

General Function Valve Pack

Our General Function Valve Packs are the most compact and lightweight available. Loaded with functionality, solenoid, proportional or mixed valve configurations and driven by a powerful, fully configurable digital control system, these are the perfect choice for ROV and tooling applications.

The small size and weight of these valve packs are achieved by building most of the functionality directly into the manifold body, thus avoiding many stacking 'sandwich' type valves. The heart of the system uses Sub-Atlantic's unique flow/PO Check Cartridge that combines a unidirectional flow controller and a pilot operated check valve. Typical operation includes manipulator functioning, adjustable torque tools, pan & tilt units, subsea robotics etc. The small size and weight of these units make them additionally suitable for smaller electric ROV's where space and payload are a premium.

FEATURES

- 6, 8, 12 & 16 station versions
- Solenoid and / or Proportional Valves
- Wandfluh NG3 Valve Reliability
- Extremely Compact and Lightweight
- Manual or Prop. Pressure Reduction
- Externally Adjustable Flow Control
- Externally Adjustable Line Relief
- Removable/Configurable PO Check Valves
- Powerful Serial Control System
- Hardware or GUI Control with Diagnostics
- Pressure tolerant Electronics
- Pressure & Water Ingress Sensors
- Fully Captive Cover Screws
- Tested to 6,000 Metres / 20,000 feet
- Various connector options.

PRESSURE AND FLOW

- 280 Bar max input pressure @ 40 LPM max input flow rate.
- 15 LPM max per solenoid valve.
- 8 LPM max per proportional valve.

PRESSURE REDUCING VALVE

Input pressure on our valve packs is controlled between 0 to 280 Bar by a Pressure Reducing Valve. This can be manually operated or proportionally controlled for remote pressure control. Pressure sensors can also be fitted to monitor the supply and return galleries.

SOLENOID OR PROPORTIONAL CONTROL VALVES

Valve packs incorporate high reliability 'Wandfluh NG3 mini' 4 way/ 3 position solenoid or proportional spool valves (solenoid and proportional can be mixed in a single pack to customer specification).

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PILOT OPERATED CHECK AND FLOW CONTROL VALVES

Each valve station incorporates two unique removable cartridges providing PO check and flow control functionality in both flow directions. The PO check provides leak-free load holding and the ball can be simply removed if a particular check function is not required (one or both directions). The externally adjustable, fine Flow Controllers provide precise flow control down to zero on each valve return line and free flow on the pressure line, allowing each function direction to be accurately set at different flow rates.

CROSS LINE RELIEF VALVES



Each valve station incorporates two Cross-Line Relief fitted integrally in the valve pack body. These provide component and hose protection when using pilot operated checks as high pressure can be generated inside hoses,

for instance, by external forces on a manipulator or during deep dive recovery. These are externally adjustable from 50 to 300 bar (280 standard setting).

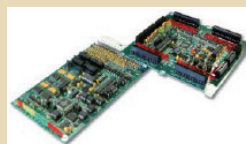
OIL COMPENSATION

The valve pack body must be oil filled and compensated. Compensators are available from Sub-Atlantic in a range of sizes.

CONTROL SYSTEM

Valve packs are fitted with a powerful serial control system; however, they can be supplied hard wired to a multi-pin connector and with diode logic control to suit customer requirements.

PRESSURE TOLERANT AND ROBUST ELECTRONICS



The pressure tolerant electronics (tested to 700 bar / 10,000 psi) that reside in the valve pack are interfaced via RS232 or RS485, half duplex, running @ 38.4 K baud or CAN (controller area network) running @ 500K bits second. The printed

circuit board (PCB) is protected on all its I/O from over voltage, reverse voltage and over current. This is achieved by utilising transient voltage suppressors, self-healing fuses and internally protected high side valve drivers.

HIGHLY FLEXIBLE ELECTRONICS

Each valve pack PCB is capable of controlling up to 8 bi-directional proportional valves (which includes the electrical pressure reducing valve (PRV) if chosen) and 8 bidirectional solenoid valves. If more than 8 proportional valves are needed in one valve pack, a second valve pack PCB can be placed in the pack (as a slave PCB) to increase the number of valves operated.

FORUM SUBSEA TECHNOLOGIES

Aberdeen: +44 (0) 1224 798660

Houston: 1 713 329 8230

Singapore: +65 6465 4850

Brazil: +55 21 2588 8016

Kirkbymoorside, York +44 (0)1751431751

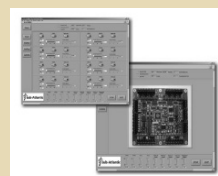
sub-atlantic.sales@f-e-t.com

www.f-e-t.com/contact

INCREASED DIAGNOSTIC FEEDBACK

The valve pack PCB provides the interfaces for water detect sensors (each pack contains two) and also the integral pressure sensor(s), which can be specified with the valve pack. The valve pack PCB also provides diagnostic feedback of voltage, current and temperature. Each proportional valve current can be monitored on an individual valve by valve basis. This current feedback information is also used internally by the PCB to regulate the control signal to the proportional valve; ensuring temperature variations in the valve coil does not affect the hydraulic performance.

ROBUST COMMUNICATION LINK



Communication between the topside software /firmware and the sub-sea valve pack PCB employs a 16 bit CRC (cyclic redundancy check) to ensure maximum robustness of communicated instructions and feedback. A timeout on the PCB means that if an instruction is not received within

a few seconds all outputs from the valve pack will be turned off as a fail-safe feature.

FOUR TOPSIDE CONTROL OPTIONS:

1. Complete Software Control and Diagnostic Feedback –



a topside graphical user interface (GUI) can be used to provide complete control of the valve pack with on screen buttons and also displays the diagnostic information from the valve pack. The GUI is free as an executable and runs on a Windows PC.

2. Complete Hardware Control – Hardware topside controllers can be purchased to control the valve pack with physical joysticks and buttons.

3. A Mixture of Hardware and Software Control with Diagnostic Feedback – if the hardware option is chosen the diagnostic feedback can still be displayed on a separate topside graphical user interface (GUI).

4. User Implemented Control - a document with the telemetry string format and content is available to valve pack customers in order to interface to the valve pack with their own system software. Consult Sub-Atlantic for details.

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.