Product Data Sheet
December 2018
00813-0100-4701 Rev CA

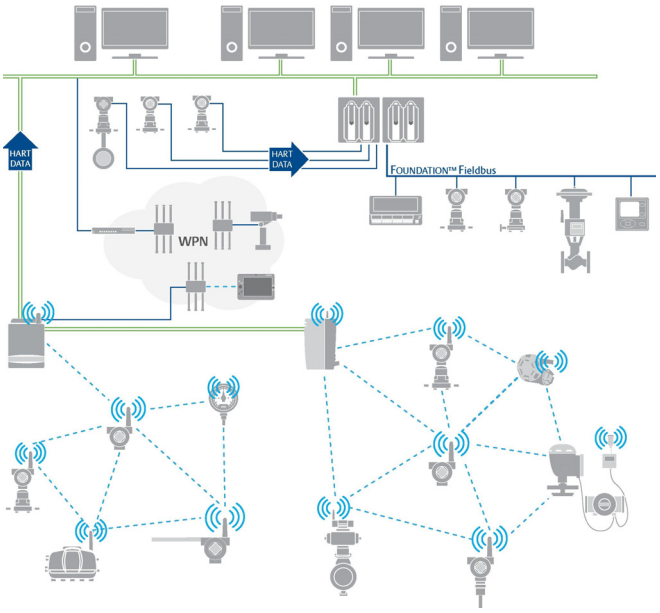
Emerson™ Wireless SmartPower™ Solutions

- 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 (*Wireless*HART)... 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
- *Wireless*HART® 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

SmartPower Solutions

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.

Model	Product description	
701P	SmartPower Options	
SmartPower type		
BK	Black Power Module	★
GN	Green Power Module	★
Certification		
KF	FM, CSA, ATEX, IECEx, and EAC Intrinsically Safe	★
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).

Temperature limits

Operating limit	Storage limit
–40 to 185 °F –40 to 85 °C	–40 to 185 °F –40 to 85 °C

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

Power module life estimates in years									
Update	1 sec	2 sec	4 sec	16 sec	60 sec	300 sec	20 min	40 min	60 min
Black Power Module									
3051S	0.6	1.3	2.2	5.8	10.0	10.0	10.0	10.0	10.0
3051SMV	0.4	0.7	1.3	3.5	6.8	9.4	10.0	10.0	10.0
648	0.9	0.7	2.8	6.9	10.0	10.0	10.0	10.0	10.0
848T	NR	NR	0.7	2.4	6.3	10.0	10.0	10.0	10.0
3308A	NR	NR	1.5	4.7	10.0	10.0	10.0	10.0	10.0
2160	1.2	2.1	3.2	6.9	10.0	10.0	10.0	10.0	10.0
928	1.5	2.1	2.9	3.0	3.2	3.2	3.2	3.2	3.2
702 Discrete	1.5	2.7	4.1	8.8	10.0	10.0	10.0	10.0	10.0
702 Plunger	0.7	0.9	1.1	1.2	1.2	1.2	1.2	1.2	1.2
705	1.5	2.7	4.1	8.8	10.0	10.0	10.0	10.0	10.0
CorrLog	NR	NR	NR	NR	NR	NR	1.6	2.6	3.7
SandLog	NR	NR	NR	NR	NR	NR	1.6	2.6	3.7
CSI 9420	Not recommended for Black Power Module. See product documentation for Blue Power Module.								
Green Power Module									
708	1.2	2.3	3.8	8.4	10.0	10.0	10.0	10.0	10.0
3051	0.6	1.3	2.2	5.8	10.0	10.0	10.0	10.0	10.0
2051	0.6	1.3	2.2	5.8	10.0	10.0	10.0	10.0	10.0
248	0.9	1.7	2.8	6.9	10.0	10.0	10.0	10.0	10.0

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
Standards: FM Class 3600 – 1998, FM Class 3610 – 2010, FM Class 3810 – 2005
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 Intrinsically 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 (Ta ≤ +70 °C) Warning – refer to | QSG 825-0100-4701 for Safe I.S. Use
(See Table 3 or Table 4 for parameters)

Specific Condition for Safe Use (X):

1. The power modules are certified as components for use in intrinsically safe products where the suitability/ combination of use in the final assembly shall be subjected to CSA acceptance. The final assembly must incorporate all protection features necessary for batteries in accordance with applicable standards of the final intrinsically safe application.

Europe

KF ATEX Intrinsic Safety
Certificate: Baseefa11ATEX0042X
Standards: EN 60079-0: 2012+A11:2013, EN 60079-11: 2012
Markings: Ⓔx II 1G Ex ia IIC T4 Ga, T4(–55 °C ≤ T_a ≤+70 °C)
Ⓔx II 1G Ex ia IIC T5 Ga, 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.

International

KF IECEx Intrinsic Safety
Certificate: IECEx BAS 11.0026X
Standards: IEC 60079-0: 2011, IEC 60079-11: 2011
Markings: Ex ia IIC T4/T5 Ga 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 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-US.MIO62.B.04747
Markings: 0Ex ia IIC T4/T5 Ga X T4 (-55 °C ≤ T_a ≤ +70 °C) T5 (–55 °C ≤ T_a ≤ +40 °C)

Safety parameters

Table 3. 701PBKKF

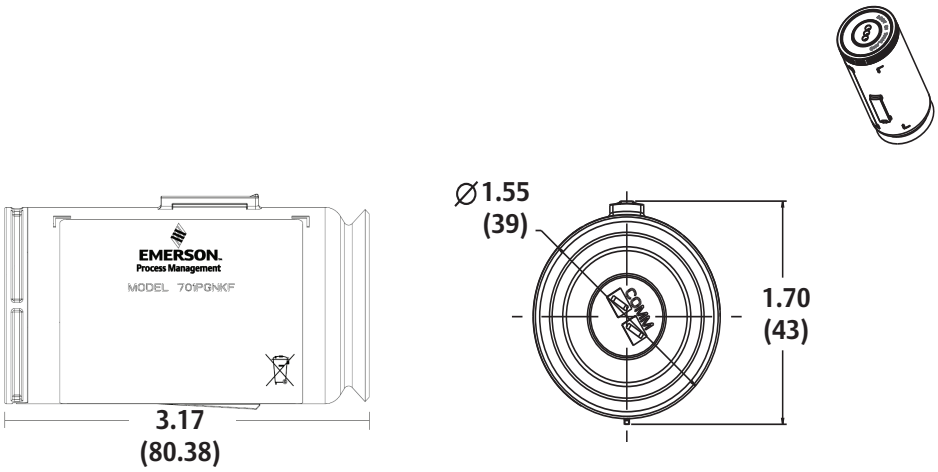
U_o	7.8 V
I_o	2.16 A
P_o	0.83 W
C_o	3.0 µF
L_o	7.6 µH

Table 4. 701PGNKF

U_o	3.9 V
I_o	2.78 A
P_o	2.71 W
C_o	100 µF
L_o	4.6 µH

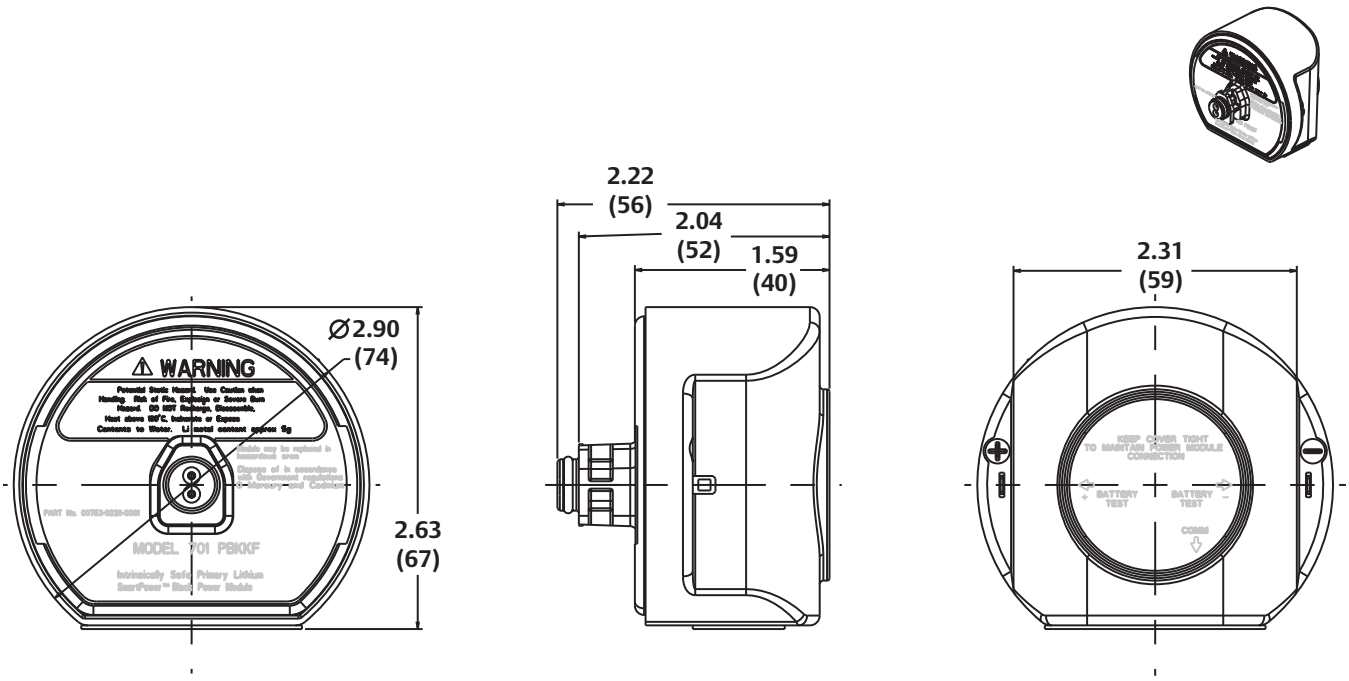
Dimensional Drawings

Figure 1. 701PGN Green Power Module



Dimensions are in inches (millimeters).

Figure 2. 701PBK Black Power Module



Dimensions are in inches (millimeters).

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