Evolution Technology
The culmination of Raymarine autopilot expertise, FLIR Systems’ R&D, and advanced aerospace guidance technology, Evolution Ai control algorithms deliver a new level of accurate autopilot control.

Evolution Ai
Evolution autopilots perceive their environment and instantly calculate and evolve steering commands to maximize performance. The result is precise and confident course keeping, regardless of vessel speed or sea conditions.

Why you need Evolution…  Race, cruise, or fish, Evolution

No Fuss
- No lengthy calibration procedures to perform
- No compass calibration required
- 9-axis precision monitoring of pitch, roll, yaw and heading

Easy to install
- Freedom from the restrictions of conventional heading sensors;
  - EV sensor core can be installed above or below deck
  - Install upsidedown or off the vessels centerline
- Plug and play connections

Rugged
Enclosure is fully sealed and built to IPX6 waterproofing standards

Fuel Efficient
Evolution autopilots steer so accurately they will save fuel and get you to your destination faster

Images and content for illustration purposes only
will take command

Easily selectable performance modes

Race Performance
When only the best will do. Razor sharp course keeping. Fine-tuned for racers!

Cruising Performance
Superb course keeping and crisp turns in all conditions – the Raymarine skippers choice

Leisure Performance
For relaxed boating when soaking up the sun is more attractive than precise course keeping

Flexible Control
Control Evolution from the p70/p70R control heads or direct from your Raymarine MFD.

Evolution perfect on all points of sail

- Downwind with kite up
- Beam reach with quartering sea
- Upwind in short chop

For more information about Evolution, visit our website www.raymarine.com or contact your Raymarine dealer

Images and content for illustration purposes only
Evolution Cockpit and Below Deck Autopilots

EV-1 autopilots consist of a Control Head, EV-1 Sensor, Actuator Control Unit (ACU) and drive unit. The drive unit (inboard mechanical/hydraulic or cockpit mounted), and correct ACU for your vessel is dependent on the steering system and displacement of the vessel itself.

Evolution Drive-by-Wire Propulsion

EV-2 has been designed for the latest drive-by-wire steering systems and connects directly to Raymarine’s SeaTalk® bus. EV-2 also has a dedicated CAN Bus port for direct connection to steer-by-wire steering systems — such as ZF Pod Drives, Yamaha Helm Master, Volvo IPS** and Seastar Solutions Optimus systems.

A single CAN Bus connection to the EV-2 eliminates the need for an Actuator Control Unit (ACU), further simplifying installation.

** Optional Volvo IPS gateway required plus additional cabling

Evolution System Packs

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Inboard Pilot Pack Description</th>
<th>Typical Vessel Type</th>
<th>Pack Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>T70155</td>
<td>EV-200 Sail</td>
<td>Mid-size sail</td>
<td>EV-1 200</td>
</tr>
<tr>
<td>T70156</td>
<td>EV-200 Power</td>
<td>Mid-size power</td>
<td>EV-1 200</td>
</tr>
<tr>
<td>T70157</td>
<td>EV-200 Hydraulic</td>
<td>Mid-size power</td>
<td>EV-1 200</td>
</tr>
<tr>
<td>T70158</td>
<td>EV-200 Linear</td>
<td>Mid-size sail</td>
<td>EV-1 200</td>
</tr>
<tr>
<td>T70159</td>
<td>EV-200 Sport</td>
<td>Sport runabouts</td>
<td>EV-1 200</td>
</tr>
<tr>
<td>T70160</td>
<td>EV-300 Solenoid</td>
<td>Vessels with solenoid controlled steering</td>
<td>EV-1 300</td>
</tr>
<tr>
<td>T70161</td>
<td>EV-400 Sail</td>
<td>Large sail</td>
<td>EV-1 400</td>
</tr>
<tr>
<td>T70162</td>
<td>EV-400 Power</td>
<td>Large Power</td>
<td>EV-1 400</td>
</tr>
<tr>
<td>T70164</td>
<td>EV-Drive by Wire</td>
<td>Drive-by-wire</td>
<td>EV-2 –</td>
</tr>
</tbody>
</table>

* Optional rudder reference unit supplied as standard

Images and content for illustration purposes only
EV-1 Sensor

Actuator Control Unit (ACU) Drive Unit

Power In

Evolution Drive-by-Wire Typical System

Drive-by-Wire Partners: • Seastar Solutions (Optimus 360 and Optimus eps) • Volvo Penta • ZF • Yamaha Helm Master
Autopilot Control

Complete your Evolution autopilot system with a p70 or p70R autopilot control head. The p70 and p70R feature vibrant color displays and are powered by Raymarine’s intuitive LightHouse user interface. LightHouse organizes all options into a simple menu structure, so with Evolution’s quick 3-step setup process you will be up and running in minutes.

p70R Control Head
Features a rotary dial control for power boaters. Use the rotary dial for menu and course changes or activate power steer mode and steer manually right from the p70R.

p70 Control Head
Designed for sailing yachts, the p70 offers simple 1 and 10 degree direct course changes at the touch of a button.

MFD Pilot Control

Evolution pilots can also be controlled from a Series, c Series, e Series and gS Series Raymarine multifunctional displays (MFD).
THE EVOLUTION AUTOPILOT RANGE

EV-100 Autopilot Packs

EV-100 autopilots are installed in the cockpit of tiller and wheel steered yachts and smaller power boats. An EV-100 system consists of an EV-1 Sensor, ACU-100 Autopilot Control unit, drive unit and control head. The following table lists the cockpit pilots and their vessel suitability.

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Cockpit Pilot Description</th>
<th>Maximum Displacement</th>
<th>Vessel Type</th>
<th>Pack Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>T70152</td>
<td>EV-100 Wheel</td>
<td>7,500kg (16,000lbs)</td>
<td>Sail</td>
<td>EV-1 ACU-100 p70 Wheel Drive</td>
</tr>
<tr>
<td>T70153</td>
<td>EV-100 Tiller</td>
<td>6,000kg (13,200lbs)</td>
<td>Sail</td>
<td>EV-1 ACU-100 p70 Tiller Drive</td>
</tr>
<tr>
<td>T70154</td>
<td>EV-100 Power</td>
<td>3,181kg (7,000lbs)</td>
<td>Power</td>
<td>EV-1 ACU-100 p70R 0.5L Hydraulic Pump</td>
</tr>
</tbody>
</table>


EV-200, 300, and 400 Below Deck Autopilots

The Evolution inboard range consists of autopilot packs designed to suit specific vessel types, steering systems and vessel displacements.

A complete Evolution system is determined by:

1. The type of steering system installed on your vessel
2. If the steering system is hydraulic, the size of the ram (in cubic inches); in hydraulic systems the pump has to be matched to the ram
3. The size and displacement of your vessel – always take the fully laden displacement of your vessel into account (often 20% above the designed displacement)

With this information obtained, the correct ACU for your vessel can be selected from the table below in conjunction with your drive.

<table>
<thead>
<tr>
<th>Evolution ACU</th>
<th>EV-100</th>
<th>EV-200</th>
<th>EV-300</th>
<th>EV-400</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type 0.5L Hydraulic Pump</td>
<td>NA</td>
<td>•</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type 1 Hydraulic Pump</td>
<td>4.8in³–14in³ (80cc – 230cc)</td>
<td>NA</td>
<td>•</td>
<td></td>
</tr>
<tr>
<td>Type 1 Mechanical Rotary / Linear Drives</td>
<td>24,000lbs (11,000kg)</td>
<td>•</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type 1 Universal Stern Drives</td>
<td>NA</td>
<td>•</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type 2 Hydraulic Pump</td>
<td>14in³–21in³ (230cc – 350cc)</td>
<td>NA</td>
<td>•</td>
<td></td>
</tr>
<tr>
<td>Type 3 Hydraulic Pump</td>
<td>21in³–30.5in³ (350cc – 500cc)</td>
<td>NA</td>
<td>•</td>
<td></td>
</tr>
<tr>
<td>Type 2 Hydraulic Linear</td>
<td>48,000lbs (22,000kg)</td>
<td>•</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type 3 Hydraulic Linear</td>
<td>77,000lbs (35,000kg)</td>
<td>•</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type 2 Short Mechanical Linear Drives</td>
<td>33,000lbs (15,000kg)</td>
<td>•</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type 2 Long Mechanical Linear Drives</td>
<td>44,000lbs (20,000kg)</td>
<td>•</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type 2 Mechanical Rotary Drives</td>
<td>44,000lbs (20,000kg)</td>
<td>•</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Solenoid Drive Units</td>
<td>NA</td>
<td></td>
<td>•</td>
<td></td>
</tr>
<tr>
<td>2F Saildrive Systems</td>
<td>NA</td>
<td>•</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**EV1 / EV2 SPECIFICATIONS**

- **Nominal Power supply:** 12 V (powered by SeaTalk™ system)
- **Operating voltage range:** 10.8 V to 15.6 V dc
- **Power consumption:** 20 mA
- **SeaTalk™ LEN (Load Equivalency Number):** 1
- **Waterproofing rating:** IPX6
- **Operating temperature:** -20 ºC to +55 ºC (-4 ºF to +131 ºF)
- **Relative Humidity:** max 93%
- **Sensors:** 3-axis digital accelerometer; 3-axis digital compass and 3-axis gyro digital angular rate sensor
- **Data Connections:** SeaTalk™ and NMEA 2000 DeviceNet (EV-2 only; port not used on EV-1 unit)
- **Weight:** 0.29 kg (0.64 lbs)

**ACU 100 SPECIFICATIONS**

- **Nominal Power supply:** 12 V
- **Operating voltage range:** 10.8 V to 15.6 V dc
- **Drive Current output:** maximum continuous 7 A at supply voltage
- **Power consumption (standby) – main power supply:** 300 mA at 12 V
- **Data Connections:** SeaTalk™
- **Operating temperature:** -20 ºC to +55 ºC (-4 ºF to +131 ºF)
- **Connections:** Rudder reference sensor / Drive motor / Drive clutch / Ground
- **Waterproofing rating:** connector panel IPX2; Drive electronics IPX6

**ACU 200/300/400 SPECIFICATIONS**

- **Nominal Power supply:** 12 V or 24 V
- **Operating voltage range:** 10.8 V to 31.2 V dc
- **Power consumption (standby) – main power supply:** 300 mA (12 / 24 V)
- **Drive Current output:** ACU-200: maximum continuous 15 A at supply voltage; ACU-300: maximum continuous 5 A at supply voltage and ACU-400: maximum continuous 30 A at supply voltage.
- **Drive Clutch Output:** ACU-200: Up to 2.0 A continuous, selectable between 12 / 24 V; ACU-300: No clutch connection and ACU-400: Up to 4 A continuous at 12 V on 12 V systems / Up to 4 A continuous at 24 V on 24 V systems / Up to 4 A continuous at 12 V on 24 V systems.
- **Power consumption (standby) – main power supply:** 2.2 kW (12 V) / 4.4 kW (24 V)
- **SeaTalk™ LEN (Load Equivalency Number):** 1
- **Drive Current output:** ACU-200: maximum continuous 15 A at supply voltage; ACU-300: maximum continuous 5 A at supply voltage and ACU-400: maximum continuous 30 A at supply voltage.
- **Drive Clutch Output:** ACU-200: Up to 2.0 A continuous, selectable between 12 / 24 V; ACU-300: No clutch connection and ACU-400: Up to 4 A continuous at 12 V on 12 V systems / Up to 4 A continuous at 24 V on 24 V systems / Up to 4 A continuous at 12 V on 24 V systems.
- **Connections:** Rudder reference sensor / Drive motor / Drive clutch / Ground
- **Waterproofing rating:** connector panel IPX2; Drive electronics IPX6

**Safety Notice**

Raymarine products are intended to be used as aids to navigation and must never be used in preference to sound navigational judgement. Their accuracy can be affected by many factors, including environmental conditions, equipment failure or defects, and incorrect installation, handling or use. Only official government charts and Notices to Mariners contain all the current information needed for safe navigation, and the captain is responsible for their prudent use. It is the user’s responsibility to use official Government charts, Notices to Mariners, caution and proper navigational skill when operating any Raymarine product.

**Content Note**

The technical and graphical information contained in this brochure, to the best of our knowledge, is correct as it went to press. However, the Raymarine policy of continuous improvement and updating may change product specifications without prior notice. Therefore, unavoidable differences between the product and of our knowledge, was correct as it went to press. However, the Raymarine policy of continuous improvement and updating may change product specifications without prior notice. Therefore, unavoidable differences between the product and...