MCS-970
Clock System

GENERAL DESCRIPTION

The Marine Electric Clock System is a device for indicating precise time and date to the analogue/digital slave clocks as well as recording and monitoring the operation data of the vessel. By using a 10.000MHz TCXO crystal oscillator to compensate or temperature, the MCS-970 system excels in safety and precision as the system has 0.1 second error per month. These systems are manufactured to be shock and vibration proof, as well as are protected from air pressure and salt. This system was tested at the IEC60945 standard and approved for CE by DNV GL.

PRODUCT INFORMATION

SYSTEM FEATURE

- Power Source : AC110/220V, 1Φ, 50/60 Hz
- Emergency Power : AC or DC 24V (Ripple less than 5%)
- Power Consumption : AC, less than 50VA
  DC, less than 1.6A (At 24V DC)
- Automatically switch to DC when AC power fails
- Certification : DNV CE
- Temperature : -20°C ~ +45°C
- Humidity : Less than 90%
- Net Weight : 7.82Kg
- Painting Color : 5.4 PB 2.8 / 3.0 (Dark Blue)
- Dimensions : 386(W) x 316(H) x 110(D)
- Mount Type : Flush Mount (Manufacturer Standard)

CAPACITY & FUNCTION OF THE SYSTEM

- Crystal Oscillation Frequency : 10.000 MHz (TCXO)
- Accuracy : Within ±1.0 sec per a month
- Dual Clocks in Main Unit :
  - Master (UTC) : Three Hands, 0.5sec. Leap, Φ80mm Dial
  - Slave (LTC) : Two / Three Hands, 30sec. Leap, Φ80mm Dial
- Output Signal Form
  - For 0.5sec Slave Clock : DC 24V, 0.5sec Polarized Pulse
  - For 30sec Slave Clock : DC 24V, 30sec Polarized Pulse
  - Time Signal for Engine Telegraph Logger :
    DC 24V, ±30sec Polarized Pulse (ADV / REV)
- Slave Clock : Up to 80ea
- Battery Slave Clock (Optional)
- Digital Slave Clock (Optional)
- Built-in lighting control system (Dimmer)
- Fully protects : Power source and slave line circuit
- Robust mechanism architecture and excellent stability
- Easy time control : CW and CCW direction for slave clocks
- High speed time setup

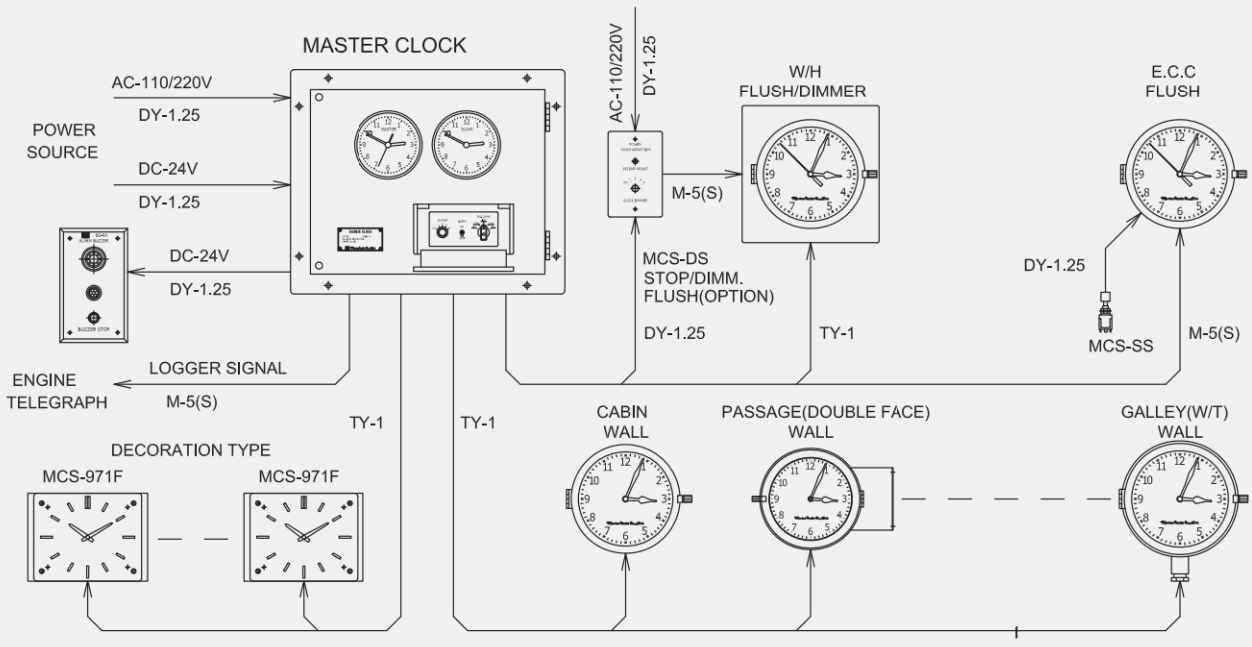
MAD-100 Main Unit

CE

PRODUCT INFORMATION

Control Panel of Main Unit	Main Unit (MCS-970) 1. UT (Universal Time) 2. LT (Local Time) 3. Mounting Holes 4. Hinge 5. Display & Control 6. Name Plate 7. Front Panel Mount	**Detailed Description of Each Part**	1. 30-Sec Time adjust switch 2. "TIME" : Stopping time of all clocks for a while. 3. "DIMMER" : Adjust illumination of back (EL) light 4/5. AC / DC Power Fuse : 1.3A / 5.0A 6/7. 0.5S / 30S Out Fuse : 1.0A / 1.0A 8/9. DC / AC Power Switch

Wiring Diagram of Communal Aerial System



MCD-100
Clock System

GENERAL DESCRIPTION

The Marine Electric Clock System is a device for indicating precise time and date to the analogue/digital slave clocks as well as recording and monitoring the operation data of the vessel. By connecting to GPS and other devices, the MCD-100 system receives data from the National Marine Electronics Association (NMEA) and the Internet protocols (LAN) to automatically renew and synchronize the precise local time. These systems are shock and vibration proof, as well as are protected from air pressure and salt. This system was tested at the IEC60945 standard and approved for CE by DNV GL . The Type Approval was done by CCS.

PRODUCT INFORMATION

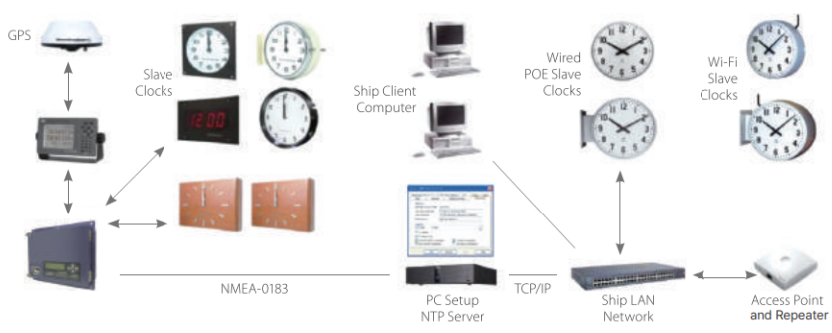
SYSTEM FEATURES

- Power Source : AC110/220V, 1Ø, 50/60 Hz
- Emergency Power : AC or DC 24V (Ripple less than 5%)
- Power Consumption : AC, less than 50VA
  DC, less than 1.6A (At 24V DC)
- Automatically switch to DC when AC power fails
- Certification : DNV CE Submitted
- Temperature : -20°C ~ +45°C
- Humidity : Less than 90%
- Net Weight : 7.52Kg
- Dimensions : 338(W) x 272(H) x 128(D)
- Mount Type : Flush Mount
  (Manufacturer Standard)

CAPACITY & FUNCTION OF THE SYSTEM

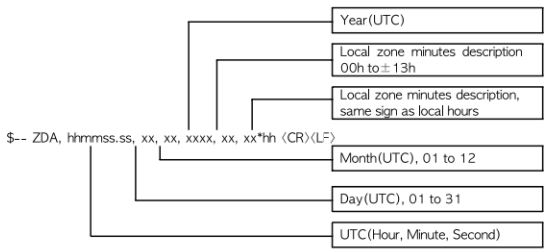
- Crystal Oscillation Frequency : 10.000 MHz (TCXO)
- Accuracy (No GPS) : Within ±1.0 sec per a month
  (With GPS) : Synchronizing from GPS automatically
- Dual Clocks in Main Unit :
  - Master (UTC) :
    Three Hands, 0.5sec. Leap, Ø80mm Dial
  - Slave (LTC) :
    Two / Three Hands, 30sec. Leap, Ø80mm Dial
  - LCD Display :
    UT / LT Year / Month / Day / Hour / Minute /
    Second 16-Character 2-Line, Back Light
- Output Signal Form
  - For 0.5sec Slave Clock : DC 24V, 0.5sec Polarized Pulse
  - For 30sec Slave Clock : DC 24V, 30sec Polarized Pulse
  - Time Signal for Engine Telegraph Logger :
    DC 24V, ±30sec Polarized Pulse (ADV / REV)
- NMEA-0183 Signal : Time & Date
  (IEC1162-1, RS-422, ZDA)
- There are 3-set Output Port for
  NMEA-0183
- Baud Rate Setup (NMEA-0183) :
  Setup, 1200 / 2400 / 4800 / 9600
- +20 / -20 Minute Control (Optional)
- Slave Clock : Up to 80 each
- Battery Slave Clock (Optional)
- Built-in lighting control system (Dimmer)
- Fully protects :
  Power source and slave line circuit
- Robust mechanism architecture and
  excellent stability
- Easy time control :
  CW and CCW direction for slave clocks
- High speed time setup
- NTP Server (Network Time Protocol, Optional)

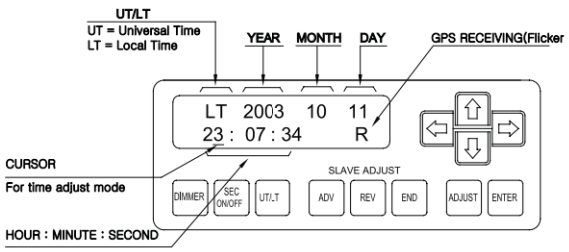
Wiring Diagram of Communal Aerial System



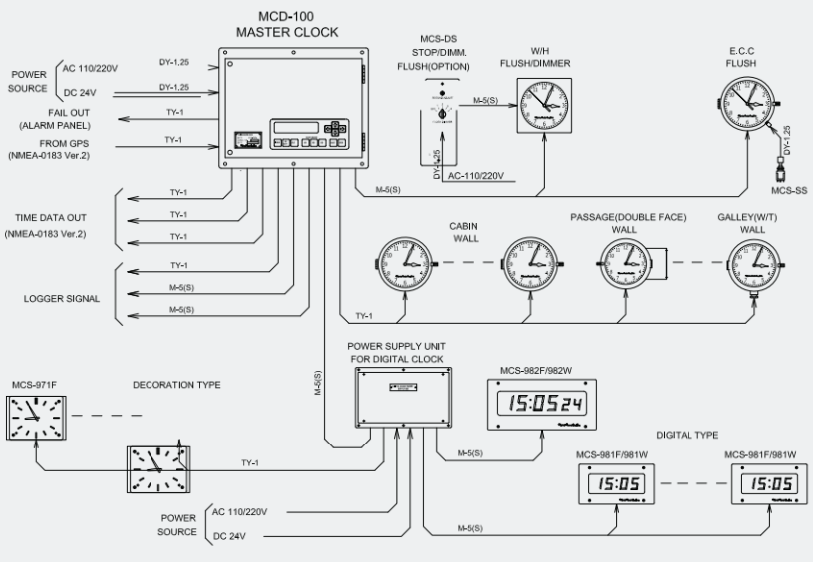
PRODUCT INFORMATION

NMEA-0183, Serial Interface Protocol	1. In(1) / Out(3) (NMEA-0183, IEC1162-1, RS-422 Compatible, $GPZDA) 2. Baud Rate Pre-set : 4800BPS (1200 / 2400 / 4800 / 9600 Compatible) 3. Standard Data Format : 4800-N-8-1(BR-Data-Parity-Stop), ZDA
Detailed Description	1. UT / LT : Universal Time / Local Time 2. Synchronizing from GPS signal automatically





Wiring Diagram of Marine Electric Clock System



Accessories: **Slave Clock**

ACCESSORY SLAVE ANALOG CLOCK

MODEL	MCS-975	MCS-975B	MCS-973C1	MCS-973S
PHOTO				
Mounting Type	FLUSH	FLUSH	WALL	FLUSH
Hour / Minute / Second	O	O	O	O
Hour / Minute	X	X	X	X
EL Plate	O	X	X	X
Second SW	X	O	X	X
Silence Mark	X	X	X	O
IP Grade	IP22	IP22	IP22	IP22
Gland	X	X	X	X
(WxDxH)mm	192×48×192	192×48×192	196×78×196	188×81×188
Material	STEEL	STEEL	STEEL	STEEL
Colour	BLACK	BLACK	IVORY	IVORY
Weight	1.6kg	1.6kg	1.2kg	1.3kg
Install Area	BCC	ECC/CCC	CABIN	RADIO SPACE

ACCESSORY SLAVE BATTERY CLOCK

MODEL	MCS-990A	MCS-990B	MCS-990C1
PHOTO			
Mounting Type	FLUSH	FLUSH	WALL
Hour / Minute / Second	O	O	O
EL Plate	O	X	X
IP Grade	IP22	P22	IP22
Silence Mark	X	X	X
(WxDxH)mm	186×80×186	186×80×186	196×74×196
Material	STEEL	STEEL	STEEL
Colour	IVORY	IVORY	IVORY
Weight	1.1kg	1.1kg	1.3kg
Install Area	BCC	ECC	CABIN

Marine Electric Clock

MCS-975C	MCS-976A	MCS-972E	MCS-972F1	MCS-972G
				
FLUSH	WALL	WALL	WALL	DOUBLE FACE
X	X	X	X	X
O	O	O	O	O
X	X	X	X	X
X	X	X	X	X
X	X	X	X	X
IP22	IP22	IP44	IP22	IP22
X	X	1 - 2	X	X
192×48×192	270×48×270	196×78×196	300×49×217	220×133×195
STEEL	STEEL	STEEL	WOOD	STEEL
BLACK	GRAY	IVORY	BROWN	IVORY
1.6kg	1.2kg	1.2kg	1.8kg	2.1kg
ECC/CCC	CABIN	GALLEY	CABIN	PASSAGE

MCS-990E	MCS-990F1	MCS-990S
		
WALL	WALL	FLUSH
O	O	O
X	X	X
P44	P22	IP22
X	X	O
196×74×196	300×49×217	186×80×196
STEEL	WOOD	STEEL
IVORY	BROWN	IVORY
1.2kg	1.8kg	1.1kg
GALLEY	CABIN	RADIO SPACE

Accessories: **Slave Clock**

ACCESSORY FOR SLAVE IP CLOCK

MODEL	MCS-961	MCS-961A	MCS-961W
PHOTO			
Mounting Type	WALL	WALL	WALL
Hour/Minute/Second	O	X	O
Hour / Minute	X	O	X
IP Grade	IP22	P22	IP44
Gland	X	X	1
(WxDxH)mm	200×60×100	200×60×100	200×60×100
Material	STEEL	STEEL	STEEL
Colour	BLACK	BLACK	BLACK
Weight	3.7kg	3.3kg	3.7kg
Install Area	CABIN	CABIN	GALLEY

MODEL	MCS-963	MCS-963A	MCS-964	MCS-964A
PHOTO				
Mounting Type	DOUBLE FACE	DOUBLE FACE	WALL	WALL
Hour/Minute/Second	O	X	O	X
Hour / Minute	X	O	X	O
IP Grade	IP22	IP22	IP22	IP22
Gland	X	X	X	X
(WxDxH)mm	200×60×100	200×60×100	200×60×100	200×60×100
Material	STEEL	STEEL	STEEL	STEEL
Colour	BLACK	BLACK	BROWN	BROWN
Weight	3.7kg	3.7kg	3.3kg	3.3kg
Install Area	PASSAGE	PASSAGE	CABIN	CABIN

MCS-961W/A	MCS-962	MCS-962A
		
WALL	FLUSH	FLUSH
X	O	X
O	X	O
IP44	IP22	IP22
1	X	X
200×60×100	200×61×100	200×61×100
STEEL	STEEL	STEEL
BLACK	BLACK	BLACK
3.7kg	3.3kg	3.3kg
GALLEY	BCC	ECC

ACCESSORY FOR DIMMER, SECOND ADJ. SW, NTP SERVER

MODEL	MCS-DS1	MCS-D	MCS-SS
PHOTO			
Mounting Type	FLUSH	FLUSH	FLUSH
IP Grade	IP22	IP22	IP22
(WxDxH)mm	78×57×116	78×57×116	11.5×12.5×38
Material	STEEL	STEEL	STEEL
Colour	BLACK	BLACK	BLACK
Weight	1kg	1kg	0.01kg
Install Area	BCC	BCC	BCC

NTP-100 IP Clock System

GENERAL DESCRIPTION

The NTP-100 provides secure synchronized timing for the ship's network system. The NTP Server is the solution for stable and precise timing on your network with GPS via Marine Master Clock System. The MRC (MCS-980) master clock system ensures the synchronization of all IT devices on the same network. Typically, this is done through the network time protocol (NTP) on the active portion of the communications infrastructure. The MRC NTP-100 is based on GPS and Master clock system technology for synchronizing to satellites' atomic clocks. This enables computer networks to synchronize all elements of network hardware and software (Including system logs) to the millisecond over LANs and/or WANs anywhere on the vessel.

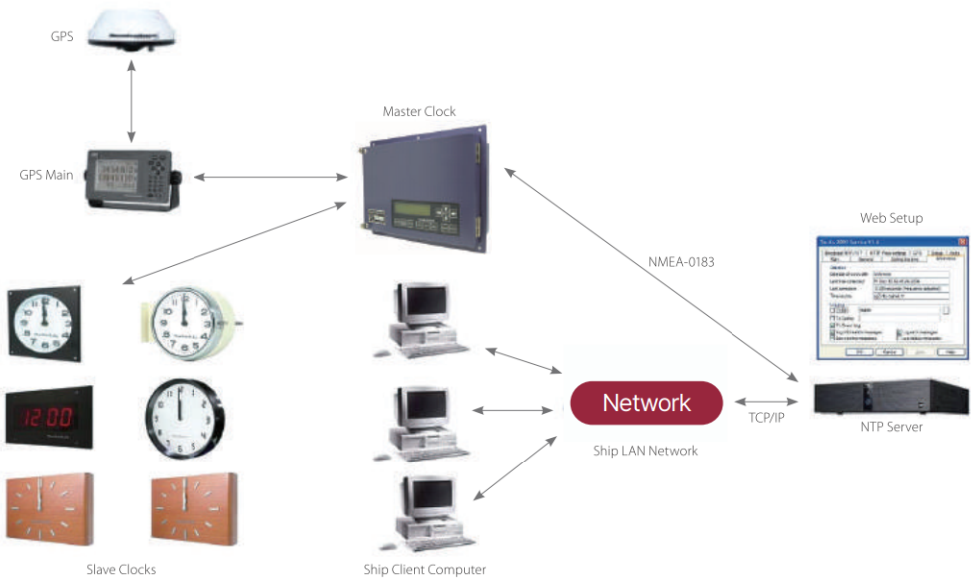
PRODUCT INFORMATION

SYSTEM FEATURES

- Power Source : 90 ~ 264VAC, 1θ, 50/60 Hz
- Em'cy Power(Optional) : AC or 24VDC (Ripple less than 5%)
- Power Consumption : AC, approximately 10VA
  DC, less than 1A (At 24VDC)
- Automatic power changeover between DC & AC (Optional)
- Timing Accuracy : Better than 50ms
- Temperature : -20°C ~ +45°C
- Humidity : Less than 90%
- Net Weight : 5.2Kg
- Dimensions 1(Wall) : 406(W) x 253(H) x 83(D)
- Dimensions 2(19") : 19" 1-U Standard Rack)
- Mount Type : Wall / 19" Rack Mount

KEY BENEFITS

- Synchronized timing via your network using NTP / SNTP protocols Master Clock (Compatible with a range of GPS) ZDA, NMEA-0183(NMEA-2000, NMEA-OneNet, Optional) Simple setup and internal oscillator included



PRODUCT INFORMATION

NMEA-0183, Serial Interface Protocol

Platform : 32bit ARM Processor

2. Input (Master Clock/GPS) : NMEA-0183, RS-422, ZDA Format

3. Baud Rate Input (NMEA-0183) : 4800 / 9600 / 19200 / 38400

4. Output : SNTP / NTP (IEC61162-450) for Ethernet TCP / IP, RJ-45

5. Protocol : NTP4 (RFC-2030), NTP v4/3/2, SNTP v4

6. Local time / UTC : Selectable on individual outputs

7. Setup interface : Using the Web Browser (Password-protected) for system configuration and management.

8. Fault Alarm : Dry contact (NMEA Input, Power Fail)

9. Free firmware upgrades via network

10. Applicable : ECDIS, Radar, Conning, Auto Pilot, VDR, IAS, Fire Alarm ,etc. for all PC based equipment

11. Standard 1-year and 2-year warranty on parts

Wall Type NTP Server

1. Size : 406(W) x 253(H) x 83(D)

2. 19" 1U : Available

3. AC Main Power

4. Dual Power : Option

5. Fail Output

6. App. 5.2Kg

7. -20°C ~ +45°C

8. Humidity : L / T 90

NTP Server Interface

1. Input : NMEA-0183, IEC1162-1, RS-422 Compatible, $xxZDA

2. Baud Rate Preset : 4800BPS (4800 / 9600 / 19200 / 38400 Compatible)

3. Standard Data Format : 4800-N-8-1 (BR-Data-Parity-Stop), ZDA

4. Output : Ethernet 10 / 100 Base-T, RJ-45 (Auto sensing)

Wiring Diagram of NTP Server with Marine Electric Clock (MCD-100) & GPS System