

## MVC - 3000

## Scientific & Environmental

### Overview

The OceanWorks Medium Voltage Converter (MVC) provides DC to DC power converting for long haul power transmission subsea and is rated to 3000 meters of sea water operating depth. The MVC-3000 is compatible with either two conductor supply cable or single conductor supply cable with a seawater return. The MVC-3000 is a proven design successfully deployed on several cabled observatory nodes. The base system accepts a backbone voltage of -1,500VDC and provides a regulated output of 375VDC at up to 2kW per can. The MVC-3000 design can also be operated in parallel as load sharing modules to provide increased power output with inherent redundancy.

### Application

- ▶ Long Haul Power Distribution
- ▶ Environmental / Scientific Cabled Observatories
- ▶ Oil Field Instrumentation

### Features

The MVC-3000 includes overvoltage protection circuitry and can accommodate a wide range of input voltages typical for long haul power distribution. The MVC-3000 provides automatic bootstrapping start-up and is typically paired with a custom surface power supply to provide maximum compatibility.

The MVC-3000 is designed for a variable load and can accommodate load variations ranging from quiescent to full load in milliseconds. Because input transients are a function of cable type and length, each MVC is configured to the end user's specific requirements based on cable type, cable length and output power profiles. This ensures that the design is optimized for each application.

A line insulation monitor (LIM) is included on each MVC-3000. The LIM detects faults to sea water on connected loads and provides an alarm and controlled shutdown to prevent stray current corrosion. If required, the LIM can be disabled via a software command.



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### Specifications

#### Input

- ▶ Input range from -1,200VDC to -1,800VDC. Nominal -1,500 VDC
- ▶ Over voltage and transient protected to 3kV
- ▶ Communications:
  - 1000BaseLX SM fiber optic Gigabit Ethernet, or*
  - 100BaseT copper Ethernet*
- ▶ Wet-mate or Dry-mate connector systems available

#### Output

- ▶ 375VDC bus at 2kW (systems can be connected in parallel for additional power output)  
Dry-mate connectors standard  
Short circuit tolerant

#### Communication & Telemetry

- ▶ Telnet command interface
- ▶ UDP/IP telemetry interface (at selectable rates up to 10Hz), SNTP time stamped
- ▶ Input & output voltage and current
- ▶ Line insulation measurement
- ▶ Multi-position temperature sensing

#### Mechanical

- ▶ 1050mm length x 332mm diameter (excluding mating connectors)
- ▶ 160kg in air weight in air
- ▶ 100% titanium pressure vessel with dual o-ring seals
- ▶ Vibration qualified to EIC60068 (Part 2, Section 64, Table A.1 & A.2 Category 2)

### Reliability

- ▶ 25+ year design life on 10 year maintenance service
- ▶ Class ISO8 clean-room assembly
- ▶ 100,000 Hrs MTBF

### Standard Testing

- ▶ Pressure boundary hydro-static test
- ▶ 120 hour operation salt water immersion test

### Environment

- ▶ 3000msw operating depth
- ▶ -20°C to +50°C Transport
- ▶ -3°C to +20°C Operational

### Options

- ▶ Increased supply voltage up-to -10,000VDC
- ▶ Increased output power up to 4kW per can
- ▶ Extended burn-in testing
- ▶ Custom instrument interfaces can all be incorporated with the addition of the OceanWorks SIIM-3000SC

