TYPE APPROVAL CERTIFICATE

Certificate No.	: LDN04977-AC117	**Initial Approval :**	20th February, 2020
Product	: Marine Computer		
Manufacturer	: Mariner Systems (UK) Ltd.		
	Oaklands Park, Wokingham, Berkshire, RG41 2FD, United Kingdom		

Product Description : Marine Computer (Model : HP EliteDesk 800 G5 Personal Computers)

" The HP EliteDesk 800 G5 Small Form Factor(SFF) PC must be used
  in conjunction with one of the Mariner Kit MS2570 or MS2580 "

" The HP EliteDesk 800 G5 Tower(TWR) PC must be used
  in conjunction with one of the Mariner Kit MS2550 or MS2560 "

- MS2550 : Desktop configuration
- MS2560 : Tower configuration
- MS2570 : Horizontal mount
- MS2580 : Vertical mount

" See Appendix 1 "

Approval Condition : " See Appendix 1 "

THIS IS TO CERTIFY that the above-mentioned product has been approved in accordance with the relevant requirement of this Society's Rules and / or of the recognized standards as follows and entered in the "List of Approved Manufacturers and Type Approved Equipment".
Pt. 6, Ch. 2, Art. 301 of the Rules for Classification, Steel Ships.

This Certificate is valid until 19th February, 2025
Issued at Busan, Korea on 20th February, 2020

This certificate is signed electronically in accordance with IMO FAL.5/Circ.39/Rev.2. Validation and authentication of the certificate can be confirmed from "http://e-cert.krs.co.kr" by using the tracking No (ME20006987266) and certificate No.(LDN04977 -AC117).

KOREAN REGISTER

General Manager of
Marine & Ocean Equipment Team

Note : 1. This certificate will be valid subject to complying with the approval conditions described on the certificate and/or on the Rules of this Society.
    2. This certificate will be invalid from the expiry date aforementioned unless the extension or renewal has been granted to the applicant or the manufacturer.
    3. Any significant modifications or changes in design or construction to the above product without approval from this Society will render this certificate invalid.
    4. Should the specified rules, regulations or standards be amended during the validity of this certificate, the product is to be re-approved by this Society in accordance with the requirements as amended.

Appendix 1

Product Description and/or Approval Condition

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A. Product Description

1. Product Specification
1) Processor
   - All processors up to and including Intel Core i7, Core i5, Core i3
     or Intel Pentium with 3.7GHz (4.8GHz turbo) frequency, 12MB cache, 8 cores

2) Memory
   - Up to 64 GB DDR4-2666 DIMM
   - Intel Optane Memory 16GB(Cache)

3) Hard Disk
   - 1TB M.2 2280 PCIe NVMe TLC SSD
   - 512GB M.2 2280 PCIe NVMe TLC SSD
   - 256GB M.2 2280 PCIe NVMe TLC SSD
   - 512GB M.2 2280 PCIe NVMe SSD
   - 256GB M.2 2280 PCIe NVMe SSD
   - 2TB SATA-6G 3.5" (7200 rpm)
   - 1TB SATA-6G 3.5" (7200 rpm)
   - 500GB SATA-6G 3.5" (7200 rpm)
   - 1TB SATA-6G 2.5" (7200 rpm)
   - 500GB SATA 2.5" (7200 rpm)
   - 500GB SATA 2.5" SED Opal 2 (7200 rpm)

4) Optical Drive
   - HP ODD 9.5mm DVD Writer
   - HP ODD 9.5mm DVD-ROM

5) Graphics Card
   - Intel HD Graphics (integrated)
   - NVIDIA Quadro P400 2GB (PCIe x16)
   - NVIDIA GeForce GT730 2GB (PCIe x8)
   - AMD Radeon RX 550X 4GB (PCIe x16)
   - AMD Radeon R7 430 2GB 2DP (PCIe x16)

6) Network Interface Card
   - Intel Ethernet I350-T4 1GB 4-port NIC
   - Intel Ethernet I210-T1 GbE NIC(PCIe x1)
   - Intel Ethernet I219LM GbE LOM Network Connection(Integrated)

7) Keyboard
   - HP PS/2 Business Slim Keyboard
   - HP USB Business Slim Keyboard

8) Mouse
   - HP PS/2 Mouse
   - HP USB Optical Mouse
   - HP USB 1000dpi Laser Mouse
   - HP USB Hardened Mouse

9) Miscellaneous
   - HP SD 4 Media Card Reader
   - HP Type-C USB 3.1 Gen2 Port
   - HP DisplayPort to HDMI True 4K Adapter
   - HP DisplayPort Port
   - HP Serial Port Rear Wall
   - HP Serial / PS/2 Module
   - HP VGA Port
   - HP DisplayPort to DVI-D Adapter
   - HP DisplayPort to VGA Adapter
   - HP DisplayPort Cable

10) Operating System
    - Windows 10 Professional(64-bit)
    - Windows 10 Home (64-bit)
    - FreeDOS

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2. Approved Drawings and Documents

1) Component list file no. HP 800 G5 Components Dec 19 dated on 2019-12-06

2) Drawings for mariner kit
   - MS2550 Assembly, Dwg. No. MS2550_A, Issue No.1, dated 2019-11-13
   - MS2560 Assembly, Dwg. No. MS2560_A, Issue No.1, dated 2019-11-13
   - MS2570 Assembly, Dwg. No. MS2570_A, Issue No.1, dated 2019-11-13
   - MS2580 Assembly, Dwg. No. MS2580_A, Issue No.1, dated 2019-11-13

3. Test Reports, etc.

1)Test Reports
   - Test Report No. TL19106 issued by MS Testing, dated 2019-12-05
   - Test Report No. TL19111 issued by MS Testing, dated 2019-12-05
   - Test Report No. TL19112 issued by MS Testing, dated 2019-12-05

2) Etc.
   - QuickSpecs, Doc. c06320288-DA 16479-Worldwide-Version 15, dated 2019-11-26

B. Approval Condition

1. Application & Limitation
1) This Approval is granted on the basis of the test reports and the approved documentation.
2) The manufacturer should inform this Society of all kinds of revisions of the equipment including software. If the changes are recognized to affect functionality of the approved equipment, type test to confirm the reliability of the revised equipment may be performed in the presence of our surveyor.
3) The product is to be installed as manufacturer's instructions.
4) When this product is installed in the vicinity of a standard or a steering magnetic compass, it should have the minimum safe distance stated in Product Description or more at which it may be mounted from such compasses.

2. Individual Product Cert. and Drawing Approval Requirement
1) Individual Product Certification is not required.
2) Drawing Approval is not required.

3. Marking
1) The product or packing is to be marked with manufacturer name and type designation on a suitable position.

4. Others
1) Test condition

Test	Condition	Remark
EMC	All locations including the bridge and deck zone	Up to 6GHz
Temperature	-25 ~ +70℃	-
Vibration	Acceleration ±0.7g	-
Salt mist	Not Applied	-

2) Compass Safety Distance

Type	1 degree deflection	0.3 degree deflection
Small Form Factor(SFF)	700mm	1000mm
Tower(TWR)	900mm	1000mm

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