 85 Hz (V)	31,5 kHz to 106,259 kHz (H) 60 Hz* to 85 Hz (V)
Max Resolution @ Max Hz	640 x 480 @ 60 Hz	1024 x 768 @ 85 Hz	1280 x 1024 @ 85 Hz	1280 x 1024 @ 85 Hz	1280 x 1024 @ 85 Hz	1600 x 1200 @ 85 Hz	1600 x 1200 @ 85 Hz
Supported Resolutions *Recommended resolution	640 x 350 / 640 x 480* 720 / 400 / 800 x 600 1024 x 768*	640 x 350 / 640 x 480 720 / 400 / 800 x 600 1024 x 768*	640 x 350 / 640 x 480 720 x 400 / 800 x 600 1024 x 768 / 1280 x 1024*	640 x 350 / 640 x 480 720 x 400 / 800 x 600 1024 x 768 / 1280 x 1024*	640 x 350 / 640 x 480 720 x 400 / 800 x 600 1024 x 768 / 1280 x 1024*	640 x 350 / 640 x 480 720 x 400 / 800 x 600 1024 x 768 / 1280 x 1024 1600 x 1200*	640 x 350 / 640 x 480 720 x 400 / 800 x 600 1024 x 768 / 1280 x 1024 1600 x 1200*
Picture Format	4:3	4:3	5:4	5:4	5:4	4:3	4:3
Supported Signal Modes	VGA	VGA, SVGA, XGA	VGA, SVGA, XGA, SXGA	VGA, SVGA, XGA, SXGA	VGA, SVGA, XGA, SXGA	VGA, SVGA, XGA, SXGA, UXGA	VGA, SVGA, XGA, SXGA, UXGA
Video Input Option	YES (PAL/SECAM/NTSC)	YES (PAL/SECAM/NTSC)	YES (PAL/SECAM/NTSC)	YES (PAL/SECAM/NTSC)	YES (PAL/SECAM/NTSC)	YES (PAL/SECAM/NTSC)	YES (PAL/SECAM/NTSC)
Supported Video Signals	SVHS COMPOSITE VIDEO	SVHS COMPOSITE VIDEO	SVHS COMPOSITE VIDEO	SVHS COMPOSITE VIDEO	SVHS COMPOSITE VIDEO	SVHS COMPOSITE VIDEO	SVHS COMPOSITE VIDEO
Display Features	PIP (Picture In Picture) Hotkeys	PIP (Picture In Picture) Hotkeys	PIP (Picture In Picture) Hotkeys	PIP (Picture In Picture) Hotkeys	PIP (Picture In Picture) Hotkeys	PIP (Picture In Picture) Hotkeys	PIP (Picture In Picture) Hotkeys
Power Terminal & Power Consumption	STD AC IEC - 115/230 VAC Max 60W	STD AC IEC - 115/230 VAC Max 40W	STD AC IEC - 115/230 VAC Max 60W	STD AC IEC - 115/230 VAC Max 100W	STD AC IEC - 115/230 VAC Max 100W	STD AC IEC - 115/230 VAC Max 100W	STD AC IEC - 115/230 VAC Max 100W
MECHANICAL DATA	JH 10T06 MMD	JH 15T03 MMD	JH 17T01 MMD	JH 19T01 MMD	JH 20T03 MMD	JH 20T04 MMD	JH 23T02 MMD
Connectors	RGB: HD D-SUB 15P (Female) Comp. Video: RCA Phono Plug S-VHS: 5 Pin SVHS Plug	RGB: HD D-SUB 15P (Female) Comp. Video: RCA Phono Plug S-VHS: 5 Pin SVHS Plug	RGB: HD D-SUB 15P (Female) Comp. Video: RCA Phono Plug S-VHS: 5 Pin SVHS Plug	RGB: HD D-SUB 15P (Female) Comp. Video: RCA Phono Plug S-VHS: 5 Pin SVHS Plug	RGB: HD D-SUB 15P (Female) Comp. Video: RCA Phono Plug S-VHS: 5 Pin SVHS Plug	RGB: HD D-SUB 15P (Female) Comp. Video: RCA Phono Plug S-VHS: 5 Pin SVHS Plug	RGB: HD D-SUB 15P (Female) Comp. Video: RCA Phono Plug S-VHS: 5 Pin SVHS Plug
Dimensions / Weight	339(W) x 256(H) x 54(D) mm Approx 3,5 kg	412(W) x 345(H) x 58(D) mm Approx 8,5 kg	460(W) x 400(H) x 60,1(D) mm Approx 9,0 kg	483(W) x 444(H) x 68(D) mm Approx 12,5 kg	534(W) x 481(H) x 79,5(D) mm Approx 13,5 kg	534(W) x 481(H) x 73(D) mm Approx 13,5 kg	584(W) x 534(H) x 72(D) mm Approx 17 kg
Optional Display Solutions	12-24 VDC Powersupply Touchscreen	12-24 VDC Powersupply Touchscreen External Power Relay Video Buffer	24 VDC Powersupply Touchscreen Remote Control (RS232/485) External Power Relay Video Buffer	24 VDC Powersupply Touchscreen Remote Control (RS232/485) External Power Relay Video Buffer ECDIS Compliant	24 VDC Powersupply Touchscreen Remote Control (RS232/485) External Power Relay Video Buffer ECDIS Compliant	24 VDC Powersupply Touchscreen Remote Control (RS232/485) External Power Relay Video Buffer ECDIS Compliant	24 VDC Powersupply Touchscreen Remote Control (RS232/485) External Power Relay Video Buffer ECDIS Compliant
Available Accessories (Customer color specific)	Bracket (tilt up/down) Sun Visor	Bracket (tilt up/down) Rotary Bracket (left/right) Sun Visor	Bracket (tilt up/down) Rotary Bracket (left/right) Sun Visor Vesa Bracket	Bracket (tilt up/down) Rotary Bracket (left/right) Sun Visor 21 inch Rack Mounting Adapter Vesa Bracket	Bracket (tilt up/down) Rotary Bracket (left/right) Sun Visor Vesa Bracket	Bracket (tilt up/down) Rotary Bracket (left/right) Sun Visor Vesa Bracket	Bracket (tilt up/down) Rotary Bracket (left/right) Sun Visor Vesa Bracket



Maritime Multi Computer (MMC) Products

TECHNICAL DATA - DISPLAY	JH 10T01 MMC	JH 15T04 MMC	JH 19T01 MMC*
TFT Technology	Color Active Matrix TFT/LCD Thin Film Transistor, RGB Vertical Stripe	Thin Film Transistor (TFT) MVA Technology	Thin Film Transistor (TFT) MVA Premium™ Technology
Viewable Image Size & Active Area	10.4 inch / 211,2 (H) x 158,4 (V) mm	15.0 inch / 304,1 (H) x 228,1 (V) mm	19.0 inch / 376,32 (H) x 301,056 (V) mm
Pixel Number / Pixel Pitch	640 x 480 / 0,330 (H) x 0,330 (V) mm	1024 x 768 / 0,297 (H) x 0,297 (V) mm	1280 x 1024 / 0,294 (H) x 0,294 (V) mm
Response Time & Contrast Ratio	20 ms (typ) / 300:1 (typ)	25 ms (typ) / 400:1 (typ)	15 ms (typ) / 600:1 (typ)
Light Intensity	350 cd/m ² (typ)	250 cd/m ² (typ)	250 cd/m ² (typ)
View Angle	+/- 70 deg. (H) - +/- 40 deg. (V)	+/- 80 deg. (typ) (up/down/left/right) @ CR >10	+/- 85 deg. (typ) (up/down/left/right) @ CR >10
Max Color Output	262,144 (6-bit color)	262,144 (6-bit color)	16,777,216 (8-bit color)
Max Resolution @ Max Hz	640 x 480 @ 60 Hz	1024 x 768 @ 85 Hz	1280 x 1024 @ 85 Hz
Supported Resolutions	640 x 480	640 x 350 / 640 x 480 / 720 x 400 800 x 600 / 1024 x 768	640 x 350 / 640 x 480 / 720 x 400 800 x 600 / 1024 x 768 / 1280 x 1024
Supported Signal Modes	VGA	VGA,SVGA,XGA	VGA,SVGA,XGA,SXGA
Power Terminal & Consumption	DC SCREW TERMINAL - 24 VDC / Max 50W	DC SCREW TERMINAL - 24 VDC / Max 100W	STD AC IEC - 115/230 VAC / TBD
TECHNICAL DATA - COMPUTER	JH 10T01 MMC	JH 15T04 MMC	JH 19T01 MMC*
CPU & BIOS	Cyrix NS GX1-233 MHz / AWARD 256KB Flash Bios	PentiumIII 850MHz - 100 MHz Bus/Award 256KB Flash Bios	Pentium4 2.0GHz - 400 MHz Bus/Award 256KB Flash Bios
Chipset & Ram	Cyrix CX5530(A) / Max 256 MB (SO-DIMM)	Intel 440BX / Max 256 MB (SO-DIMM)	Intel 845G / 512 MB Standard (DDR SDRAM)
VGA Controller	NS CX5530(A) with Local-bus support 1 ~ 4 MB shared with system memory	SMI Lynx 721 with 4 MB on chip AGP 2x support	Intel 82845G with AGP 4x support Shared Video Memory, Max 64 MB
Hard Drive / CDROM Drive	10 GB internal (standard) / No CDROM option	10 GB internal (standard) / External CDROM option	20 GB internal (standard) / No Cdrom Installed
Floppy Drive	1.4 MB HD External	1.4 MB HD External	No Floppy Installed
Audio	On Board Support for AC97	N/A	Line in/out Mic in - Supports AC97
Network & Ethernet	1 x 10/100 Mbps (Realtek RTL81319)	2 x 10/100 Mbps (Intel 82559ER)	1 x 10/100 Mbps (ICH4 intergrated)
USB & Keyboard + Mouse	2 x USB + 2 x PS/2	2 x USB + 2 x PS/2	4 x USB + 2 x PS/2
Serial Com Ports	1 x RS232/222/485 + 1 x RS232	3 x RS232/222/485	2 x RS232 and 1 x RS232/222/485
Parallel Port (LPT) & PCI Slot	1 x SPP/EPP/ECP Port / No PCI Slot	1 x SPP/EPP/ECP Port / No PCI Slot	1 x EPP/ECP Port / 2 x PCI Slot (Short Length, Std. Profile)
MECHANICAL DATA	JH 10T01 MMC	JH 15T04 MMC	JH 19T01 MMC*
I/O Connectors	1 x 10/100Base: RJ-45 1 x Keyboard: PS/2 1 x Mouse: PS/2 1 x COM1: DB9 (RS232/222/485) 1 x COM2: DB9 (RS232/485) 1 x LPT: DB25 2 x USB: Std. USB 1 x Floppy: DB37 1 x External Screen: DB15 1 x Internal IDE: 40P, 2,54mm	2 x 10/100Base: RJ-45 1 x Keyboard: PS/2 1 x Mouse: PS/2 1 x COM1: DB9 (RS232/222/485) 1 x COM2: DB9 (RS232/222/485) 1 x COM3: DB9 (RS232/222/485) 1 x LPT: DB25 2 x USB: Std. USB 1 x Floppy: DB37 1 x External Screen: DB15 1 x Internal IDE: 40P, 2,54mm	2 x 10/100Base: RJ-45 1 x Keyboard: PS/2 1 x Mouse: PS/2 1 x COM1: DB9 (RS232) 1 x COM2: DB9 (RS232) 1 x COM3: DB9 (RS232/222/485) 1 x LPT: DB25 4 x USB: Std. USB 1 x External Screen: DB15 1 x Internal IDE: 40P, 2,54mm
Dimensions & Weight	342(W) x 295(H) x 90(D) mm Approx 4,2 kg	412(W) x 345(H) x 59.2(D) mm Approx 9,0 kg	483(W) x 444(H) x 98(D) mm
Optional Display Solutions	Touchscreen Compact Flash Internal PC/104 Larger Hard Drive	Touchscreen Compact Flash Internal PC/104 Larger Hard Drive	Touchscreen Additional 1.5 GB Memory Larger Hard Drive
Available Accessories (Customer color specific)	Bracket (tilt up/down) Rotary Bracket (left/right) Front Frame / Logo / Cabinet Sun Visor	Bracket (tilt up/down) Rotary Bracket (left/right) Front Frame / Logo / Cabinet Sun Visor	12-24 VDC Powersupply Bracket (tilt up/down) Rotary Bracket (left/right) Front Frame / Logo / Cabinet Sun Visor

* Preliminary, spec may change.



Standard TFT Display (VGA/STD) Products

TECHNICAL DATA - DISPLAY	JH 10T06 STD	JH 15T03 STD
TFT Technology	Color Active Matrix TFT/LCD Thin Film Transistor RGB Vertical Stripe	Thin Film Transistor (TFT) MVA Technology
Viewable Image Size	10.4 inch	15.0 inch
Active Area	211,2 (H) x 158,4 (V) mm	304,1 (H) x 228,1 (V) mm
Pixel Number	640 x 480	1024 x 768
Pixel Pitch	0,33 (H) x 0,33 (V) mm	0,297 (H) x 0,297 (V) mm
Response Time	20 ms (typ)	25 ms (typ)
Contrast Ratio	300:1 (typ)	400:1 (typ)
Light Intensity	350 cd/m ² (typ)	250 cd/m ² (typ)
View Angle	+/- 70 deg. (H) +/- 40 deg. (V)	+/- 80 deg. (typ) (up/down/left/right) @ CR > 10
Max Color Output	262,144 (6-bit color)	262,144 (6-bit color)
Sync. Signal Auto-detect	Separate Sync only	Separate Sync only
Synchronisation Range *Recommended refresh rate	31,5 kHz to 48,3 kHz (H) 60 Hz (V)*	31,5 kHz to 48,3 kHz (H) 60 Hz (V)*
Max Resolution @ Max Hz	640 x 480 @ 60 Hz	1024 x 768 @ 60 Hz
Supported Resolutions *Recommended resolution	640 x 350 / 640 x 480*	640 x 480 / 800 x 600 1024 x 768*
Picture Format	4:3	4:3
Supported Signal Modes	VGA	VGA, SVGA, XGA
Video Input Option	NO	NO
Display Features	Hotkeys	Hotkeys
Power Terminal	STD AC IEC - 115/230 VAC	STD AC IEC - 115/230 VAC
Consumption	Max 60W	Max 40W
MECHANICAL DATA	JH 10T06 STD	JH 15T03 STD
Connectors	RGB: HD D-SUB 15P (Female)	RGB: HD D-SUB 15P (Female)
Dimensions / Weight	339(W) x 256(H) x 54(D) mm Approx 3,5 kg	412(W) x 345(H) x 58(D) mm Approx 8,5 kg
Optional Display Solutions	12-24 VDC Powersupply	12-24 VDC Powersupply
Available Accessories (Customer color specific)	Bracket (tilt up/down) Front Frame / Logo / Cabinet Sun Visor	Bracket (tilt up/down) Rotary Bracket (left/right) Sun Visor

Display Variations/Models Explanation:

A1 = AC Power 115-230 VAC
 A2 = DC Power 12-24 VDC (Some have 10-36 VDC)
 A3 = AC Power 115-230 VAC including videobuffer
 A4 = DC Power 12-24 VDC including videobuffer
 C1/C3 = Touchscreen + AC Power 115-230 VAC
 C2/C4 = Touchscreen + DC Power 12-24 VDC
 E1 = ECDIS Compliant + AC Power 115-230 VAC
 E2 = ECDIS Compliant + DC Power 12-24 VDC
 MMD = Dual Input (RGB + VIDEO) Display
 MMC = Complete Maritime Multi Computer + Display Solution
 MIL = Naval Military Dual Input (RGB + VIDEO) Display
 STD/VGA = Single Input RGB Signal

CRT Products:

Note: Jakob Hatteland Display AS does not anymore develop any CRT products.