SEIKO

NETWORK CLOCK

SCN-500,600,800series

INSTRUCTION MANUAL

Thank you for purchasing SEIKO NETWORK CLOCK.
Before using your SEIKO NETWORK CLOCK, please read this manual carefully for its proper use and care.
Keep this manual handy for ready reference.

SEIKO TIME CREATION INC.

I-7468-1

Table of contents

1 Safety

1.1 Safety instructions

- The information in this manual can be changed at any time without previous notice.
- This manual has been composed with utmost care, in order to explain all de-tails in respect of the operation of the product. Should you, nevertheless, have questions or discover errors in this manual, please contact us.
- We do not answer for direct or indirect damages, which could occur through incorrect use of this manual.
- Please read the instructions carefully before setting-up of the product, only once you have correctly understood all information for the installation and of the operation.
- Keep this instruction manual in a safe place to have it handy every time you need it.
- The installation must only be carried out by a skilled person.

1.2 Symbols and Signal Words used in this Instruction Manual

	**Caution!** Please observe this safety message to avoid damages to property and devices!

1.3 Observe operating safety!

⚠
- Do not modify your clock!
- If you cannot rectify the problems, contact your supplier from whom you have purchased the device. Any repairs must be carried out at the manufacturer's plant.
- Disconnect the power supply immediately and contact your supplier, if liquid has entered your clock.

1.4 Consider the installation site!

⚠
- To avoid any operating problems, keep the clock away from moisture and avoid dust, heat, and direct sunlight.
- Through operation, the clock can warm up. Make sure to provide enough air circulation to divert the warmth.
- Please make sure that the structure of the attached structure can withstand the weight of this product. If installed in a place with low strength, products may fall due to wind pressure or vibration, resulting in injury to persons.

2 Maintenance

- The clock must be transported upright in its original packaging and has to be stored dry.
- Clean the cover with wet (leather-) cloth.
- Never use solvents, aerosol or organic cleaning products.
- The frame can be cleaned with standard cleaning agents.

3 General Information: Introduction

3.1 Function description

The SCN-500/600/800 series is a self-setting clock with hour, minute and second hand. It is network compatible and can be synchronized using NTP (Network Time Protocol).

Features:

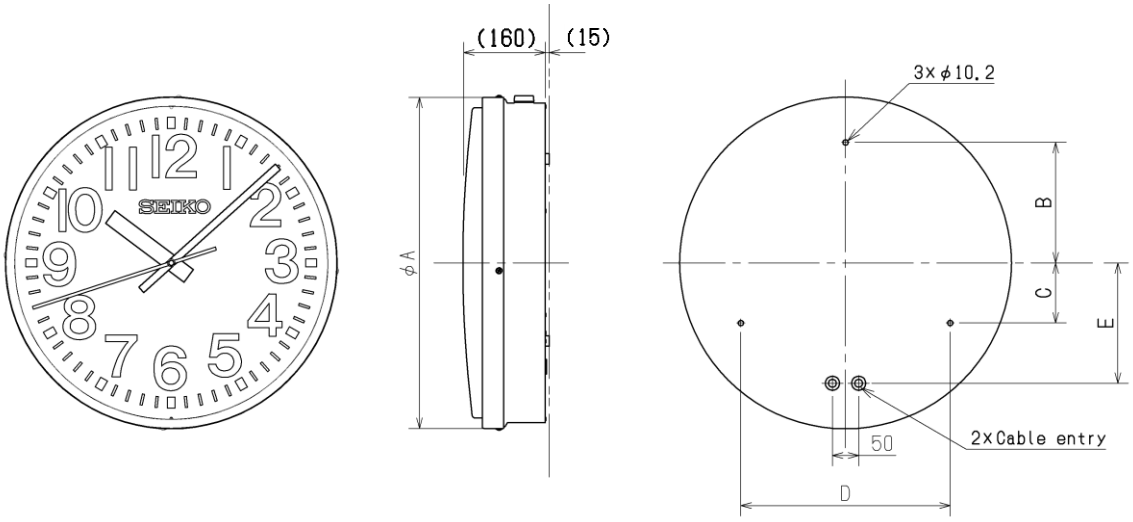
- Single-sided or double-sided design, for wall mounting, or to be suspended on ceiling.
- The frame is made of painted aluminum.
- It has LED internal lighting. Also, the brightness of the LED can be adjusted.
- Synchronization using an NTP server in the network.
- PoE/PoE+ (Power over Ethernet / Power over Ethernet Plus) power supply.
- Automatic configuration of network configuration.

  Alternatively: the network configuration can be set manually using the PC tool “Clock Setup Tool”.
- Automatic daylight saving time change according to a predefined rule. The rules can be programmed using the PC tool “Clock Setup Tool”.
- Operation mode of the minute hand selectable over “Clock Setup Tool”.

SCN-500E	Ø534mm	Single-sided	Wall Mounting
SCN-540E	↑	Double-sided	Wall bracket Mounting
SCN-560E	↑	↑	Ceiling Mounting
SCN-600E	Ø634mm	Single-sided	Wall Mounting
SCN-640E	↑	Double-sided	Wall bracket Mounting
SCN-660E	↑	↑	Ceiling Mounting
SCN-680E	↑	↑	Central poll Mounting
SCN-800E	Ø834mm	Single-sided	Wall Mounting
SCN-860E	↑	Double-sided	Ceiling Mounting
SCN-880E	↑	↑	Central poll Mounting

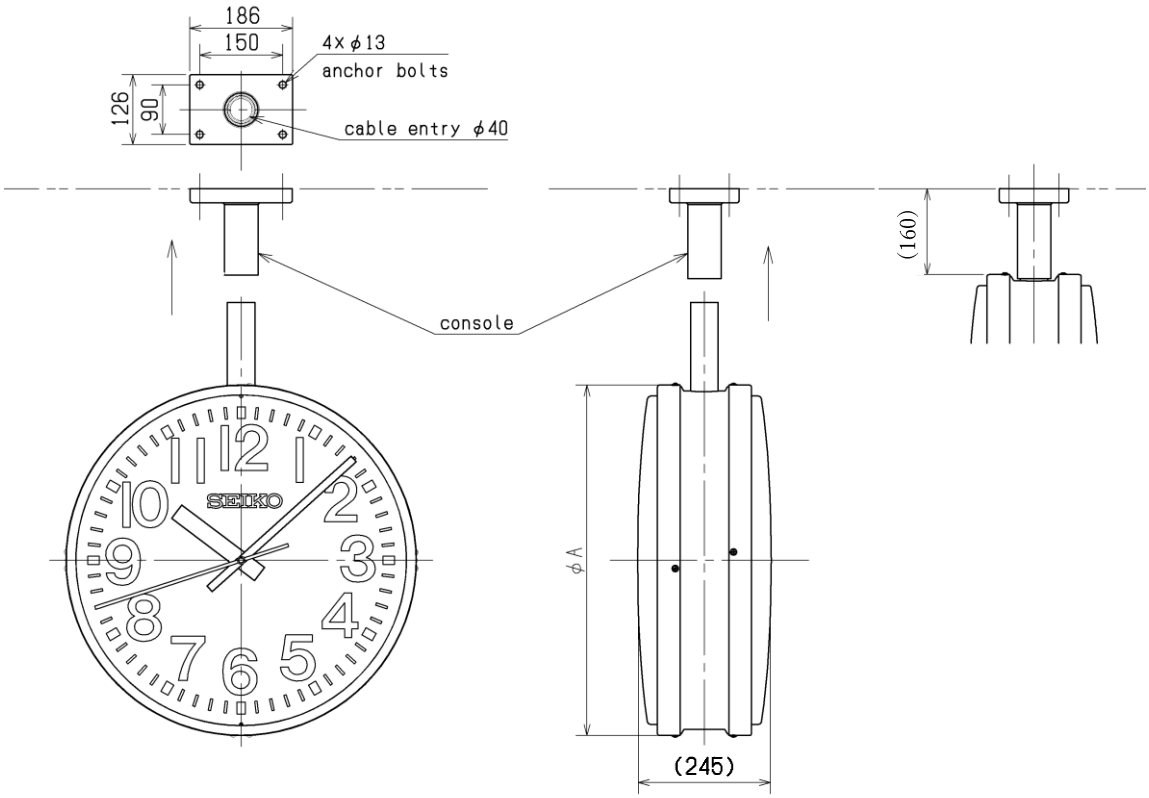
3.2 Dimensions

3.2.1. Single-sided clock（Wall type）



	∅ A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	Weight[kg]
SCN-500E	534	190	95	330	190	Approx. 5.5
SCN-600E	634	230	115	400	230	Approx. 8
SCN-800E	834	300	150	520	300	Approx. 11

3.2.2. Double-sided clock（Ceiling type）



	ø A [mm]	Weight [kg]
SCN-560E	534	Approx. 10.5
SCN-660E	634	Approx. 14
SCN-860E	834	Approx. 19

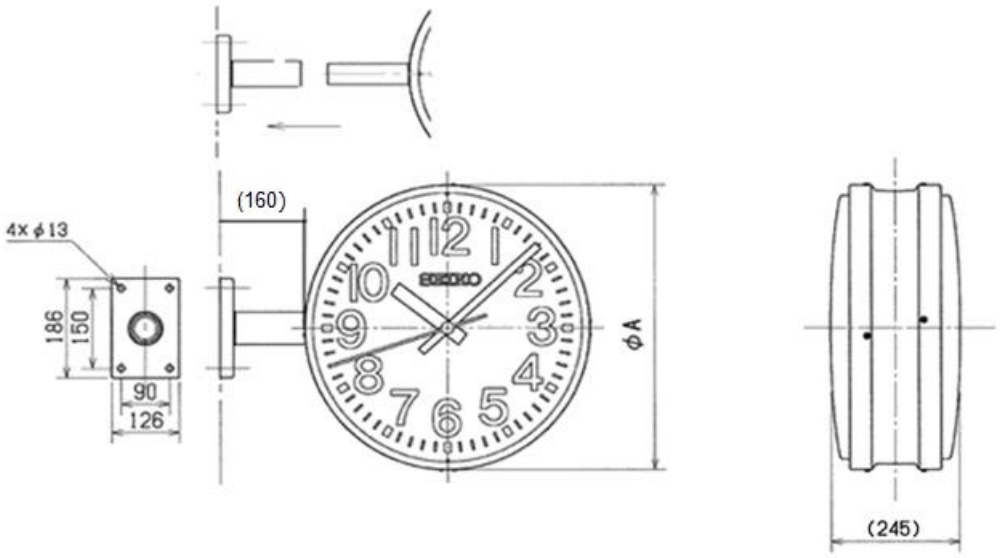
（Accessories）

・falling prevention wire ×1piece

・screw [M4×L12（SW/PW）] ×1piece

・M5 x 12 bolt, spring washer and plain washer×1set

3.2.3. Double-sided clock（Wall bracket type）

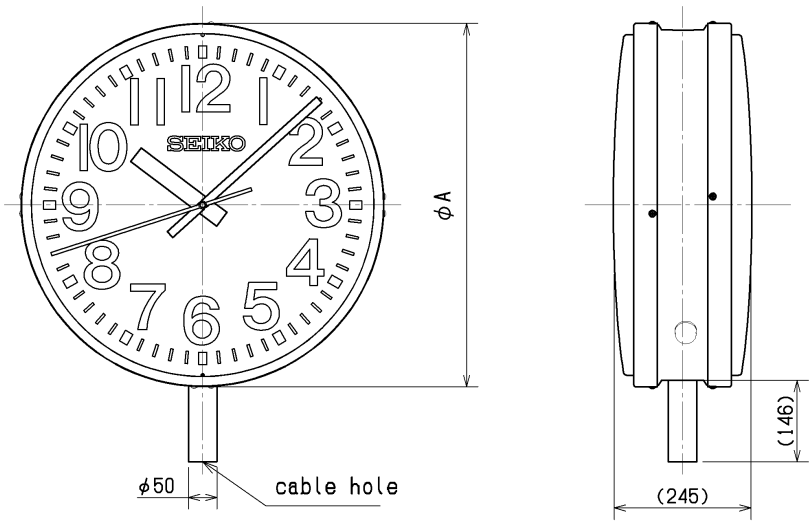


	ø A [mm]	Weight [kg]
SCN-540E	534	Approx. 10.5
SCN-640E	634	Approx. 14

（Accessories）

・M5 x 12 bolt, spring washer and plain washer×1set

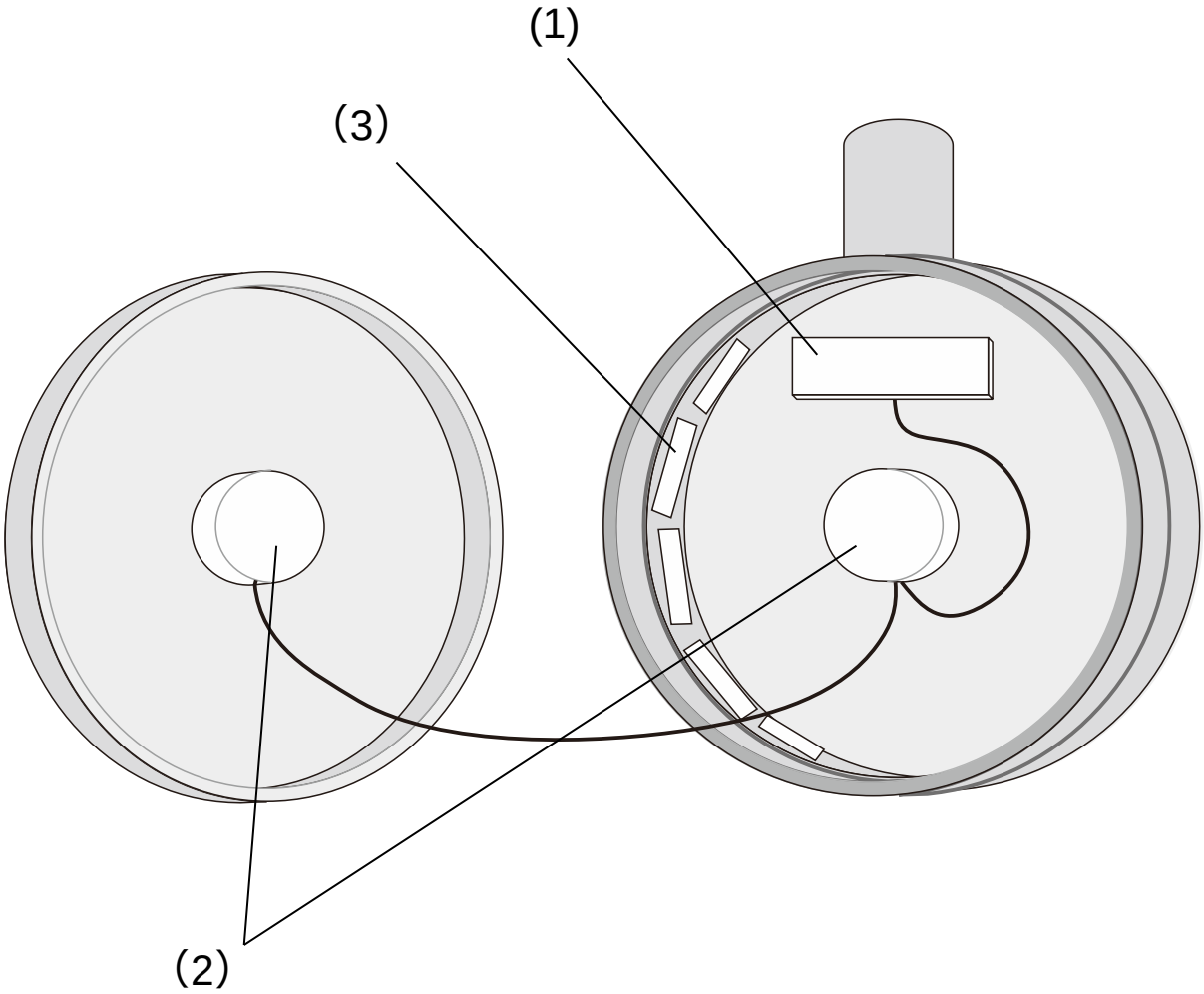
3.2.4. Double-sided clock（Pole type）



	ø A [mm]	Weight [kg]
SCN-680E	634	Approx. 13
SCN-880E	834	Approx. 18

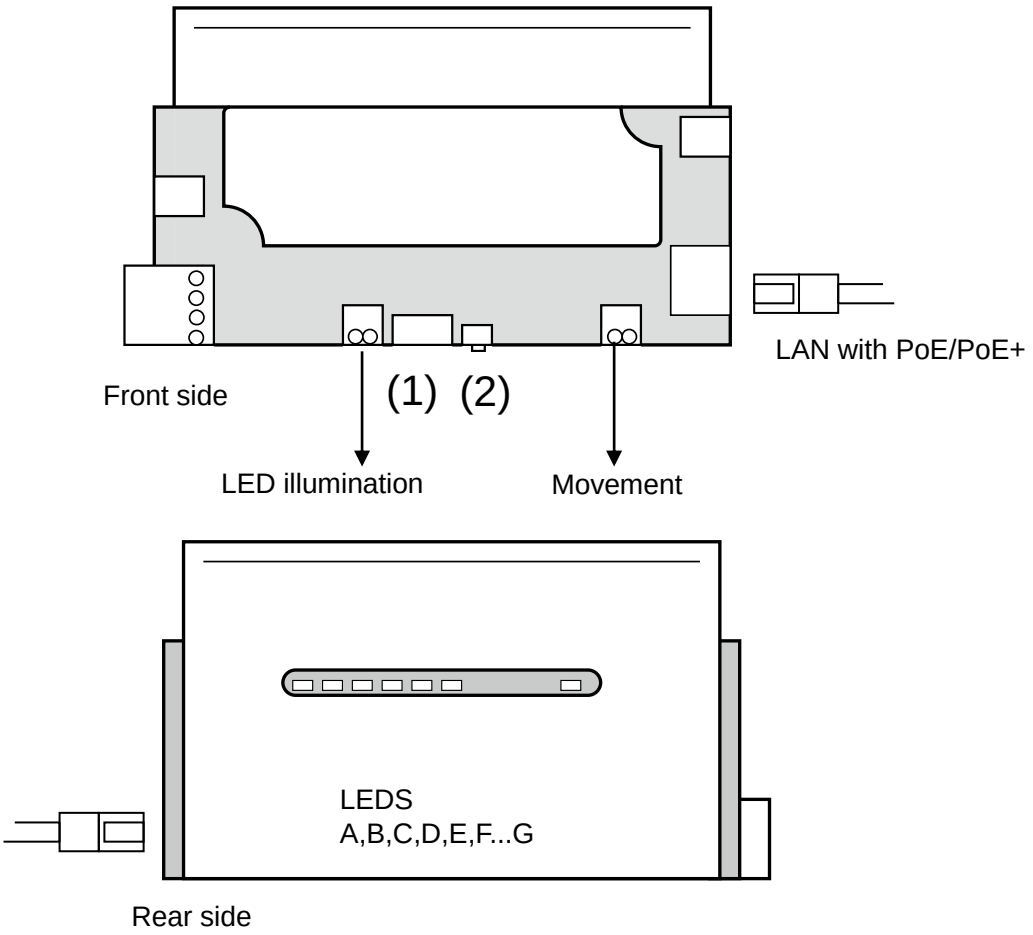
4 Mounting guidelines

4.1 Internal connections



(1)	NCC(Network Clock Controller)
(2)	Movement Double-sided clock: 2 Movements Single-sided clock: 1 Movement
(3)	LED illumination

4.2 NCC(Network Clock Controller）



(1)	DIP switch	Single-sided resp. double-sided (1) Monitoring (2) Illumination level (3-5)
(2)	Reset push-button	hold for > 4 seconds, device reboots hold for > 20 seconds, device resets to factory settings

A	class+ LED (orange)	ON if PoE+ was detected
B	LAN activity LED (yellow)	Blinks: active network traffic
C	LAN link LED (green)	ON: Ethernet link OK
D	LED (yellow)	Currently unused
E	Synch. LED (green)	ON: NTP synchronization OK
F	Alarm LED (red)	ON: min. 1 alarm active
G	Power LED (green)	ON: power supply OK

4.3 Open clock

Remove all four screws on one clock side from the case ring. Pull case ring with glass cover and dial from the clock's cabinet. Disconnect electrical terminals from clock movement.

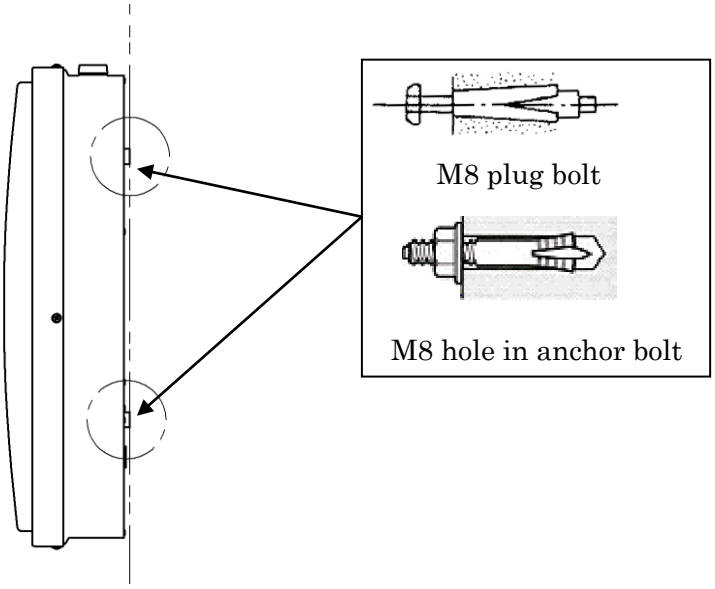
⚠ Please correct it if the position of the needle is misaligned

4.4 Close clock

Reconnect the electrical terminals to the movement. Put case ring with glass cover and dial onto the clock's cabinet, press lightly and reinsert the four screws.
Be aware of the cable's position inside the clock as they may shade the illuminated dial.

4.5 Wall mounting

- Open the clock.
- Depending on the material and strength of the wall, fix with M8 plug bolt or M8 hole in anchor bolt.
- Pass LAN cable through incoming hole and connect to NCC.
- Close the clock.



4.6 Ceiling mounting

How to fix the console

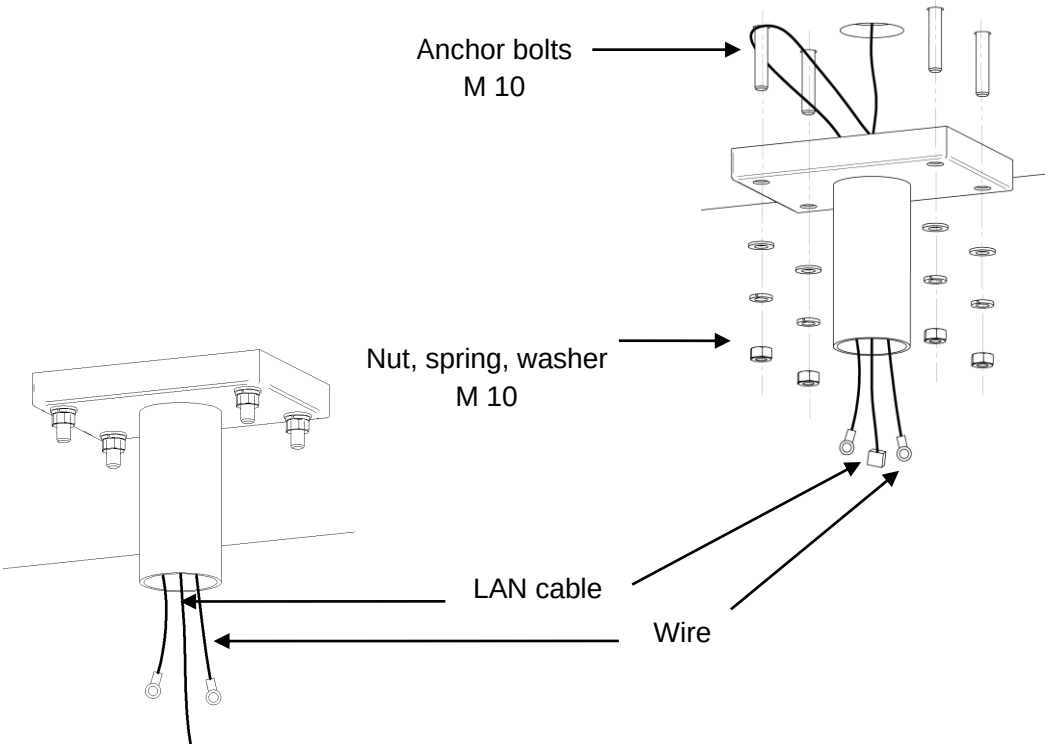
When the clock is suspended from the ceiling, be sure to attach a “drop-prevention wire” to the clock. A drop-prevention wire is included with the ceiling mounted type standard console. When using a console of a different length or shape from those of the standard one, refer to the following and prepare an appropriate wire.

- Turn off the PoE power supply before installation.
- Construct 4× M10 anchor bolt, nut, spring washer and plain washer.
- Turn the wire through the anchor bolt.
- Pass the wire tip and LAN cable through the console and align the lengths of both ends of the wire.
- Securely fix the nut, spring, washer (4 places).
- Pull on both ends of the wire and make sure that it is caught on the anchor bolt securely.

To attach a drop-prevention wire prepared by the customer:

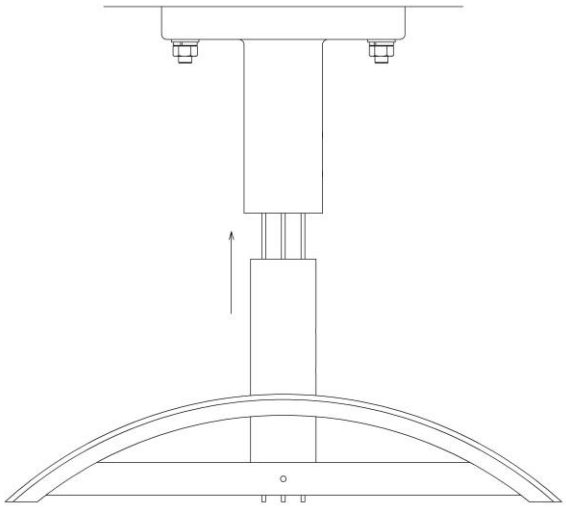
Be sure to keep the excessive length of the drop-prevention wire within 100 mm and the thickness of the wire with φ2 or more.

Otherwise, the wire may be broken by the shock applied to it when the clock drops accidentally.

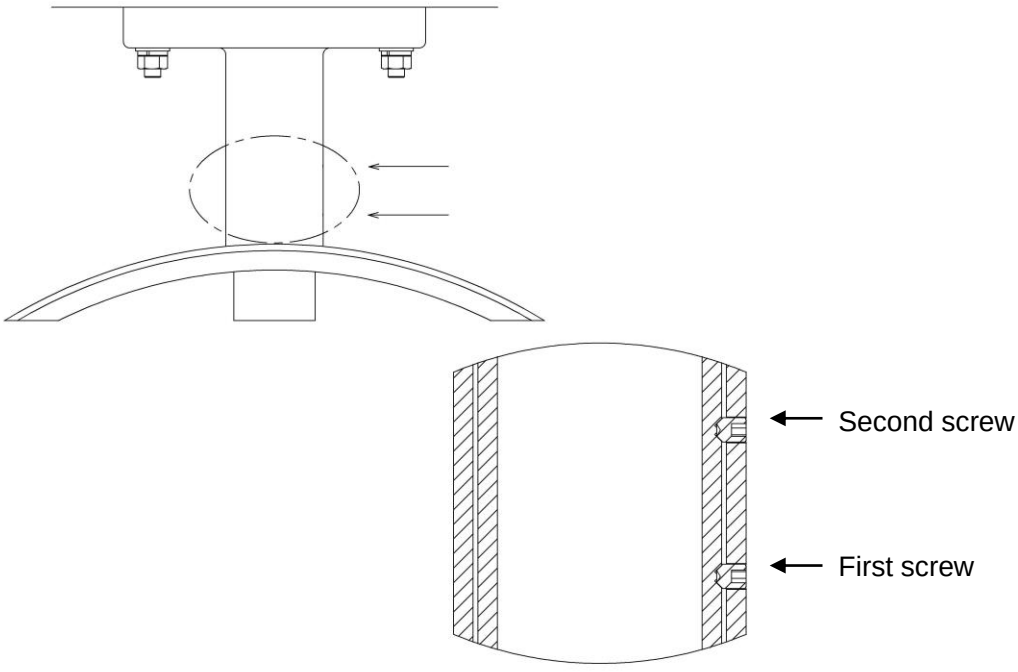


How to fix the clock

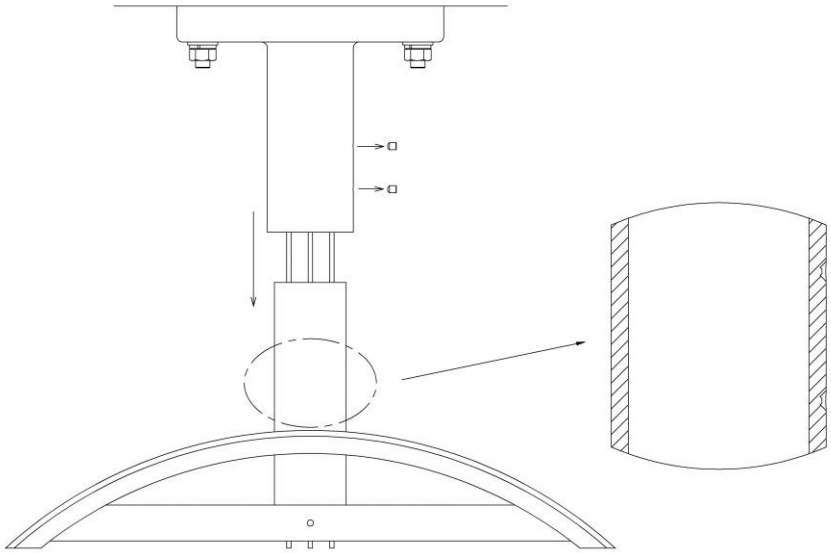
- Open the clock.
- Pass the LAN cable and the drop-prevention wire through the clock, and insert the clock into the console until it touches the console edge.
- Rotate the clock so that it faces the desired direction.



- When the clock faces the desired direction, tighten the two screws using a hex wrench.
  Do not tighten the screws before the clock faces the desired direction.

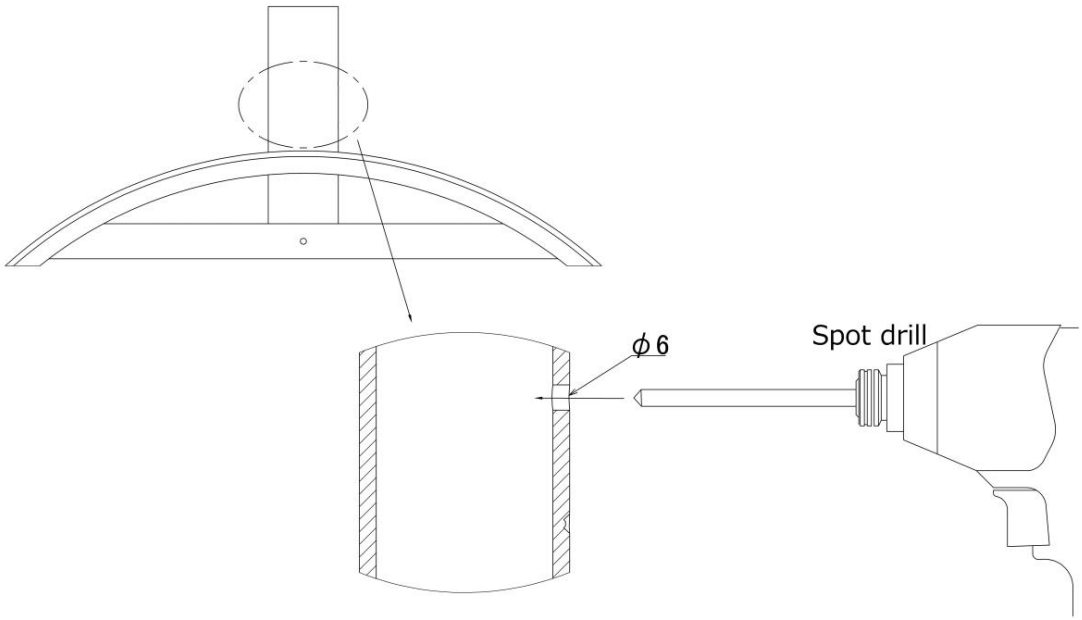


- Loosen the two screws to remove the clock, and put it on the floor.



While loosening the screws, be sure to have another person hold the clock. If this step is performed by only one person, the clock may drop to the floor.

- The clock has two screw marks at the first and second screw positions. Drill a φ 6 through hole at the upper screw position.

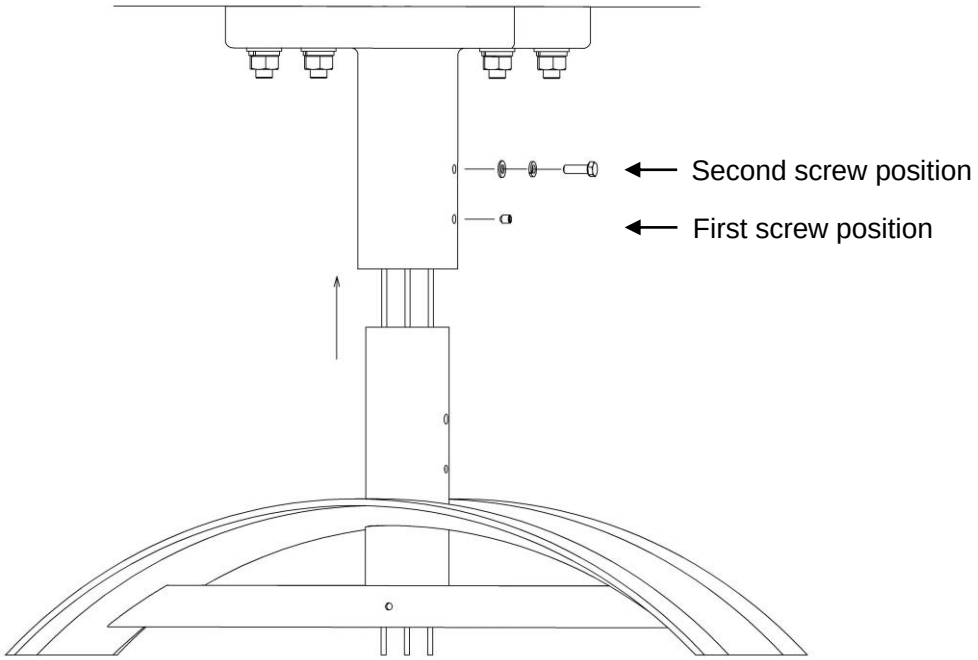


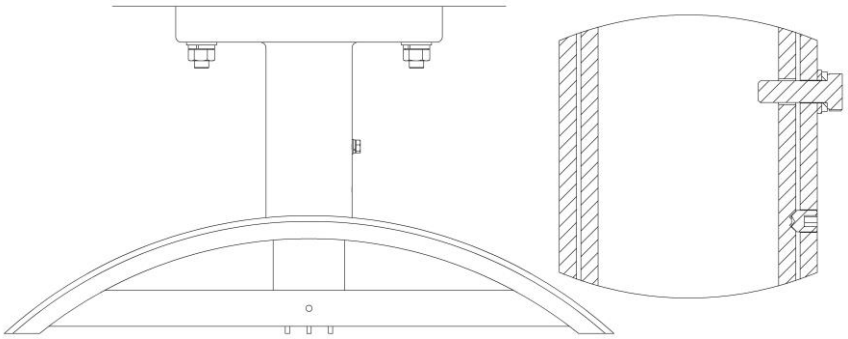
Ensure that no swarf enters inside the clock while drilling a hole.

- Insert the clock into the console again, and turn it to the direction you have adjusted previously.
- Fix the clock to the console by tightening an M5 bolt, spring washer and plain washer prepared separately at the second screw position.

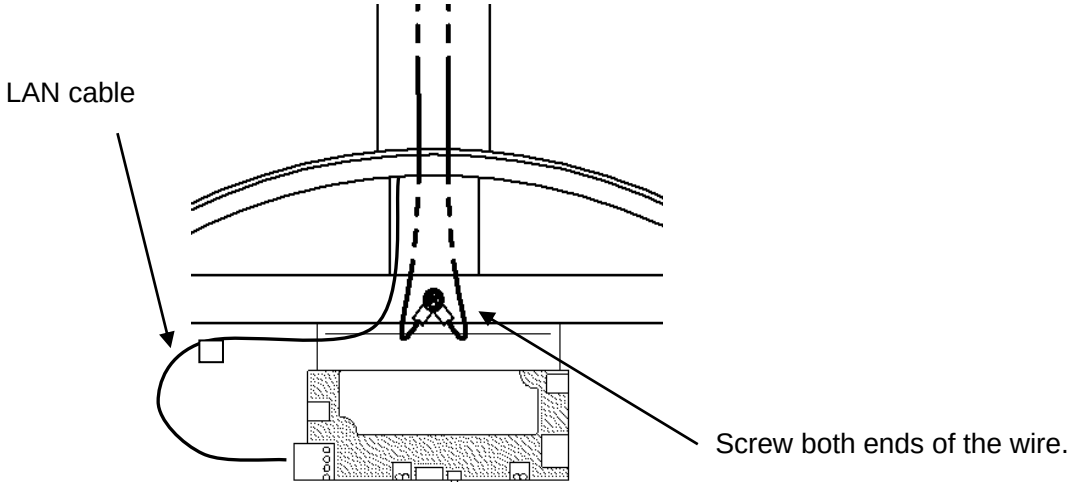
  (It is recommended to use an M5 x 12 bolt, spring washer and plain washer all made of stainless steel.)

  At the first screw position, tighten the screw used previously to make a mark on the clock.





- Secure the both ends of the wire to the M4 screw hole of the pole fitting inside the clock with the M4 × L12 (SW / PW) screw. (Tightening torque 1.5 Nm or more)
- Connect the LAN cable to NCC.

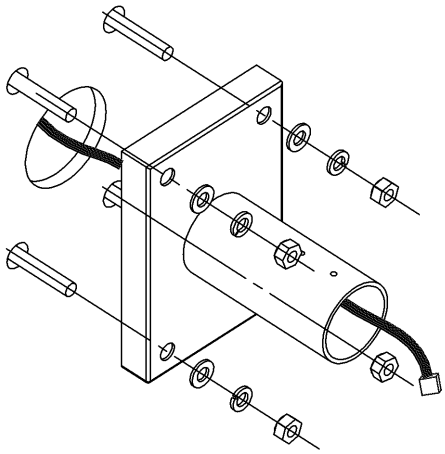


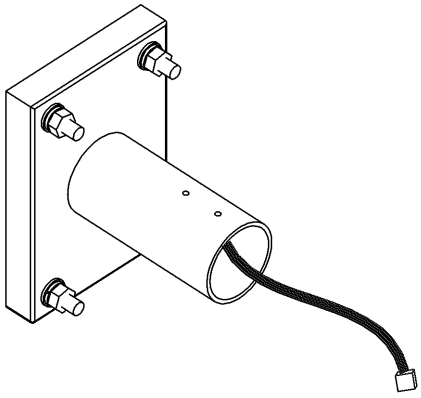
- Close the clock.

4.7 Wall bracket mounting

How to fix the console

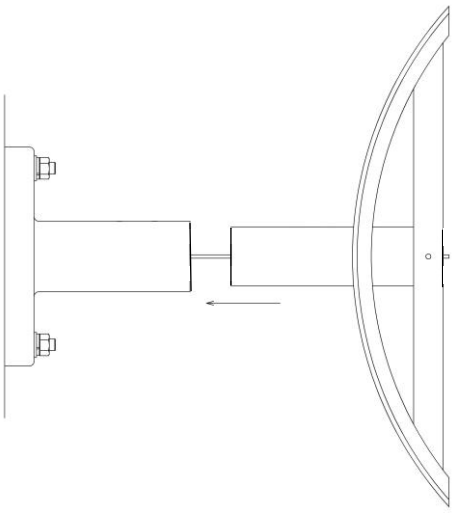
- Turn off the PoE power supply before installation.
- Construct 4× M10 anchor bolt, nut, spring washer and plain washer.
- Pass LAN cable through the console.
- Securely fix the nut, spring, washer (4 places).



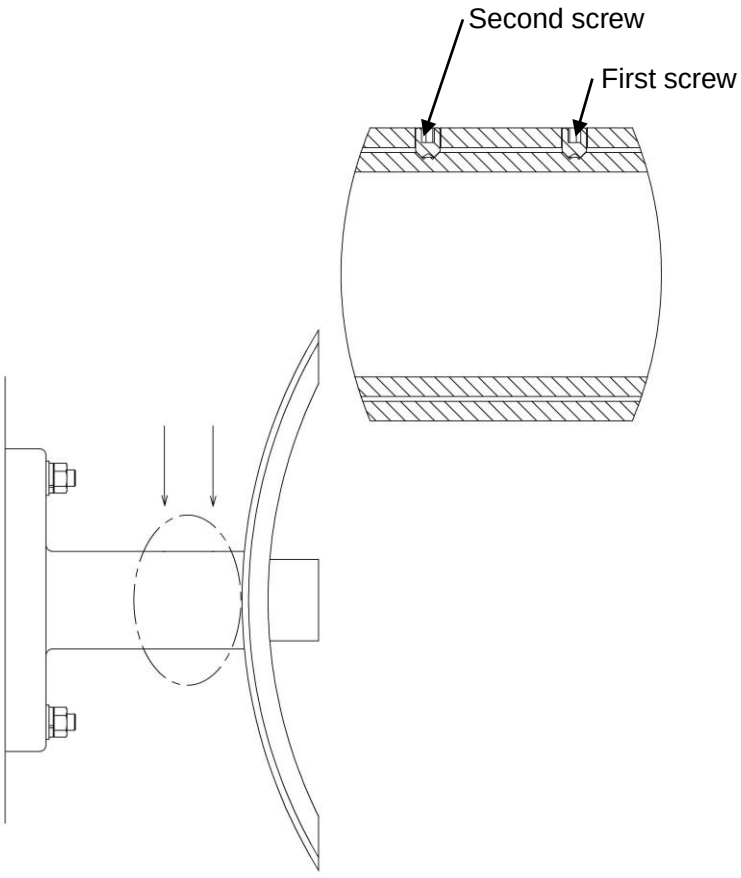


How to fix the clock

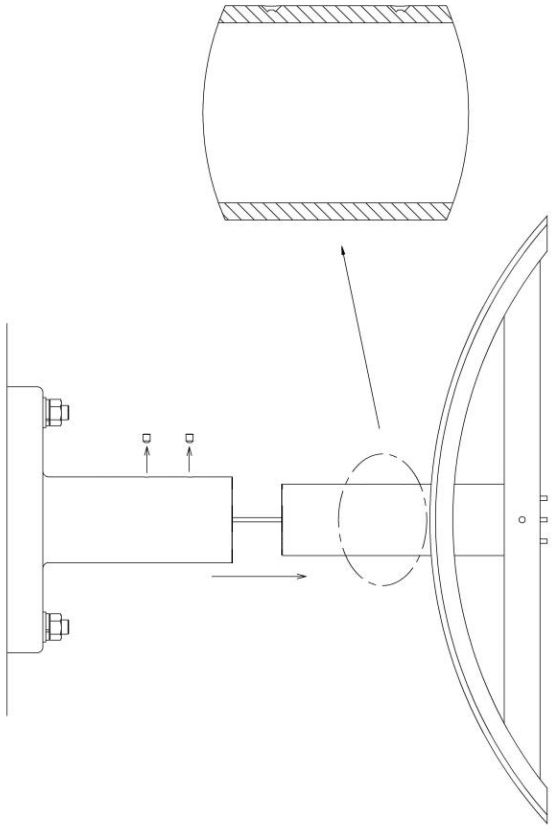
- Turn off the PoE power supply before installation.
- Open the clock.
- Pass the LAN cable through the clock, and insert the clock into the console until it touches the console edge.
- Turn the clock to a vertical position.



- Use a hex wrench to tighten the two screws.

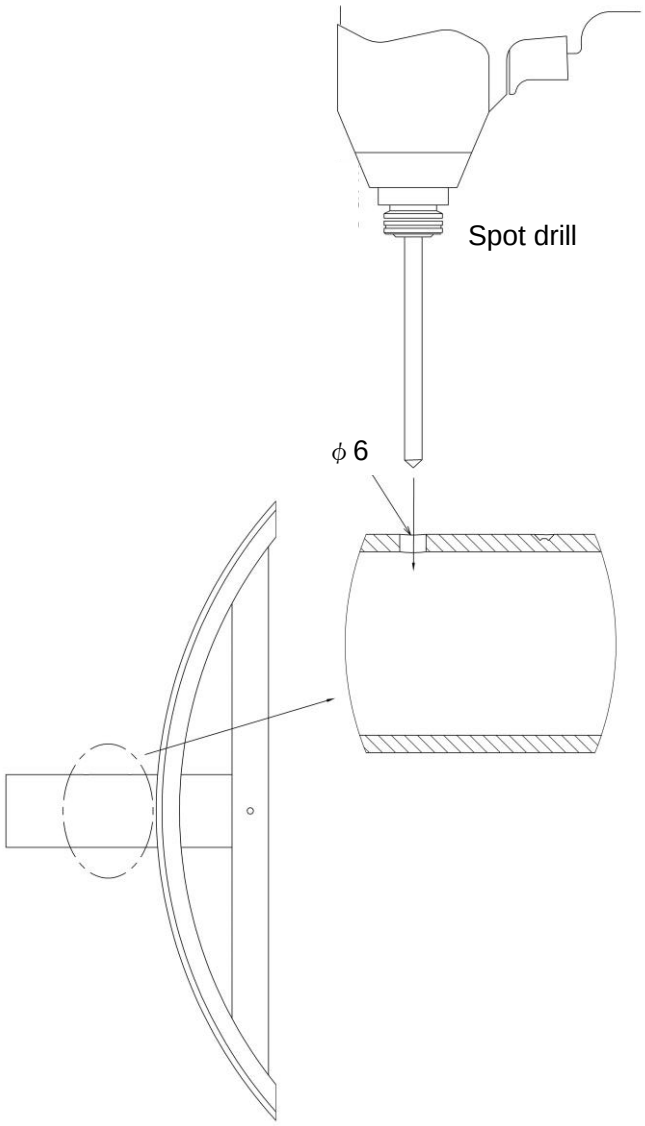


- Loosen the two screws to remove the clock, and put it on the floor.



While loosening the screws, be sure to have another person hold the clock. If this step is performed by only one person, the clock may drop to the floor.

- The clock has two screw marks at the first and second screw positions. Drill a φ 6 through hole at the upper screw position.

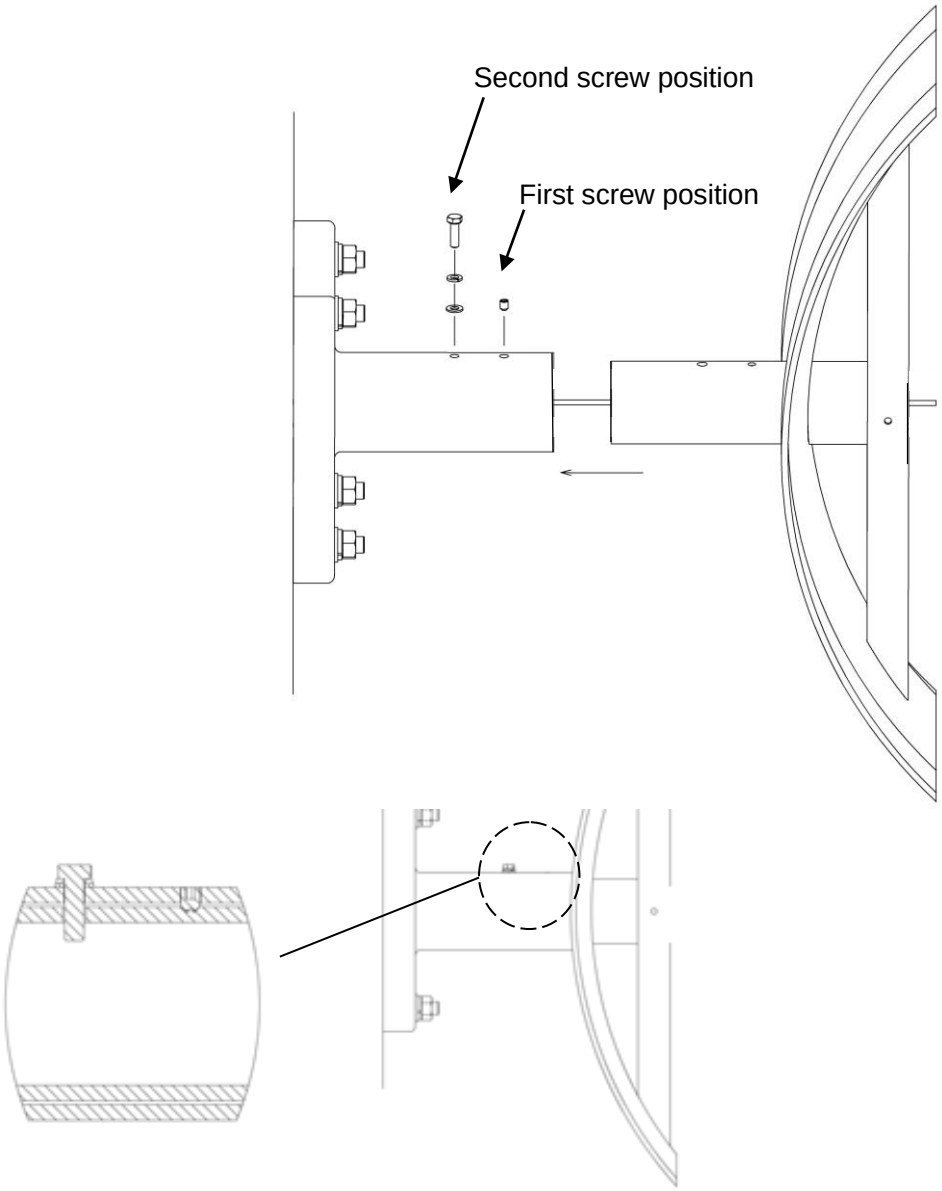


Ensure that no swarf enters inside the clock while drilling a hole.

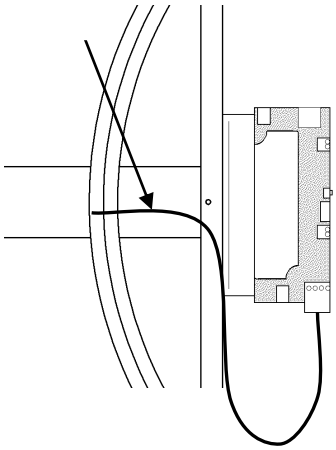
- Insert the clock into the console again, and turn it to the direction you have adjusted previously.
- Fix the clock to the console by tightening an M5 bolt, spring washer and plain washer prepared separately at the second screw position.

  (It is recommended to use an M5 x 12 bolt, spring washer and plain washer all made of stainless steel.)

  At the first screw position, tighten the screw used previously to make a mark on the clock.



- Secure the both ends of the wire to the M4 screw hole of the pole fitting inside the clock with the M4 × L12 (SW / PW) screw. (Tightening torque 1.5 Nm or more)
- Connect the LAN cable to NCC.



- Close the clock.

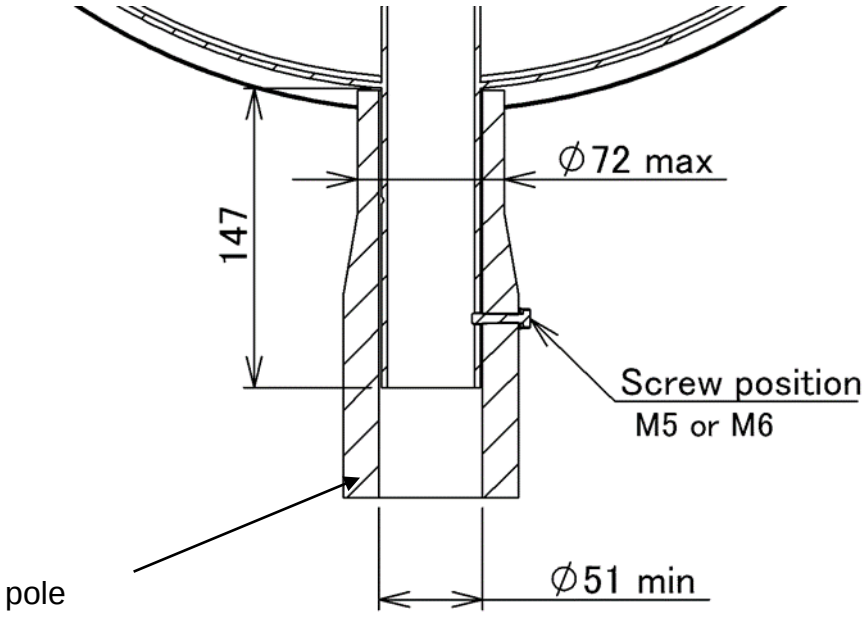
4.8 Pole mounting

How to fix the clock

- Prepare the post with its foundation, taking in account the wind load stressing.
- Pole diameter of clock insertion part: max. 72mm
- Turn off the PoE power supply before installation.
- Open the clock.
- Through the pole, insert the LAN cable into the clock, adjust the clock face to desired angle.
- At least one locking screw has to be used on the pole.

  The contractor should prepare the screws and secure the clock.

  Use stainless steel screws.
- Connect the LAN cable to NCC.
- Close the clock.



5 Configuration

5.1 Overview

The Clock is configured via a DIP switch and using “Clock Setup Tool”.
In case of the latter, the operation takes place entirely via “Clock Setup Tool”. Additionally, parameters can be given via DHCP.

5.2 Configuration of the DIP switches

Selecting whether the NCC is used for a single- or a double-sided clock:

Double-sided/Single-sided	1
Monitor two movements	ON
Monitor one movement	OFF

Selecting whether the movements are to be monitored by the NCC:

Monitoring	2
Monitoring on	ON
Monitoring off	OFF

Adjusting the illumination level:

Current[mA]	3	4	5
240	OFF	OFF	OFF
350	OFF	OFF	ON
390	OFF	ON	OFF
440	ON	OFF	OFF
500	OFF	ON	ON
550	ON	OFF	ON
590	ON	ON	OFF
700	ON	ON	ON

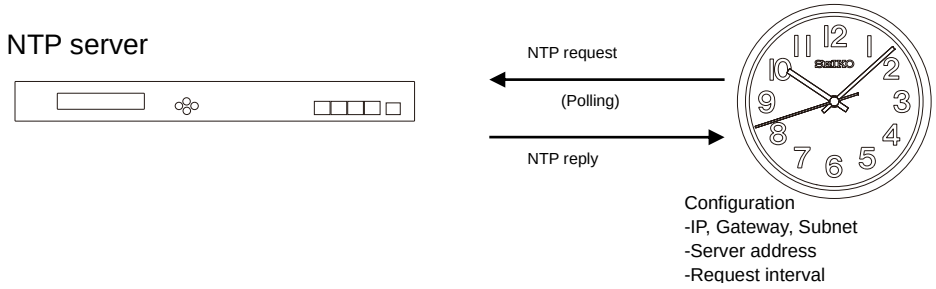
Currently, DIP switch 6 does not have any function.

5.3 Reset push-button

The NCC features a reset push-button next to the DIP switch. To carry out a software reset, the push-button must be held down for min. 3 seconds.
If the push-button is held down for 10～20 seconds, the factory settings are loaded. (see manual of Clock Setup Tool)

5.4 NTP behavior

The clock possesses a network connection and is synchronized to UTC (Coordinated Universal Time) from an NTP server.
This operating mode supports the monitoring and configuration of the clock through the network connection.



The configuration can be carried out automatically by a DHCP server or manually using the software “Clock Setup Tool”.

6 Operation behavior

6.1 Power supply

The Clock can be supplied by PoE/PoE+ (Power over Ethernet / Power over Ethernet Plus) from a switch.
As an alternative to the PoE switch, a PoE injector can be used.

6.2 DHCP

The Clock tries to obtain the network configuration from a DHCP server. The DHCP options are automatically evaluated.
It is the task of the network administrator to configure the DHCP options accordingly.

The clock will try to obtain the following network parameters from a DHCP server:

[50] IP address
[3] Gateway address
[1] Subnet mask

6.3 Local time calculation

The clock is synchronized to UTC (Coordinated Universal Time). In order to calculate and display the local time, the clock requires additional information in the shape of a time zone entry.
The clock can save 1 time zone entry which can be edited over the network using the PC tool “Clock Setup Tool”.

6.4 Accuracy / Loss of synchronization

The deviation in the synchronized state is usually smaller +/-50ms.
The clock is notified by indicating that 12 o'clock, 24 hours passed since synchronization was lost.

The deviation after 24 h without synchronization is typically smaller +/-2 s (quartz accuracy: 20 ppm at room temperature).

Notice: The mentioned deviations depend on the accuracy and performance of the time source (NTP server). The NTP reception can be influenced by the network load and devices (hub, switch, router, firewall, etc.).

6.5 Redundant time source

The availability of NTP servers as time source can be improved through a redundant operation in the network.

As a DHCP option or through manual configuration (“Clock Setup Tool”), up to four different NTP server addresses can be announced to the Clock. If three time requests in a row are not answered by the current server, the interface switches to the next server (if available). The duration until the change is dictated by the set request interval (default:3 x 10 seconds). After a restart of the interface, the request begins at the first server.

7 Time zone table

Time zone	City / State	UTC Offset	DST Change	Standard → DST	DST → Standard
00	UTC (GMT), Monrovia	0	No		
01	London, Dublin, Lisbon	0	Yes	Last Sun. Mar. (01:00)	Last Sun. Oct. (02:00)
02	Brussels, Amsterdam, Berlin, Bern, Copenhagen, Madrid, Oslo, Paris, Rome, Stockholm, Vienna, Belgrade, Bratislava, Budapest, Ljubljana, Prague, Sarajevo, Warsaw, Zagreb	+1	Yes	Last Sun. Mar. (02:00)	Last Sun. Oct. (03:00)
03	Athens, Helsinki, Riga, Tallinn, Sofia, Vilnius	+2	Yes	Last Sun. Mar. (03:00)	Last Sun. Oct. (04:00)
04	Bucharest	+2	Yes	Last Sun. Mar. (03:00)	Last Sun. Oct. (04:00)
05	Pretoria, Harare, Kaliningrad	+2	No		
06	Amman	+2	Yes	Last Thu. Mar. (23:59)	Last Fri. Oct. (01:00)
07	UTC (GMT)	0	No		
08	Istanbul, Kuwait City, Minsk, Moscow, Saint Petersburg, Volgograd	+3	No		
09	Praia, Cape Verde	-1	No		
10	UTC (GMT)	0	No		
11	Abu Dhabi, Muscat, Tbilisi, Samara	+4	No		
12	Kabul	+4.5	No		
13	Adamstown (Pitcairn Is.)	-8	No		
14	Tashkent, Islamabad, Karachi, Yekaterinburg	+5	No		
15	Mumbai, Kolkata, Chennai, New Delhi, Colombo	+5.5	No		
16	Astana, Thimphu, Dhaka, Novosibirsk	+6	No		
17	Bangkok, Hanoi, Jakarta, Krasnoyarsk	+7	No		
18	Beijing, Hong Kong, Singapore, Taipei, Urumqi, Irkutsk	+8	No		
19	Tokyo, Seoul, Yakutsk	+9	No		
20	Gambier Island	-9	No		
21	South Australia: Adelaide	+9.5	Yes	1st Sun. Oct (02:00)	1st Sun. Apr. (03:00)
22	Northern Territory: Darwin	+9.5	No		
23	Brisbane, Guam, Port Moresby, Vladivostok	+10	No		
24	Sydney, Canberra, Melbourne, Tasmania: Hobart	+10	Yes	1st Sun. Oct. (02.00)	1st Sun. Apr. (03:00)
25	UTC (GMT)	0	No		
26	UTC (GMT)	0	No		
27	Honiara (Solomon Is), Magadan, Noumea (New Caledonia),	+11	No		
28	Auckland, Wellington	+12	Yes	Last Sun. Sep. (02:00)	1st Sun. Apr. (03:00)
29	Majuro (Marshall Is.), Anadyr	+12	No		
30	Azores	-1	Yes	Last Sun. Mar. (00:00)	Last Sun. Oct. (01:00)
31	Middle Atlantic	-2	No		
32	Brasilia	-3	Yes	3rd Sun. Oct. (00:00)	3rd Sun. Feb. (00:00)

Time zone	City / State	UTC Offset	DST Change	Standard → DST	DST → Standard
33	Buenos Aires	-3	No		
34	Newfoundland	-3.5	Yes	2nd Sun. Mar. (02:00)	1st Sun. Nov. (02:00)
35	Atlantic Time (Canada)	-4	Yes	2nd Sun. Mar. (02:00)	1st Sun. Nov. (02:00)
36	La Paz	-4	No		
37	Bogota, Lima, Quito	-5	No		
38	New York, Eastern Time (US & Canada)	-5	Yes	2nd Sun. Mar. (02:00)	1st Sun. Nov. (02:00)
39	Chicago, Central Time (US & Canada)	-6	Yes	2nd Sun. Mar. (02:00)	1st Sun. Nov. (02:00)
40	Tegucigalpa, Honduras	-6	No		
41	Phoenix, Arizona	-7	No		
42	Denver, Mountain Time	-7	Yes	2nd Sun. Mar. (02:00)	1st Sun. Nov. (02:00)
43	Los Angeles, Pacific Time	-8	Yes	2nd Sun. Mar. (02:00)	1st Sun. Nov. (02:00)
44	Anchorage, Alaska (US)	-9	Yes	2nd Sun. Mar. (02:00)	1st Sun. Nov. (02:00)
45	Honolulu, Hawaii (US)	-10	No		
46	Midway Islands (US)	-11	No		
47	Mexico City, Mexico	-6	Yes	1st Sun. Apr. (02:00)	Last Sun. Oct. (02:00)
48	Adak (Aleutian Is.)	-10	Yes	2nd Sun. Mar. (02:00)	1st Sun. Nov. (02:00)
49	UTC (GMT)	0	No		
50	UTC (GMT)	0	No		
51	UTC (GMT)	0	No		
52	UTC (GMT)	0	No		
53	UTC (GMT)	0	No		
54	Ittoqqortoormiit	-1	Yes	Last Sun. Mar. (00:00)	Last Sun. Oct. (01:00)
55	Nuuk, Qaanaaq, Greenland	-3	Yes	Last Sat. Mar. (22:00)	Last Sat. Oct. (23:00)
56	Myanmar	+6.5	No		
57	Western Australia: Perth	+8	No		
58	Caracas	-4.5	No		
59	CET standard time	+1	No		
60	Not used				
61	Not used				
62	Baku	+4	Yes	Last Sun. Mar. (04:00)	Last Sun. Oct. (05:00)
63	UTC (GMT)	0	No		
64	UTC (GMT)	0	No		

※Software version 2.16～

8 Technical data

SCN-500E/SCN-600E/SCN-800E

Mounting	Wall Mounting
Version	Single-sided
Illumination	LED
Hands	3hands:H/M/S
Time accuracy	Synchronized: < ±100ms Unsynchronized: < ±3 seconds/day(Reference value)
Material	Case: aluminum Dial: acrylic resin Hands: aluminum Dial Cover: transparent acrylic
Color	Case: white-aluminum RAL 9006 Dial: opal white Hands: hour and minute: black, second: blue Pantone 294C
Synchronization	Network Time Protocol (NTP)
Synchronization rate	10 - 999s
Power Consumption / Power supply	SCN-500E MAX.14W / LAN(PoE) SCN-600E MAX.14W / LAN(PoE) SCN-800E MAX.24W / LAN(PoE+)
Temperature range	-20 to +60°C
Dimension	SCN-500E Ø 534mm x 160mm (D) SCN-600E Ø 634mm x 160mm (D) SCN-800E Ø 834mm x 160mm (D)
Weight	SCN-500E Approx. 5.5kg SCN-600E Approx. 8kg SCN-800E Approx. 11kg

※IPv6 is not supported

SCN-560E/SCN-660E/SCN-860E

Mounting	Ceiling Mounting
Version	Double-sided
Illumination	LED
Hands	3hands:H/M/S
Time accuracy	Synchronized: < ±100ms Unsynchronized: < ±3 seconds/day(Reference value)
Material	Case: aluminum Dial: acrylic resin Hands: aluminum Dial Cover: transparent acrylic Mounting bracket: Steel
Color	Case: white-aluminum RAL 9006 Dial: opal white Hands: hour and minute: black, second: blue Pantone 294C Mounting bracket: white-aluminum RAL 9006
Synchronization	Network Time Protocol (NTP)
Synchronization rate	10 - 999s
Power Consumption / Power supply	SCN-560E MAX.14W / LAN(PoE) SCN-660E MAX.14W / LAN(PoE) SCN-860E MAX.24W / LAN(PoE+)
Temperature range	-20 to +60°C
Dimension	SCN-560E Ø 534mm x 245mm (D) SCN-660E Ø 634mm x 245mm (D) SCN-860E Ø 834mm x 245mm (D)
Weight	SCN-560E Approx. 10.5kg SCN-660E Approx. 14kg SCN-860E Approx. 19kg

※IPv6 is not supported

SCN-540E/SCN-640E

Mounting	Wall bracket Mounting
Version	Double-sided
Illumination	LED
Hands	3hands:H/M/S
Time accuracy	Synchronized: < ±100ms Unsynchronized: < ±3 seconds/day(Reference value)
Material	Case: aluminum Dial: acrylic resin Hands: aluminum Dial Cover: transparent acrylic Mounting bracket: Steel
Color	Case: white-aluminum RAL 9006 Dial: opal white Hands: hour and minute: black, second: blue Pantone 294C Mounting bracket: white-aluminum RAL 9006
Synchronization	Network Time Protocol (NTP)
Synchronization rate	10 - 999s
Power supply	LAN(PoE)
Power Consumption	SCN-540E MAX.14W SCN-640E MAX.14W
Temperature range	-20 to +60°C
Dimension	SCN-540E Ø 534mm x 245mm (D) SCN-640E Ø 634mm x 245mm (D)
Weight	SCN-540E Approx. 10.5kg SCN-640E Approx. 14kg

※IPv6 is not supported

SCN-680E/SCN-880E

Mounting	Central poll Mounting
Version	Double-sided
Illumination	LED
Hands	3hands:H/M/S
Time accuracy	Synchronized: < ±100ms Unsynchronized: < ±3 seconds/day(Reference value)
Material	Case: aluminum Dial: acrylic resin Hands: aluminum Dial Cover: transparent acrylic
Color	Case: white-aluminum RAL 9006 Dial: opal white Hands: hour and minute: black, second: blue Pantone 294C
Synchronization	Network Time Protocol (NTP)
Synchronization rate	10 - 999s
Power Consumption / Power supply	SCN-680E MAX.14W / LAN(PoE) SCN-880E MAX.24W / LAN(PoE+)
Temperature range	-20 to +60°C
Dimension	SCN-680E Ø 634mm x 245mm (D) SCN-880E Ø 834mm x 245mm (D)
Weight	SCN-680E Approx. 13kg SCN-880E Approx. 18kg

※IPv6 is not supported

If you have any question, inquiry or request for repair regarding the Clock, please contact your SEIKO dealer or agent.

SEIKO TIME CREATION INC.

https://www.seiko-stc.co.jp