

Centeron[®] Intrinsically Safe Digital Float Monitor Instruction Manual

Model # DT-IS-GPS Series

Document # 040256C0001

Revision # A

Dated 06/21/2010



Notice

The information contained in this document is current as of the date of publication but is subject to change without notice. **Robertshaw makes no warranty, expressed or implied, with regard to this material, including but not limited to the implied warranties of merchantability and fitness for a particular purpose.** Robertshaw shall not be liable for errors contained herein or for incidental or consequential damages in connection with the furnishing, performance, or use of this material.

Robertshaw assumes no responsibility for the use or reliability of its products or equipment other than that for which it is intended or for use other than in the manner prescribed herein.

This document is protected by copyright. All rights reserved. No part of this document may be reproduced, copied, photographed, electronically scanned, or translated into another language without the prior written consent of Robertshaw.

Centeron[®] is a registered trademark of Robertshaw Controls.

The Centeron[®] logo is a trademark of Robertshaw Controls.

Other manufacturer or service names mentioned in this publication are trademarks, service marks, or registered trademarks of their respective holders.

© 2010 Robertshaw Controls. All Rights Reserved.

Table of Contents

1.0 Introduction	2
2.0 Product Overview	2
2.1 DESCRIPTION	2
2.2 OPERATION	2
2.2.1 Measurement Operation.....	2
2.2.2 Scheduler Operation	2
2.2.3 Data Transmissions.....	3
2.2.4 Alarm Operation	3
2.2.5 Cellular Network Operation.....	4
2.3 ENVIRONMENTAL SPECIFICATIONS	4
2.4 CERTIFICATIONS	4
2.4.1 FCC Notice—Radio Frequency Communications.....	4
2.4.2 Canada	5
2.4.3 Safety and Regulatory.....	5
2.4.4 Marking	5
3.0 Installation	6
3.1 HANDLING GUIDELINES	6
3.2 MOUNTING.....	6
3.2.1 Mounting Step 1	7
3.2.2 Mounting Step 2	7
3.2.3 Mounting Step 3	8
3.2.4 Mounting Step 4	8
3.3 ACTIVATION.....	8
4.0 Troubleshooting	8
5.0 Battery Replacement	9
6.0 Warranty and Service	9
6.1 WARRANTY	9
6.2 UNIT DISPOSAL	10
6.3 SERVICE AND TECHNICAL SUPPORT	10
7.0 Control Drawing	11

1.0 Introduction

This manual describes how to install, test, and service the Centeron® Digital Float Monitor Series (hereafter referred to as the DT). The DT is part of the Centeron® Level Monitoring System, which includes Centeron® WebView (hereafter referred to as WebView) Internet data and device configuration access.

This guide does not include the detailed operation of WebView. Refer to the Internet help screens for this information.

The description herein is based on a standard installation.

2.0 Product Overview

2.1 Description

The DT is a battery-powered unit that measures and transmits tank level, device temperature, and other status information to WebView for display to the customer. The DT can be configured in the field using WebView. The DT uses a digital cellular modem to transmit and receive data.

2.2 Operation

The DT uses a scheduler to determine when to make level measurements. The DT transmits information to WebView Based on the device's schedule and any alarm conditions that are detected. WebView further processes the data and displays it on the Internet. WebView can be configured to send alerts to users via e-mail, text message, or fax.

2.2.1 Measurement Operation

The DT connects to a sensor that detects the position of the pointer in a level indicator dial on the tank. By comparing the sensor input and output voltages the Monitor is able to determine the percent volume of liquid inside the tank. WebView uses this data along with the tank dimensions to calculate the amount of product that is in the tank.

A tank level measurement is made each time the DT reports to WebView. The DT also measures and reports battery voltage, cellular signal strength, and temperature inside its enclosure. WebView interprets the reported data to provide the user with tank level, communication link quality, and battery condition information. Level measurements are also made at regular intervals between reporting times to determine if the tank level has crossed any setpoints. The DT can be configured to make unscheduled transmissions in response to setpoint crossings.

2.2.2 Scheduler Operation

The DT has a scheduler that allows the user to configure:

- Daily or weekly reporting,
- Number and time of reports per day or week, and
- How frequently to perform extra measurements between transmissions.

The user can configure the schedule using WebView. Please refer to the online help screens if you have any questions regarding the configuration of the DT.

2.2.3 Data Transmissions

The DT will transmit data on a preset schedule, on an alarm condition, or when the disable magnet is removed from its slot in the enclosure.

2.2.3.1 Regularly Scheduled Transmissions

All transmission scheduling is configurable from WebView. Internal timekeeping allows the user to specify the times for transmissions to within approximately 15 minutes. The schedule can be set from once per hour (maximum of 24 transmits per day) to once per week. Measurements will be performed just before regularly scheduled transmissions.

IMPORTANT NOTE: The DT battery life has been optimized for a schedule of three cellular transmissions per day with intermediate level measurements every hour. Changing the DT schedule will affect unit battery life.

2.2.3.2 Alarm Transmissions

The DT will transmit immediately upon detecting an alarm condition. WebView can be configured to send e-mail alerts whenever it receives an alarm from the DT. Please refer to Section 2.2.4 for more detail.

2.2.3.3 Forced Transmissions

Whenever the disable magnet is removed from the housing, the DT will take a measurement and transmit within minutes.

2.2.4 Alarm Operation

The DT provides flexible alarm capabilities for level Setpoints and Fill Alerts. These alarms can be configured using WebView. When an alarm condition occurs the DT will immediately transmit to WebView. WebView can be configured to send alert messages whenever an alarm condition is reported by the DT. Alarm functions cause the DT to make additional level measurements and cellular transmissions, which may affect battery life and call usage.

2.2.4.1 Level Setpoint Alarm

The DT provides two level setpoints. The user can configure the setpoints to alarm as the level is increasing, decreasing, or passing the setpoint in either direction. The user can configure a deadband around each setpoint to avoid unnecessary calls.

2.2.4.2 Fill Alert Alarm

The DT is programmed to report tank fills. When a substantial fluid level increase is detected the DT makes a special transmission to report both the pre-fill and post-fill tank levels. WebView can be configured to send an e-mail alert message whenever a Fill Alert is reported by the DT. Unscheduled Monitor transmissions resulting from Fill Alerts can be prevented by disabling the Fill Alert feature in WebView.

2.2.5 Cellular Network Operation

The DT transmits its data on a standard digital cellular network using many cellular providers. As with all cellular devices, coverage includes most of the United States, Canada, and Mexico. If you have any issues regarding the DT communicating with WebView, please contact Robertshaw Technical Support (See Section 6.3). They may be able to provide information regarding any network issues in the area where the device is located.

2.3 Environmental Specifications

The following environmental specifications should be observed when installing the DT:

- Temperature Range: -30°C to +75°C
- Designed for indoor or outdoor use
- Type 4X enclosure

2.4 Certifications

2.4.1 FCC Notice—Radio Frequency Communications

The DT generates and uses radio frequency energy. If not installed and used in accordance with the manufacturer's instructions, it may cause interference to radio and television reception. The DT has been tested and found to comply with the specifications in Part 15 of Radiators and FCC Rules for Class B Computing Devices.

CAUTION: Robertshaw Industrial Products does not support field changes or modifications to any of the Centeron® Level Monitoring System equipment unless they are specifically covered in this manual. All adjustments must be made at the factory under the specific guidelines set forth in our manufacturing processes. Any modification to the equipment will void the manufacturer's warranty and could void the user's authority to operate the equipment and render the equipment in violation of FCC Part 15, Subpart C, 15.247.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

2.4.2 Canada


This Class B digital apparatus complies with Canadian ICES-003.
Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

2.4.3 Safety and Regulatory

The DT is designed to comply with UL Standards for Intrinsically Safe Apparatus for use in Class I, II, and III, Division 1, Hazardous (Classified) Locations. The Monitor conforms to UL 913, 7th Edition and has been certified to CAN/CSA Standard C22.2 No. 157, Non-Incendive Equipment for Use in Hazardous Locations.

2.4.4 Marking

The DT Nameplate and Warning Label provide the following information:

<p>Centeron® by <i>Robertshaw</i></p> <p>S/N: C20GGXXXXX </p> <p>MODEL: MONITOR - DTXXXX-X-IS-XXX - REV X</p> <p>FCC ID: 09EWMP100 FC Canada: 3651C-WMP100</p> <p>HW VER: 1.0 SW VER: 1.0</p>	 <p>2002027</p> <p>Conforms to UL Std. 913</p> <p>Certified to CAN/CSA Standard C22.2 No. 157</p>		
<p>Intrinsically Safe Apparatus for Use in Class I Division 1 Group D Hazardous Locations.</p> <p>Class I Zone 0</p> <p>AEx ia IIA T3</p> <p>-30°C ≤ Ta ≤ +70°C</p> <p>Enclosure Type 4X</p>			
<p><small>This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference and (2) This device must accept any interference received, including interference that may cause undesired operation.</small></p>			
<p>Made in USA under the following U.S. Patents: 6,994,305, 7,298,278, 7,298,281.</p> <p>Patents Pending in the U.S. and other countries.</p>	<table border="1" style="width: 100%;"> <tr> <td style="padding: 2px;"> Robertshaw Industrial Products 1602 Mustang Drive Maryville, TN 37801 USA www.centeron.net 1-865-981-3100 </td> <td style="padding: 2px; text-align: center;">  </td> </tr> </table>	Robertshaw Industrial Products 1602 Mustang Drive Maryville, TN 37801 USA www.centeron.net 1-865-981-3100	
Robertshaw Industrial Products 1602 Mustang Drive Maryville, TN 37801 USA www.centeron.net 1-865-981-3100			

WARNING - SUBSTITUTION OF COMPONENTS MAY IMPAIR INTRINSIC SAFETY.
AVERTISSEMENT - LA SUBSTITUTION DE COMPOSANTS PEUT COMPROMETTRE LA SECURITE INTRINSEQUE.

WARNING - POTENTIAL ELECTROSTATIC CHARGING HAZARD. DO NOT RUB WITH A DRY CLOTH. SEE INSTRUCTIONS.
AVERTISSEMENT - RISQUE DE CHARGE ÉLECTROSTATIQUE. NE PAS FROTTER AVEC UN TISSU SEC. VOIR LES INSTRUCTIONS.

WARNING - USE ROBERTSHAW BATTERY REPLACEMENT KIT "E" (086662E0001) ONLY.
AVERTISSEMENT - UTILISEZ UNIQUEMENT LE KIT DE PILES DE RECHANGE ROBERTSHAW "E" (086662E0001).

INTRINSICALLY SAFE DEVICE
SECURITE INTRINSEQUE Ex ia IIA

SEE INSTRUCTION MANUAL FOR ADDITIONAL INFORMATION.
VOIR LE MODE D'EMPLOI POUR DE PLUS AMPLES INFORMATIONS.

REFER TO CONTROL DRAWING 039976B0001.

3.0 Installation

A list of the provided equipment and additional tools required for installation can be found in the Installation Guide that was included with this product.

NOTE: The DT should be configured in WebView prior installation and activation.

3.1 Handling Guidelines

Warning: Tanks may contain flammable liquid or vapor, extinguish all flames and smoking material before performing the Monitor installation procedure.

Warning: Electrostatic discharge precautions:

1. To minimize the risk of an electrostatic spark occurring in the hazardous area, ground yourself to the tank before installing the Monitor.
2. Do not rub the Monitor housing with a dry cloth.

The DT is designed to provide many years of reliable service in demanding outdoor environments. However, the device contains sensitive measurement circuitry and should be handled carefully. Do not throw or drop the Monitor. Do not attempt to disassemble the Monitor.

3.2 Mounting

WARNING - The DT must be installed to provide a separation distance of at least 20 cm from all persons and must not be collocated or operating in conjunction with any other antenna or transmitter.

NOTE: For optimal performance, avoid mounting multiple cellular products within two feet of each other. Avoid mounting the Monitor inside a fully closed metal building or in a metal enclosure, and avoid close proximity to large electrical equipment.

3.2.1 Mounting Step 1

Select a mounting bung on the top of the tank that will allow free travel of the float mechanism. Verify that there is adequate clearance to prevent the float mechanism from contacting obstructions such as walls, baffles, reinforcements, and other measurement equipment inside the tank. Remove all materials from the desired bung.

Install the Threaded Adapter into the desired bung. Securely tighten the Threaded Adapter. Stop rotating the Adapter when one of the four sides is parallel to the desired direction of travel for the float mechanism. Place a gasket on top of the Threaded Adapter and install the Float Gauge being careful to orient the float mechanism for the desired direction of travel. Install and tighten the four mounting screws evenly in several steps to 35 +/-15 inch-pounds torque using a crossing pattern.

Note: Over-tightening may cause damage to head and gasket.

Note: For maximum accuracy, adjust the tank so that it is level to within +/- 5 degrees.

3.2.2 Mounting Step 2

Install the Level Sensor Dial on the Float Gauge using the two supplied #6-32 screws. Tighten the dial mounting screws to 5 inch-pounds torque.

Install the Wiring Harness Assembly on the Level Sensor Dial. Remove the black plastic “Remote Ready” tab from the dial by lifting the outer edge and sliding it away from the center of the dial. Slide the Wiring Harness sensor module into the slot where the tab was removed and snap it securely into position.

Compare the new dial reading with the estimated tank contents. If the new dial reading is not correct, remove the dial and rotate the pointer to approximate the expected dial reading (using a magnet near the back of the dial). Reinstall the dial. If the reading still seems incorrect, verify that the float mechanism is installed correctly and is free to move inside the tank.

3.2.3 Mounting Step 3

Generously apply the supplied dielectric grease to the three electrical terminals inside the Monitor housing socket. Insert the sensor wiring harness connector into the Monitor housing socket and snap it firmly into position.

3.2.4 Mounting Step 4

Carefully attach the DT to the top of the tank. A large magnet in the base will hold the Monitor in place on a smooth area of the tank. Rotate the Monitor slightly to position it in the most stable orientation on the tank.

3.3 Activation

Following installation, the unit can be activated. To activate the Monitor, pull the external slide magnet completely out of the top of the Monitor housing. This will activate the Monitor to make measurements and radio transmissions on a programmed interval (per customer configured schedule in WebView).

Note: Do not discard the magnet completely—keep it accessible for future use if needed. Do not store the magnet in the Monitor upper housing slot since this will de-activate the Monitor.

Once the external slide magnet is removed from the Monitor, the DT will take a measurement and send this data to WebView within a few minutes. If the installer’s cell phone is available and active with its email address set up in WebView to receive “Alert on Data” messages, a successful installation text message should be received within several minutes. If the installer’s Cell Phone is not configured to receive data notification text messages, the installer could contact someone at his company who has access to WebView for verification that Monitor data has been received.

4.0 Troubleshooting

If the DT is not operating properly, locate the solution below:

Issue

Installer didn’t receive a confirmation text message when magnet was pulled from unit.

When looking at WebView, configuration data wasn’t sent when a magnet pull was done.

All installation and activation instructions have been followed completely, but the DT

Resolution

Verify that installer’s e-mail address was set up on WebView to receive notification when data is sent.

See if “Downloaded” checkbox is checked. If so, configuration has already been downloaded.

Call Robertshaw Technical Support. (See Section 6.3)

Issue

Installer didn't receive a confirmation text message when magnet was pulled from unit.
will not report valid information to WebView.

Resolution

Verify that installer's e-mail address was set up on WebView to receive notification when data is sent.

5.0 Battery Replacement

The DT is self-contained and operates on a specially designed battery pack, which should only be replaced by qualified service personnel. Detailed battery replacement instructions are included with each Battery Replacement Kit.

CAUTION: Use Robertshaw 086662E0001 Battery Replacement Kit only.

6.0 Warranty and Service**6.1 Warranty**

Seller warrants title and that products sold to Buyer shall be free from defects in material and workmanship and shall conform to specifications for a period of one (1) year from purchase date for complete units and parts and subassemblies. Warranties on goods sold but not manufactured by the seller are expressly limited to the terms of warranties of the manufacturer of such goods.

Seller makes no representation or warranty of any kind, express or implied, as to merchantability, fitness for particular purpose or any other matter. Upon receipt of definite shipping instructions, Buyer shall return, transportation prepaid, all defective material, or material not conforming to specifications, to Seller, after inspection by Seller, or at Seller's election, subject to inspection by Seller. Material returned by Buyer must be returned in same condition as when received by Buyer. Defective material, or material not conforming to specifications, so returned shall be replaced or repaired by Seller and returned, freight prepaid, without any additional charge, or in lieu of such replacement or repair, Seller, may, at Seller's option, refund the purchase price applicable to such material. Seller agrees to pay return freight charges not exceeding the lowest rail or truck rate which would apply from the original destination on all defective material, or material not meeting specifications. However, Seller shall not be obligated for such charges when material returned proves to be free from defect and to meet specifications. Material which proves to be free from defect and to meet specifications shall be held by Seller for shipping instructions and Buyer shall furnish such instructions promptly upon request. Seller's liability shall be limited solely to the replacement or repair or to refunding the purchase price applicable to the defective material or material not meeting specifications. Seller shall not be

liable for any consequential damages nor any loss, damages or expenses directly or indirectly arising from the use of the material.

6.2 Unit Disposal

The U.S. Environmental Protection Agency regulates the disposal of waste products in the United States. The EPA Regulations are listed in the "Code of Federal Regulations," CFR40, entitled "Protection of Environment." Additionally, individual states and local communities also may establish more stringent regulations covering the disposal of waste products. Thus, state and local agencies should be contacted for their disposal guidelines.

6.3 Service and Technical Support

If you experience trouble with this equipment, please contact **Robertshaw Industrial Products Technical Support at (865) 981-3118, Monday through Friday, EST 8:00 a.m. to 4:30 p.m.**

This unit is to be serviced by qualified service personnel only.

7.0 Control Drawing

REV.	DATE	DESCRIPTION	SCALE
A	1662P	RELEASE FOR PRODUCTION	1/8"
B	1665E	NOTE 5 DOXXXX-X-IS-XXX WAS REMOVED DWT FRENCH FROM NOTE 6	1/8"
C	1654E	NOTE 5A AND 5B FROM NOTE 6 REMOVED	1/8"

1. WHEN INSTALLED AS SHOWN THE MONITOR AND GAUGE ARE INTRINSICALLY SAFE FOR HAZARDOUS LOCATION CLASS 1, DIVISION 1, GROUP D.

2. INTRINSICALLY SAFE WIRING MUST BE INSTALLED IN ACCORDANCE WITH ARTICLE 504 OF THE NEC ANSI/NFPA 70 OR, IF APPLICABLE, WITH THE CANADIAN ELECTRICAL CODE.

3. MONITOR AND GAUGE SHALL BE INSTALLED IN ACCORDANCE WITH GAUGE MONITOR INSTALLATION INSTRUCTIONS.

4. GAUGE, ROCHESTER GAUGES 0 TO 10,000 OHM TWINSTE SENDER OR ROCHESTER GAUGES HALL EFFECT SENSOR.

5. MONITOR, ROBERTSHAW INDUSTRIAL PRODUCTS DOXXXX-X-IS-XXX OR DXXXXX-X-IS-XXX SERIES GAUGE MONITOR.

6. USE MANUFACTURER SUPPLIED 066662 SERIES 7.2 V BATTERY PACK ONLY. SEE MONITOR LABEL FOR SPECIFIC BATTERY REPLACEMENT KIT PART NUMBER.

7. WARNING: SUBSTITUTION OF COMPONENTS MAY IMPAIR INTRINSIC SAFETY. AVERTISSEMENT: LA SUBSTITUTION DE COMPOSANTS PEUT COMPROMETTRE LA SECURITE INTRINSIQUE.

THIS DOCUMENT IS THE CONFIDENTIAL PROPERTY OF ROBERTSHAW INDUSTRIAL PRODUCTS. ANY USE, REPRODUCTION, OR REDISTRIBUTION OF THIS DOCUMENT WITHOUT WRITTEN AUTHORIZATION IS STRICTLY PROHIBITED.

© 2002 ROBERTSHAW INDUSTRIAL PRODUCTS

ROBERTSHAW INDUSTRIAL PRODUCTS
1602 MUSTANG DRIVE
MARYVILLE, TENNESSEE 37801
USA

INVENSY Controls
INDUSTRIAL PRODUCTS DIVISION
DIGITAL CELLULAR GAUGE
MONITOR CONTROL DRAWING

039976B0001



inven·s·y·s
Controls

U.S.A. – Robertshaw Industrial Products Division, 1602 Mustang Drive, Maryville, Tennessee 37801
865-981-3100 • Fax: 865-981-3168
www.Centeron.net

The product described within is manufactured by Robertshaw I.P.D. in Maryville, TN USA under the following U.S. Patents: 6,994,305 7,298,278 7,298,281. Patents Pending in the U.S. and other countries.