FURUNO

CHART RADAR

Models:

FAR-3005 series

FURUNO FAR-3005 Series Chart Radar of
and navigation safety through greatly enha

Newly developed antennas with enhanced high durability and reliability

X Band Antenna (Solid-State)

XN12CF . XN20CF . XN24CF

S Band

SN36CF

X Band Antenna (Magnetron)

NEW

XN12AF . XN20AF . XN24AF

▶ **Newly designed antenna scanners to suppress the aerodynamic drag and prevent a spike in temperature**

▶ **Less maintenance required through use of the DC brushless motor**

▶ **Ethernet network link between antenna unit and below deck processor unit**

The analog signals are converted into the digital signals within the antenna unit and sent to the below deck processor unit via Ethernet network. This network technology eliminates loss of signal gain between antenna unit and processor unit that may be seen in conventional Radar system.

▶ **Optional LAN Signal Converter enables users to extend the cable between antenna unit and processor unit or to utilize the existing cables when retrofitting**

Solid State Radar model - NXT - specializes in target detection and maintainability

Compared to the traditional Magnetron Radar, the Solid State Radar NXT Series provide highly reliable target detection while requiring low power.

**Power Amplifier Module of the Solid State transceiver**

for X-band
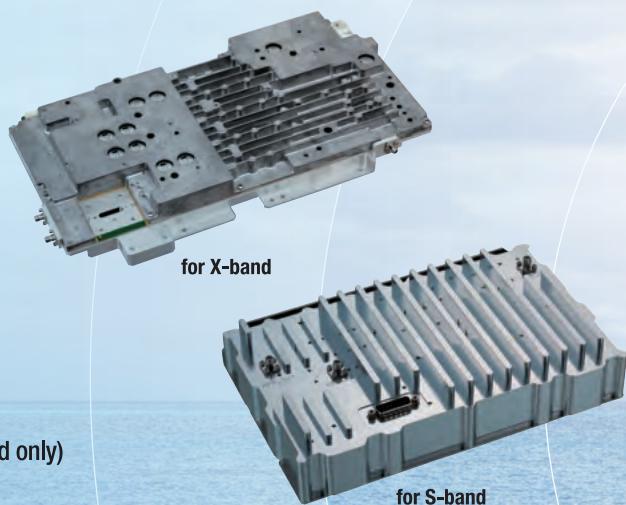
▶ **Clear images**

Furuno Solid State Radar technology generates clear echo images, which allows users to obtain a clear picture of the area around their vessel, including weaker echoes from small crafts.

▶ **Reducing the time and cost for maintenance**

・No need to replace the magnetron
・Removal of the consumable parts thanks to a fan-less antenna (S-band only)

for S-band

fers reliable situational awareness
nced target detection

▶ **Automatic Clutter Elimination (ACE) function provides clear echoes**

Users can quickly adjust the radar image with a single action. When Automatic Clutter Elimination (ACE) function is activated, the system automatically adjusts the clutter reduction filter and gain control according to the sea and weather conditions selected (Calm/Rough Sea/Hard Rain).

Our advanced echo averaging architecture is also incorporated into Automatic Clutter Elimination (ACE) function. Users can avoid complicated adjustment processes, resulting in clear echo images.

Automatic Clutter Elimination (ACE) function suppresses the false echoes.
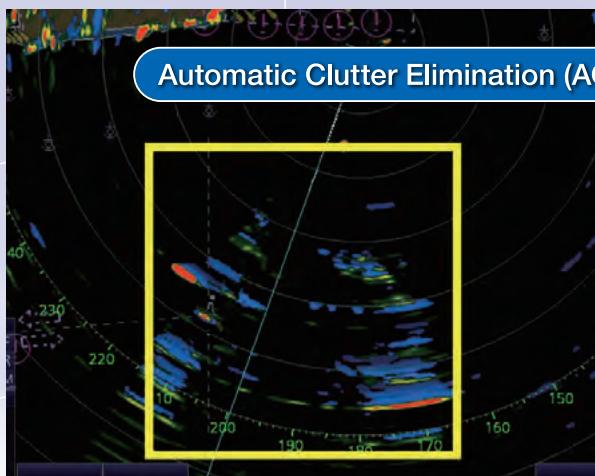
**Automatic Clutter Elimination (ACE)
OFF**
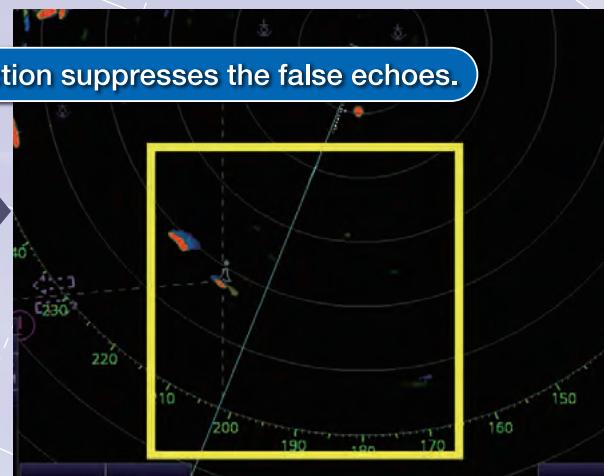
**Automatic Clutter Elimination (ACE)
ON**

▶ **Improved Target Tracking (TT) function**
- • Target acquisition takes only a few seconds

a few
seconds

- • Acquired target does not jump to adjacent target
- • Reliable and stable tracking of high-speed and rapidly maneuvering vessels

▶ **High performance Radar with Cat.1 and Cat.2 support**

▶ **Complies with the following regulations:**

• IEC 60945 Ed. 4.0	• IEC 62288 Ed. 3.0
• IEC 61162-1 Ed. 5.0	• IEC 62388 Ed. 2.0
• IEC 61162-2 Ed. 1.0	• IEC 62923-1
• IEC 61162-450 Ed. 2.0	• IEC 62923-2
• IEC 61174 Ed. 4.0	

Advanced technologies for safer and optimal navigation in all kinds of situations (option)

Wave Analyzer Software *
・Allows real-time monitoring and analysis of wave echoes
・Ensures safety at sea even at night

Ice Mode ** (X-band magnetron only)
・Find the best route through ice
・Obeserve ice conditions by Radar

Wave Information
ANT-1 X-BAND ▲ Wind
Significant Wave   DIR   324.3°
Height   1.7 m Speed 22.2 m/s
▲ 1st Wave
Height   1.2 m
DIR   122.2°
Period   9.6 sec
▲ 2nd Wave
Height   0.8 m
DIR   039.2°   True-North
Period   9.4 sec
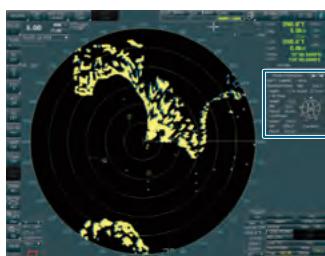
*More details on the Wave Analyzer brochure
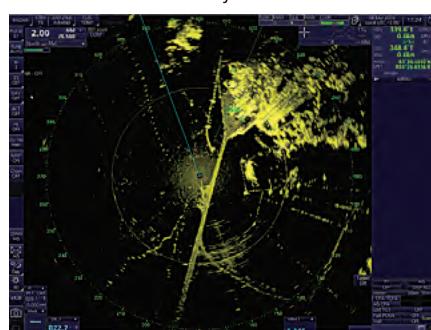
**Please contact your local distributor for more details

Multi Function Display (MFD) capability*

Furuno proposes workstations that combine flexibility and redundancy. Users may easily select ECDIS, Chart Radar, Conning display or Alert Management System at any multi-function display. Navigators will enjoy reduced workload and significant freedom to move about the bridge. All necessary information is available on a variety of displays and at locations that may be altered as required.

*MFD capability is to be implemented as software upgrade
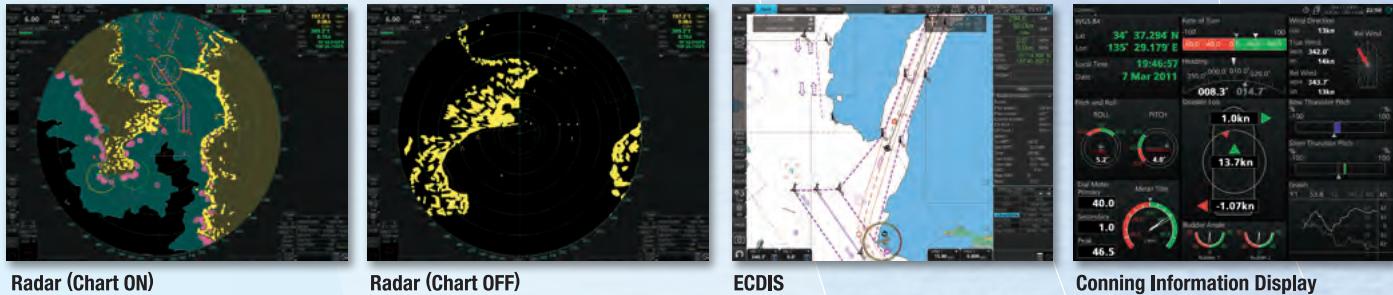
Radar (Chart ON)

Radar (Chart OFF)

ECDIS

Conning Information Display

Sensor Adapter

▶ Common sensor adaptor makes installation and maintenance easy

The Sensor Adapter acts as a central medium to gather all of the sensor data and collectively feed it to all FAR-3005 Chart Radar and FMD-3200/3300 ECDIS in the network. Since the sensor adapter can be extended to interface with all the sensors within the network, individual cable connections in the sensor-to-Chart Radar/ECDIS interface can be greatly reduced.


Navigation sensors can be directly interfaced with the processor's 8 serial I/O ports.
Sensor adapters are required under the following conditions:

• The sensor data is to be shared amongst multiple networked Chart Radar and ECDIS systems,
• The number of sensors interfaced is more than the number of the ports the processor has (8 serial I/O ports, 1 digital IN and 6 digital OUT), and/or
• The networked sensors include analog sensors.

In order to integrate onboard sensors into the navigation network, the sensor adapter may be interfaced with the Intelligent Hub HUB-3000 from which distribution of the sensor data throughout the network is possible. Alternatively, multiple sensor adapters may be interfaced via Ethernet to integrate onboard sensors for use in the shipboard network.

System diagram for the new Chart Radar

Model: FAR-3005
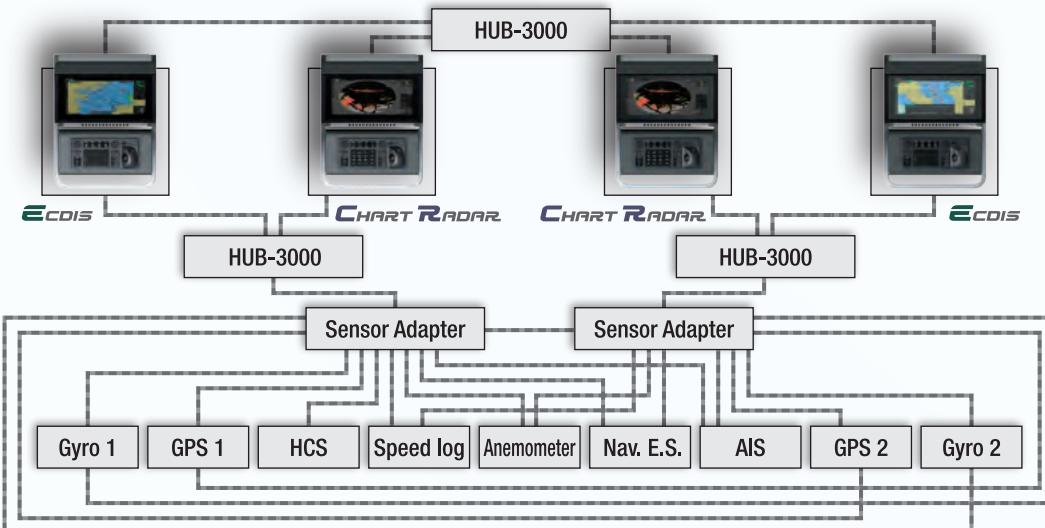
FURUNO's new user interface delivers straightforward operation

## Unique & smart operation tool – "Status bar" and "InstantAccess bar™"

The user interface of the Radar utilizes carefully organized operational tools: the Status bar and the InstantAccess bar™. These operational tools deliver straightforward, task-based operation by which the operator can quickly perform tasks without having to navigate an intricate menu tree.

Status bar

Status bar contains information about the operating status, i.e., MFD operating mode, main tasks assigned to each MFD operating mode.

InstantAccess bar™

InstantAccess bar™ contains all the tasks (functions or actions) corresponding to the operation mode currently selected so that quick access to necessary functions/actions can be made.

## Stress-free operation with the well-designed control unit

Intuitive operation
All operations can be controlled with the trackball.

Contextual menu
The context menu contains all the available actions related to the selected icon or area, it provides quick access to tasks.
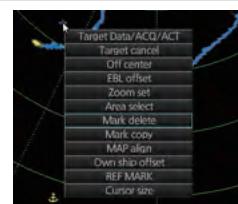
SPECIFICATIONS

PRODUCT NAME
MARINE RADAR

GENERAL
Range Scales and Ring Intervals

Range (NM)	0.125	0.25	0.5	0.75	1.5	3	6	12	24	48	96
RI (NM)	0.025	0.05	0.1	0.25	0.25	0.5	1	2	4	8	16
Number of rings	5	5	5	3	6	6	6	6	6	6	6

ANTENNA UNIT
Radiator Type   Slotted waveguide array

Beamwidth and Sidelobe

Antenna Type	X band						S band
	XN12CF	XN20CF	XN24CF	XN12AF	XN20AF	XN24AF	SN36CF
Antenna Length (cm/ft)	130 / 4.2	210 / 7	260 / 8.5	126 / 4	204 / 6.7	255 / 8.3	383 / 12.6
Horizontal beam	1.9°	1.23°	0.95°	1.9°	1.23°	0.95°	1.8°
Vertical beam	20°			20°			25°
Side lobe (±10° or below)	-24 dB	-28 dB	-28 dB	-24 dB	-28 dB	-28 dB	-24 dB
Side lobe (±10° or above)	-30 dB	-32 dB	-32 dB	-30 dB	-32 dB	-32 dB	-30 dB

TRANSCEIVER UNIT
● Frequency and radio wave type

X band （Magnetron）	9410 MHz ± 30 MHz, P0N
S band （Magnetron）	3050 MHz ± 30 MHz, P0N
X band （Solid-state）	CH1 P0N: 9403.75 MHz/Q0N: 9423.75 MHz ± 5 MHz CH2 P0N: 9413.75 MHz/Q0N: 9433.75 MHz ± 5 MHz
S band （Solid-state）	CH1 P0N: 3043.75 MHz/Q0N: 3063.75 MHz ± 5 MHz CH2 P0N: 3053.75 MHz/Q0N: 3073.75 MHz ± 5 MHz

● Peak Output

FAR-3015	12 kW
FAR-3025	25 kW
FAR-3025-NXT	600 W
FAR-3035S	30 kW
FAR-3035S-NXT	250 W

Range scale, Pulse Repetition Rate and Pulselength
Magnetron radar: FAR-3015/3025/3035S

PRR (Hz approx.)	Range scale (NM)										
	0.125	0.25	0.5	0.75	1.5	3	6	12	24	48	96
3000	S1										
3000			S2								
1500				M1							
1200					M2						
1000						M3					
600*							L				

*: 500 Hz on 96 NM range.

Solid state radar: FAR-3025-NXT

PRR (Hz approx.)	Range scale (NM)										
	0.125	0.25	0.5	0.75	1.5	3	6	12	24	48	96
1500	S1										
1500			S2								
1200				M1							
1000					M2						
1000						M3					
600							L				

Solid state radar: FAR-3035S-NXT

PRR (Hz approx.)	Range scale (NM)										
	0.125	0.25	0.5	0.75	1.5	3	6	12	24	48	96
2400	S1										
2000			S2								
1500				M1							
1060					M2						
1000						M3					
600							L				

PROCESSOR UNIT
Chart Materials   IMO/IHO S57 edition-3 ENC vectorized material (IHO S-63 ENC data protection scheme), C-MAP and CM-93/3 vectorized materials

Data Presentation
- Own Ship   Own ship's mark and numeral position in lat/lon, speed and course
- Target Data(TT: ARPA, AIS)   Range, bearing, speed, course, CPA/TCPA, BCR/BCT. Target information from AIS (waypoint, ship's hull and status)

Position Calculation   Navigation by result from external position sensor. Dead reckoning with gyro and log data from gyro, log, and position sensors to be fed to mathmatical filter to generate highly accurate position and speed

Navigation Planning   Planning by rhumb line, great circle

Route Monitoring   Off-track display, waypoint arrival alarm, shallow depth alarm

User Chart   User chart creation and display

Notes Data   Create and display notes data

MOB (Man Overboard)   Position, and other data at time of man overboard are recorded MOB mark is displayed on the screen

DISPLAY UNIT

Screen type	MU-270W
Resolution	27-inch color LCD, 1920 x 1200 (WUXGA)
Brightness	400 cd/m² typical
Visible distance	1.02 m nominal
Effective diameter	349 mm

INTERFACE
Processor Unit

DVI	2 ports, DVI-D (Video signal from DVI-1 and DVI-2 is identical) 1 port, DVI-I Ver. 1.1 (RGB for VDR)
LAN	2 ports, Ethernet 1000 Base-T (for Interswitch and Sensor Adapter) 1 port, 100 Base-TX (for Radar sensor)
USB	4 ports, USB 2.0 type-A
COM	2 ports, RS232C/RS-485 (for brilliance control)
Serial I/O	8 ports IEC61162-1/2 (2 ports), IEC61162-1 (6 ports)

Sentences
- Input   ABK, ACN (ACM), ALC, ALF, ALR, ARC, CUR, DBT, DDC, DPT, DTM, GGA, GLL, GNS, HBT, HCR, HDT, MTW, MWD, MWV, NRM, NRX, NSR, RMC, RRT, SRP, THS, VBW, VDM, VDO, VDR, VHW, VLW, VSD, VTG, ZDA
- Output   ABM, ALC, ALF, ALR, ARC, BBM, DDC, EVE, HBT, OSD, RRT, RSD, RTE, SRP, TLB, TTD, TTM, VSD, WPL

Digital Input	1 port (for ACK signal input)
Contact Closure	6 ports 1 port for system fail, 1 port for power fail, 2 ports for normal close, and 2 ports for normal open

Sensor Adapter
Control and Serial Input
- LAN   1 port, Ethernet 100 Base-TX
- Serial   8 ports   IEC 61162-1/2 (4 ports), IEC 61162-1 (4 ports)

Analog Input	3 ports/per unit, -10 to +10 V/0 to 10 V, 4 to 20 mA selectable
Digital Input	8 ports/per unit, normal close or open, selectable
Digital Output	8 ports/per unit, normal close or open, selectable

POWER SUPPLY
Power Supply Unit   100-230 VAC: 1 phase, 50-60 Hz

FAR-3015	PSU-014: 1.7-0.8 A / PSU-014: 2.5-1.1 A
FAR-3025	PSU-014: 1.8-0.8 A / PSU-014: 2.5-1.2 A
FAR-3025-NXT	PSU-014: 1.8-0.9 A / PSU-014: 2.5-1.2 A
FAR-3035S	PSU-014: 2.8-1.3 A / PSU-015: 5.1-2.3 A
FAR-3035S-NXT	PSU-016: 2.8-1.3 A / PSU-018: 4.7-2.1 A

Processor Unit (EC-3005)   100-115/220-230 VAC: 2.3/1.1 A, 1 phase, 50-60 HZ

Display Unit   MU-270W : 100-230 VAC : 0.6-0.4A, 1 phase, 50-60 Hz

Hub   100-230 VAC: 0.1 A, 1 phase, 50-60 Hz
De-icer (option)   100-115/220-230 VAC: 2.6-1.3 A, 1 phase, 50-60 Hz

ENVIRONMENTAL CONDITIONS

Unit	Ambient Temperature	Relative Humidity	Degree of protection	Vibration
Antenna Unit	-25°C to +55°C (storage +70°C)	95% or more at 40°C	IP56	IEC 60945 Ed. 4
Power Supply Unit	-15°C to +55°C		IP22	
Processor Unit			IP20	
Control Unit			IP22	
HUB-3000			IP22	

EQUIPMENT LIST

Standard

Display Unit	MU-270W	1 unit
Processor Unit	EC-3005	1 unit
Control Unit		1 unit
Radar Control Unit	RCU-025	1 unit (specify when ordering)
Trackball Control Unit	RCU-026	
Antenna Radiator	XN12CF/XN20CF/XN24CF	1 unit
	XN12CA/XN20AF/XN24AF	
	SN36CF	
Transceiver	RTR-107/111/123/131/132	1 unit
Gear Box	RSB-128/129/133/146	1 unit
Performance Monitor	PM-32A/32B/52A/52B	1 unit
Power Supply Unit	PSU-014/015/016/018	1 unit
Cable between Power Supply Unit and Antenna Unit		1 pc
LAN Cable between Processor Unit and Power Supply Unit		1 pc
Standard Spare Parts and Installation Materials		1 set

Option

| Sensor Adapter	MC-3000S/3010A/3020D/3030D
Sub Display Radar Cable	RW-00136
De-icer	OP03-226/227/231/232/274
Junction Box (for foremast mounting)	RJB-001
Composite Cable between Junction Box and Antenna/ Power Supply Unit (for foremast mounting)	RW-9600
LAN Signal Converter (for foremast mounting)	OP03-223
Intelligent Hub	HUB-3000
Wave Analyzer Software	WV-100/WV-100ST

INTERCONNECTION DIAGRAM

Antenna Units

FAR-3015
FAR-3025   XN12AF / XN20AF / XN24AF

Performance Monitor PM-32A — Gear Box RSB-146

100-115/220-230 VAC 1ø, 50/60 Hz for Deicer

FAR-3025-NXT   XN12CF / XN20CF / XN24CF

Performance Monitor PM-32B — Gear Box RSB-128

100-115/220-230 VAC 1ø, 50/60 Hz for Deicer

FAR-3035S   SN36CF

Performance Monitor PM-52A — Gear Box RSB-129

100-115/220-230 VAC 1ø, 50/60 Hz for Deicer

FAR-3035S-NXT   SN36CF

Performance Monitor PM-52B — Gear Box RSB-133

100-115/220-230 VAC 1ø, 50/60 Hz for Deicer

100-230 VAC 1ø, 50/60 Hz

Antenna Power Supply Unit

FAR-3015/3025:	PSU-014
FAR-3025-NXT:	PSU-014
FAR-3035S(24 rpm):	PSU-014
FAR-3035S(42 rpm):	PSU-015
FAR-3035S-NXT(24 rpm):	PSU-016
FAR-3035S-NXT(42 rpm):	PSU-018

Display Unit MU-270W

5 m/10 m DVI

USB Keyboard USB Mouse

RW-00135 15/30/ 40/50 m

Wave Analyzer Software

Processor Unit EC-3005 for ECDIS and Radar

*Up to 8 EC-3005 Processors Units can be interfaced through single HUB-3000

Intelligent Hub HUB-3000 8 ports

Sensor Adapter

Serial MC-3000S 8 ports

Navigation Sensors
Gyrocompass
AIS
GPS
NAVTEX
Wind Indicator
Echo Sounder
Speed Log
Water Temp. Sensor
etc.

100-230 VAC 1ø, 50/60 Hz

24 VDC

Analog MC-3010A 3 ports

Controller RCU-025

TET-16-045A 2.3/10/20/30 m

Processor Unit EC-3005

Intelligent Hub HUB-3000 8 ports

Digital IN/OUT MC-3020D/3030D 8 ports each

6TPSH-XH12X2 2.3/10/20/30 m

Trackball Controller RCU-026

AC 100-230 V 1ø, 50/60 Hz

Navigation Sensors
System Fail
Power Fail

ACK IN

DVI-RGB Cable   VDR

100-230 VAC 1ø, 50-60 Hz

100-115/220-230 VAC 1ø, 50-60 Hz

Option or Local Supply

| Model	Output Power	Transceiver	Antenna		Rotation	Power Supply	Display
FAR-3015	X band 12 kW	RTR-131	126 cm	(XN12AF)	24/42* rpm	PSU-014	27″ WUXGA (MU-270W)
FAR-3025	X band 25 kW	RTR-132	204 cm 255 cm	(XN20AF) (XN24AF)			
FAR-3025-NXT	X band 600 W	RTR-123	130 cm 210 cm 260 cm	(XN12CF) (XN20CF) (XN24CF)	24/42* rpm	PSU-014	27″ WUXGA (MU-270W)
FAR-3035S	S band 30 kW	RTR-107	383 cm	(SN36CF)	24/42* rpm	PSU-014 (24 rpm) PSU-015 (42 rpm)	27″ WUXGA (MU-270W)
FAR-3035S-NXT	S band 250 W	RTR-111	383 cm	(SN36CF)	24/42* rpm	PSU-016 (24 rpm) PSU-018 (42 rpm)	27″ WUXGA (MU-270W)

* Except for XN24CF

Antenna Unit (FAR-3025-NXT)

XN12CF 46.2 kg 101.4 lb
XN20CF 48.1 kg 106 lb
XN24CF 49.3 kg 108 lb

XN12CF: 1300±10mm 51.1"
XN20CF: 2100±10mm 82.6"
XN24CF: 2600±10mm 102.3"

575 22.6" 109 4.3" 395 15.5"
255 10" 257 10.1" 15 0.6"
409 16.1" 9 0.3"
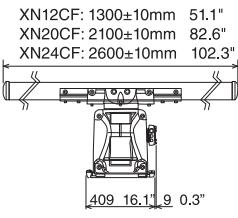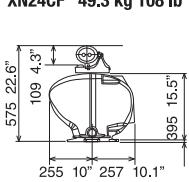
Antenna Unit (FAR-3015/3025)

XN12AF 39 kg 86 lb
XN20AF 44 kg 97 lb
XN24AF 46 kg 101 lb

XN12AF: 1260±10mm 49.6"
XN20AF: 2040±10mm 80"
XN24AF: 2550±10mm 100"

XN20AF/24AF : 570 22.4"
XN12AF : 555 21.8"
431 17"
429 17"
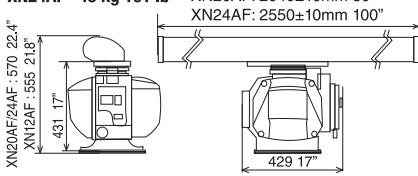
Antenna Unit (FAR-3035S/3035S-NXT)

SN36CF 144 kg 317.4 lb

3822 150.5"
8-R15
769 30" 457 18"
12 0.5" 640 25"
420 16.5" 69 2.7"
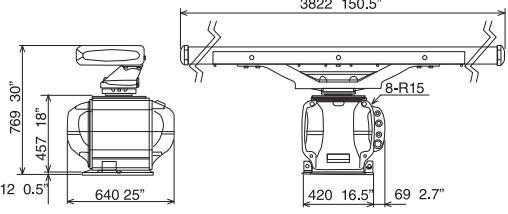
Monitor Unit

MU-270W
Bracket Mount
21 kg 46.3 lb

236 9.3" 95 3.7"
485 19.1"
35°
287 11.3"
341 13.4"
135 5.3"
728 28.7"
814 32.0"
Hood (option)
Handle (option)
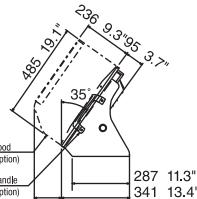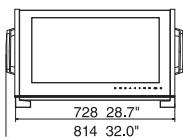
MU-270W
Flush Mount
13 kg 28.7 lb

95 3.7"
less than 4xR10
pilot hole 6
4xΦ8x17 fixing hole
12 0.5"
485 19.1" 313 12.3"
471 18.5" 313 12.3"
706 27.8"
686 27.0"
706 27.8"
728 28.7"
79 3.1"
Cutout for flush mount
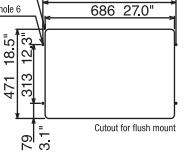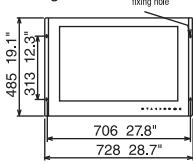
Power Supply Unit

PSU-014 8.5 kg 18.7 lb

392 15.4" 370 14.6" 32 1.3"
340 13.4" 405 15.9"
350 13.4"
150 5.9"

PSU-016 8.5 kg 18.7 lb

392 15.4" 370 14.6" 32 1.3"
340 13.4" 405 15.9"
350 13.4"
150 5.9"

PSU-015 10 kg 22.0 lb

392 15.4" 370 14.6" 32 1.3"
340 13.4" 405 15.9"
350 13.4"
150 5.9"

PSU-018 10 kg 22.0 lb

392 15.4" 370 14.6" 32 1.3"
340 13.4" 405 15.9"
350 13.4"
150 5.9"
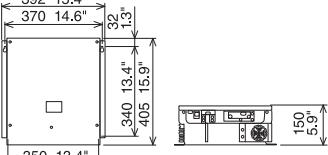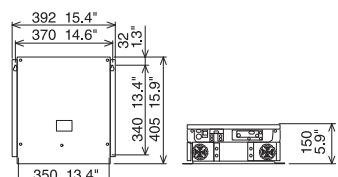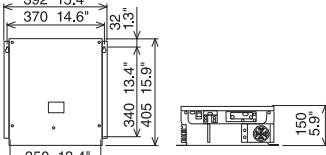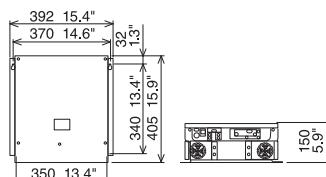
Control Unit

RCU-025 2.3 kg 4.4 lb

32 1.26" 339 13.3"
180 7.09"
398 15.7"
72 2.83" max.
no less than 70 2.76"
10 to 20 0.39" to 0.79"
55 2.17" 38 1.50"
216 8.50"
398 15.7"
170 6.69"
180 7.09"
388 15.3"
Cutout for flush mount
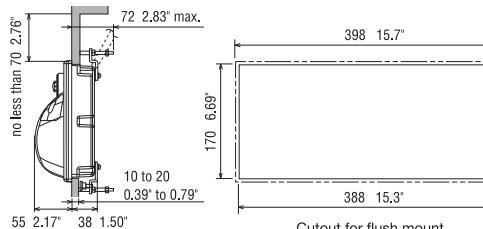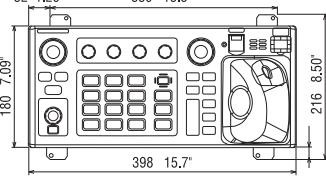
Trackball Control Unit

RCU-026 1.5 kg 3.31 lb

no less than 70 2.76"
Max 70 2.76"
120 4.72"
180 7.09"
120 4.72"
170 6.69"
180 7.09"
110 4.33"
Cutout for flush mount
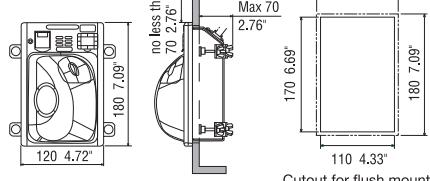
Processor Unit

EC-3005
14 kg 30.9 lb

426 16.77"
15 0.59" 396 15.59"
360 14.17"
45 1.77"
153 6.02"
150 5.9"
150 5.9"
150 5.9"
3-ø8
Fixing hole
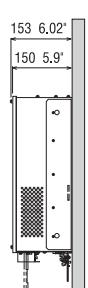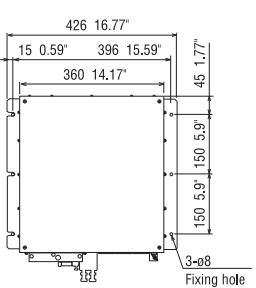
Intelligent Hub

HUB-3000
1.5 kg 3.31 lb

350 13.79"
336 12.23"
4-ø5 Fixing hole
103 4.06" 153 6.02" 172 6.77"
324 12.76"
33 1.3"
42 1.65"
no less than 100 3.94"
no less than 150 5.91"
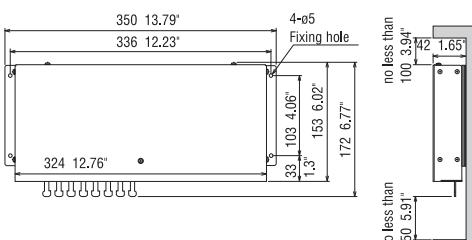
Sensor Adapter

Serial : MC-3000S 1.5 kg 3.3 lb

220 8.66" 180 7.09"
4-ø5 Fixing Hole
48 1.88" 41 1.61"
235.5 9.27" 150 5.91"
64 2.52"
no less than 150 5.91"
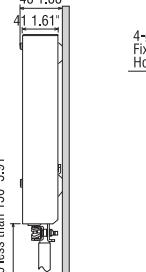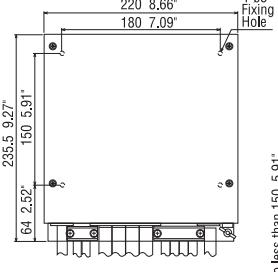
Analog : MC-3010A 0.8 kg 1.8 lb

100 3.94" 60 2.36"
4-ø5 Fixing Hole
48 1.88" 41 1.61"
150 5.91" 235.5 9.25"
64 2.51"
no less than 150 5.91"
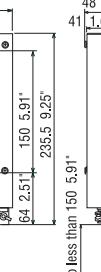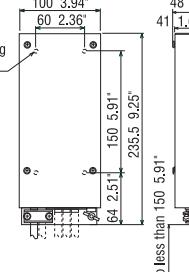
Digital In : MC-3020D 0.8 kg 1.76 lb

100 3.94" 60 2.36"
4-ø5 Fixing Hole
48 1.88" 41 1.61"
150 5.91" 235.5 9.25"
64 2.52"
no less than 150 5.91"
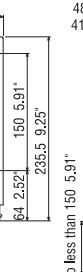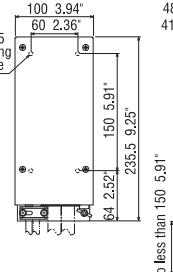
Digital Out : MC-3030D 0.8 kg 1.76 lb

100 3.94" 60 2.36"
4-ø5 Fixing Hole
48 1.88" 41 1.61"
150 5.91" 235.5 9.25"
64 2.52"
no less than 150 5.91"
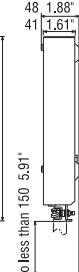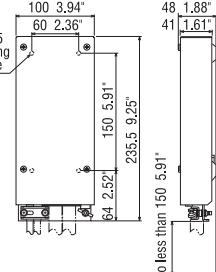
Beware of similar products

All brand and product names are registered trademarks, trademarks or service marks of their respective holders.

SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE