Emerson™ Wireless SmartPower™ Solutions

- Intrinsically Safe design enables routine maintenance in hazardous areas
- Predictable life specified under installed conditions
- Robust design for use in harsh environments
- Low Level alerts for easy maintenance
- Keyed connection for easy and fail-safe replacement
IEC 62591 (WirelessHART)... the Industry Standard

Self-organizing, adaptive mesh routing

- Know you are backed by Emerson’s proven experience in Wireless field instrumentation and expert technical support
- The self-organizing, self-healing network manages multiple communication paths for any given device. If an obstruction is introduced into the network, data will continue to flow because the device already has other established paths.

Reliable wireless architecture

- Standard IEEE 802.15.4 radios
- 2.4 GHz ISM band
- Time synchronized channel hopping
- WirelessHART® technology delivers high reliability in challenging radio environment

Layered security keeps your network safe

- Ensures data transmissions are received only by the wireless Gateway
- Network devices implement industry standard encryption, authentication, verification, anti-jamming, and key management.
- Third party security verification including Achilles and FIPS197- user based login and enforced password strength. Password strength monitoring, user based log in, password reset requirements, automatic lockout, password expiration requirements. Based on guidelines from ISA99.03.03 standard approved level two.

Seamless integration to existing hosts

- Native integration into DeltaV™ and Ovation™ is transparent and seamless
- Gateways interface with existing host systems using industry standard protocols including OPC, Modbus® TCP/IP, Modbus RTU, and EtherNet/IP™

SmartPower solutions

- Optimized Emerson instrumentation, both hardware and software, to extend power module life
- SmartPower technologies enable predictable power life

Contents

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Black power module

- Hazardous Area Certifications: FM, CSA, ATEX, IECEx, EAC
- Designed for use with:
  Rosemount™ 3051S Wireless Pressure Transmitter
  Rosemount 3051SMV Wireless Pressure Transmitter
  Rosemount 648 Wireless Temperature Transmitter
  Rosemount 848T Wireless Temperature Transmitter
  Rosemount 3308A Wireless Guided Wave Radar
  Rosemount 2160 Wireless Level Switch
  Rosemount 928 Wireless Gas Monitor
  Rosemount 702 Wireless Discrete Transmitter
  Rosemount 702 Wireless Plunger Arrival Transmitter
  Rosemount 705 Wireless Totalizing Transmitter
  Roxar CorrLog Wireless Corrosion Transmitter
  Roxar SandLog Wireless Sand/Erosion Transmitter

Green power module

- Hazardous Area Certifications: FM, CSA, ATEX, IECEx, EAC
- Designed for use with:
  Rosemount 708 Wireless Acoustic Transmitter
  Rosemount 3051 Wireless Pressure Transmitter
  Rosemount 2051 Wireless Pressure Transmitter
  Rosemount 248 Wireless Temperature Transmitter (Polymer)

Alternate power options

SmartPower Solutions Blue Power Module

- Recommended for energy intensive applications
- Double the lifetime, up to 10 years
- Compatible with most products using the Black Power Module
- Extended cover required
- Reference Blue Power Module datasheet for approved devices

Energy harvesting options

- Perpetuum Intelligent Power Module (IPM) accepts harvested energy and delivers to transmitter
- Perpetua® Power Pucks convert heat into thermoelectric energy and send to IPM
- Compatible with most products using the Black Power Module
- Contact Emerson representative for approved devices
Ordering Information

Specification and selection of product materials, options, or components must be made by the purchaser of the equipment. See page 5 for more information on material selection.

Table 1. SmartPower Solutions Ordering Information

The starred offerings (★) represent the most common options and should be selected for best delivery. The non-starred offerings are subject to additional delivery lead time.

<table>
<thead>
<tr>
<th>Model</th>
<th>Product description</th>
</tr>
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<tbody>
<tr>
<td>701P</td>
<td>SmartPower Options</td>
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**SmartPower type**

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<td>Black Power Module</td>
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<tr>
<td>GN</td>
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**Certification**

<table>
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<td>KF</td>
<td>FM, CSA, ATEX, IECEx, and EAC Intrinsically Safe</td>
</tr>
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</table>

Typical model number: 701PBKKF

Emerson SmartPower Solutions Features

**Intrinsically safe power solution**

- SmartPower Modules can be changed in hazardous areas
- No need to remove transmitter from process to change power module

**Predictable life**

- Life expectancies specified under installed conditions
- Up to 10-year life depending on update rate

**Easy maintenance**

- Low level alerts for easy planning of replacements
- Keyed connections for easy replacement and fail-safe connection

**Safe robust design**

- Short circuit protection
- No special training required
- Designed for harsh environments
Specifications

Functional specifications

Life expectancy
Up to 10-year life at one minute update rate. See Table 2 on page 5 for more information.

Humidity limits
0–100 percent relative humidity

Physical specifications

Material selection
Emerson provides a variety of Rosemount product with various product options and configurations including materials of construction that can be expected to perform well in a wide range of applications. The Rosemount product information presented is intended as a guide for the purchaser to make an appropriate selection for the application. It is the purchaser’s sole responsibility to make a careful analysis of all process parameters (such as all chemical components, temperature, pressure, flow rate, abrasives, contaminants, etc.), when specifying product, materials, options, and components for the particular application. Emerson is not in a position to evaluate or guarantee the compatibility of the process fluid or other process parameters with the product, options, configuration or materials of construction selected.

Electrical connections
Emerson SmartPower solutions were designed for use with various Emerson Wireless devices, listed on page 3.

Rated voltage
Black Power Module: 7.2 V
Green Power Module: 3.6 V

Materials of construction
Primary Lithium-thionyl chloride with a polybutylene terephthalate (PBT) enclosure.

Weight
Black Power Module -0.50 lb (230 g)
Green Power Module - 0.34 lb (155 g)

Performance specifications

Electromagnetic compatibility (EMC)
All models:
Meets all relevant requirements of EN 61326-1; 2006; EN 61326-2-3; 2006.

Vibration effect
No effect when tested per the requirements of IEC60770-1: High Vibration Level - field or pipeline (10–60 Hz 0.21 mm displacement peak amplitude/60–2000 Hz 3g).

Specifications

Temperature limits

<table>
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<tr>
<th>Update</th>
<th>1 sec</th>
<th>2 sec</th>
<th>4 sec</th>
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<th>40 min</th>
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Green Power Module

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Power module life

Power module life in a given wireless transmitter is mainly a function of the wireless update rate. Faster wireless updates lead to lower power module life. Power module life is also impacted by extreme temperature service and wireless network conditions. Power module storage conditions should be temperature controlled.

Table 2. Power Module Life Estimates

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</table>

Assumptions

- Three network descendants
- 70 °F ambient temperature
- 10 years is shelf life of lithium cell
- ±10% capacity for temperature and network variation

Note
NR: this update rate not recommended for this product

To better estimate power module life for a wireless transmitter in your network, visit the on-line power module life estimator.
Product Certifications – 701P SmartPower Solutions

Rev 2.1

European Directive Information
A copy of the EC Declaration of Conformity can be found at the end of the Quick Start Guide. The most recent revision of the EC Declaration of Conformity can be found at Emerson.com/Rosemount.

Ordinary Location Certification for FM Approvals
As standard, the transmitter has been examined and tested to determine that the design meets the basic electrical, mechanical, and fire protection requirements by FM Approvals, a nationally recognized test laboratory (NRTL) as accredited by the Federal Occupational Safety and Health Administration (OSHA).

Installing in North America
The US National Electrical Code® (NEC) and the Canadian Electrical Code (CEC) permit the use of Division marked equipment in Zones and Zone marked equipment in Divisions. The markings must be suitable for the area classification, gas, and temperature class. This information is clearly defined in the respective codes.

USA
KF FM Intrinsic Safety (IS) Certificate: 3042016
Markings: IS CL I, DIV 1, GP A, B, C, D; CL II, DIV 1, GP E, F, G; Class III; Class 1, Zone 0 AEx ia IIC T4; (–40 °C ≤ T_a ≤ +70 °C)
(See Table 3 or Table 4 for parameters)

Special Condition for Safe Use (X):
1. Replacement of power module, see instructions for final product.

Canada
KF CSA Intrinsicly Safe Certificate: 2430393
Standards: CAN/CSA C22.2 No. 0-M91, CSA Std C22.2 No.157-92
Markings: Intrinsically Safe Class I, Division 1, Groups A, B, C, and D T3C (T_a ≤ +70 °C) Warning – refer to | QSG 825-0100-4701 for Safe I.S. Use
(See Table 3 or Table 4 for parameters)

Special Condition for Safe Use (X):
1. The plastic enclosure of the Model 701P SmartPower Power Modules may constitute a potential electrostatic ignition risk and caution should be used when handled.

Note
This condition of use does not apply after a Power Module is installed within a wireless transmitter enclosure.

International
KF IECEx Intrinsic Safety Certificate: IECEx BAS 11.0026X
Markings: Ex ia IIC T4/T5 Ga T4(–55 °C ≤ T_a ≤ +70 °C), T5(–55 °C ≤ T_a ≤ +40 °C)
(See Table 3 or Table 4 for parameters)

Special Condition for Safe Use (X):
1. The plastic enclosure of the Model 701P SmartPower Power Modules may constitute a potential electrostatic ignition risk and caution should be used when being handled.

Note
This condition of use does not apply after a Power Module is installed within a wireless transmitter enclosure.

EAC - Belarus, Kazakhstan, Russia
KF Technical Regulation Customs Union (EAC) Intrinsic Safety Certificate: TC RU C-U.0062.2B.04747
Markings: 0Ex ia IIC T4/T5 Ga X T4 (–55 °C ≤ T_a ≤ +70 °C), T5 (–55 °C ≤ T_a ≤ +40 °C)

Special Condition for Safe Use (X):
1. The plastic enclosure of the Model 701P SmartPower Power Modules may constitute a potential electrostatic ignition risk and caution should be used when handled.

Note
This condition of use does not apply after a Power Module is installed within a wireless transmitter enclosure.
Safety parameters

**Table 3. 701PBKKF**

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<th>Parameter</th>
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<td>$P_o$</td>
<td>0.83 W</td>
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<tr>
<td>$L_o$</td>
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**Table 4. 701PGNKF**

<table>
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</table>
**Dimensional Drawings**

**Figure 1. 701PGN Green Power Module**

Dimensions are in inches (millimeters).

**Figure 2. 701PBK Black Power Module**

Dimensions are in inches (millimeters).