SPECIFICATIONS

GENERAL

Product Name	SATELLITE COMPASS
Receiving frequency	1575.42 MHz (GPS/Galileo), 1602.5625 MHz (GLONASS)
Tracking code	C/A code (GPS), E1B (Galileo), 1OF (GLONASS)
Positional accuracy	GPS 10 m approx. (2drms, HDOP<4)
(dependent on ionospheric	DGPS 5 m approx. (2drms, HDOP<4)
activity and multipath)	WAAS 3 m approx. (2drms, HDOP<4)
	MSAS 7 m approx. (2drms, HDOP<4)
Ship's speed accuracy (SOG)	0.02 kn RMS (tracking satellites 5 or more)
Ship's speed accuracy	0.2% of ship's speed or 0.02 kn whichever is the greater
(VBW, SOG)	(tracking satellites 5 or more, at antenna unit)
Course accuracy	SC-70 0.4° RMS, SC-130 0.25° RMS
Course resolution	0.1°,0.01°,0.001° typical (select from menu)
Tracking bearing	40°/s
Position fixing time	90 s approx. (typical)
Attitude accuracy	Pitch/ Roll: 0.4° RMS
Attitude resolution	0.1°,0.01°,0.001° typical (select from menu)
Rate of turn	0.1° ,0.01, 0.001°/min typical (select from menu)

DISPLAY UNIT

Screen	4.3-inch color LCD, 95.04 mm (W) x 87.12 mm (H)
Resolution	480 x 272 dots (WQVGA)
Brilliance	600 cd/m² typical
Contrast	17 levels
Display mode	Heading, Nav data,
	Rate of turn and Speed modes (Non-IMO mode only)
Visible distance	0.65 m nominal

INTERFACE (JUNCTION BOX)

Number of ports (junction box)		
IEC61162-2:	1 port (IN: 1, OUT: 1)	
IEC61162-1:	8 ports (IN: 4, OUT: 8)	
External beacon input (DATA5 port):	RTCM SC-104 V2.3 (RS-485), ITU-R M823	
CANbus:	1 port	
AD-10:	4 ports, for heading output	
RS-485:	1 port, for display unit connection	
LAN (IEC61162-450):	Ethernet, 100Base-TX, RJ45 connecter	
Data sentences		
Serial data	Input	ACK, ACM, ACN, HBT, HDT*1, MSK, MSS, THS, VBW*2, VDR*2
	Output	ALC, ALF, ALR, ARC, DTM, GBS, GGA, GLL, GNS, GRS, GSA, GST, GSV, HBT, HDG*2, HDM*2, HDT*1, HRM*2, MSK, POS, RMC, ROT, THS,VBW*2, VDR*2, VHW*2, VLW*2, VTG, XDR*2, ZDA
Ethernet data	Input	ACK, ACM, ACN, HBT
	Output	ALC, ALF, ALR, ARC, DTM, GBS, GGA, GLL, GNS, GRS, GSA, GST, GSV, HBT, HDG*2, HDM*2, HDT*1, HRM*2, POS, RMC, ROT, THS, VBW*2, VDR*2, VHW*2, VLW*2, VTG, XDR*2, ZDA
Output proprietary sentences	PFEC GPatt, GPhve, GPimu, pireq, IIalr, pidat	
PGN	Input	059392/904, 060928, 061184, 126208/720/996
	Output	059392/904, 060928, 061184, 065280 , 126208/464/720/992/996,127250/251/252/257/258, 129025/026/029/033/044/291/539/540/545/547, 130310/312/314/316/577/578/822/823/842/843/845/846
IEC61162-450 transmission group		
	Input	MISC, SATD, NAVD, PROP
	Output	Arbitrary (default: SATD)
Other network function excepted IEC61162-450	NTP, HTTP	

*1: Not used for SOLAS vessels.
*2: for Non-IMO types only.

POWER SUPPLY

Junction box	12-24 VDC: 2.1-1.1 A
	(included antenna unit and display unit)
Rectifier (PR-240, option)	100-115/220-230 VAC, 1 phase, 50-60 Hz and 24 VDC

ENVIRONMENTAL CONDITIONS

Ambient temperature	Antenna unit -25°C to +55°C (storage: +70°C)
	Display unit/ Junction box -15°C to +55°C
Relative humidity	95% or less at +40°C
Degree of protection	Antenna unit IP56
	Display unit IP22 (IP35: option)
	Junction box IP20 (IP22: bulkhead mount)
Vibration	IEC 60945 Ed.4

EQUIPMENT LIST

Standard

1	Antenna unit	SC-703	x 1
		SC-1303	x 1
2	Display Unit	SC-702	x 1
3	Junction Box	SC-701	x 1
4	Installation Materials		

Optional supply

1 AC/DC Power Supply Unit	PR-240	
2 Alarm Monitoring	IF-2503	
3 Interface Unit	IF-NMEA SC	
4 Remote Display	RD-50	
5 Connector (waterproof)	FRU-RJ-PLUG-ASSY	
6 Modular Connector	MPS588-C	
7 LAN_CNV Kit	OP20-47/48	
8 Cable Assembly	M12-05BFFM-010/020/060	
9 Connector (NMEA)	LTWMC-05BFFT-SL8001	x 1
	LTWMC-05BMMT-SL8001	x 1
	SS-050505-FMF-TS001	x 1

Display unit (hanger)
SC-702   0.7 kg, 1.5 lb

Junction Box
SC-701   2.9 kg, 6.39 lb
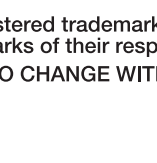
Antenna unit
SC-1303 7.1 kg, 15.6 lb
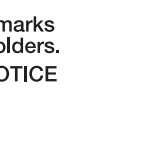
SC-703   2.8 kg, 6.17 lb

FURUNO

SATELLITE COMPASS

Models:

SC-130
SC-70

SATELLITE COMPASS

The SC-70 and SC-130 are the latest satellite compasses, built on FURUNO's commercial-grade technology platform. These satellite compasses prove their value by increasing the accuracy of other instruments, such as Radar, Target Tracking (TT), ECDIS, AIS, Doppler Sonar and Autopilot.

They provide a highly accurate heading signal to these other technologies by utilizing the very latest GNSS (Global Navigation Satellite System). This satellite system is comprised of GPS, Galileo and GLONASS to ensure the highest precision and a continuous coverage.

The SC-70 and SC-130 provide a variety of data, including GPS Positioning, SOG (Speed Over Ground), COG (Course Over Ground), ROT (Rate Of Turn) and 3-axis speed (bow, stern and longitudinal). All of these data assist with critical maneuvers, such as berthing.

These Compasses are maintenance free and are a great asset for any vessel.

Standard High contrast 4.3" Color LCD
(on the screen, the THD mode)
SC-702

SC-130 / SC-70 DISPLAY MODES

Navigational data screen
- 3-axis speed, as well as the Heading, Rate Of Turn and Course Over Ground can be grasped at a glance. (non-IMO type only)

① Current selected mode (SDME or THD), integrity status and common satellite number
② Transverse speed at bow position
③ Longitudinal speed
④ Transverse speed at stern position
⑤ Distance travelled

GPS integrity mode
- GPS satellites signal reception including signal strength and signal to noise ratio
- SBAS signal status

Speed mode
- 3-axis speed of the ship: bow, stern and longitudinal (non-IMO type only)

ROTI display mode
- Rate Of Turn Indicator displaying on the RD-50

SC-130 / SC-70 FEATURES

▶ **SC-130 features a Tri-sensor antenna that provides a high system accuracy for the heading of the ship**
Provides highly accurate heading data for Autopilot, Radar, Target Tracking, AIS, Doppler Sonar, and ECDIS.
- **0.25° (with SC-130)**
Ideal for medium to large ships navigating in crowded ports and making precise maneuvers, such as berthing.
- **0.4° (with SC-70)**
Ideal for small to medium ships requiring highly accurate heading.

▶ **Type-approved as THD, GPS and ROTI*, complying with the following requirements**
IMO MSC.116(73) •IMO MSC.112(73) •IMO MSC.526(13) •IMO A.694(17)
IMO MSC.97(73) •IMO MSC.191(79) •IMO MSC.302(87) •IEC 60945 Ed.4
IEC 62288 Ed.2 •IEC 61162-1 Ed. 4 •IEC 61162-2 Ed.1 •IEC 61162-450 Ed.1
IEC 61108-1 Ed.2 •ISO 22090-3 Ed.2 •ISO 20672 Ed.1
* requires the RD-50 as a display unit

▶ **Utilizes GNSS such as Galileo and GLONASS for high precision**
- SBAS compatible (EGNOS, WAAS, MSAS)
- Provide precise data for SOG, COG, ROT and L/L
- Eliminating the problem of not having enough satellites at hand by using multiple types of satellites

▶ **Super short starting time - 90 seconds**
- Once the power is on, it takes about 90 seconds to start (the starting time will slightly differ depending on the equipment location)

▶ **100% free of regular maintenance, no recurring cost, no mechanical parts**

▶ **Easily integrated into the existing shipboard network via Ethernet**

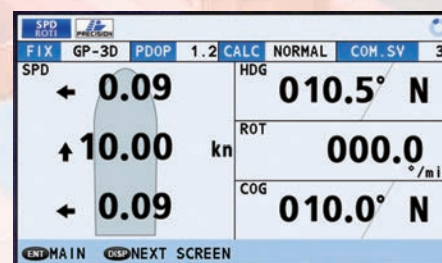▶ **Rapid follow-up rate 40°/s (twice the IMO high speed craft requirement, 20°/s)**

▶ **Precision Pitch/Roll data in Analog and Digital formats for Vessel Stabilization, SONAR, etc.**

▶ **Bow and stern speed monitoring for safe berthing**
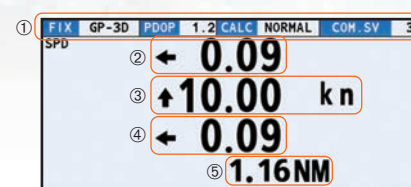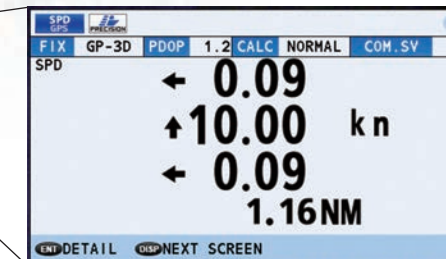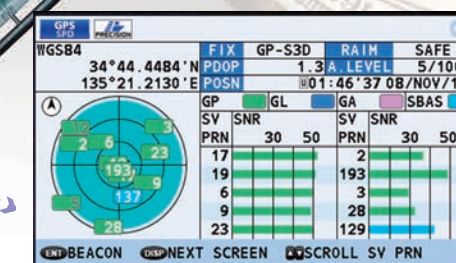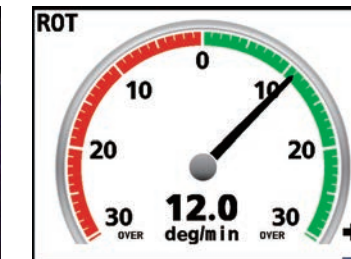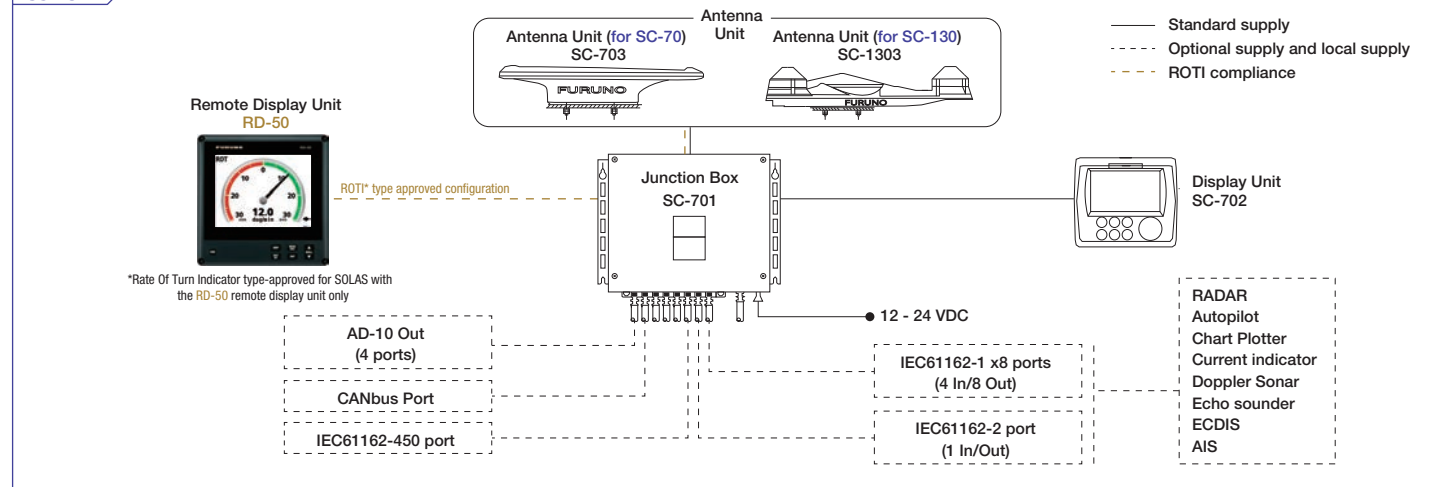
▶ **Easy to retrofit by using existing antenna cabling**
- For SC-50/55/60/110/120 (The LAN_CNV option kit is necessary)

SC-130 / SC-70 INTERCONNECTION DIAGRAM

— Standard supply
--- Optional supply and local supply
--- ROTI compliance

Antenna Unit (for SC-70) SC-703
Antenna Unit (for SC-130) SC-1303

Remote Display Unit RD-50
ROTI* type approved configuration

*Rate Of Turn Indicator type-approved for SOLAS with the RD-50 remote display unit only

Junction Box SC-701

Display Unit SC-702

12 - 24 VDC

AD-10 Out (4 ports)
CANbus Port
IEC61162-450 port

IEC61162-1 x8 ports (4 In/8 Out)
IEC61162-2 port (1 In/Out)

RADAR
Autopilot
Chart Plotter
Current indicator
Doppler Sonar
Echo sounder
ECDIS
AIS

Accept no compromises, choose only quality marine electronics and navigation.