

Steering Reliability since 1916

COMMERCIAL AUTO PILOT



SA-10 series



SAURA

Computer Controlled Auto Pilot

For over 30 years, Saura auto pilots have earned a "hard-one" reputation from discerning professionals all over the world. Unlike the majority of auto pilots on the market, Saura SA-10 offers all the features that a commercial auto pilot should have.

Tight course holding and rugged construction to withstand harsh off shore operating conditions will earn professionals' satisfaction.

FEATURES

Fast response, precision auto pilot

Saura's proven and well-established technology succeeds in unbeatable performance and unparalleled reliability.

Single main unit design

No separate processor unit or distribution box is necessary. "Space saving" and simple installation.

Rotary course setter and controls

Positive fingertip control for fine course setting, steering responses and mode selection with rotary control dials.

Dual remote capability

Two remote controls (portable or fixed electric helm) can both be connected. No selector switch operation required for station transfer.

GPS course matching navigation

An advanced algorithm which is exclusive to Saura SA-10 series reduces deviation off the set course.

Serial data input and output

Navigation equipment can talk to the autopilot providing the most up-to-date information for accurate way point steering. Heading output is provided for other navigational equipment.

Manual and permanent TRIM control dial

Course Set Dial can turn into a manual TRIM control dial, allowing TRIM adjustments freely at any time while in REMOTE or NAV mode.



SA-10

Specifications

Power supply:	13.8 - 30VDC
Current drain:	0.3A stand-by 1.4A when actuating solenoid
Bearing accuracy:	±1° for X-Y type sensor inputs ±0° for NMEA inputs
Heading display:	0-359° 1° step, back-lit LCD
Rudder angle:	LCD bar graph indication External RAI can be connected
Size & weight:	W194 H94 D94mm 1.5kg (SA-10)

INPUTS:	
Heading reference:	Compass sensor (sine/cosine)
Serial data:	NMEA-HDT or HDM
GPS data:	NMEA0183-APB or a pair of BOD & XTE
OUTPUTS:	
Heading output:	NMEA0183-HCHDM and Saura SA-10 format serial data (interval 0.3 sec approx)

SA-101 Wheel House Unit

Top quality 150mm compass and auto pilot controls come in one easy to install pedestal. Steering dial on the front panel offers a handy and positive maneuvering on F.F.U.

An additional remote control or an electric helm can be connected without an external junction box.

Fitted with a full magnetic compass deviation correcting facility that is essential for GPS guided navigation.



W530 H256 D422mm 22kg

SA-101

SA-101P Panel Mount Control Head

It is a front top section of SA-101 for panel or flush mounting installation. A magnetic compass can be installed at a remote location separately from this control head, where it is subject to little magnetic interference.

Gyro compass or fluxgate compass heading reference can be connected to it.

SA-101P is fitted with a helm control dial (FFU) whereas SA-103P is with lever steering (non-follow-up) as shown in photo.



W300 H126 D115mm 2kg

SA-103P

Accessories for SA-10

And more

It is not well known what a paramount role both the compass and sensor play in enabling the auto pilot to perform at its best.

Designing a professional quality auto pilot requires thorough knowledge of the compass behavior, especially in dynamic motion encountered off shore, and engineering expertise in magnetic field detection technology.

Saura, with more than 80 years of experience in manufacturing top quality magnetic compasses, can achieve this better than anyone else. This is the hidden secret behind Saura's unparalleled quality and reliability of their auto pilots.

ACCESSORIES

Rudder Feedback TR-2



W160 H100 D150mm 1.2kg

Oil filled potentiometer ensures an extremely long duty life. Inner reduction gear mechanism will magnify the rudder travel three times of its actual angle, for ultimate preciseness in establishing the rudder position.

Fluxgate Compass SC-75



W150 H125 D150mm 1.6kg

Directional system, held afloat in compass liquid on the tip of pivot, is able to rotate freely and face North, resulting in accurate, repeatable and stable headings for auto pilot. Gimballed bracket keeps the compass horizontally.

Remote Control F-20



W62 H236 D66mm 0.6kg

A large dial for positive helm control on a water-tight handset with 10 mtr highly durable cabtyre cable. FD-20 is fitted with an LED display to show the heading or set course.

OPTIONALS

Rudder Angle Indicator A-3



W80 H80 D85mm 0.5kg

An external R.A.I., illuminated for night with dimmer control. Rudder position is precisely shown by the pointer needle.

Electric Helm FH-5



Panel W190 H240mm 3.1kg

The steering wheel allows fast and simple control of helm. Rudder order indicator has a dimmer control for night use.

Course Setter RC-10



W139 H118 D118mm 1kg

80mm dia card tracks the ship's heading at all times. Second steering station capability; a course dial for selecting and setting a new course.

Pick-off Sensor SCP-SC



Ø 204 or 164 H 25mm 0.1kg

It detects heading reference of a magnetic compass. Clear mounting plate for simple attachment on Saura steering compass without obstructing card view.

SMART Sensor SCP-NT



Ø 204 or 164 H 33mm 0.2kg

A magnetic pick-off device mounted on a magnetic compass, to generate NMEA output to transfer the heading for auto pilot or other navigational instrument.

Alarm Unit SWA-1



W120 H120 D60mm 0.4kg

Offering selection of two functions by DIP Sw settings ; Watch alarm or Watch dog alarm. Key switch to prevent from unauthorized operation. Anti-tamper alarm function is incorporated.

Second Steering Station SA-10S



W194 H94 D94mm 1.5kg

Offers full control capability at a remote location, such as flying bridge. One thin cable link is all that is required to connect it to SA-10 main unit.

Twin rudder independent control SA10-2MR



W194 H94 D94mm 1.5kg

A sub-set of SA-10, and it works in parallel with the master unit SA-10 for steering control in vessels having twin rudder. Two rudders can be controlled independently as well as simultaneously.

Solenoid Stack SV-02F/03F



W230 H230 D80mm 6kg

Quick response, low pressure loss and high surge endurance. "Bleeding Off" type flow control valve, allows adjustment of oil displacement to match with the capacity of existing hydraulic ram(s).

Engine Remote Control System

Total steering controls in one hand

ERC-VF is a unique combination of engine-helm control for small commercial crafts, and it offers comfort and freedom in controlling engine's shift and speed as well as steering/helm (if Saura auto pilot installed) at the operator's fingertips anywhere onboard within the reach of the remote control cable.

Not only for single engine/rudder applications, ERC-VF is capable of controlling twin engine installations, from one or two control stations.

ERC-VF is suitable for vessels having a twin lever type master control head for shift and throttle operated by push-pull cables.

After more than three thousands of successful installations of our engine remote control systems, ERC-VF now comes with a new compact light weight actuator box.

Easy to install

All what is required is link the actuator box and engine control levers by push-pull cables. Ball joints provided make installation work easy and ensure the rigid cable connections.

Safety design

Engagement of actuator can be switched ON or OFF simply by a press on a push switch provided side of the handset, ensuring an instant station transfer to manually operated control levers at any time.

Easy adjustment and calibration

The cable stroke can be easily adjusted with a screw driver to match various engine installations. Throttle actuating speeds in push and pull modes can be adjusted independently each other.

Helm control capability

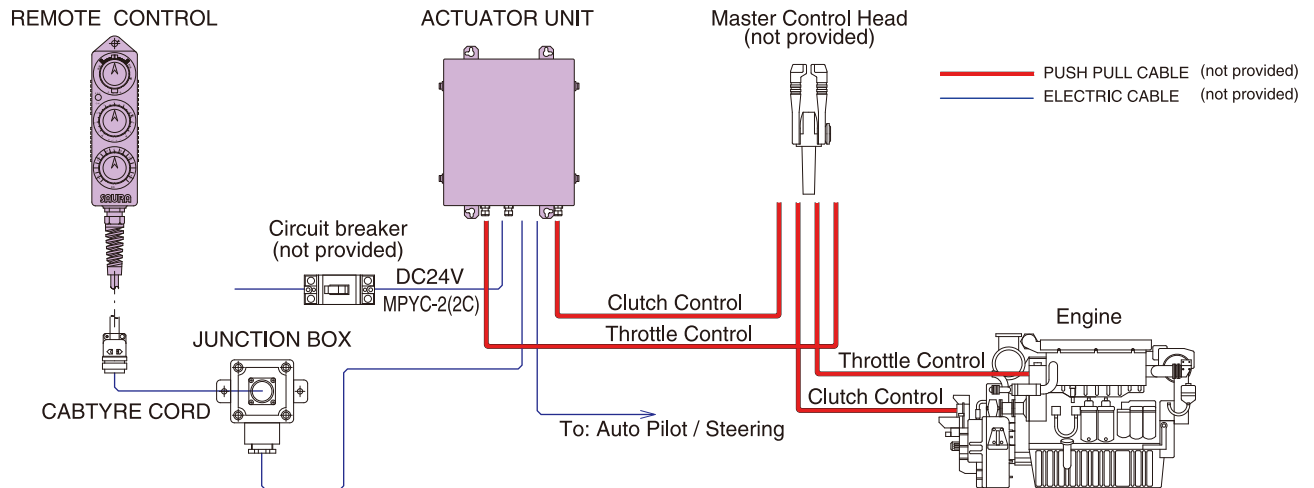
Rudder control dial is provided. When used with Saura auto pilot, you can have the total maneuvering control of engine and helm in one hand.



Remote Control



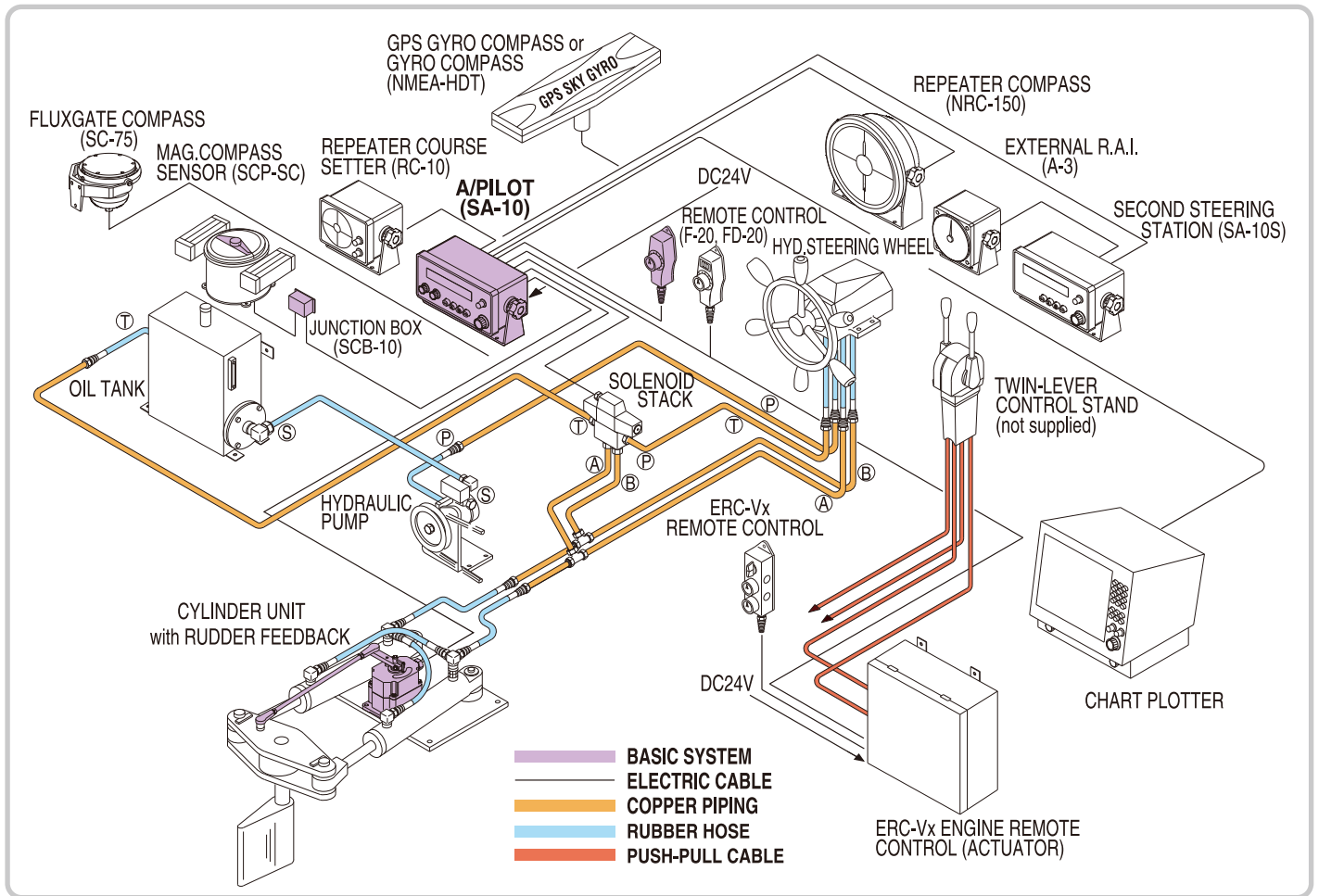
Actuator box



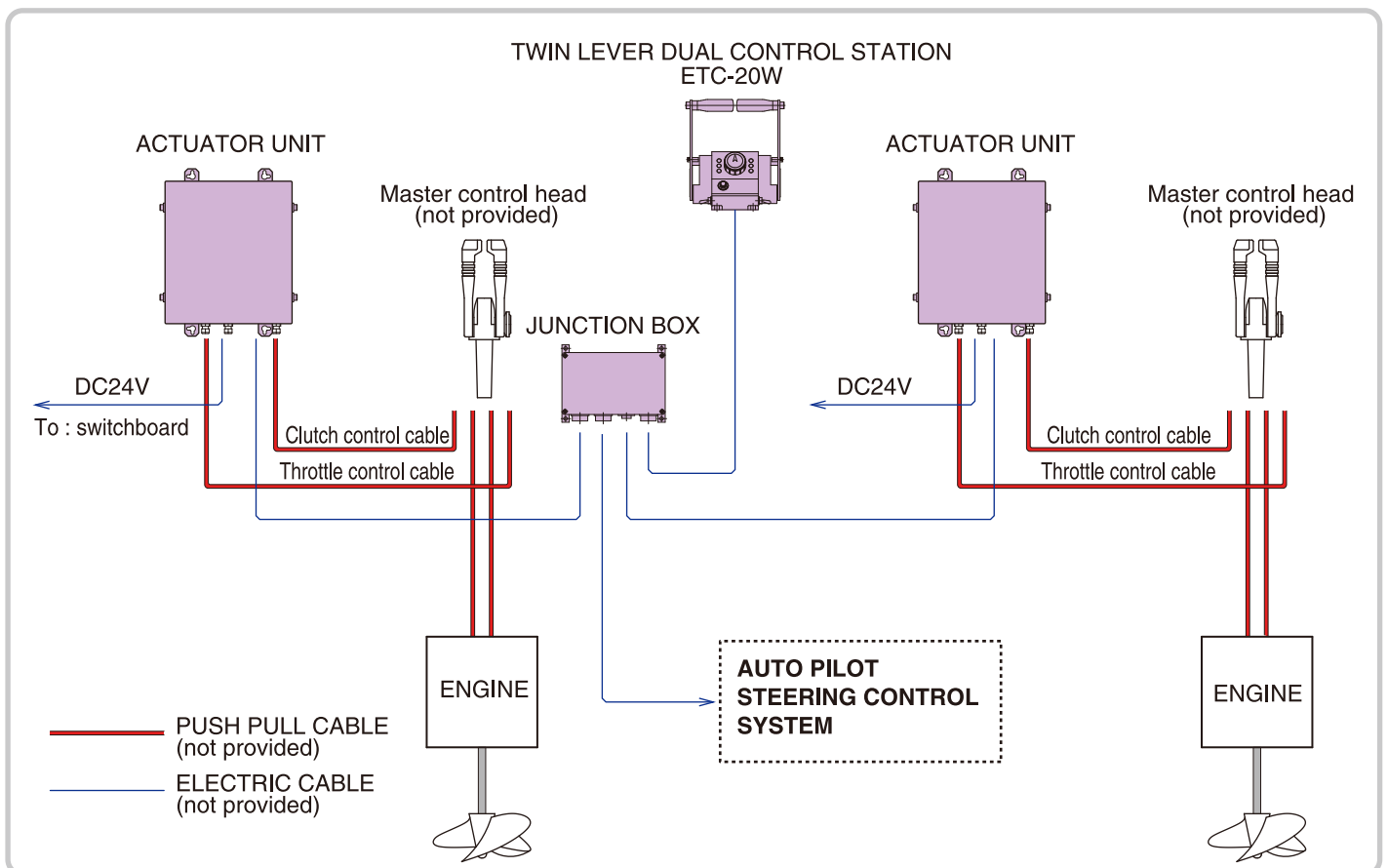
Specifications

	Clutch	Throttle
Cable actuating force	35 kg or greater	35 kg or greater
Controlling method	4-sector independent control ; Ahead-Neutral and Neutral-Ahead	Linear follow-up control
Cable actuating speed	less than 1 sec for each sectors	approx 5 sec for full travel
Adjustable range for cable travel length	50mm for each sectors	100mm for Dead Slow to Full Speed
Power supply	24VDC	
Power consumption (stand-by)	less than 0.6A approx	
Power consumption (on duty)	4A approx	3.5A approx
Applicable push-pull cable	MORSE #J33C, thread M5 (not provided)	
Weight	15 kgs approx	
Ambient temperature	-20°C ~ +60°C	

Installation layout



ERC-VF for twin engine applications



Repeater Compass NRC-150

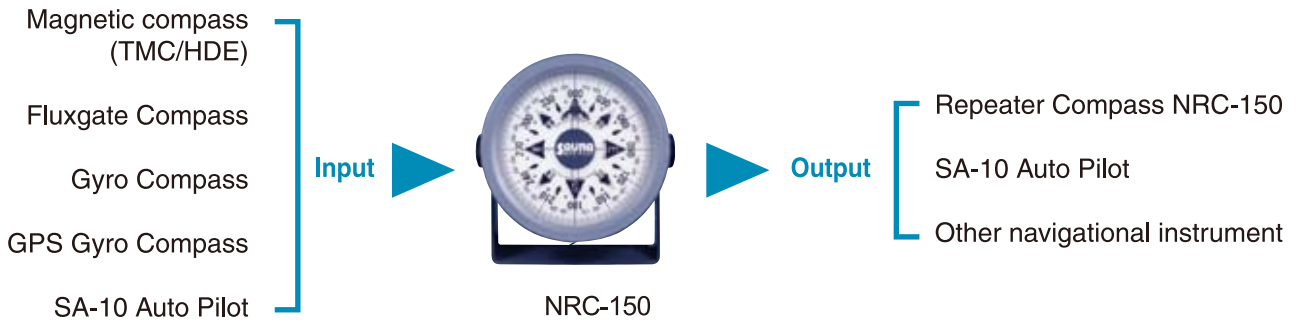
NRC-150 is a unique combination of repeater compass and heading reference input & output facility, which makes it very versatile for various applications.



NRC-150P

- A large easy to read 150mm dia card with 1° graduation
- Capable of connecting to a variety of heading reference transmitting sources ; Gyro compass, GPS antenna compass, TMC systems, Auto pilots, etc.
- Back-lit illumination for night use
- Unlimited number of repeater connections
- Heading data output facility
- Available in two different mounting styles; panel (NRC-150P) or bracket mounting (NRC-150)
- Light in weight and low profile design
- Water-proofing rear cover available on option for NRC-150

Heading output & repeater connection



Specifications

	NRC-150	NRC-150P
Power source	13.8 (12) - 30VDC	←
Current drain	200mA nominal, 400mA max	←
Input signals	Serial data NMEA 0183 HDT and HDM Sine/cosine analogue sensor input	←
Output signals	Serial data NMEA 0183 HDM Sine/cosine analogue output	←
Output interval	Serial data in every 50mS (250mS) Analogue signal continuous	←
Accuracy	Average within 1 deg, max ±2 deg	←
Card diameter	150mm	←
External form	Round verge ring type	Square bezel type
Mounting	Bracket foot or panel mount	Panel mount
Dimmer control	fitted on the rear	fitted on the instrument front bezel
Operating temperature	-10 deg to 50 deg C	←
Dimension	213mm x 202mm x D 80mm	200mm x 200mm x D 80mm
Weight	1.3 kg	1.3 kg
Optional accessories	External dimmer kit Water protection rear cover	not available not available

Specifications to change without prior notice

Distributed by:

Manufactured by:

Saura Keiki Seisakusho Co., Ltd.

Steering reliability since 1916

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