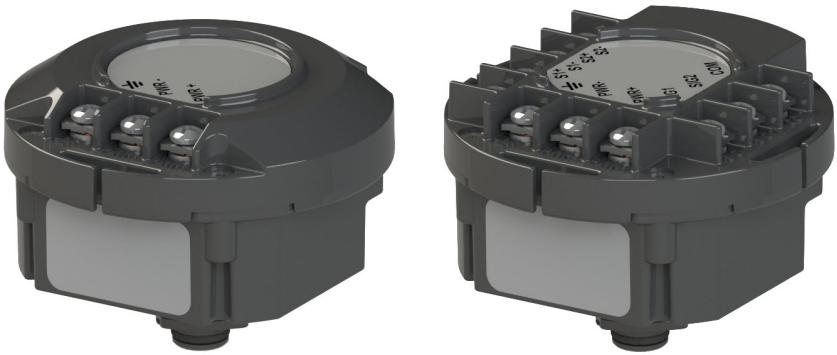
Quick Start Guide
MHM-97919-PBF, Rev 1
February 2018

Emerson™ A9000Px

Emerson SmartPower™ Solutions - Power Adapter



EMERSON

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See http://www.emerson.com/documents/automation/40816.pdf.

All other marks are property of their respective owners.

Patents

The product(s) described in this manual are covered under existing and pending patents.

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1 Introduction

1.1 Emerson A9000P description of intended use

The Emerson A9000P series adapters are available in two versions: Emerson A9000PA and Emerson A9000PS-A. They allow an Emerson wireless transmitter to be powered by external DC power. When installed with an appropriate safety barrier, they can be used in a hazardous location. Barrier requirements are described in the Emerson A9000Px Quick Start Guide and installation drawings included with the power adapter.

- Use either version to connect external DC power.
- Use the Emerson A9000PS-A to connect external DC power and up to 2 standard ICP accelerometers with a nominal sensitivity of 100 mV/g.

Figure 1-1: Emerson A9000PA (left) and Emerson A9000PS-A (right)

1.2 Optional spacer

The spacer is required only when the transmitter has an extended endcap.

Figure 1-2: Optional spacer

2 Installation requirements

2.1 Assembly, location, and mounting requirements

The Emerson A9000P series adapters use a specially designed connection method for insertion into the socket on the termination block used by most Emerson wireless transmitters. The adapter is keyed, so that it is only possible to insert it in the proper orientation. The adapter must be securely inserted into the socket and completely enclosed in the transmitter using an appropriate end cap.

The shorter end cap features a spring-loaded plate which assures that the adapter remains securely in place, even when exposed to shock, drop and vibration. When using the extended end cap, the provided spacer must be inserted into the end cap before installation to maintain a secure connection.

Power leads, as well as sensor leads where appropriate, enter the rear compartment of the transmitter housing through conduit openings on the left and right of the housing. Power leads and sensor leads must enter on opposite sides of the housing. If sensors leads are not used, the power leads may enter on either side of the housing. Emerson recommends the sensor leads enter the same side where the sensor terminal screws are located. When using two sensors, a 1/2 in. Type T threaded conduit body with cover and gasket adapter is required. Always refer to the user documentation of the transmitter for installation instructions.

With the Emerson A9000PS-A, use the included cable harness to jumper the signals from the power adapter to the AMS 9420 terminal block. Refer to the installation drawing for details. The most recent version of the installation drawing is on our website.

2.2 Grounding (protective earthing) requirements

A grounding screw is provided on the housing of each of Emerson's wireless transmitters as well as on the Emerson A9000P series adapter itself. Refer to the user reference documentation for each device for grounding requirements or recommendations.

3 Installation examples

3.1 Connect external DC power to Emerson wireless transmitters

You can use all versions of the Emerson A9000P series adapters to connect external DC power to Emerson wireless transmitters. This example describes connecting the power adapter. Always refer to the user documentation of the transmitter for installation instructions.

⚠ CAUTION!

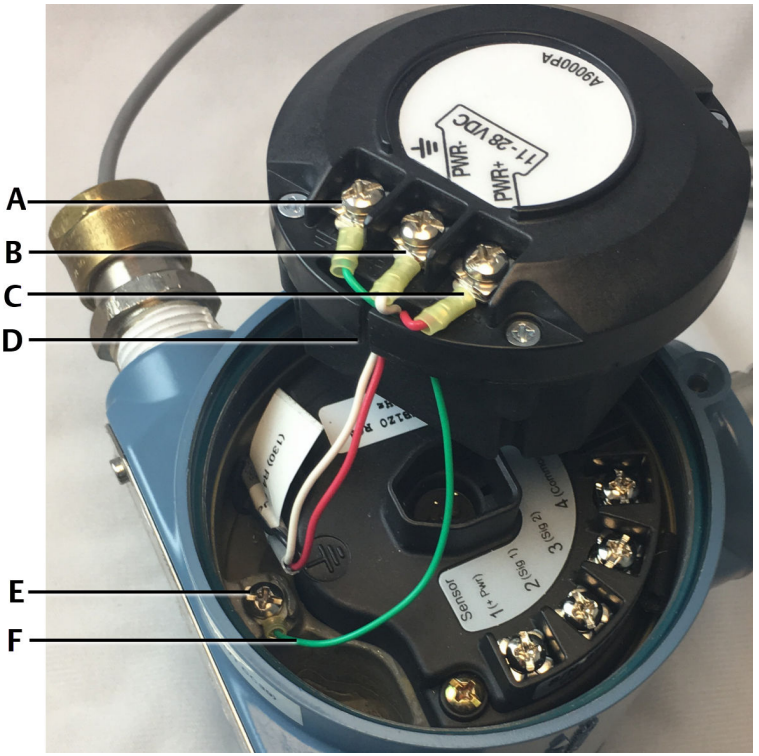
DC power should only be applied to the power adapter after it is wired and inserted in the transmitter terminal block.

Procedure

1. Connect the external DC power to the power adapter.
2. Connect the included green chassis ground cable to the power adapter ground and to the chassis ground point.

   The connections are shown in detail in the installation drawing and an example is shown in *Figure 3-1*.

Figure 3-1: External DC power and included cable harness connected to the power adapter



A. Green chassis ground cable
B. PWR -
C. PWR +
D. Slot
E. Chassis ground point
F. Green chassis ground cable

3. Push each wire through the slot.
4. Insert the power adapter into the receptacle on the transmitter terminal block.
5. If the transmitter has an extended end cap, insert the spacer into the end cap. Otherwise, the spacer is not required.

3.2 Connect external DC power and ICP® accelerometer inputs to an AMS 9420

With the AMS 9420, use the Emerson A9000PS-A to connect external DC power and up to 2 standard ICP® accelerometers with a nominal sensitivity of 100 mV/g. This example describes connecting the power adapter. Always refer to the user documentation of the transmitter for installation instructions.

Note

For a typical AMS 9420 installation, only connect external DC power to the power adapter. Low-power accelerometers connect directly to the transmitter terminal block.

⚠ CAUTION!

DC power should only be applied to the power adapter after it is wired and inserted in the transmitter terminal block.

Prerequisites

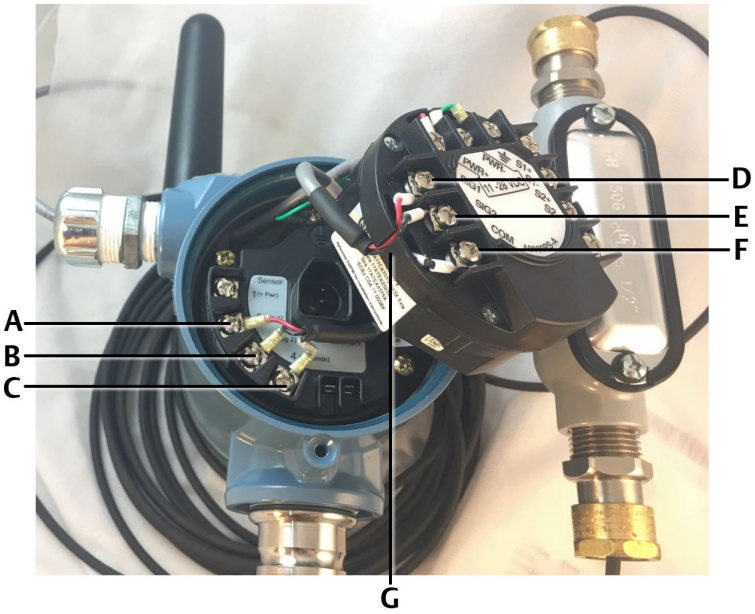
Connect external DC power and green chassis ground cable to the power adapter. Refer to the example in *Section 3.1*.

Procedure

1. Use the included cable harness to connect the power adapter sensor terminals to the AMS 9420, as shown in the installation drawing.

   The cable harness has three wires: two colored wires and one bare wire. Each wire has a spade lug on one end and a ferrule on the other end. Connect the spade lugs to the terminal block. Connect the ferrules to the power adapter. Be careful to connect each wire to the matching terminal screw. The connections are shown in detail in the installation drawing and an example is shown in *Figure 3-2*.

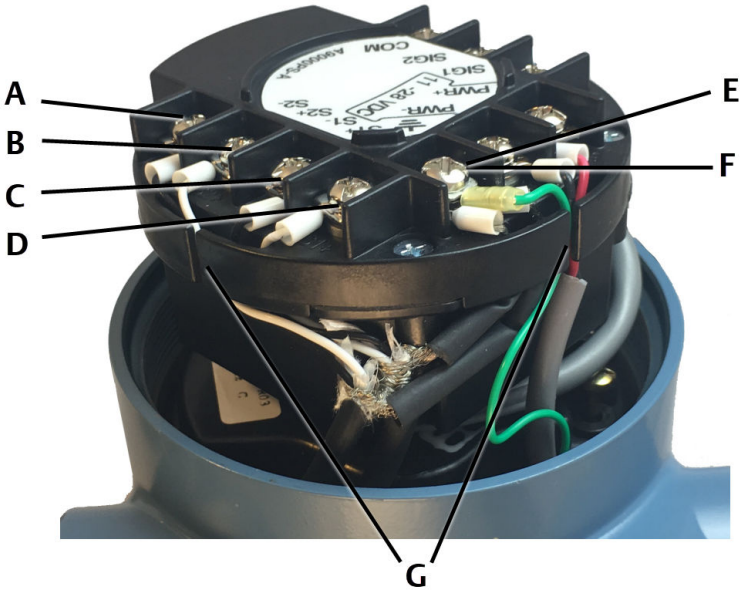
Figure 3-2: Emerson A9000PS-A to AMS 9420 signal connections with included cable harness



	Spade lug to AMS 9420	Cable harness wire	Ferrule to Emerson A9000PS-A	
A	2 (Sig 1)	color 1 (red shown)	SIG1	D
B	3 (Sig 2)	color 2 (black shown)	SIG2	E
C	4 (Common)	unshielded	COM	F
G	Slot			

2. Push each wire from the cable harness into the slot. It is easier to push the individual wires into the slot after connecting the ferrules.
3. Connect the leads from up to two standard ICP® accelerometers with a nominal sensitivity of 100 mV/g to the terminal screws on the Emerson A9000PS-A.

Figure 3-3: Two ICP® accelerometers connected to the power adapter (rotated view)



A. S2-
B. S2+
C. S1-
D. S1+
E. S1 Shield
F. S2 Shield
G. Slots

4. Push each signal cable wire into the slot.
5. Wrap the cable harness counter clockwise around the receptacle on the transmitter terminal block.

Figure 3-4: Cable harness wrapped around the receptacle

6. Insert the power adapter into the receptacle.
7. If the transmitter has an extended end cap, insert the spacer into the end cap. Otherwise, the spacer is not required.

4 Technical data

Table 4-1: Environmental conditions

Pollution degree	Category 2
Installation category	Category II
Altitude	2000 m max.
Operating Temperature	-40 to +80° C

Table 4-2: Power specifications

Input power (nominal)	11-28 VDC
Output power (nominal)	7 VDC

Table 4-3: Sensor specifications (P9000PS-A)

Supported sensor type	ICP accelerometer
Input signal	100 mV/g
Output signal	25 mV/g

5 Product certifications

The most recent product certification information is available on our website.

5.1 Approved manufacturing locations

Emerson
835 Innovation Drive
Knoxville, TN 37932 USA
T: +1 865-675-2400

Benchmark Electronics (Thailand) Plc.
109 moo.4, Chaimongkol, Muang, Nakorn Ratchasima
Thailand 30000
T: +66 44-233-800

5.2 European directive information

A copy of the EU Declaration of Conformity can be found at the end of the Quick Start Guide. The most recent revision of the EU Declaration of Conformity can be found at www.emerson.com.

5.2.1 ATEX directive (2014/34/EU)

Emerson complies with the ATEX Directive.

5.2.2 Electro Magnetic Compatibility (EMC) (2014/30/EU)

Emerson complies with the EMC Directive.

5.3 Ordinary location certification

The power adapter has been examined and tested to determine that the design meets the basic electrical, mechanical, and fire protection requirements.

5.4 Hazardous locations certifications

Table 5-1: Emerson A9000PA: Hazardous locations certifications

USA/Canada	Certificate	CSA17CA70101643X
	Marking	Class I, Div. 1, Groups A, B, C & D, T4 Class II, Div. 1, Group E, F & G Class I, Zone 0, A/Ex ia IIC T4 Ga
	Standards	C22.2 No 61010-1-12; UL 61010-1 3rd Ed. C22.2 No 60079-0: 2015; UL 60079-0 6th Ed. C22.2 No 60079-11: 2014; UL 60079-11 6th Ed.
Europe	Certificate	Sira 17ATEX2323X
	Marking	CE 0518 Ex II 1G Ex ia IIC T4 Ga
	Standards	EN 60079-0:2012/A11: 2013 EN 60079-11:2012
International	Certificate	IECEx CSA 17.0038X
	Marking	Ex ia IIC T4 Ga Ta: -40°C to +85°C
	Standards	IEC 60079-0:2011 (6th Edition) IEC 60079-11:2011 (6th Edition)

Table 5-2: Emerson A9000PS-A: Hazardous locations certifications

USA/Canada	Certificate	CSA17CA70101643X
	Marking	Class I, Div. 1, Groups C & D, T4 Class I, Div. 2, Groups A, B, C & D, T4 Class I, Zone 0, A/Ex ia IIB T4 Ga Class I, Zone 2, A/Ex ic IIC T4 Gc
	Standards	C22.2 No 61010-1-12; UL 61010-1 3rd Ed. C22.2 No 60079-0: 2015; UL 60079-0 6th Ed. C22.2 No 60079-11: 2014; UL 60079-11 6th Ed.
Europe	Certificate	Sira 17ATEX2323X, Sira 17ATEX4375X
	Marking	CE 0518 Ex II 1G Ex ia IIB T4 Ga CE Ex II 3G Ex ic IIC T4 Gc
	Standards	EN 60079-0:2012/A11:2013 EN 60079-11:2012
International	Certificate	IECEx CSA 17.0038X
	Marking	Ex ia IIB T4 Ga Ex ic IIC T4 Gc Ta: -40°C to +85°C
	Standards	IEC 60079-0:2011 (6th Edition) IEC 60079-11:2011 (6th Edition)

5.5 Connections and entity parameters

Entity parameters

Refer to the installation drawing for details. The most recent version of the installation drawing is on our website.

When the power adapter is installed in a hazardous location, the appropriate safety barrier is required.

- I.S. Barrier [Ex ia Ga] IIB: 28V, 164Ω, 170mA
- I.S. Barrier [Ex ia Ga] IIC: 28V, 234Ω, 120mA

Refer to the user documentation of the transmitter for details.

Table 5-3: Entity parameters for power

Connection	Power In		Power Out	
Terminals	**PWR and GND**		**Bottom Plug**	
Marking	Ex ia IIC T4 Ga	Ex ia IIB T4 Ga Ex ic IIC T4 Gc	Ex ia IIC T4 Ga	Ex ia IIB T4 Ga Ex ic IIC T4 Gc
Parameters	Ui = 28 V	Ui = 28 V	Uo = 7.65 V	Uo = 7.65 V
	Ii = 120 mA	Ii = 170 mA	Io = 106 mA	Io = 106 mA
	Pi = 0.84 W	Pi = 1.19 W	Po = 813 mW	Po = 813 mW
	Ci = 0 nF	Ci = 0 nF	Co = 9.8 µF	Co = 85 µF
	Li = 80 µH	Li = 80 µH	Lo = 3.2 mH	Lo = 7.1 mH

Table 5-4: Entity parameters for sensor

Connection	Sensor Out(1)		Sensor In	
Terminals	**S1+ & S1- / S2+ & S2-**		**SIG1 / SIG2 & COM**	
Marking	Ex ia IIC T4 Ga	Ex ia IIB T4 Ga Ex ic IIC T4 Gc	Ex ia IIC T4 Ga	Ex ia IIB T4 Ga Ex ic IIC T4 Gc
Parameters	Uo = 25.2 V	Uo = 25.2 V	Uo = 7.424 V	Uo = 7.424 V
	Io = 127 mA	Io = 127 mA	Io = 29.4 mA	Io = 29.4 mA
	Po = 0.8 W	Po = 0.8 W	Po = 55 mW	Po = 55 mW
	Co = 75 nF	Co = 358 nF	Co = 11.1 µF	Co = 100 µF
	Lo = 2.2 mH	Lo = 5 mH	Lo = 41.1 mH	Lo = 92.5 mH

(1)Entity parameters for sensor out terminals S1+ & S1- / S2+ & S2- reflect total combined limitations for both channels.

Special Condition for Safe Use (X)

The plastic enclosure may constitute a potential electrostatic ignition risk and caution should be used when being handled. This condition of use does not apply after a power adapter is installed within a wireless transmitter enclosure.

Compatibility

The power adapter is compatible with most other Emerson wireless transmitters that use a power module. It has been certified intrinsically safe as indicated here; however, always refer to the individual certification requirements for each product to determine whether it is suitable for installation and in which environments.

List of critical failures

Not specified

Special conditions for safe use

Do not operate the unit if there is any damage to housing, cover, or rubber seals.

Special training requirements for personnel

Review operating instructions and certification documentation. Device should be verified as appropriate for installation in the intended environment by the safety officer responsible for the end use location.

5.6 Declaration of Conformity

EU Declaration of Conformity

In accordance with IEC 17050-1

We:

Manufacturer's Name: Computational Systems, Inc. (CSI)
A division of Emerson

Manufacturer's Address: 835 Innovation Drive
Knoxville, TN 37932
USA

declare under sole responsibility that the product:

Product Name: Power/Signal Adapter

Model: A9000Px

Revision Level: 0 and up

to which this declaration relates, is in conformity with the provisions of the European Community Directives, including the latest amendments, as shown in the attached schedule.

Assumption of conformity is based on the application of the harmonized standards and, when applicable or required, a European Community notified body certification, as shown in the attached schedule.

CE

Bob White
Quality Manager
Knoxville, Tennessee U.S.A.
on 1 November 2017

European Contact: Mr. Bruno Hecker
Emerson
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Gronau, Germany
Tel +49 2562 709-179
Fax +49 2562 709-198

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EU Declaration of Conformity

In accordance with IEC 17050-1

EMC Directive 2014/30/EU
All Versions
Applicable Standards: IEC 61326-1:2012 (Second Edition)

Low Voltage Directive 2014/35/EU
All Versions
Applicable Standards: EN 61010-1:2010 (2010 Edition)

RoHS2 Directive 2011/65/EU
All Versions

ATEX Directive 2014/34/EU

Type Examination Certificate Number: Sira 17ATEX2323X & IECEx CSA 17.0038X
Applicable Standards: EN 60079-0:2011 Ed. 6
EN 60079-11:2011 Ed. 6
IEC 60079-0: 2011 (6th Edition)
IEC 60079-11:2011 (6th Edition)

Marking appears as follows:
A9000PA

CE Ex **II 1 G**

Ex ia IIC T4 Ga -40°C to +85°C
Ex ia IIC T4 Ga -40°C ≤ Ta ≤ +85°C

A9000PS

CE Ex **II 1 G**

Ex ia IIB T4 Ga -40°C to +85°C
Ex ia IIB T4 Ga -40°C ≤ Ta ≤ +85°C

CE Ex **II 3 G**

Ex ic IIC T4 Gc -40°C to +85°C
Ex ic IIC T4 Gc -40°C ≤ Ta ≤ +85°C

Output Parameters:

Connection	Power In		Power Out		Sensor Out*		Sensor In	
Terminals	PWR & GND		Bottom Plug		S1+ & S1-/S2+ & S2-		SIG1 / SIG2 & COM	
Marking	Ex ia IIC T4 Ga	Ex ia IIB T4 Ga Ex ic IIC T4 Gc	Ex ia IIC T4 Ga	Ex ia IIB T4 Ga Ex ic IIC T4 Gc	Ex ia IIC T4 Ga	Ex ia IIB T4 Ga Ex ic IIC T4 Gc	Ex ia IIC T4 Ga	Ex ia IIB T4 Ga
Parameters	Ui = 28 V	Ui = 28 V	Uo = 7.65 V	Uo = 7.65 V	Uo = 25.2 V	Uo = 25.2 V	Uo = 7.424 V	Uo = 7.424 V
	Ii = 119 mA	Ii = 170 mA	Io = 106 mA	Io = 106 mA	Io = 127 mA	Io = 127 mA	Io = 29.4 mA	Io = 29.4 mA
	Pi = 0.84 mW	Pi = 1.19 W	Po = 813 mW	Po = 813 mW	Po = 0.8 W	Po = 0.8 W	Po = 55 mW	Po = 55 mW
	Ci = 0 nF	Ci = 0 nF	Co = 9.8 µF	Co = 85 µF	Co = 75 nF	Co = 358 nF	Co = 11.1 µF	Co = 100 µF
	Li = 80 µH	Li = 80 µH	Lo = 3.2 mH	Lo = 7.1 mH	Lo = 2.2 mH	Lo = 5 mH	Lo = 41.1 mH	Lo = 9.25 mH
*Entity parameters for sensor out terminals S1+ & S1- / S2+ & S2- reflect total combined limitations for both channels.								

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EU Declaration of Conformity

In accordance with IEC 17050-1

Special Condition for Safe Use

- A9000Px shall be installed inside of an enclosure with a minimum IP rating of IP64.
- Field wiring using multiconductor cable shall either have each conductor enclosed in grounded metal shield or each conductor have a minimum of 0.25mm (0.01" insulation thickness.
- If an earth connection is made inside the transmitter housing, it should be made through the same enclosure entry as the external sensors.

ATEX Notified Body for EC Type Examination Certificate
Number Sira 17ATEX2323X
CSA Group
178 Rexdale Boulevard
Toronto, Ontario M9W IR3 Canada

Notification No. SIRA 17 ATEX M769

Notified Body for Quality System
Sira Certification Service
Unit 6, Hawarden Industrial Park,
Hawarden,
Deeside,
CH5 3US
T: +44 (0) 1244 670 900
E-mail: ukinfo@csagroup.org
http://www.csagroupuk.org/

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