Designed for small boats, the SI-TEX SP-110 autopilot brings all the features of more expensive models into a single compact unit, without the need for a separate junction box. It works with rudder feedback units or it's also fully capable of Virtual Feedback operation. Suitable for small motorboats as well as sailing yachts up to around 15 meters.

Designed to an industry standard 110mm square casing it fits nicely together with other instruments. SI-TEX has developed the SP-110 to provide performance and reliability for the small boat user. There are simply no other autopilots on the market so compact and easy to install with the same level of functionality.

The SP-110 can operate as a stand-alone system with the control unit and compass connected to either reversing pumps or mechanical drive units. Alternatively, the system can be integrated via NMEA-0183 interface with navigational aids such as a GPS or GPS plotters to provide waypoint steering. The SP-110 also features a Wind steering Mode that enables the unit to steer to wind when interfaced via NMEA-0183 to a Wind Sensor.

**MAIN FEATURES**

- Splashproof Control Unit with large, easy to read backlit display
- Simple operation with push button controls
- Attractive styling complements existing vessel instrument layout
- Off course alarm
- Steer to GPS or Steer to Wind modes

**AUTOPilot MODES**

**Manual Mode:** Your vessel is under manual steering control, the autopilot does not apply automatic steering control. The display shows current magnetic heading.

**Auto Mode:** The autopilot will maintain your vessel on any desired magnetic course, which can be set from the Control Unit.

**GPS Mode:** When interfaced with a GPS via NMEA-0183, the autopilot can steer the vessel to a precise Lat/Long position, through any number of desired course changes.

**Wind Mode:** When interfaced with a NMEA-0183 wind sensor the autopilot will steer the vessel relative to the selected Apparent Wind Angle.

**SP-110 DIMENSIONS & SPECIFICATION**

**VOLTAGE** 12 volts DC  
**CURRENT (AVG)** 0.5 Amps  
**CURRENT (MAX)** 15 Amps  
**CONTROLS** 4 Push Button  
**DISPLAY** Transflective LCD Better than 1º  
**SENSITIVITY** 0-10º  
**RUDDER RATIO** 0.1 : 10 to 1.0 : 1.0  
**RUDDER LIMITS** Adjustable  
**COURSE DETECTION** 45º  
**ALARM** NAV SIGNAL NMEA-0183

**SP-110 SYSTEM (TYPICAL)**

**STANDARD COMPONENTS**

SP-110 Control Unit, Electronic Compass Sensor with 5 metres of cable, mounting hardware and brackets, operation manual.

**SUPPORT**

Si-TEX has been in the Marine Electronics Industry for 35 years and backs the SP-110 with a 2 year warranty.
MECHANICAL DRIVE SELECTION GUIDE

This flowchart will help you choose the correct mechanical drive for your powerboat. The first step is to find out what manual helm you have behind the dash and steering wheel:

START

- Rack & Pinion Steering?
  - Replace Steering Cable
  - Non-Feedback (NFB) Helm?
    - Order OC15SUUK11 Friction Brake
      - Order MDRESYS-A Type R Kit
        - Volvo Gasoline, Volvo North American Diesel, Mercruiser 1994 on
          - Min 215mm/8.5in behind dash?
            - Order MDRESYS-B Type R Kit
              - Volvo European Diesel, Mercruiser to 1994
                - Min 250mm/10in behind dash?
                  - Order Type 'S' Drive, 90° Mounting Kit
                    - Order OC15SUUK10 Max 2 Spacers
                      - 20° Steering Mount Angle?
                        - Order OC15SUUK9 20° Bezel Kit
                          - Spacers Required?
                            - Order OC15SUUK17 Max 2 Spacers
                              - Spacers Required?
                                - Order MDRESYS-C Type R Kit
                                  - Yahama 70hp+?
                                    - Order MDRESYS-D Type R Kit
                                      - Mercury/Marine/Suzuki?
                                        - Order MDRESYS-E Type R Kit
                                          - Boat under 32ft, 13,200lbs?
                                            - Inboard/Outboard?
                                              - Order TFX SSCP73 Ultex M47 Morse 304415
                                                - Order TFX SSCP62 Ultex M66?
                                                  - Order OC15SUUK08 Adapter Kit
                                                    - TFX Performance Tilt drop in available - consult factory for other tilt helms
                                                      - Spacers Required?
                                                        - Order OC15SUUK16 Max 2 Spacers
                                                          - Use Existing Cable
                                                            - Std Morse Steering Cable?
                                                              - Order OC15SUUK07 Adapter Kit
                                                                - Yacht under 32ft, 13,200lbs?
                                                                  - Outboard Engine?
                                                                    - Order OC15SUUK09 20° Bezel Kit
                                                                      - Spacers Required?
                                                                        - Order OC15SUUK17 Max 2 Spacers

Note: OC15SUUK11 Friction Brake is not available for Type T Tilt Helm.
MECHANICAL DASHBOARD DRIVE TYPE S/T

PROFESSIONAL SOLUTIONS FOR STERN DRIVE & OUTBOARD ENGINES
These drives are a professional solution replacing the manual helm with a manual helm/autopilot drive combination. No unsightly autopilot drive is seen behind the steering wheel in front of the dash.

UNIQUE AUTOPILOT DRIVES FOR CABLE STEERED BOATS

TYPE S BEHIND THE DASH DRIVE MDMSW
The Straight shaft drive unit replaces the manual drive used on cable steered boats and is mounted directly behind the dash. The drive is directly compatible with the Morse 290 steering helm but comes with its own bezel kit and can be retrofitted in most installations using the cable and steering wheel from the manual steering helm on the boat. The dealer installation guide can be downloaded from our website which gives all the necessary information. See page 12 for optional accessories.

TYPE T TILT BEHIND THE DASH DRIVE MDTPW
This drive unit replaces a manual Tilt drive and is mounted directly behind the dash, but still allows the angle of the steering wheel to be changed. It uses the front end from Teleflex SH91800 (not supplied).

See page 12 for optional accessories.

OPTIONAL RUDDER FEEDBACK UNIT
Typically one of the most complex and time-consuming aspects of autopilot installation is fitting the rudder feedback unit and ensuring that the geometry matches the full range of rudder movement. The solution is an integrated rudder feedback unit that directly mounts to the drive unit itself. A range of rudder feedback units are compatible with all major autopilot brands and models.
MECHANICAL DASHBOARD DRIVE TYPE S/T

MOTOR & CLUTCH CABLE CONNECTIONS

RFB CABLE CONNECTIONS

<table>
<thead>
<tr>
<th>OCTOPUS DRIVE</th>
<th>SP110 DISPLAY SOCKET</th>
</tr>
</thead>
<tbody>
<tr>
<td>RED</td>
<td>PIN 1 (5V)</td>
</tr>
<tr>
<td>BLACK</td>
<td>BLACK</td>
</tr>
<tr>
<td>GREEN</td>
<td>PIN 2 (WIPER)</td>
</tr>
<tr>
<td>WHITE</td>
<td>PIN 3 (0V)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>OCTOPUS RFB</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>RED</td>
<td>Pot Pin 3 (red)</td>
</tr>
<tr>
<td>BLACK</td>
<td>+5volts</td>
</tr>
</tbody>
</table>

| POT PIN 1 (BLACK) | 0 volts |

| POT PIN 2 (WHITE) | slider |

HOOK-UP TABLE

INSTALLATION ENVELOPE

TOP VIEW

MIN 250mm (10in) clearance front-back (216mm / 8.5in with spacers)

SIDE VIEW

MIN 150mm (10in) clearance top-bottom
MECHANICAL REMOTE DRIVE - SYSTEM PACKS

ONE DRIVE, ALL BOATS
The revolutionary Type R Remote Drive System makes selection and installation simple - one standard drive unit is suitable for all boat types, whether it’s a powerboat with outboard, sterndrive or inboard steering as well as sailboats.

EVERYTHING YOU NEED IN THE BOX
Now Octopus have made things even easier with the new Remote Drive Autopilot Packs - everything needed for fitting is supplied in one box, including steering cable and installation kit. To specify, simply choose the appropriate engine make and drive system.

OPTIONAL RUDDER FEEDBACK UNIT
With an autopilot installation, typically one of the most complex and time-consuming aspects is fitting the rudder feedback unit and ensuring that the geometry matches the full range of rudder movement.

The Type R system gets around this problem with its optional integrated rudder feedback unit that directly mount to the drive unit itself. A range of rudder feedback units are compatible with all major autopilot brands & models - see page 11 for the selection chart.

UNIVERSAL SOLUTION
One drive fits most engine and steering types.

EASY TO BUY
Everything you need in one box - drive unit, cable, installation kit.

EASY TO FIT
Simple to mount installation kits and optional integrated rudder feedback make for easy fitting.

COMPACT
The remote drive unit has a tiny 0.25Ft² footprint and can be mounted in the most convenient location on your boat.

RELIABLE & SAFE
Proven, tested design. The drive unit features a manual override without having to disengage the autopilot first.

COMPATIBLE WITH YOUR PILOT
Compatible with all major autopilot brand electronics.

SELECTION GUIDE

<table>
<thead>
<tr>
<th>PART No.</th>
<th>DRIVE SYSTEM</th>
<th>ENGINE MAKE / MAX DISPLACEMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>MDRSYS-A</td>
<td>Sterndrive</td>
<td>Mercruiser 1994+ / Volvo Gasoline</td>
</tr>
<tr>
<td>MDRSYS-B</td>
<td>Sterndrive</td>
<td>Mercruiser 1983-93 / Volvo Diesel</td>
</tr>
<tr>
<td>MDRSYS-C</td>
<td>Outboard</td>
<td>Yamaha 70hp+</td>
</tr>
<tr>
<td>MDRSYS-D</td>
<td>Outboard</td>
<td>Mercury, Mariner, Suzuki</td>
</tr>
<tr>
<td>MDRSYS-E</td>
<td>Inboard/Sail</td>
<td>13,200lbs (6t) 32ft (9.75m)</td>
</tr>
</tbody>
</table>

See p7 for larger drive model suitable for inboard/sailboats up to 38ft/15,500lbs
MECHANICAL REMOTE DRIVE - SYSTEM PACKS

MOTOR & CLUTCH CABLE CONNECTIONS

RFB CABLE CONNECTIONS

HOOK-UP TABLE

OUTBOARD CONNECTION KIT

TYPICAL STERNDRIVE CONNECTION KIT

INBOARD/SAILBOAT INSTALLATION ENVELOPE

DRIVE ENVELOPE

www.si-tex.com
MECHANICAL LINEAR DRIVE TYPE RS

COMPACT AND CONVENIENT SOLUTION
The Octopus Remote Sailboat Drive System makes it easy and economical to install an autopilot on light displacement Sailboats steered with mechanical cable or tiller. The drive is very responsive and has little feedback resistance when in ‘Standby’ Pilot mode making it very suitable for racing yachts.

The linear drive connection kit can be fitted into very small spaces which makes it ideal for the smaller to midsized modern yachts which have limited space to fit drive units.

Recommended for Yachts up to 38ft (11.5m) with a maximum displacement of 15400 lbs / 7000 kg.

EVERYTHING YOU NEED IN THE BOX
We’ve have made things even easier with the RS Sailboat Drive Autopilot Packs - everything you need to install the drive is supplied in one box, including steering cable and installation kit.

INTEGRATED RUDDER FEEDBACK UNIT
With an inboard pilot installation, typically one of the most complex and time-consuming aspects is fitting the rudder feedback unit and ensuring that the geometry matches the full range of rudder movement.

The Type RS Remote Drive gets around this problem with its integrated rudder feedback unit that directly mounts to the drive unit itself. The feedback unit can easily be configured to work with mainstream Autopilot electronics from all major manufacturers.

See available cable lengths and rudder feedback versions on page 11.

EASY TO BUY
Everything you need supplied in one box - drive unit, 6ft steering cable and linear drive connection kit.

EASY TO FIT
Simple to mount installation kits and the integrated rudder feedback make for easy fitting.

COMPACT
The remote drive unit has a tiny 0.25Ft² footprint and can be mounted in the most convenient location on your boat, horizontally or vertically.

RELIABLE & SAFE
Proven, tested design. The drive unit features a manual override without having to disengage the autopilot first.

COMPATIBLE WITH YOUR PILOT
The Type RS Remote Drive System is compatible with all major autopilot brand electronics.

SPECIFICATION

<table>
<thead>
<tr>
<th>ORDER CODE</th>
<th>MDR5-SYS</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAXIMUM STROKE</td>
<td>305mm / 12in</td>
</tr>
<tr>
<td>PEAK THRUST</td>
<td>180kg / 400lbs</td>
</tr>
<tr>
<td>MAX RUDDER TORQUE</td>
<td>450nm / 333 lbft</td>
</tr>
<tr>
<td>HARD OVER TIME</td>
<td>12-15 seconds</td>
</tr>
<tr>
<td>PEAK POWER</td>
<td>7 Amps</td>
</tr>
<tr>
<td>AVERAGE POWER</td>
<td>2.5 Amps</td>
</tr>
<tr>
<td>TILLER ARM RADIUS</td>
<td>254mm / 10in</td>
</tr>
<tr>
<td>MAX DISPLACEMENT</td>
<td>7000kg / 15,400lbs</td>
</tr>
<tr>
<td>(FULLY LADEN)</td>
<td>11.5m / 38ft</td>
</tr>
<tr>
<td>MAX BOAT LENGTH</td>
<td>12v DC</td>
</tr>
<tr>
<td>VOLTAGE</td>
<td>850mA</td>
</tr>
<tr>
<td>CLUTCH CIRCUIT POWER</td>
<td></td>
</tr>
</tbody>
</table>
MECHANICAL LINEAR DRIVE TYPE RS

MOTOR & CLUTCH CABLE CONNECTIONS

RFB CABLE CONNECTIONS

HOOK-UP TABLE

OCTOPUS DRIVE
- RED
- BLACK
- GREEN
- WHITE

SP110
- YELLOW
- YELLOW/BLACK
- +12V SUPPLY
- GREEN

OCTOPUS RFB
- RED
- WHITE
- BLACK

SP110 DISPLAY SOCKET
- PIN 1 (5V)
- PIN 2 (WIPER)
- PIN 3 (0V)

INSTALIATION ENVELOPE

Rudder

- Type 2 Sailboat Connection Kit
  OCI5SUUK26

- **105
- ***105

- 208
- 254 MAX

- 35°
- 35°

- 413 NOMINAL

- **1120

- **2m (6 foot) Steering Cable
  Other Lengths Available

- ****Spent Cable Tube

- Type RS Drive Unit
  + Integral Rudder
  Feed Back Module

* MIN SPACE REQUIRED
** BASED ON 2m STEERING CABLE
*** ADJUSTMENT RANGE
**** ENTRY POINT TO DRIVE UNIT OF
STEERING CABLE & SPENT CABLE TUBE ARE REVERSIBLE
HYDRAULIC REVERSING PUMP

TWICE THE POWER
The Octopus piston pump delivers over twice the hydraulic output per watt of input than a hydraulic gear pump.

HALF THE CONSUMPTION
Gear pumps leak oil between the gears, while a piston (such as used in car engines) does not. This means the piston pump will place the cylinder ram exactly where it is required, positioning the rudder accurately. This gives far sharper steering, reducing unnecessary course corrections meaning battery consumption on Octopus pumps is up to half that of other pumps.

RELIABLE
Octopus pumps use the patented piston technology and have only three moving parts. Thousands of these pumps are in service around the world and have established a reputation of reliability.

SAVE ON INSTALLATION COSTS
A professional installation should always have a method of isolating the pump from the steering system - Octopus pumps feature inbuilt shut off valves in the pump manifold.

ADJUSTABLE FLOW RATE
A pump that does not have variable flow will be operating too fast or too slow in 90% of cases. Autopilot manufacturers get around this problem by adjusting the output to the pump to compensate. However, this either forces the pump to operate for longer periods of time which increases power consumption and wear on the parts, or the pump will operate at high pressure for short periods of time - also putting unnecessary strain and wear on the system.
Octopus Variable Flow Reversing Pumps precisely control the speed of the ram, reducing unnecessary battery consumption, pressure, strain and wear on the hydraulic system.

PINPOINT ACCURACY
Leading autopilot manufacturers choose Octopus pumps for their non RFB pilot systems which do not have a Rudder Feedback unit. Previously, slop in the system caused by gear leakage meant that a Rudder Feedback unit was necessary to tell the pilot the exact rudder position. As Octopus pumps will always bring the ram back to the required position the Rudder Feedback unit is not required, which also greatly simplifies installation.

ADJUSTABLE FLOW PUMPS OFFER A PROFESSIONAL SOLUTION TO MATCHING AN AUTOPILOT PUMP TO A STEERING SYSTEM

HOOUP- TABLE

<table>
<thead>
<tr>
<th>OCTOPUS DRIVE</th>
<th>SP110</th>
</tr>
</thead>
<tbody>
<tr>
<td>RED</td>
<td>YELLOW/BLACK</td>
</tr>
<tr>
<td>BLACK</td>
<td>YELLOW</td>
</tr>
</tbody>
</table>
HYDRAULIC REVERSING PUMP

TYPICAL HYDRAULIC STEERING CONFIGURATIONS

TWO LINE SYSTEM

THREE LINE SYSTEM

PRESSURISED SYSTEM
### ACCESSORIES - MECHANICAL DRIVES

#### TYPE S/T DASHBOARD DRIVE ACCESSORY KITS
- **OC15SUK10** 90 degree Bezel Mounting Kit – for Type S Straight Shaft Drive
- **OC15SUK09** 20 degree Bezel Mounting Kit – for Type S Straight Shaft Drive
- **OC15SUK07** Steering Cable Adapter Kit - for TFX SSC72 - Uflex M47 - Morse 304415
- **OC15SUK08** Steering Cable Adapter Kit - for TFX SSC62 - Uflex M66
- **OC15SUK11** Adjustable Friction Brake - for Type S Straight Shaft Drive with 90º Bezel Mounting Kit
- **OC15SUK16** Spacer Kit x 19mm for - 90º Bezel Mounting Kit
- **OC15SUK17** Spacer Kit x 16mm for - 20º Bezel Mounting Kit
- **OC15SUK18** Spacer Kit x 13mm - for TFX Performance Tilt Mechanism (Type T)

#### TYPE R REMOTE DRIVE ACCESSORY KITS
- **OC15SUK12B** Type B - Multi I/O Connection Kit – To Fit to Sterndrive Power Assist Steering Cylinders for Mercruiser engines (from 1994) and Volvo Gas engines & Volvo Diesel engines USA (from 1997)
- **OC15SUK12C** Type C - Multi I/O Connection Kit – To fit to Sterndrive Power Assist Steering Cylinders for Mercruiser Saginaw (up to 1993) & Volvo Diesel drives Europe (from 1994)
- **OC15SUK15A** Yamaha 115-220 O/B Installation Kit – for Second Steering Cable Connection to Outboard
- **OC15SUK15B** Mercury-Mariner-Suzuki O/B Installation Kit – for Second Steering Cable Connection to Outboard
- **OC15SUK19** Universal Connection Kit – for Custom Steering Cable Connection to Tiller or Quadrant
- **OC15109-6** Standard Steering Cable x 6 foot long
- **OC15109-9** Standard Steering Cable x 9 foot long
- **OC15109-12** Standard Steering Cable x 12 foot long

#### TYPE RS REMOTE DRIVE ACCESSORY KITS
- **OC15211-4** Sail Boat Steering Cable 12 Inch Stroke. 4 foot long
- **OC15211-6** Sail Boat Steering Cable 12 Inch Stroke. 6 foot long
- **OC15211-9** Sail Boat Steering Cable 12 Inch Stroke. 9 foot long
- **OC15SUK26** Universal Connection Kit 12 inch Stroke

#### RUDDER FEEDBACK UNIT
- **OC15SUK27A** Rudder Feed Back Module – For Si-Tex Autopilots