

# FURUNO



Model: **GP-39**

## Using the GP39 as an SCX-21 (NMEA0183) Display and Setting Device

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Model: GP-39 with Model: SCX-21

GP-39 version 03.01 software and above includes a function, which allows the GP39 to be used as a data display as well as an initial setting device of the SCX-21 SATELLITE COMPASS. This document describes the displays and setting options, as well as interconnection and setup instructions.

## 1. Navigation Displays for SCX-21

The following display pages are added to the GP-39 with v3.01 software and above to show data from an SCX-21.

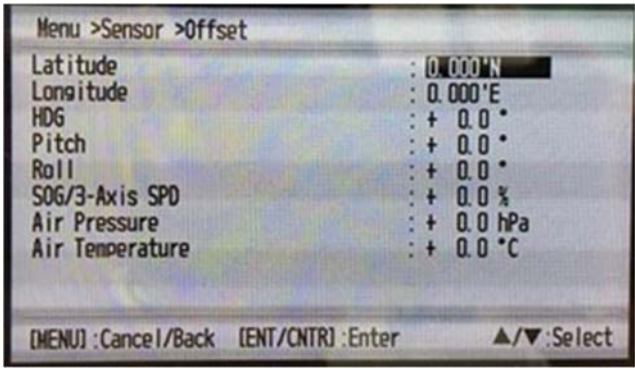

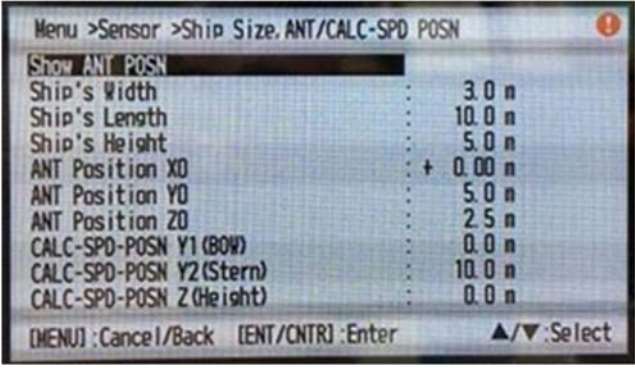
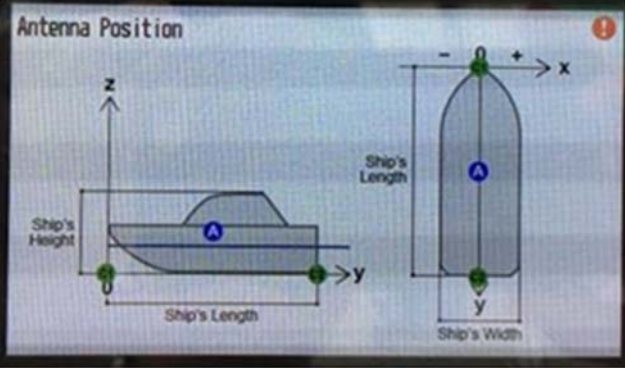
Display	Example	Remarks
Satellite Monitor		In addition to the conventional page, GNSS satellite display, 4-antenna display, and masking area display are also supported.
Heading		The heading data from SCX-21 is displayed in the same graphical image as the RD-33, SC-70/130, etc.
3-Axis Speed		3-axis speed is indicated numerically with arrows to indicate the transverse speed at the bow and stern.
ROT		The ROT meter as well as heading and SOG helps to see how own ship is turning.
Attitude Roll/Heave/Pitch		The Attitude page shows how own ship is rolling, pitching, and heaving graphically and numerically.

## 2. Setting Menus for SCX-21

In addition to the conventional GP-39 settings, the following items are added.

- **Prohibited GNSS satellite** (QZSS, GPS, GLONASS, Galileo)
- **Offset** (Heading, Pitch, Roll, SOG/3-Axis SPD, Air Pressure, Air Temperature)
- **Smoothing** (SOG/COG, 3-Axis Speed, ROT)
- **DR time**
- **Ship size, antenna location, 3-axis speed position**
- **I/O Setup** (Data2, Data3) (Data 2 is output only)
- While the SCX-21 has three (3) output ports, Data 1 is used to connect to the GP-39 and NMEA0183 data is output from Data 2 and 3.

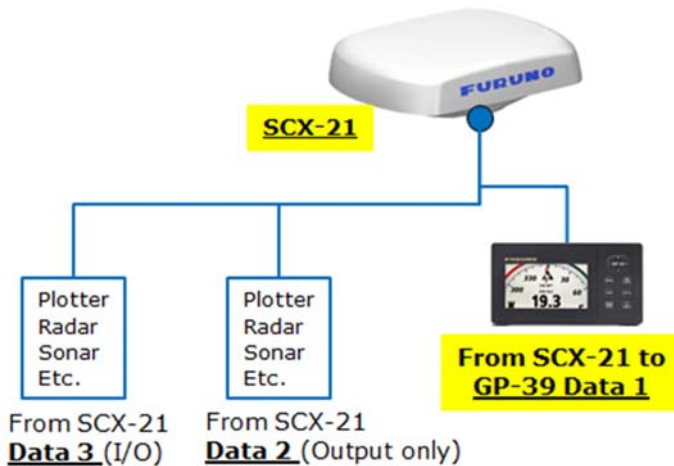
### Sample Screens

Offset	Smoothing
	
Ship Size, ANT/CALC-SPD POSN	Antenna Position in Illustration
	

### 3. Interconnection and Settings

#### 3.1. Interconnection

Make sure to connect the GP-39 to the SCX-21 – Data 1 port.



#### Notes:

(1) When the SCX-21 is connected to the GP-39, the original antenna GPA-017 or GPA-C01 **CANNOT** be used.



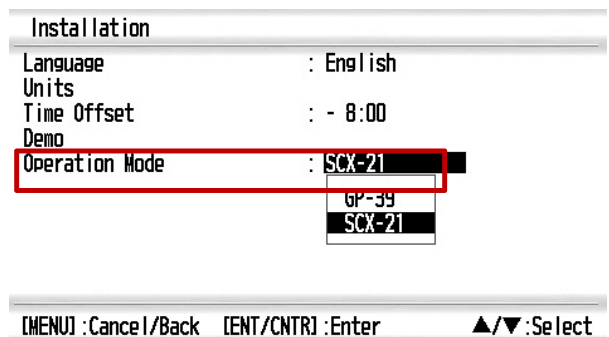
(2) In the configuration of an SCX-21 with a GP-39, the GP-39 NMEA0183 output port is occupied by the SCX-21. **In order to output/input data from/to the SCX-21, utilize Data 2 and Data 3 ports of SCX-21. (Data 2 is output only)**

#### 3.2. Setting – Operation Mode

Change the operation mode of the GP39 to make the GP-39 work as an SCX-21 display.

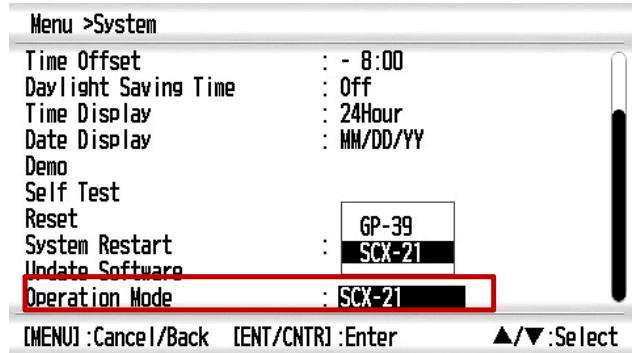
##### Option 1 – When turning the power on for the first time...

When the SCX-21 is turned on for the first time, the Installation menu will launch: Access [Operation Mode] and select [SCX-21]. (Default: [GP-39]) After changing the mode, the GP-39 will restart.



**Option 2 – If the GP-39 has been turned on before...**

In [Menu] – [System] – [**Operation Mode**], select [**SCX-21**]. (Default) [GP-39]) After changing the mode, the GP-39 will restart.



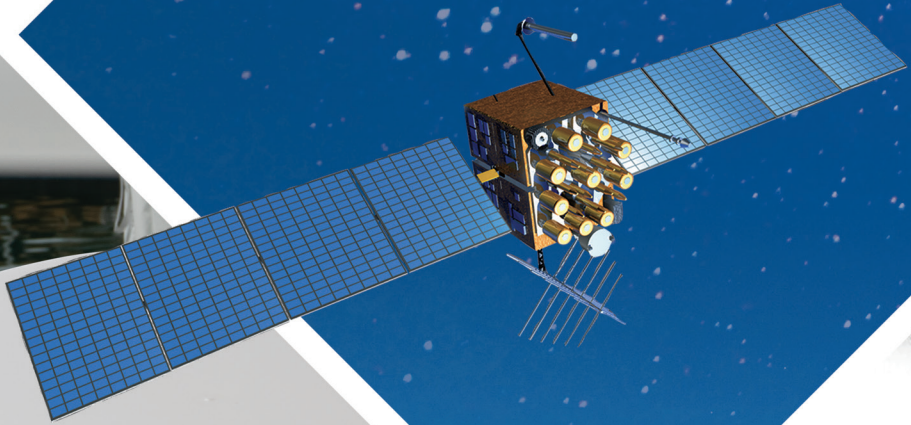
### 3.3. Update Guidance

For a GP-39 with v02.01 or earlier, update to v03.01 or higher to connect to the SCX-21.

If the GP-39 is already loaded with v3.01 or higher, change the operation mode to [SCX-21] to use the GP39 with the SCX-21. Set the mode to [GP-39] as default to use it as a GP-39 with a GPA-017 or GPA-C01 GPS antenna.



FAQ  
SCX-21  
SATELLITE COMPASS™



# SCX20 FAQ

## Q How can the SCX21 be mounted?

The SCX21 comes standard with a pole mount kit. This kit supports a 1" NPT.



SCX-21

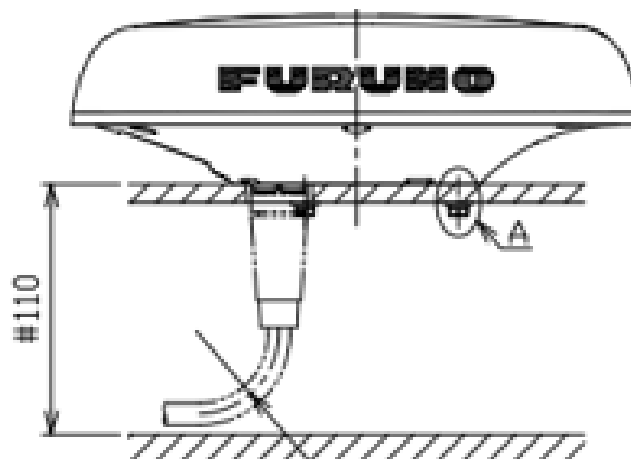


Pole-Mount Kit

Optional mast mount kit is also available. Part # [001-556-240-00](#). This kit is used in combination with the pole mount kit.



The SCX21 can also be surface mounted. Please see the installation manual for full details.



## Q What are the physical dimensions of the SCX21?

3"H x 8"W x 10"L (without pole mount attachment). 2.2lbs

**Q What type of connector does the SCX21 use?**

The SCX21 uses a 16pin proprietary connector.

**Q What connection cable is the SCX21 supplied with?**

The SCX21 is supplied with a 15-meter serial data/power pigtail cable. A 30-meter cable is optional. Part # 001-555-570.

**Q How many I/O ports does the SCX20 have?**

The SCX21 has one Three (3) NMEA0183 ports. Two (2) NMEA0183 input ports, and one PPS port for WASSP.

**Q What voltage can the SCX21 operate from?**

The operating voltage of the SCX21 is 12vdc to 24vdc.

**Q What NMEA0183 sentences does the SCX21 output/Input?**

SCX-21:                    3 Ports NMEA0183, Tx 3 Ch, Rx 2 Ch  
                              1 Port PPS, RS-485, rising edge detecting

Data Sentences

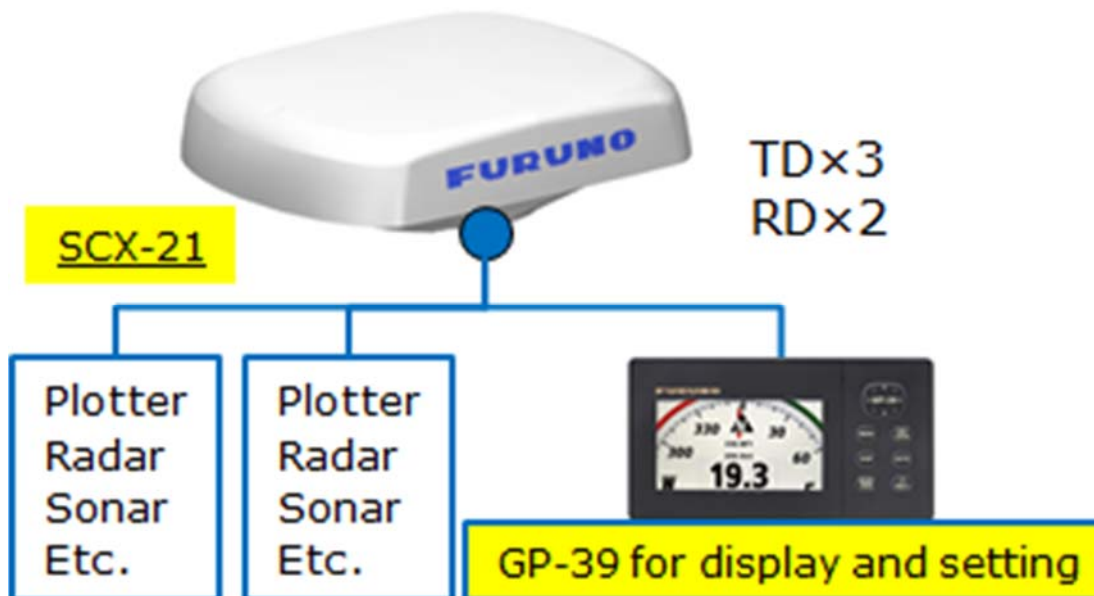
Input:                    AAM\*, APB\*, BOD\*, BWC\*, BWR\*, RMB\*, TLL\*, XTE\*

Output:                  AAM\*, APB\*, BOD\*, BWC\*, BWR\*, DTM, GGA, GLL, GNS, GSA, GSV,  
                              HDG, HDT, HRM, POS, RMB\*, RMC, ROT, THS, TLL\*, VBW, VTG, XDR,  
                              XTE\*, ZDA

P Sentences             GPatt, GPhve, GPimu, pidat, SDmrk\*, GPmsv, hdcom

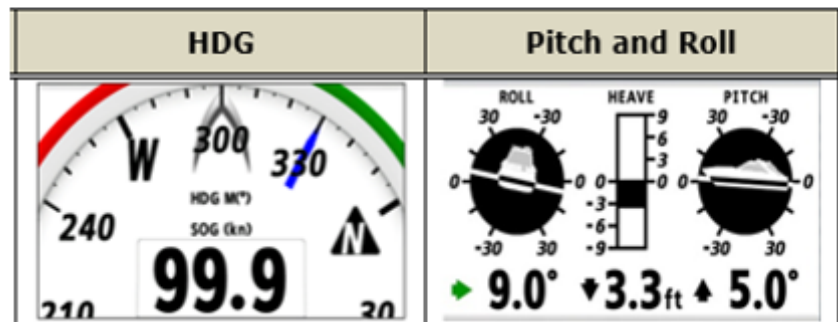
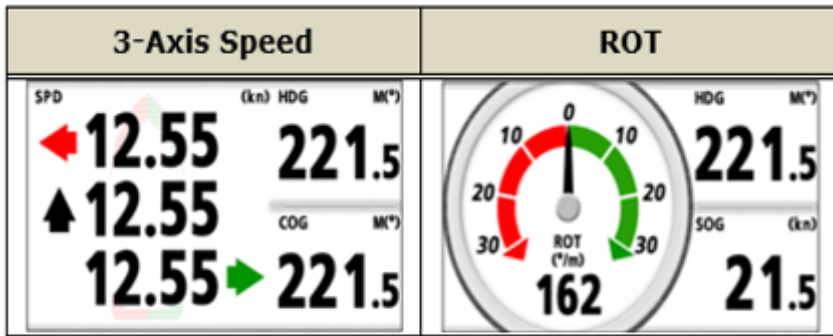
\*: GP-39 REQUIRED

**Q Sample connection diagram.**





**Q When the GP39 is connected to the SCX21, what additional displays are available on the GP39?**



**Q Does the SCX21 output Heave information for my Furuno Sounder?**

Yes, the SCX21 outputs Heave along with pitch and roll.

**Q What is the update rate of the SCX20 position/heading information?**

The SCX21 updates position and heading at 10hz.

**Q Can the output rate be changed and or individual sentences turned off?**

Yes. Sentence output rates can be individually changed or turned off completely using a connected GP39, or via a PC running Tool software.

**Q Is the SCX21 compatible with the TZtouch2/3 sensor management menu?**

No. TZT2/3 Sensor management is done over the NMEA2000 bus. The SCX21 is not a NMEA2000 device.

**Q Is the SCX21 affected by GPS blockage and or multipath?**

Any GPS sensor or satellite heading sensor can be affected by blockage and or multipath. The SCX21 decreases these affects by using 4 internal GNSS antennas creating 6 baselines, the most currently available on the market, for measurement. While the SCX21 can use all 6 baselines for heading, it does not have to. It can calculate heading using only two baselines. The chance that all 6 baselines would be affected by multipath is decreased. This makes the SCX21 much more resistant to these issues.

**Q What satellite systems is the SCX21 compatible with?**

The SCX20 is compatible with GPS, Galileo (EU), GLONASS (Russia), and QZSS (Japan and Oceania). The SCX20 will track multiple GNSS Satellite Systems for heading calculation.

**Q Is the SCX21 compatible with any SBAS systems?**

The SCX21 is compatible with the following **Satellite Based Augmentation Systems**.

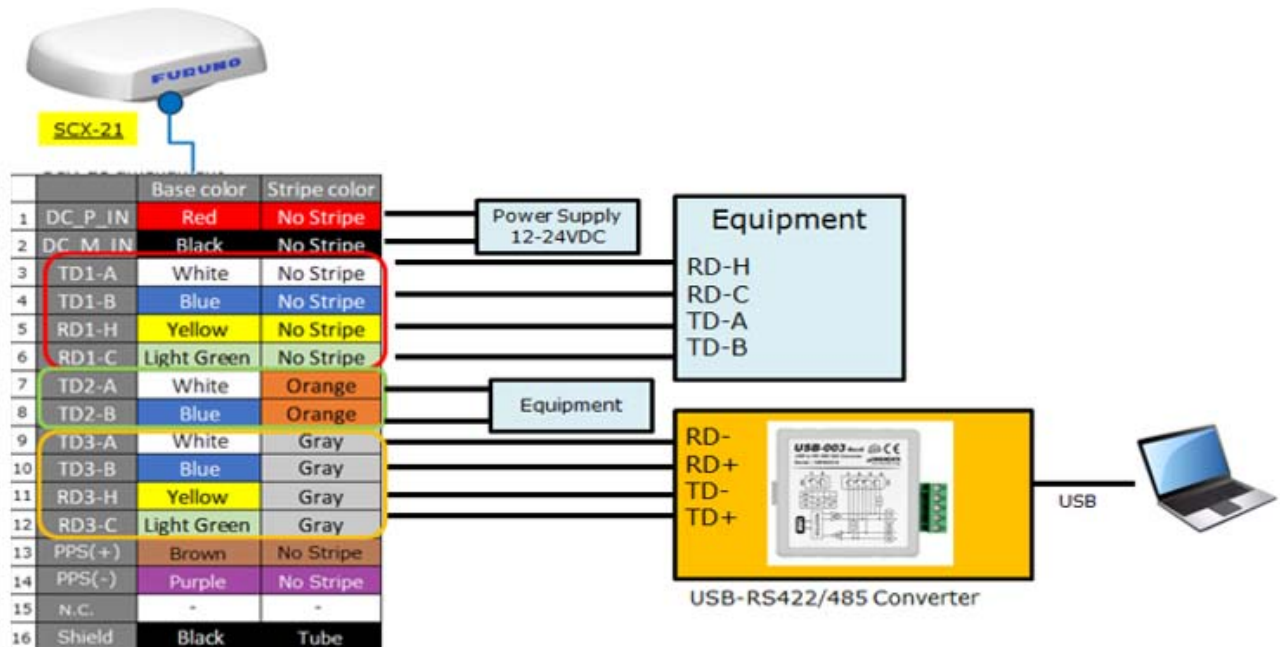


**Q How can offsets and changes be made to the SCX21?**

Offsets and changes can be made to the SCX21 via a GP39, or by a PC running SCX20 Tool software. Slight heading corrections can also be made by physically adjusting (port or starboard) the SCX21 antenna. The PC Tool software can also monitor the status of the SCX21, such as condition, signal reception and blockage condition of all the antennas.

**Q How is the SCX21 connected when used with the PC Tool software?**

A PC is connected to either Port 1 or 3 using a USB 422/485 converter.



**Q Is the SCX21 compatible with the IF-NMEASC?**

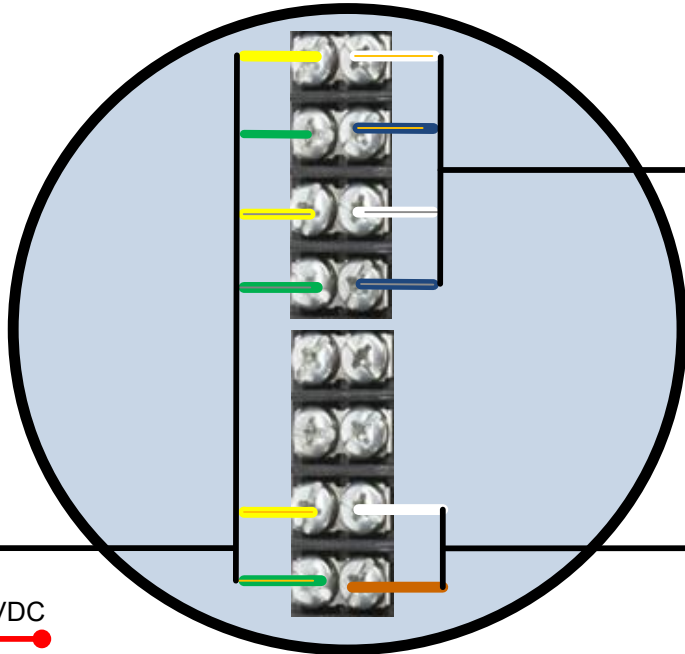
**No.** The SCX21 is not compatible with the IF-NMEASC. However, you could use the SCX21 to replace an SC30/IF-NMEASC installation.

**Q What options are available for the SCX21?**

Options include mast mount kit, Bird repellents, Snow cover kit, GP39. For a complete list of available options, please visit the accessories page of the SCX21 on the Furuno USA website.



1815	TO	SCX21
YEL (RD1-H)	↔	WHT/ORG (TD2 A) GPS
GRN (RD1-C)	↔	BLU/ORG (TD2 B) GPS
YEL/GRY (RD3-H)	↔	WHT/GRY (TD3 A) HDG
GRN/GRY (RD3-C)	↔	BLU/GRY (TD3 B) HDG
		RED (12/24 VDC +)
		BLACK (12/24 VDC -)



1815	TO	FA70
YEL/ORG (RD2-H)	↔	WHT (TD-A) AIS
GRN/ORG (RD2-C)	↔	BRN (TD-B) AIS

Note: Grey and Purple wires from FA70 power/data cable allows connection to physical hardware switch to engage or disengage Silent Mode. When circuit is closed Silent Mode is activated and when circuit is open Silent Mode is deactivated.



# SCX21 TO PC

