



SEIKO

MarineClock SYSTEM

The Seiko Marine Clock is literally the result of Seiko's many years of experience and achievements in its determined pursuit of accuracy and reliability, and horological fine arts and the most advanced electronics are assimilated in it.



Marine Master Clock QC-6M5/QC-6M4

- 1/ **High-accuracy crystal clock**
Highly accurate crystal is built in and a Secondary Clock group inboard is driven by the signal of accurate time. Signals for loggers are available.
- 2/ **The power supply automatically switched from AC to DC in case of AC failure.**
- 3/ **As for the setting of Local Time (LT), an automatic time adjusting by an adjust key is available.**
- 4/ **It is possible to correct accumulated error (within ± 30 second) by the 0-second adjust button without interrupting the operation.**
- 5/ **It equips with the digital signal input/output* in accordance with NMEA0183 format.**
- 6/ **The Liquid Crystal Display (LCD) and Secondary Clock Monitors* are illuminated with dimmer.**
- 7/ **The active operation can be monitored on the LCD.**
- 8/ **A space-saved design and easy operations have been achieved by adopting a thin movement and the microprocessor.**

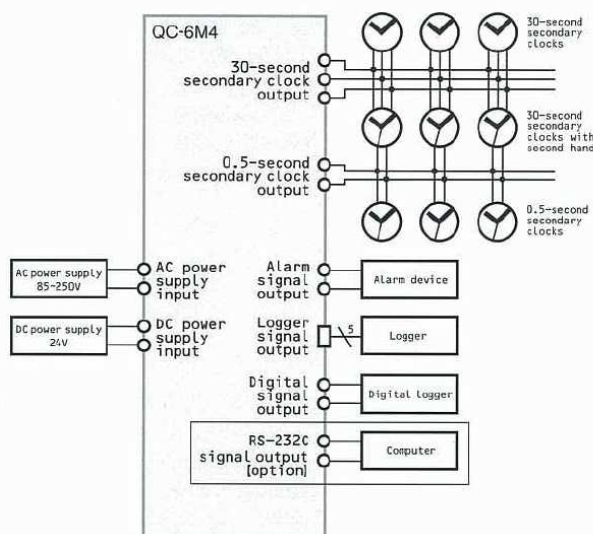
* Available on QC-6M5 only.



QC-6M4

Specifications

- 1 **Crystal oscillation** / 4,194304MHz
- 2 **Accuracy daily rate** / within ± 0.2 second/day
- 3 **Temperature range for the rated accuracy** / $+5^{\circ}\text{C} \sim +40^{\circ}\text{C}$
- 4 **Operating temperature range** / $-10^{\circ}\text{C} \sim +55^{\circ}\text{C}$ (LCD: $0^{\circ}\text{C} \sim +55^{\circ}\text{C}$)
- 5 **Operating humidity range** / 35~90% RH (no dew condensation)
- 6 **Monitor clocks**
Digital clock (MASTER/SECONDARY alternative) /
Two lines of 16-digit LCD
(STN half penetration type and character height of 4.89mm)
Illuminated with dimmer
- 7 **Operation panel**
Nine buttons and two lines of 16-digit LCD for key-input
- 8 **Input / Output**
0.5-second Secondary Clock output /
Two wired system (Only clockwise)
10 Secondary Clocks can be connected. (Less than 120mA)
30-second Secondary Clock output /
Three wired system (Clockwise/Counterclockwise)
65 Secondary Clocks can be connected. (Less than 780mA)
(Power consumption of a 30-second Secondary Clock with second-hand is counted as both one 0.5-second Secondary Clock and 30-second Secondary Clock.)
Digital signal output /
Two balanced wired system (RS-422). One port NMEA0183 format
RS-232C signal output [option] /
Two unbalanced wire system (RS-232C)
One port (The content is the same as the digital signal output.)
Logger signal output /
Five wired system: One port.
24V (COMMON). (Less than 150mA in total).
30-second polarized pulse output (+)
30-second polarized pulse output (-)
Signal output (-) : for the status during time adjusting
Signal output (-) : for the status during counterclockwise.
Alarm signal output /
Two wired system: One port. 24V (COMMON). (Less than 100mA). Alarm (-)
- 9 **Time Adjusting**
When power is turned on / Key-input by buttons and LCD.
At normal operation / Reset to "00" sec. by 0-second adjust button (± 30 second adjustment). After the above operation, Hands of 0.5-second Secondary Clock will follow by stop or fast-forwarding.
When LT is changed / Adjustment by LT adjust button is effective only for 30-second Secondary Clock. Setting of time at step of one minute is available within the range of UT ± 13 hours. (Date will be adjusted automatically.)
- 10 **Dimmer function for Monitor Clocks**
In 3 steps (Off-Mid-Hi) on the front panel
- 11 **Power supply specifications**
AC power supply / Range of input voltage: AC 85~250V
Range of frequency: 47~63Hz
Power consumption: 35W
DC power supply / Range of input voltage: DC 24V $\pm 10\%$
Current consumption: 1.4A
Power supply automatically switched from AC to DC supply without interruption in case of AC power failure.
- 12 **Dimensions** / 365(W) \times 300(H) \times 120(D)mm
- 13 **Weight** / 5.0kg
- 14 **Exterior** / Painted steel (Pale green: 2.5G7/2 or Bluish green: 7.5BQ7/2)



We have prepared the exclusive spare parts for QC-6M4; SP-4A • SP-4B.



QC-6M5

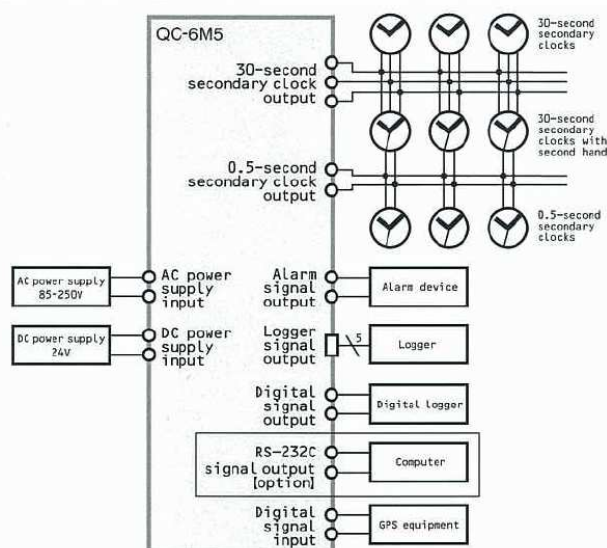
Specifications

- 1 **Crystal oscillation** / 4.194304MHz
- 2 **Accuracy daily rate** / within ± 0.2 second/day
- 3 **Temperature range for the rated accuracy** / $+5^{\circ}\text{C} \sim +40^{\circ}\text{C}$
- 4 **Operating temperature range** / $-10^{\circ}\text{C} \sim +55^{\circ}\text{C}$ (LCD $0^{\circ}\text{C} \sim +55^{\circ}\text{C}$)
- 5 **Operating humidity range** / 35~90% RH (no dew condensation)
- 6 **Monitor clocks**
 - Digital clock (MASTER/SECONDARY alternative) /
 - Two lines of 16-digit LCD
 - (STN half penetration type and character height of 4.89mm)
 - Analog clock (MASTER) /
 - With second-hand, 0.5-second step, $\phi 80\text{mm}$ dial.
 - Analog clock (SECONDARY) /
 - Two hands, 30-second step, $\phi 80\text{mm}$ dial.

These clocks are illuminated with dimmer.
- 7 **Operation panel** / Nine buttons and two lines of 16-digit LCD for key-input
- 8 **Input/Output**
 - 0.5-second Secondary Clock output /
 - Two wired system (Only clockwise)
 - 20 Secondary Clocks can be connected. (Less than 240mA)
 - 30-second Secondary Clock output /
 - Three wired system (Clockwise/Counterclockwise)
 - 130 Secondary Clocks can be connected. (Less than 1,560mA)
 - (Power consumption of a 30-second Secondary Clock with second-hand is counted as both one 0.5-second Secondary Clock output and 30-second Secondary Clock.)
 - Digital signal output /
 - Two balanced wired system (RS-422). One port NMEA0183 format
 - Digital signal input /
 - Two balanced wired system (RS-422). One port NMEA0183 format
 - RS-232C signal output [option] /
 - Two unbalanced wire system (RS-232C)
 - One port (The content is the same as the digital signal output.)
 - Logger signal output /
 - Five wired system. One port.
 - 24V (COMMON). (Less than 150mA in total).
 - 30-second polarized pulse output (+).
 - 30-second polarized pulse output (-).
 - Signal output (-): for the status during time adjusting
 - Signal output (-): for the status during counterclockwise.
 - Alarm signal output /
 - Two wired system. One port. 24V (COMMON). (Less than 100mA) Alarm (-)
- 9 **Time Adjusting**
 - When power is turned on / Key-input by buttons and LCD.
 - At normal operation / Reset to "00" sec. by 0-second adjust button (± 30 second adjustment). After the above operation, Hands of 0.5-second Secondary Clock will follow by stop or fast-forwarding.
 - When LT is changed / Adjustment by LT adjust button is effective only for 30-second Secondary Clock. Setting of time at step of one minute is available within the range of UT ± 13 hours. (Date will be adjusted automatically.)
 - Automatic LT adjustment / Available when the switch of Automatic LT Adjustment on PCB is ON. When the external signal of the NMEA0183 format is fed, LT is applied automatically in accordance with the "Local Zone" data from the GPS equipment. The interval of one hour is necessary for the continuity automatic adjustment.
 - Automatic UT adjustment / When the external signal of the NMEA0183 format is fed, UT is applied automatically within 30 seconds in accordance with the data from the GPS equipment. (23:30-23:50)
- 10 **Dimmer function for Monitor Clocks**
 - In 3 steps (Off-Mid-Hi) on the front panel
- 11 **Power supply**
 - AC power supply / Range of input voltage: AC 85~250V
 - Range of frequency: 47~63Hz
 - Power consumption: 50W
 - DC power supply / Range of input voltage: DC 24V $\pm 10\%$
 - Current consumption: 2.2A

Power supply automatically switched from AC to DC supply without interruption in case of AC power failure.
- 12 **Dimensions** / 365(W) \times 300(H) \times 120(D)mm
- 13 **Weight** / 5.8kg
- 14 **Exterior** / Painted steel (Pale green: 7.5BG7/2 or Bluish green: 7.5BG7/2)

We have prepared the exclusive spare parts for QC-6M5; SP-5A • SP-5B.



0.5 second secondary clock



MC-001

For UTC Wall-mounting type

Dimensions : Diameter ϕ 220mm
Dial ϕ 145mm
Frame : Pale green(2.5G7/2)
or Bluish green(7.5BG7/2)
Hand driving : Second hand 0.5-second step
Minute hand sweep



MC-002

For UTC Wall-mounting type

Dimensions : Diameter ϕ 220mm
Dial ϕ 145mm
Frame : Pale green(2.5G7/2)
or Bluish green(7.5BG7/2)
Hand driving : Second hand 0.5-second step
Minute hand sweep



MC-003

For UTC Panel-mounting type

Dimensions : Diameter ϕ 173mm
Dial ϕ 145mm
Frame : Chrome-plated
Hand driving : Second hand 0.5-second step
Minute hand sweep



MC-004

For UTC Panel-mounting type

Dimensions : Diameter ϕ 173mm
Dial ϕ 145mm
Frame : Chrome-plated
Hand driving : Second hand 0.5-second step
Minute hand sweep

30 second secondary clock with second hand



MC-005

Wall-mounting type

Dimensions : Diameter ϕ 220mm
Dial ϕ 145mm
Frame : Pale green(2.5G7/2)
or Bluish green(7.5BG7/2)
Hand driving : Second hand 0.5-second step
Minute hand 30-second step



MC-006

Wall-mounting type with EL (orange)

Dimensions : Diameter ϕ 220mm
Dial ϕ 145mm
Frame : Pale green(2.5G7/2)
or Bluish green(7.5BG7/2)
Hand driving : Second hand 0.5-second step
Minute hand 30-second step



MC-007

Panel-mounting type

Dimensions : Diameter ϕ 173mm
Dial ϕ 145mm
Frame : Chrome-plated
Hand driving : Second hand 0.5-second step
Minute hand 30-second step



MC-008

Panel-mounting type with EL (orange)

Dimensions : Diameter ϕ 173mm
Dial ϕ 145mm
Frame : Chrome-plated
Hand driving : Second hand 0.5-second step
Minute hand 30-second step



30 second secondary clock



MC-050

Wall-mounting type

Dimensions : Diameter ϕ 220mm×244mm
Dial ϕ 168mm

Frame : Plastic
Frame color : Pale green(2.5G7/2)
or Bluish green(7.5BG7/2)



MC-011

Wall-mounting type with EL (orange) and dimmer switch

Dimensions : Diameter ϕ 220mm
Dial ϕ 145mm

Frame : Steel
Frame color : Pale green(2.5G7/2)
or Bluish green(7.5BG7/2)



MC-012

Drip-proof Wall-mounting type

Dimensions : Diameter ϕ 220mm
Dial ϕ 145mm

Frame : Steel
Frame color : Pale green(2.5G7/2)
or Bluish green(7.5BG7/2)



MC-013

Panel-mounting type

Dimensions : Diameter ϕ 173mm
Dial ϕ 145mm

Frame : Steel
Frame color : Chrome-plated



MC-014

Panel-mounting type with EL (orange)

Dimensions : Diameter ϕ 173mm
Dial ϕ 145mm

Frame : Steel
Frame color : Chrome-plated



MC-015

Decorative wall-mounting type

Dimensions : 350(H)×250(W)×40(D)mm
Hand : Aluminium, silver metallic painted
Hour-mark : Brass, silver metallic painted
Dial : Steel, semi mat black painted



MC-016

Decorative wall-mounting type

Dimensions : 300(W)×210(H)×65(D)mm
Hand : Aluminium, silver metallic painted
Hour-mark : Brass, silver metallic painted
Dial : Plywood, walnut finish



MC-016C

Decorative wall-mounting type

•カバー／透明アクリル

Dimensions : 300(W)×210(H)×65(D)mm
Hand : Aluminium, silver metallic painted
Hour-mark : Brass, silver metallic painted
Dial : Plywood, walnut finish
Dial cover : Transparent acrylic resin



30 second secondary clock



MC-017

Decorative wall-mounting type

Dimensions : $\phi 260 \times 45(D)$ mm
Dial : Aluminium hairline finish
Frame : Steel, semi mat black painted



MC-018

Double faced bracket type

Dimensions : Main body:
275(W) \times 275(H) \times 190(D)mm
Flange:
230(W) \times 180(H) \times 50(D)mm
Frame : Steel
Frame color : Pale green(2.5G7/2)
or Bluish green(7.5BG7/2)



MC-019

Double faced bracket type

Dimensions : $\phi 191 \times 168(D)$ mm
Dial $\phi 145$ mm
Flange 180(W) \times 110(H) \times 53(D)mm
Frame : Steel
Frame color : Pale green(2.5G7/2)
or Bluish green(7.5BG7/2)

Dashboard type secondary clock



MC-022

Dashboard type (without case) with EL (orange)

Dimensions : Diameter $\phi 218$ mm
Dial $\phi 180$ mm
Hand driving : Second hand 0.5-second step
Minute hand 30-second step



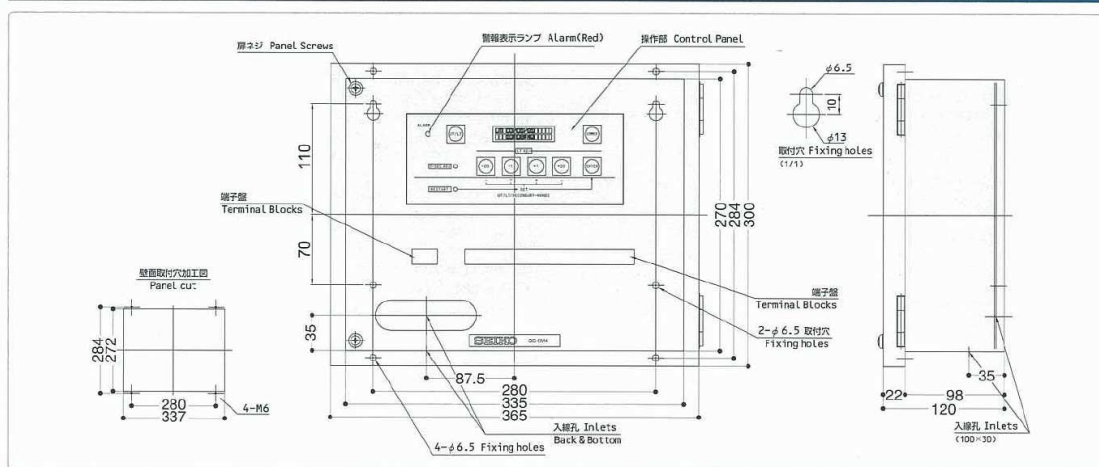
INSTALLATION AND WIRING

For installation of the master clock, prepare four stud bolts on the wall.
For the laying of input and output cables and for the purpose of internal inspection, leave a space which allows the clock cover to turn 90° on the right hinge. Connect the cables to the terminals inside the clock through the coaming in the wall or at the bottom.

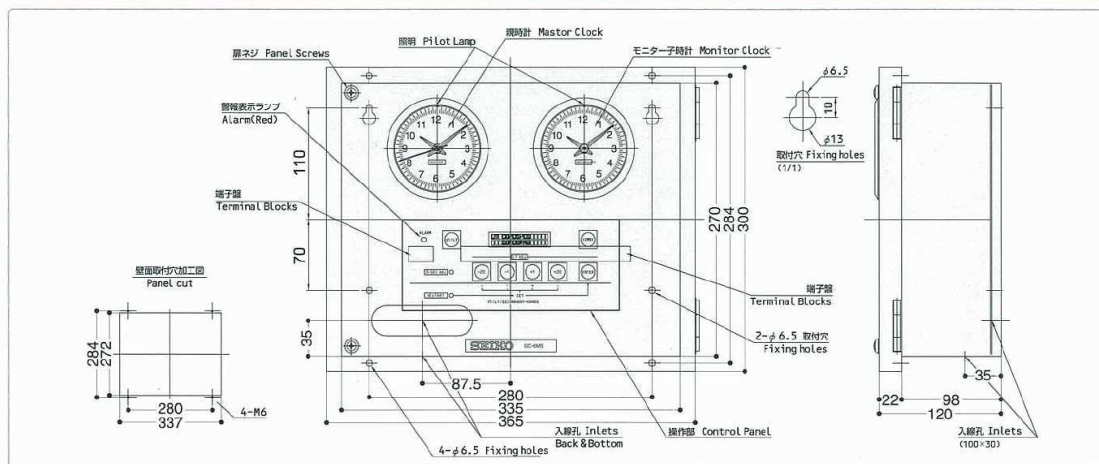
The cables required are as follows.

- Power supply AC 100V~AC 240V :1 circuit (2 conductors)
- Power supply DC 24V:1 circuit (2 conductors)
- 30-second secondary clock (DC 24V):clockwise and counterclockwise 1 circuit (3 conductors)
- 30-second secondary clock w/second hand (DC 24V):1 circuit (5 conductors)
- 0.5-second secondary clock (DC 24V):1 circuit (2 conductors)
- Logger signal output:1 circuit (6 conductors)
- RS-422 signal input:1 circuit (2 conductors). Only for QC-6M5
- RS-422 signal output:1 circuit (2 conductors)
- RS-232C signal output:1 circuit (2 conductors). [option]

Outside view



Outside view

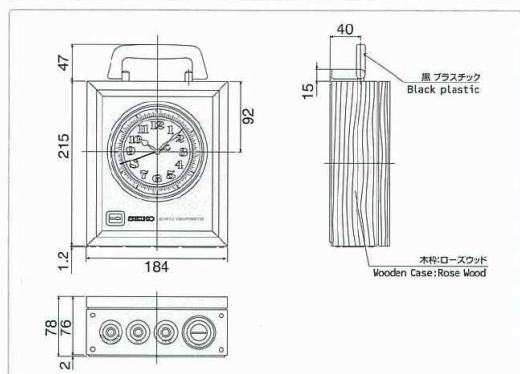


QM-10 CHRONOMETER

Withstanding severe tests, the extreme accuracy of the selected quartz presents you the reliable standard clock.

SEIKO Marine Chronometer QM-10

Outside view



Specifications

- 1 **Accuracy** / Within ± 0.1 sec/day ($+20^{\circ}\text{C}$). Daily difference: within 0.04 sec.
- 2 **Temperature characteristics** / ± 0.2 sec/day (at $0^{\circ}\text{C} \sim +40^{\circ}\text{C}$)
- 3 **Temperature range**
Accuracy guaranteed range $0^{\circ}\text{C} \sim +40^{\circ}\text{C}$ Operating temperature range $-10^{\circ}\text{C} \sim +50^{\circ}\text{C}$
- 4 **Battery life** / Approx. 12 months
- 5 **Battery** / SUM-1/R-20/D X3pcs. (4.5V)
- 6 **Voltage required** / 4V ~ 4.8V DC
- 7 **Current consumption** / $550 \mu\text{A}$ (4.5V)
- 8 **Back-up power** / Approx. 40 hours
- 9 **Second hand-moving** / 0.5 sec step
- 10 **Device in use** / C-MOS IC
- 11 **Anti-magnetic** / No trouble in a direct magnetic field of 30 oersted
- 12 **Anti-shock** / No trouble by consecutive 2G shock
- 13 **Anti-humidity** / No trouble at $+40^{\circ}\text{C}$ with relative humidity of 90%
- 14 **Water-resistant** / Japan standards Water-resistant test
- 15 **Dimensions** / 184(W) \times 215(H) \times 78(D)mm
- 16 **Case** / Paulownia
- 17 **Weight** / 2.2kg

