

# ADS<sup>®</sup> PrimeLog<sup>®</sup> User Manual

---

August 2009

QR 775015 A0



ADS LLC  
4940 Research Drive  
Huntsville, Alabama 35805  
Telephone: 1-800-430-3366 / Fax: 1-800-430-6633  
[www.adsenv.com](http://www.adsenv.com)

Copyright © 2009 ADS<sup>®</sup> LLC. All rights reserved.

ADS<sup>®</sup> is a registered trademark of ADS LLC.

PrimeWorks<sup>®</sup> and PrimeLog<sup>®</sup> are registered trademarks of Primayer Limited.

Microsoft<sup>®</sup> and Windows<sup>®</sup> are registered trademarks of Microsoft Corporation.

All other brand and product names are trademarks or registered trademarks of their respective holders.

**Notice of Proprietary Information**

The information contained herein represents the latest information available at the time of publication. ADS reserves the right to make any changes or modifications to the content of this document, without notice, to reflect the latest changes to the equipment. No part of this document may be reproduced in any form without the written consent of ADS.



**CAUTION:** This product contains Lithium batteries. Please refer to *Appendix 3: Important Notice - Air-Freighting This Product* on page 27 before Air-Freighting Loggers.

# Table of Contents

<b>Chapter 1 Introduction.....</b>	<b>1</b>
System Features .....	2
Logging Range Features.....	2
Main Features.....	2
Logging Features.....	2
Flow and Pressure Logging.....	3
Special Features .....	3
Logger Types.....	4
ADS No-Hassle Warranty and Return Policy .....	5
New Product Warranty.....	5
Replacement or Loaner Equipment.....	5
Shipping .....	5
Product Returns.....	6
<b>Chapter 2 System Overview .....</b>	<b>7</b>
PrimeLog.....	8
Auxiliary Battery Unit.....	9
Auxiliary Battery/Communications Adaptor .....	9
<b>Chapter 3 Hardware Connections.....</b>	<b>10</b>
Sealing.....	11
Polarization .....	12
PrimeLog Input Connections .....	13
Digital Inputs.....	13
Internal Pressure Transducer.....	13
Analog Inputs .....	14
Communication Link .....	14
<b>Chapter 4 Installation and Use.....</b>	<b>15</b>
Logger Setup .....	16
Logger Use .....	17
<b>Chapter 5 Interfacing .....</b>	<b>18</b>
Quadrina Insertion Meters.....	19
The Quadrina Range .....	19
Volumetric Flow Measurement .....	19
Probe Calibration .....	19
Logger Configuration.....	20
Other Flow Meters .....	21

**Chapter 6 Appendices..... 22**

- Appendix 1: Meter Scaling Tables..... 23
  - Elster/Kent Helix & Domestic Meters ..... 23
  - Schlumberger/Actaris/Stream Domestic & Helix Meters..... 23
  - Sensus (Socam/Meinecke) ..... 24
- Appendix 2: Specifications ..... 25
- Appendix 3: Important Notice - Air-Freighting This Product ..... 27

**Chapter 7 Index..... 28**

## CHAPTER 1

# Introduction

PrimeLog<sup>®</sup> is a family of advanced submersible data loggers, designed specifically for applications in the water industry. Common applications include the following:

- District, residential, and leakage flow monitoring
- Network analysis
- Pressure monitoring
- PRV (*pressure reducing valve*) monitoring
- Open channel flow monitoring
- Reservoir and borehole depth measurement

The different loggers offer one, two, or four data input channels. This manual describes the operation of the PrimeLog in general terms. Therefore, some material may not be applicable to all loggers.

## System Features

### Logging Range Features

Standard (non-modem) Logger	1F	1A	1P	2i	2	4	4i
Total number of channels	1	1	1	2	2	4	4
Total number of bi-directional flow channels	1			1	1	2	2
Number of analog channels (for transducer, voltage, or current input)		1			1	2	
Number of internal pressure channels			1	1			2
Pressure / analog channel accuracy (%)		±0.1	±0.5 or ±0.1	±0.1	±0.1	±0.1	±0.1

### Main Features

- 1-, 2-, or 4-channel models
- Submersible to IP68
- 5-year battery life (*see note below*)
- Extremely robust
- Small size (*fits in small locations*)
- Serviceable/maintainable

**Note:** The battery packs used for PrimeLog data loggers are designed to last for five years, based on a standard configuration. However, the data logger configuration and usage deemed appropriate for the current application will affect the actual battery life. Therefore, ADS does not guarantee that all batteries will maintain a five-year battery life in all situations.

### Logging Features

- Wide range of measurement intervals
  - 1 second to 24 hours
  - Setting different intervals for each individual channel

- Variety of measurement modes
  - Cyclical
  - Designated time period
  - Memory limited (stops logging when memory is full)
- Multiple data collection options
  - All data
  - Since last collection
  - Defined date range
- Substantial data storage
  - Standard: 128K RAM (approximately 1 year at 15-minute interval)
  - Optional: 256K, 512K, and 1M

---

### Flow and Pressure Logging

- Logs data from all flow meters (e.g., Kent, Meinecke (Socam), Schlumberger, ABB Kent-Taylor, and Quadrina)
- Logs bi-directional flow
- Logs directly from combination meters
- Supports internal or external transducer
- Supports pressure accuracy options to  $\pm 0.1\%$  (meets the Water Research Center code of practice for network analysis)











---

### Special Features

- Supports multiple analog inputs: pressure and depth sensors 4-20mA voltage (various ranges)
- Powers Kent HRP/PU100 pulse units directly
- Stores Quadrina calibration data internally: 10-point calibration velocity profile and blockage factor

## Logger Types

The following table includes the types of loggers available:

1F Flow	1P Pressure	2i Flow + Pressure	2 2-channel	4 4-channel
		 	 	   



Digital input



Analog input



Internal pressure transducer



## ADS No-Hassle Warranty and Return Policy

The following sections detail the hassle-free warranty and return policy for the ADS PrimeLog.

---

### New Product Warranty

ADS will repair or replace any PrimeLog equipment (supplied by ADS) that is defective in materials and/or workmanship for up to two (2) years following the date of shipment from ADS. To make a warranty claim, the customer should simply call ADS at (256) 430-3366 or contact the ADS Support Center toll-free at (877) 237-9585. The ADS Client Services Agent will assign a *Return Materials Authorization (RMA)* to the customer's claim immediately.

The customer shall return a defective unit or part to ADS for troubleshooting and repair or replacement within 10 days with the RMA.

---

### Replacement or Loaner Equipment

For a defective part, ADS will ship a replacement part immediately once the customer makes an initial claim. However, if ADS does not receive the defective part within 30 days *or* testing concludes that the part experienced excessive wear and tear or abuse for the period of use, ADS will bill the customer for the replacement part.

For a defective unit, at the customer's request, ADS will ship a temporary (loaner) unit to the customer at the time of the initial claim. However, if ADS does not receive the temporary unit from the customer within 15 days of receiving the repaired or replacement unit *or* testing concludes that the unit experienced excessive wear and tear or abuse for the period of use, ADS will bill the customer for the temporary unit.

---

### Shipping

The customer must pay to ship defective equipment to ADS for repair or replacement. However, ADS will incur the costs for shipping the repaired or replacement equipment back to the customer using the same priority shipment procured by the customer upon returning the defective equipment to ADS.

## **Product Returns**

If the customer is not satisfied with the performance of the PrimeLog, the customer may return the equipment within 30 days for a full refund, provided the condition of the equipment is in the same condition as sold, except for expected or normal wear and tear for the period of use.

CHAPTER 2

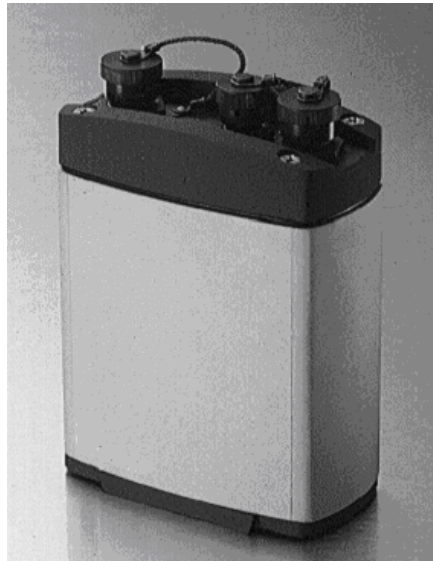
## System Overview

**Note:** This manual provides information on most standard features and applications; however, ADS cannot anticipate all possible configurations or applications involving the PrimeLog. Therefore, some information may not be included in this manual. Please contact the ADS Support Center at [supportcenter@idexcorp.com](mailto:supportcenter@idexcorp.com) or (877) 237-9585 for assistance, when necessary.

## PrimeLog

PrimeLog submersible data loggers are available with one to four input channels and various power options. An internal pressure transducer is available with all models. The tables in the *Introduction* outline the range of loggers and features available. This section offers additional information and details for the various logger types.

All loggers are equipped with military-grade connectors and are sealed according to IP68 specifications.



PrimeLog (Model 2)

A serial connection provides local communication with a PC/laptop computer, which may include a display for taking measurements real-time and viewing stored data.

The PC/laptop-based **PrimeWorks**<sup>®</sup> host application provides comprehensive software support. This multi-task system, running on a Microsoft<sup>®</sup> Windows<sup>®</sup> 95, 98, Me, NT, 2000, or XP operating system, supports local loggers.

**PrimeWorks** incorporates advanced graphing and reporting through Wizards to dramatically simplify data presentation. The graphical user interface includes full drag-and-drop capabilities and dockable toolbars. Refer to the *ADS PrimeWorks*<sup>®</sup> *User Manual (QR 775018 A\*)* for more information.

PrimeLog units are powered by an internal battery with an optimal battery life of 5 years or more, based on the nature of use. However, please note that temperature can affect battery life significantly. Operating the unit continually above 86°F (30°C) or below 32°F (0°C) will reduce battery life.

## **Auxiliary Battery Unit**

An auxiliary battery unit containing 6 C-size alkaline cells is available to supply additional power to digital sensors with heavy current demands. When selecting this kind of sensor for a logger (through the **Logger Setup** and the **Digital** tab options – refer to the *PrimeLog Menu* section of the *ADS PrimeWorks User Manual*), the user receives notification through a warning message of the requirement to use the battery unit. This fully-encapsulated disposable pack meets IP68 standards and connects to the logger through the **Comms** connector.

Due to the method of connection, connect the auxiliary battery pack to the logger after programming and temporarily disconnect the pack when communicating with the logger. This will prevent the logger from recording data from the digital sensor while disconnected.

The system can monitor all battery voltages continually and generate alarms if any voltage falls below the preset threshold. Refer to the *Battery Warning Setup* section of the *ADS PrimeWorks User Manual* for more information.

---

## **Auxiliary Battery/Communications Adaptor**

If logging must continue throughout communication activities, an adaptor is available for providing a constant connection for the battery pack while providing simultaneous access to the **Comms** connector.

CHAPTER 3

## Hardware Connections

This chapter provides details concerning sealing, polarization, and inputs.

## Sealing

The PrimeLog connectors are waterproof only when used with a mating connector, or when the captive sealing cap is connected.

For continued full environmental protection, the sealing caps *must* be secured when the connector is not in use.

Sensors supplied by ADS come with sealed mating connectors. Attach connectors using a bayonet (twist-and-click) action of the rotating shell.

Connectors will not seal correctly if foreign matter is present between the mating surfaces. Logger sensors operate at low levels of current; therefore, any moisture present facilitates electrical leakage, resulting in a degradation or destruction of data. Clean contaminated connectors by scrubbing them with a brush using pure ethyl (*denatured*) alcohol.

When making connections, it is good practice to also verify that the sealing caps are seated properly. This prevents dirt and moisture from accumulating in the cap and transferring to the connector.

## Polarization

All PrimeLog connectors are polarized, making it impossible to connect a device to the wrong input.



---

## PrimeLog Input Connections

The connectors on PrimeLog include logos for identification. The following sections describe the connections and show the corresponding logos.

**WARNING:** Due to the operational requirements of depth transducers, never immerse the connector in or expose it to water. The vent tube from the transducer sensor terminates at the connector and must be open to the atmosphere to sense pressure in vented gauge mode. If water enters the vent tube, the sensor may become operationally impaired or irreparably damaged. **This damage is not covered by the ADS warranty.**

---

### Digital Inputs



Typically, connecting the sensor correctly ensures the logger provides the necessary power. However, for sensors requiring an external power source, refer to *Interfacing* on page 18 for more information.

If the logger starts before the sensor is connected, a malfunction will not occur. However, the logger will record only zero values until the sensor is connected.

---

### Internal Pressure Transducer

*(no logo)*

Loggers equipped with an internal pressure transducer have a male quick-release connector mounted on the logger end cap.

This integrated pressure transducer is available in a wide range of sensitivities, from 44 to 363 psi. Pressures of more than 150% of its range may damage the transducer. Subjecting the transducer to shocks may change the zero point calibration of the transducer; however, calibrating the logger can compensate for this offset.

A hose with male and female connectors is available to connect the logger to the pressure monitoring point.

Avoid pressure shock when connecting to the transducer. This can damage or destroy the sensing diaphragm.

## Analog Inputs



The PrimeLog has two types of analog inputs: general purpose and dedicated integral pressure transducer.

General analog inputs may be voltage or current.

Voltage input range is nominally 0 - 21V DC. Voltages outside this range require a special cable; standard voltage ranges available are 0 - 5V and 0 - 10V.

Current input requires a special cable suitable for 0 - 10mA, 0 - 20mA, and 4 - 20mA ranges.

If the logger starts before the sensor is connected, a malfunction will not occur. However, the logger will register only zero values until the sensor is connected.

---

## Communication Link



The communication link is a cable that interfaces directly between the logger and a PC/laptop serial port. Communication occurs at standard RS-232C levels. You must configure the loggers through the PC/laptop before use.

The communications port on submersible loggers also is used for connecting the Auxiliary Battery Unit.

CHAPTER 4

## Installation and Use

Installing the logger primarily involves connecting the cables to the inputs. Sensors supplied by ADS come with the appropriate connector.

## Logger Setup

Set up the logger by running the support software. Refer to the *ADS PrimeWorks User Manual* for more information.

## Logger Use

Data may be downloaded through a local connection at any time without interrupting the recording of data. No special procedure is required when the logger is in use.

CHAPTER 5

## Interfacing

This chapter provides information about interfacing the PrimeLog with various probes and sensors.

## Quadrina Insertion Meters

Quadrina insertion meters are probes that are inserted, usually on a temporary basis, into mains supply pipes and measure velocity.

---

### The Quadrina Range

ADS supplies these probes in two sizes, standard (Probeflo) and miniature (Miniprobe), and both are equipped for unidirectional or bi-directional flow. While two options of the insertion tube are available, eight hardware variations exist. Each variation may be equipped with an MEP or QEP electronic interface.

The QEP interface requires no power from the logger and, therefore, is compatible with all PrimeLog instruments. Its pulse frequency is linear against velocity.

The MEP interface normally requires power from the logger. The PrimeLog submersible range requires the use of an Auxiliary Battery Unit. The MEP output pulse frequency is non-linear.

An internal-powered MEP interface allows for a direct interface with the PrimeLogs without auxiliary batteries.

---

### Volumetric Flow Measurement

Flow volume must be calculated based on the velocity measurement taken at one point in the flow. In general, this point corresponds to the centerline of the pipe because flow typically occurs symmetrically about this point.

The probe creates an obstruction in the flow (blockage factor). Therefore, ADS supplies F-factor tables that provide the ratio of mean velocity to (measured) centerline velocity. These factors compensate for the obstruction that occurs from the probe in common pipe sizes.

---

### Probe Calibration

Each probe comes with a calibration certificate indicating the number of pulses produced per meter of flow. In other words, it is the number of pulses produced per second for each meter per second of flow rate.

Probes fitted with QEP interfaces have single-point calibration. For the non-linear MEP interfaces, calibration values are supplied for several different

velocities. A mean factor also is calculated from these values. While this factor offers convenience, it also introduces some level of error.

---

### Logger Configuration

After selecting the **Quadrina Insertion Probe** option from the **PrimeWorks** flow meter menu, the following information must be provided:

- Probeflo (*default*) or Miniprobe
- Unidirectional (*default*) or bi-directional
- Standard (0.5-inch) or oversize (0.75-inch) insertion tube
- Pipe diameter
- MEP or QEP electronic interface

Selecting the MEP interface requires a choice of either single-point or multi-point calibration. Multi-point calibration involves entering the given values or rate (feet per second) and corresponding output frequencies (Hz) from the calibration certificate.

For both interfaces, single-point calibration simply requires entering the value displayed on the calibration certificate.

**PrimeWorks** automatically sets up the logger to calculate the flow rate in gallons per second.

**Note:** Quadrina devices must be configured using **PrimeWorks**.



## Other Flow Meters

Interfacing the PrimeLog instruments with other flow meter sensors requires an adequate knowledge of the power requirements of these sensors. The following table specifies the power interface:

### Powering Standard Sensors

Type	Sensor	Power Source
1 - Contact Closure	Kent PSM/LRP/MSM/PU10 Kent Helix 4000 Reed Switch Meinecke/Socam K01/K505R/K510/RO2.2/RD022 Schlumberger Model S/Cyble LF/Cyble HF	Data logger
2	Kent HRP/PU100	Data logger
3	Kent BPG20 Meinecke/Socam OPTO06/OPTO OD06 Schlumberger TLOS	Auxiliary unit
4	ABB Kent-Taylor Aquamag/Aquaprobe ABB Kent-Taylor Magmaster	Internal
5	Kent Combination Meter	Data logger
6	Combination Meter - non-Kent	Auxiliary unit

The following table provides the typical battery life for the auxiliary battery unit powering the Type 3 sensors:

Sensor	Battery Life
Kent BPG20	94 days
Socam OPTO06	215 days
Schlumberger TLOS	9 days

CHAPTER 6

## Appendices

The following appendices provide meter scaling tables, product specifications, and important information about air-freighting the PrimeLog.

## Appendix 1: Meter Scaling Tables

### Elster/Kent Helix & Domestic Meters

Meter		PU10/LRP	PU100/HRP
	<b>(mm)</b>	<b>FCAL</b>	
Helix 2000	40-80	10	1
	100-300	100	10
Helix 3000	40-80	10	1
	100	10	1
	150	100	10
Master 2000	40-50	1	0.1
	80-100	10	1
		<b>PVG100</b>	<b>PV14/BPG20</b>
Helix 4000	80-125	10/1000	1
	150-300	100/10000	10
		<b>PSM</b>	<b>MSM</b>
PSM-PS15-PS20 (V100)	15/20	0.5	
PSM-PS25-PS30 (V100)	25-30	5	
PSM-PS40 (V100)	40	5	
PSM-LT (V210)	15 & 20	0.5	
MSM-T (V100)			1
KVM-T (V200)			1
MSM-RS			10

### Schlumberger/Actaris/Stream Domestic & Helix Meters

Meter		CYBLE HF		CYBLE LF	
	<b>(mm)</b>	<b>K=1</b>	<b>K=2.5</b>	<b>K=10</b>	<b>K=25</b>
Aquadis (4X4)	15	0.1	0.25	1	2.5
Aquadis	15-40	1	2.5	10	25
P40M (4x4)	15	0.1	0.25	1	2.5
P40M	15	1	2.5	10	25
FlostarM	40-100	10	25	100	250
Woltex	50-100	10	25	100	250
	150-300	100	250	1000	2500
	400-500	1000	2500	10000	25000

**Sensus (Socam/Meinecke)**

Meter		K510	K505R
	(mm)	FCAL	
510/510PR	15-20	1	0.5
501L		10	
501LM		100	
501JM		1000	
510/510PR	25-30	10	5
501JM		100	
		<b>R01.1</b>	<b>OPTO 06</b>
Cosmosil	50-125	100/1000	1
	150-250	1000/10000	10
	300-800	10000/100000	100
		<b>RD 01</b>	<b>OD 07</b>
Cosmos	50-125	100	1
WP/WS-Dynamic	40-125	100/1000	
		10/1000	
	150-300	1000/10000	10
	100/10000		

**Supplementary Notes for Meter Scaling Tables:**

FCAL = NO. LITERS PER PULSE

**Kent Meters:**

\* Some earlier 100mm meters require the following:

FCAL = 100(PU10/LRP) or 10(PU100/HRP). These meters can be distinguished by the center pointer dial registration = 1000 liters/rev.

\*\* Applies to 7-digit counters only; the other FCALs apply to the 8-digit counters.

Kent combination meters use a Helix 3000 meter as the main meter and a PSM-T as the secondary meter. Select the appropriate FCAL from the table above for each of the meters.

The Master 2000 has been discontinued.

**Socam meters:**

\*The 510 pulse unit is factory-installed and cannot be removed. The FCAL is determined at the factory and the table above shows the values available. Check the individual meter before selecting the appropriate FCAL.

## Appendix 2: Specifications

Inputs	
	1, 2, and 4 channels
Dedicated Models	
	Single channel flow Single channel pressure 2-channel (1 flow/1 pressure) 4-channel (2 flow/2 pressure)
General Purpose	
	2-channel (1 analog/1 digital) 4-channel (2 analog/2 digital)
Digital Channels	
<b>Frequency</b>	0 - 500 Hz max
<b>Bi-directional</b>	YES - 2 pins provided
<b>Conversion</b>	10-point table
<b>Compatibility</b>	Voltage-free contact/open drain FET Socam / Meinecke RO1.1 / OPTO 06 Kent PU100/HRP/BPG10 Schlumberger DS/S/TLOS Combination Meters Electromagnetic Meters - ABB/ Krone / Fisher Porter Insertion Meters - Quadrina MEP / QEP, ABB Aquaprobe
Analog Channels	
<b>Voltage</b>	100 mV, 0.5 V, 1.0 V, 5.0 V, 10 V
<b>Current</b>	10 mA, 20 mA, 4 - 20 mA
<b>Pressure</b>	5.1 – 290.1 psi (11.5 – 656.2 ft)
<b>Accuracy (68°F)</b>	0.1% or 0.5% of range
Dedicated Pressure Channel	
<b>Range</b>	44 – 363 psi
<b>Accuracy (68°F)</b>	0.5% of range
<b>Auto Zero</b>	On-site

<b>Outputs</b>	
<b>Alarm</b>	One per channel
<b>Local Comms</b>	19,200 baud
<b>Data Collection</b>	All data / data since last reading / designated date range
<b>Logging</b>	
<b>Types</b>	Count
<b>Modes</b>	Cyclical / designated time period / stop when memory is full
<b>Capacity</b>	128 Kbytes (approximately 1 year at 15 minutes per channel)
<b>Interval</b>	1 second to 24 hours
<b>Features</b>	Independent logging per channel
<b>Power</b>	
<b>Lithium Battery</b>	Design life 5 years ( <i>see note on page 2</i> ) Factory or agent replaceable (Calculation is based on a 15-minute logging interval. More frequent measurement intervals may reduce battery life.)
<b>Battery options</b>	Alkaline field-replaceable battery
<b>Physical</b>	
<b>Sealing</b>	IP68 - all models
<b>Operational Range</b>	32°F to 122°F (0°C to 50°C)
<b>Dimensions</b>	
<b>Submersible (No Modem)</b>	4.41 x 2.32 x 6.10 inches (112 x 59 x 155 mm) – <i>all except 4 channel model</i> 4.41 x 2.32 x 7.01 inches (112 x 59 x 178 mm) – <i>only 4-channel model</i>

## Appendix 3: Important Notice - Air-Freighting This Product

### **IATA Hazardous Goods Regulation**

This product is powered by a battery containing lithium C-cells or lithium D-cells. Air-freighting of products containing these lithium cells is governed by IATA (International Air Transport Association) regulation UN/ID number 3091 entitled '*Lithium batteries contained in equipment.*' This regulation clearly states that this equipment is classified as Hazardous Goods, Class 9. It can only be transported by air if it is specially packed as defined in instruction UN/ID number 3091; this defines the necessary packing requirements as specified in *Packing Instruction 912* and labelling requirements as specified in *Miscellaneous*.

### **PrimeLog transported from ADS via air-freight.**

All new or newly repaired/recalibrated PrimeLogs leaving ADS and transported by air are packed to meet UN/ID number 3091. If the product(s) is to be transported to a second destination, it must be declared as *hazardous* to the freighting agent together with the information contained in section 'IATA Hazardous Goods Regulation' above.

### **PrimeLog transported to ADS via air-freight.**

When transporting this product by air, all batteries and SIM cards (*if applicable*) must first be removed. The PrimeLog can then be transported without declaring it as *hazardous*.

Dispose of removed batteries according to local waste regulations. New batteries will be installed in the product at ADS. The SIM card (*if applicable*) should be kept for re-installation.

To airfreight these products or for further information concerning air-freight regulations, please contact ADS as follows:

### **ADS Customer Support**

(877) 237-9585

[supportcenter@idexcorp.com](mailto:supportcenter@idexcorp.com)

CHAPTER 7

## Index

- Air-Freighting, ii, 27
- Analog Inputs, 14
- Auxiliary Battery Life, 21
- Auxiliary Battery Unit, 9
- Auxiliary Battery/Communications Adaptor, 9
- Battery, 9
- Battery Unit
  - Auxiliary, 9
- Calibration, 19
- Communication Link, 14
- Connections
  - Input, 13
- Digital Inputs, 13
- Flow and Pressure Logging, 3
- Flow Meters, 21
- Interfacing, 18
- Internal Pressure Transducer, 13
- Kent Meters, 24
- Lithium, 27
- Logger Configuration, 20
- Logger Setup, 16
- Logging Features, 2
- Master Meters, 23
- Meter Scaling Tables, 24
- Polarization, 12
- Probe Calibration, 19
- Quadrina Insertion Meters, 19
- Return Policy, 6
- Scaling Tables, 23
- Sealing, 11
- Socam Meters, 24
- Special Features, 3
- Specifications, 25
- Submersible Logger, 2
- Volumetric Flow Measurement, 19
- Warranty, 5