This Patented Hybrid Feedback™ Control System upgrades existing or new rate manipulators to have the master slave performance of feedback manipulators while maintaining the inherent reliability of the rate manipulator. No electronics, wires or sensors are required in the manipulator. This is a class leading control solution, not only from the operator’s perspective in terms of performance, reliability and ease of maintenance but also in terms of upgrade cost, downtime and through life cost.

At the surface the PSS Hybrid Feedback Control System comprises of a rugged operator control pendant with buttons and LED backlit colour TFT display. A robust miniature replica master arm that features proportional claw rotate and grip control and a freeze/re-indexing button that ensures comfortable, intuitive manipulator operations, and a compact base station housing a serial converter and power supply.

Subsea the PSS Hybrid Feedback Smart Valve Pack forms the heart of the PSS Hybrid Feedback Control System, and incorporates robust mini NG3 valves (no servo valves) and our industry standard LVC with full diagnostics. The existing rate manipulator hydraulic valve pack connections are freed up for extra tooling capability, hoses are simply moved to the SVP.

### Features
- Provides master slave control on rate arms
- Intuitive user interface
- Diagnostics
- Retrofit to most rate arms

### Specifications

<table>
<thead>
<tr>
<th>Options</th>
<th>Features</th>
</tr>
</thead>
</table>
| www.f-e-t.com | - Provides master slave control on rate arms  
- Intuitive user interface  
- Diagnostics  
- Retrofit to most rate arms |
The specification details are illustrative for marketing purposes only. Actual equipment may be different as a result of product improvement or other reasons. Specific interface and performance information should be reconfirmed at time of order placement.

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**Smart Valve Pack Features**

<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Local Diagnostic LEDs</td>
<td>Supply &amp; Onboard Voltages, Comms, Status</td>
</tr>
<tr>
<td>Remote Diagnostics</td>
<td>Supply &amp; Onboard Voltages, Drive Currents</td>
</tr>
<tr>
<td>Input Supply Protection</td>
<td>Reverse Polarity, Limited Overvoltage, Spike</td>
</tr>
<tr>
<td>Output Drive Protection</td>
<td>Active Overcurrent, Short Circuit</td>
</tr>
</tbody>
</table>

**Smart Valve Pack**

<table>
<thead>
<tr>
<th>Material</th>
<th>Anodised Aluminium (St. St. external valves)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Width</td>
<td>310mm (12&quot;)</td>
</tr>
<tr>
<td>Depth</td>
<td>190mm (7.5&quot;)</td>
</tr>
<tr>
<td>Height</td>
<td>174mm (7&quot;)</td>
</tr>
<tr>
<td>Weight in Air</td>
<td>18kg (40 lb)</td>
</tr>
<tr>
<td>Weight in Water</td>
<td>11kg (24 lb)</td>
</tr>
<tr>
<td>Supply Pressure</td>
<td>207 Bar (3000psi)</td>
</tr>
<tr>
<td>Typical Viscosity</td>
<td>32 cSt</td>
</tr>
<tr>
<td>Typical Fluids</td>
<td>Petroleum Based Hydraulic Fluids</td>
</tr>
<tr>
<td>Manipulator Connections</td>
<td>SAE-4 Adapters to JIC or Swagelock, etc.</td>
</tr>
<tr>
<td>Required Supply Hose</td>
<td>For SAE-6 Male Fitting</td>
</tr>
<tr>
<td>Required Return Hose</td>
<td>For SAE-8 Male Fitting</td>
</tr>
<tr>
<td>SVP Pressure Compensation</td>
<td>PSS 480ml positive unit or customer supply</td>
</tr>
</tbody>
</table>

**Electrical Power & Telemetry Requirement**

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Telemetry</td>
<td>Half Duplex RS485</td>
</tr>
<tr>
<td>Surface Controller</td>
<td>Half Duplex RS485</td>
</tr>
<tr>
<td>Power Supply</td>
<td>Nominal 30V DC Smoothed/Unsmoothed/AC</td>
</tr>
<tr>
<td>Smart Valve Pack*</td>
<td>Required Static Power 12W, Typical Dynamic Power 12W-100W</td>
</tr>
<tr>
<td>Surface Controller</td>
<td>100/230 V AC (Auto Select) 47-63 Hz 50W</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>Subsea Smart Valve Pack -10°C to 50°C (14°F to 122°F)</td>
</tr>
<tr>
<td></td>
<td>Surface Controller 0°C to 30°C (32°F to 86°F)</td>
</tr>
</tbody>
</table>

**Data Sheet:** A001-350-072 issue 7

[www.f-e-t.com](http://www.f-e-t.com)

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