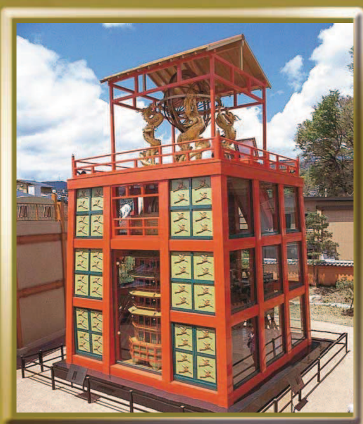
SEIKO

SYSTEM CLOCKS
Catalogue





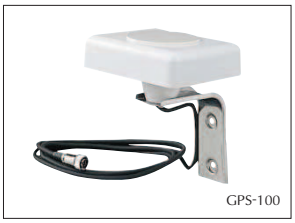



SEIKO TIME SYSTEMS INC.

MASTER CLOCK (GPS Synchronization)

RACK-MOUNT TYPE

QCG-100



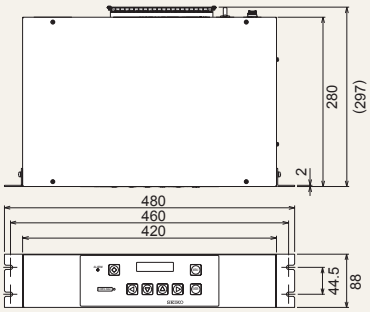
GPS-100

*GPS-100 is available separately.

QCG-100

- **QCG-100 is a master clock which is capable of receiving the precise time information from GPS (Global Positioning System) operated by the U.S. and can retain a high-accuracy in the internal clock at all times.**
- **Exclusive GPS antenna with receiver unit (GPS-100) is available separately to make a time correction for the internal clock in the QCG-100 periodically.**
- **QCG-100 is capable of making analog secondary clocks activate directly and synchronizing them with a precise time.**
- **QCG-100 is capable of generating time data (in accordance with RS-422) for digital secondary clocks and other computer systems.**

- Automatically time synchronization with GPS (Global Positioning System).
- Time Accuracy when synchronized by GPS signal is within ±5ms.
- Exclusive GPS antenna with receiver unit can be purchased separately.
- High-accuracy crystal clock inside (Accuracy daily rate : within±0.1s).
- Rack-mounting type complied with EIA (Electronic Industries Alliance) Standard.
- Maximum 110pcs. of secondary clocks can be activated.
- Both Two hands and Three hands secondary clocks can be activated.
- Serial data signal output (RS-422) is available to synchronize digital clocks and so on.
- Liquid Crystal Display (LCD) with dimmer function for monitor clock in 3 steps (off-mid-hi) on the front panel.
- Daylight saving time and leap time can be set by key input.
- Time adjustable with Time Server (SNTP) through LAN (RJ45) as an optional extension system (QCG-100N).
- Signal auto changer unit QCG-100SC is available as an option for the dual master clock (QCG-100) operation.



CONTENTS			SPECIFICATIONS
MASTER CLOCK	Input / Output Signals	1-sec. polarized signal	Controlled by 2 wires (only clockwise) (Max. 110pcs. of analog secondary clocks can be connected, together with analog secondary clocks of 30-sec. signal.)
		30-sec. polarized signal	Controlled by 2 wires (only clockwise) (Max. 110pcs of analog secondary clocks can be to connected, together with analog secondary clocks of 1-sec. signal.)
		GPS I/F	Data input : Serial data (in accordance with RS-422) 1PPS input : Received by 2 wires Power supply : DC 5V (powered by QCG-100) Sealed : 1 wire *To be connected the exclusive GPS antenna with receiver unit (GPS-100). Available separately. *To be connected with 6 sealed wires cable (as an option).
		Serial data signal output	RS-422 : Time information (Year / Month / Day / Date / Hour / Minute / Second) in SEIKO format shall be sent every second.
	Crystal oscillator frequency		32.768kHz
	Time accuracy		within ±0.1s / day (0℃～+40℃)
	Time accuracy when synchronized by GPS signal		within ±5ms
	Frequency of synchronizing with GPS signal		Every 10 min.
	LCD display		16digits 2 lines with back light
	Operation unit		8keys
	How to adjust the time		When powering on : Automatic setting by GPS or manual setting by key input When operating : Periodical and automatically synchronization by GPS signal or manual setting by key input Setting for Time difference : Manual setting by key input *Against UTC, time difference from -12h to +14h can be set by minutes.
	Daylight saving time		Manual setting by key input
	Leap second		Manual setting by key input
	Over current protection		Power input : Non-fuse breaker Internal circuit : Fuse 5A Secondary clock signal output : Non-fuse breaker
	Alarm detection		If this product detects a decrease in voltage in internal circuit and NFB in secondary clock signal output, the ALARM LED lamp lights up.
Power supply			AC85～264V, 47～63Hz
Power consumption			50W
Operational temperature and humidity range			0℃～+50℃ / 20～90% with no dew condensation
Dimensions			QCG-100 : W480×H88×D280mm (excluding protruded portion) GPS-100 : W142×H67×D110mm (with a 1m cable)
Material			Steel with pearl-gray painted
Weight			QCG-100 : Approx. 3.5kg GPS-100 : Approx. 420g

MASTER CLOCK (QUARTZ)

WALL-MOUNT TYPE

QC-55301 / 55302

QC-5500 Series

QC-55101 / 55102

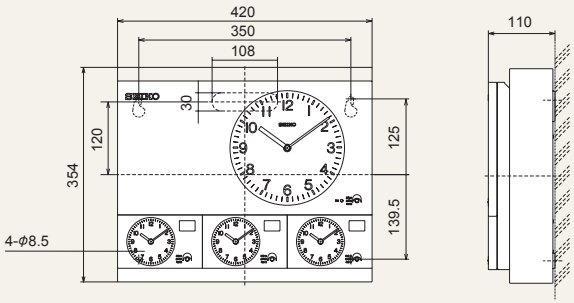
QC-55201 / 55202

QC-55301 / 55302

SEIKO QC-5500 Series is a high-precision quartz master clock. By connecting with an external master clock generating 30-sec polarized signal output, time correction can be made. Models operating on AC 110V (QC-55X01) and AC 220V (QC-55X02) are available.

(1) Master clock function (QC-5510X, QC-5520X and QC-5530X)
Up to 30 secondary clocks can be connected to each channel (if the current consumption of each secondary clock is 12mA).

(2) External synchronization function
By connecting with an external master clock generating 30-sec polarized signal output, the loss/gain of the clock is corrected automatically.



*Rack-mount type is available.

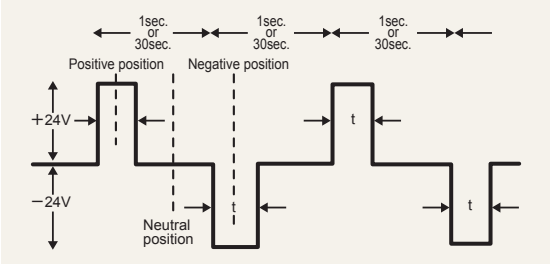
QC-55301 / 55302

CONTENTS			SPECIFICATIONS		
FUNCTIONS	Model No.		QC-55101 ／ QC-55102	QC-55201 ／ QC-55202	QC-55301 ／ QC-55302
	Number of secondary clock circuits		1 circuit	2 circuit	3 circuit
MASTER CLOCK	Crystal oscillator frequency		4.194304 MHz		
	Time accuracy		Weekly rate of less than ±0.7 seconds (+5℃～+35℃) ; no accumulated error after time correction		
	Time display	Master clock	Year, month, date hour, minute, and seconds; and Digital display in 24-hour indication (not displayed during power failure)		
		Monitor clock	30-second interval hand movement		
	Time setting	Master clock	Setting of year, month, date, hour, minute and seconds		
		Monitor clock	60X speed quick advance of hands by APC system		
	Daylight saving time		Setting of year, month, date and hour for start date, and month, date and hour for end date		
	Secondary clock driver	Driving signal	DC 24V 30-sec. polarized signal ; Pulse width of 0.5-sec. ; No-contact		
		Max. number of secondary clocks to drive	30 units	60 units	90 units
			12mA / unit ; 30 units / circuit		
		Maximum driving capacity	360mA	720mA	1,080mA
			360mA / circuit		
		Backup power	DC 24V ; Built-in sealed Ni-Cd rechargeable battery		
		Battery protection	Overdischarge prevention circuit		
		Signal voltage detection	Signal voltage stopper function (stops output when secondary clock driving voltage lowers)		
	External synchronization		DC 24V 30-sec. polarized signal; Every hour except 7, 19, 0, and 12 o'clock; Synchronizable loss/gain range … Less than 15 seconds		
	Synchronization output		RS-422		
Power supply			QC-55X01 : AC 110V ±10% or DC 24V ±10%　QC-55X02 : AC 220V ±10% or DC 24V ±10%		
Power consumption			21W	32W	42W
Power failure backup		Master clock	Approx. 5 years (no indication on digital display, counting by internal clock only)		
		Secondary clock driver	30 hours (in case of power failure of more than 30 hours, hands are adjusted automatically after recovery.)		
Operational temperature range and humidity range			−10℃～+50℃ / 20～80% with no dew condensation		
Dimensions			W420×H354×D110mm		
Material			Front panel : ABS and stainless steel, pearl gray with a slight gloss　Rear panel: Stainless steel, pearl gray with a slight gloss		
Weight			Approx. 7.0kg	Approx. 7.2kg	Approx. 7.5kg
Accessories			Plastic foot, 4 pcs; Miniature fuse; Instruction manual; Mounting hole drilling template; and Insulated crimp terminal		
Options			Rack-mounting fittings (in accordance with EIA Standard)		

How to Drive Secondary Clocks

Accuracy and Synchronization of Secondary Clocks

The role of the secondary clock in a time-keeping system is to accurately reproduce the time signal supplied by the master clock. The master clock and secondary clocks are connected electrically , and the Crystal oscillator frequency of 32.768kHz or 4.194304 MHz/sec. from the master clock is reduced in several stages by the frequency diving LSI and finally transmitted to the secondary clock as a 1-sec. or a 30-sec. polarized signal of ±24V DC. The secondary clock converts this electrical signal into mechanical energy and, with the same precision as the master clock, simultaneously displays the correct time.



INDOOR SECONDARY CLOCK(24V)

WALL TYPE / RECESSED TYPE

Current consumption of a wall type and a recessed type secondary clock is 12mA.
Input signal of a wall type and a recessed type secondary clock is 30-sec. polarized signal / DC 24V. (*F-001 is 1-sec. polarized signal / DC 24V.)

260-mm Diameter Round Type

SC-200C

Dial — Steel, White
Hour marker — Black
Hands — Aluminum, Black
Frame — Steel, Cream
Thickness — 40mm
Weight — 1.0kg

SC-201

Dial — Aluminum, Silver
Hour marker — Black
Hands — Aluminum, Black
Frame — Steel, Semi-mat black
Thickness — 40mm
Weigh — 1.0kg

300-mm Diameter Round Type

SC-304

Dial — Brass, White hairline finish
Hour marker — Brass, Black
Hands — Aluminum, Black
Outer Frame — Polished chromium finish
Thickness — 46mm
Weight — 2.0kg

310-mm Diameter Round Type

SC-300
SC-300C
(cream color) is also available.

Dial — Steel, White
Hour marker — Black
Hands — Aluminum, Black
Frame — Steel, Gray
Thickness — 40mm
Weight — 1.5kg

SC-301C
SC-301
(gray color) is also available.

Dial — Steel, White
Hour marker — Black
Hands — Aluminum, Black
Frame — Steel, Cream
Thickness — 40mm
Weight — 1.5kg

SC-302

Dial — Steel, White
Hour marker — Black
Hands — Aluminum, Black
Frame — Steel cream
Thickness — 40mm
Weight — 1.5kg

SC-305

Dial — Aluminum, Silver
Hour marker — Black
Hands — Aluminum, Black
Frame — Steel, Semi-mat, Black
Thickness — 40mm
Weight — 1.5kg

SC-306

Dial — Steel, White
Hour marker — Black
Hands — Aluminum, Black
Frame — Steel, Cream
Thickness — 40mm
Weight — 1.5kg

SC-316
SC-316C
(cream color) is also available.

Dial — Steel, White
Hour marker — Black
Hands — Aluminum, Black
Frame — Steel, White
Thickness — 40mm
Weight — 1.5kg

410-mm Diameter Round Type

SC-400
SC-400C
(cream color) is also available.

Dial — Steel, White
Hour marker — Black
Hands — Aluminum, Black
Frame — Steel, Gray
Thickness — 55mm
Weight — 2.5kg

SC-419

Dial — Steel, White
Hour marker — Black
Hands — Aluminum, Black
Frame — Steel, White
Thickness — 55mm
Weight — 2.5kg

310-mm Diameter Round Type with second hand (1-sec. polarized signal)

F-001

Dial — Steel, White
Hour marker — Black
Hands — Aluminum, Black
Frame — Steel, White
Thickness — 40mm
Weight — 1.5kg

*F-001 is driven entirely by Master Clock QCG-100.

Square Type with Standard Frame

SC-320
SC-320C
(cream color) is also available.

Dimensions — W310×H310×D45mm
Dial — Steel, White
Hour marker — Black
Hands — Aluminum, Black
Frame — Steel, Gray
Weight — 2.0kg

SC-323K

Dimensions — W310×H310×D75mm
Dial — Cloth covered, Black
Hour marker — Blass, White hair-line finish
Hands — Blass, White hair-line finish
Frame — Steel, Cream
Speaker — Max. input 4W
With output transformer
Input impedance : 7kΩ
Output impedance : 8kΩ
Weight — 2.0kg

SC-324

Dimensions — W310×H310×D45mm
Dial — Aluminum, Silver
Hour marker — Black
Hands — Aluminum, Black
Frame — Steel, Semi-mat black
Weight — 2.0kg

SC-420C

Dimensions — W400×H310×D55mm
Dial — Steel, White
Hour marker — Black
Hands — Aluminum, Black
Frame — Steel, Cream
Weight — 2.5kg

SC-422K

Dimensions — W420×H310×D75mm
Dial — Steel, White
Hour marker — Black
Hands — Aluminum, Black
Frame — Steel, Cream
Speaker section — Cloth covered, Black
Speaker — Max. input 4W
With output transformer
Input impedance : 7kΩ
Output impedance : 8kΩ
Weight — 3.0kg

Square Type with Wood Finish

SC-322S
SC-421

Dial — Wood, Walnut finish
Hour marker — Brass, Silver metallic painted
Hands — Brass, Silver metallic painted

*SC-322S : W300×H210×D45mm (1.0kg)
*SC-421 : W420×H295×D45mm (1.5kg)

Recessed Type

Sharp, straight-bar type hour marker

SC-340S
SC-440S

Movement cover
— Brass, White hairline finish
Hour marker
— Brass, White hairline finish
Hands
— Brass, White hairline finish

*SC-340S : 300mm diameter (0.5kg)
*SC-440S : 400mm diameter (0.6kg)

Straight-bar type, with numerals for the quarter-hours

SC-341S

Movement cover
— Brass, White hairline finish
Hour marker
— Brass, White hairline finish
Hands
— Brass, White hairline finish

*SC-341S : 300mm diameter (0.5kg)

Circular type hour marker

SC-342
SC-441

Movement cover
— Brass, White hairline finish
Hour marker
— Brass, White hairline finish
Hands
— Brass, White hairline finish

*SC-342 : 300mm diameter (0.5kg)
*SC-441 : 400mm diameter (1.0kg)

DOUBLE-FACED TYPE

Current consumption of a double-faced secondary clock is 24mA.
Input signal of a double-faced secondary clock is 30-sec. polarized signal/DC 24V.

Double-faced Suspended Type

SC-360

- **Dimensions** — 312mm Dia × D150mm
- **Dial** — Steel, White
- **Hour marker** — Black
- **Hands** — Aluminum, Black
- **Frame** — Steel, Gray
- **Pipe** — 34mm Dia × D360mm
- **Weight** — 8.0kg

SC-460

- **Dimensions** — W400 × H310 × D180mm
- **Dial** — Steel, White
- **Hour marker** — Black
- **Hands** — Aluminum, Black
- **Frame** — Steel, Gray
- **Flange** — W250 × H50 × D100mm
- **Weight** — 8.0kg

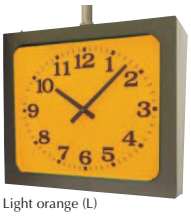
Double-faced Bracket Type

SC-461

- **Dimensions** — W400 × H310 × D180mm
- **Dial** — Steel, White
- **Hour marker** — Black
- **Hands** — Aluminum, Black
- **Frame** — Steel, Gray
- **Flange** — W50 × H250 × D100mm
- **Weight** — 8.0kg

Double-faced Suspended Type (Condensed Resin Illumination)

Yellow(Y)



Light orange (L)

Green(G)

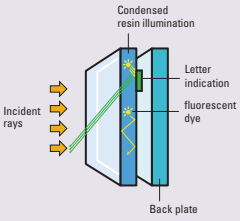
Orange (O)

RWS-6WHB (Y•L•G•O)
RWS-5WHB (Y•L•G•O)
RWS-4WHB (Y•L•G•O)

- Fluorescent ramps and power are unnecessary for illumination.
- Easy to maintenance.
- To be suitable for station use.

- **Dimensions** — 6WHB : W650 × H580 × D205mm
  5WHB : W510 × H450 × D178mm
  4WHB : W400 × H360 × D173mm
- **Dial** — Condensed resin illumination
- **Hands** — Yellow (Y), Light orange (L) :Aluminum, Mat-black
  Green (G), Orange (O) : Condensed resin
- **Frame** — Steel, Gray-brown painted
- **Weight** — 6WHB : Approx. 22kg (excluding a suspended pipe)
  5WHB : Approx. 16kg (excluding a suspended pipe)
  4WHB : Approx. 12kg (excluding a suspended pipe)

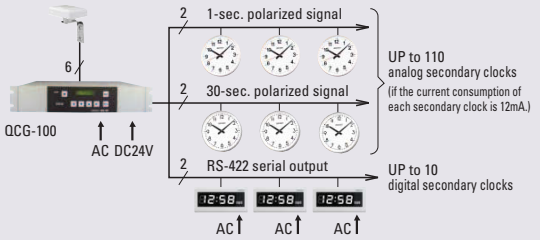
The mechanism of Condensed resin illumination



INFORMATION

		Distance (m) ～ Master Clock to Secondary Clocks ～									
		100	200	300	400	500	600	700	800	900	1,000
Number of Secondary Clocks / Circuits	～5										
	～10	φ1.2 (mm)									
	～15				φ1.6 (mm)						
	～20						φ2.0 (mm)				
	～25								φ2.6 (mm)		
	～30										φ3.2 (mm)

System configuration



*In case of QC-5500 Series, up to 30 secondary clocks can be connected to each channel (if the current consumption of each secondary clock is 12mA).

Option Equipment for Secondary Clocks

APX-1011/1021

Clock controller

- **Cristal oscillator frequency** — 4.194304 MHz
- **Time accuracy** — Weekly rate of less than ±0.7 second (+5℃～+35℃)
- **Input power supply** — APX-1011 : AC100-120V
  APX-1021 : AC200-240V
- **Power consumption** — 2W (MAX)
- **Output signal** — DC 24V 30-sec. polarized signal × 2 circuits
- **Power failure backup** — 30 hours
- **Dimensions** — W108.5 × H170 × D79 mm
- **Weight** — Approx. 760g

APX-1011/1021

MT-01

Secondary clock monitor for APX-1011/1021

MT-01

- **Dimensions** — W90 × H90 × D67mm
- **Weight** — Approx. 500g

FA-1021

Secondary clock repeater

FA-1021 amplifies the 30-sec. polarized signal transmitted by the master clock.

- **Input signal** — DC 24V 30-sec. polarized signal / AC100-240V
- **Output signal** — DC 24V 30-sec. polarized signal
- **Number of secondary clock to drive** — 30 units
- **Power failure backup** — 30 hours
- **Dimensions** — W200 × H310 × D96mm
- **Material** — Steel with pearl-gray painted
- **Weight** — Approx. 3.7kg

FA-1021

FA-300

Hand Adjuster with jack plug

Among secondary clocks driven by a master clock, the FA-300 is used for adjusting the hands of a large-sized secondary clock mounted on a wall in a very high position. By the signal from the FA-300, the clock is adjusted apart form a signal from a master clock.

- **Built-in battery** — 006P (9V × 3=27V)
- **Operating time** — Approx.100 minutes (2,000 Ω load)
- **Hand moving speed** — Approx. 30 times
- **Output terminal** — Jack plug type
- **Dimensions** — W83 × H140 × D56mm
- **Material** — Steel, Gray
- **Weight** — Approx. 650g

FA-300

FA-301

Jack-plug plate for single-faced clocks

FA-301

FA-302

Jack-plug plate for double-faced clocks

FA-302

Contact Us

For further information or if you have any questions, please do not hesitate to leave a message here:

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Regards

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