Hi-G-Tek

SPDS WIRELESS ADAPTOR

User Manual

UM4801
Date: 26-Nov-13
Rev: 1.5

1. Introduction

The following instructions describe and illustrate the principle steps involved in installation of RFID tags operating as SPDS bottom valve wireless adaptor and SPDS vapor pressure valve wireless adaptor.

The SPDS tag is portable, reusable electronic device designed to monitors the access point through sensors and generate status information and alarms corresponding to various programmed conditions. The wireless adaptor tag uses RFID (Radio Frequency Identification) wireless technology- and includes a transmitter/ receiver unit, read/write capability, real-time clock, memory sensing circuitry for sealing verification.

2. Product Models

This manual described the use of the products listed in the following table.
Due to differences in regulations regarding the use of RF spectrum, a product should be used according to the following table:

Model Number	**Used in**
IG-SPV-40-433	Europe or where the EU directives apply.
IG-SBV-40-433	
IG-SBV-40-916	Where the FCC regulation apply. Forbidden for use in Europe.
IG-SBV-40-916	

3. Safety Precautions

NOTE: The SPDS wireless adaptor electronic tag is powered by internal, irreplaceable 3.6V cell; do not drill into or attempt to open any part of the tag housing.

USE HIGTEK APPROVED SERVICE
Only approved service personnel must work on this product.

HAZARDOUS ENVIRONMENT
The Use of wireless adaptor tag is subject to the product safety classification given in section 6 : "ATEX product marking", in this user guide. For all other safety aspects, Please refer to the enclosed EC- type examination certificate (page 8)

ACCESSORIES
Use only approved accessories. Do not connect incompatible devices.
When connecting to any other device, please consult with Hi-G-Tek Engineering Department prior to installation.

The device must not be used within non-conductive flowing media. To the externals (Sensor-1, Sensor-2, Sensor-3 and Common) only passive components, according to the user manual of the manufacturer, must be connected. Switches and resistors must meet the simple apparatus requirements according to EN 60079-11. Resistors must meet the current-limiting resistors requirements according to EN60079-11. The assembly of the connected components must comply with the clearances and creepage distances requirements according to EN60079-11.

The FCC Wants You to Know

"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."

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the

following measures:

a) Reorient or relocate the receiving antenna.

b) Increase the separation between the equipment and receiver.

c) Connect the equipment to an outlet on a circuit different from that to which the receiver is connected.

d) Consult the dealer or an experienced radio/TV technician.

FCC Warning

Modifications not expressly approved by the manufacturer could void the user

authority to operate the equipment under FCC Rules.

Instructions concerning human exposure to radio frequency electromagnetic fields:

A distance of at least 20cm. between the equipment and all persons should be maintained during the operation of the equipment.

4. SPDS bottom valve wireless adaptor Product Part No. IGSBV40xxx

4.1. General

Adaptor shape is similar to the Data-Seal enclosure with the required modifications for cable connection. RF channels specifications are identical to the Data-Seal.

4.2. I/O's

The adaptor has 3 inputs and internal reed switch.

The internal reed switch is used to sense removing of the enclosure from installation fixture. A magnet should be installed in the fixture. See figure 1 and 2 for reed switch location. NCND D4X5mm magnet is recommended. Locate a magnet in one of reed switch ends. Each one of the three inputs can be configured to work in digital mode or analog mode. Digital mode gives the basic ON/OFF functionality without tamper proof of the cable. In analog mode, the sensor ON/OFF states are sensed and cable short or disconnect are sensed as well.

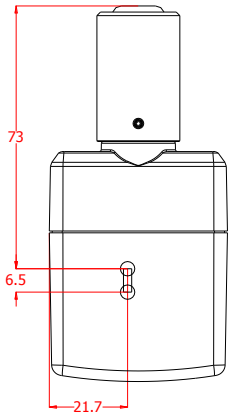


Figure 1:
Internal reed sw. location without rubber Jacket

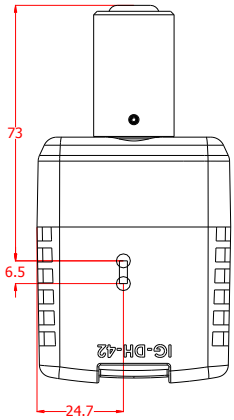


Figure 2:
Internal reed sw. location with rubber Jacket

4.3. Setting Digital /Analog mode

To work in digital mode simply connect the sensing switch to the cable. To work in analog mode connect the sensor according to Figure 3 below.

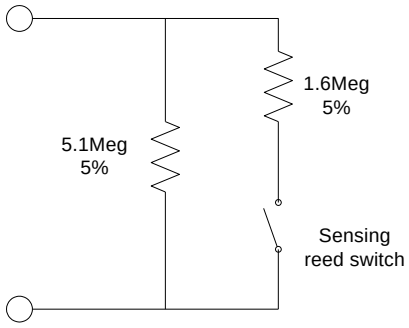
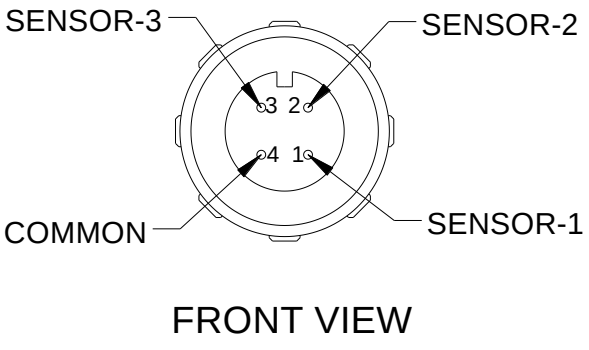


Figure 3: Connecting the sensor:



4.4. Input specifications:

- Input type: Dry contact.
- Polarity: Internally pulled HIGH, Activated when pulled LOW.
- Protections: ESD.

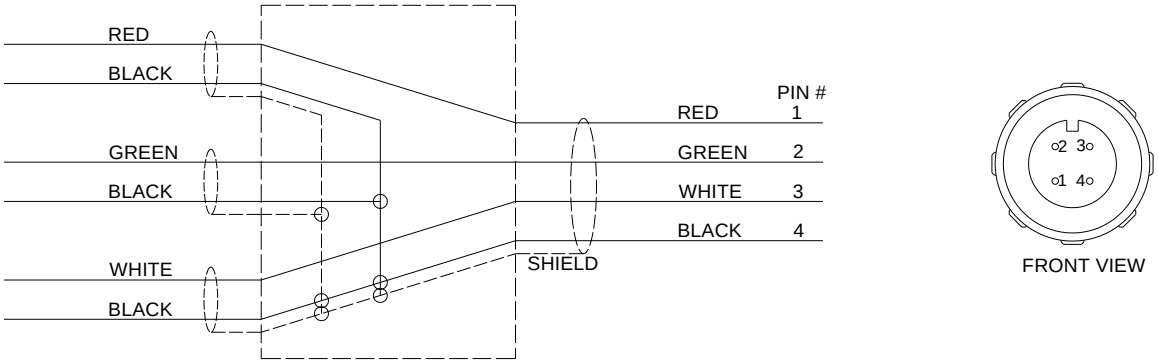


Figure 4: Extension cord (p/n IGSBVEC01): Pinout & wiring diagram:

5. SPDS vapor pressure valve wireless adaptor
Product Part No. IGSPV40xxx

5.1. General

Adaptor shape is similar to the DataSeal enclosure with the required modifications for cable connection. RF channels specifications are identical to the DataSeal.
The adaptor controls the relay of the pneumatic system and reads the status of the air pressure.

5.2. I/O's

The adaptor has one input, one output and internal reed switch. The internal reed switch is used to sense removing of the enclosure from installation fixture. A magnet should be installed in the fixture. See figure 1 and 2 for reed switch location. NCND D4X5mm magnet is recommended. Locate a magnet in one of reed switch ends.

The input can be configured to work in digital mode or analog mode. Digital mode gives the basic ON/OFF functionality without tamper proof of the cable. In analog mode, the sensor ON/OFF states are sensed and cable short or disconnect are sensed as well.
To work in digital mode simply connect the sensing switch to the cable.
To work in analog mode connect the sensor according to Figure 3.

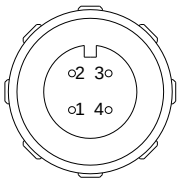
5.3. Output specifications:

The output is open drain type with specifications as follows:

- Output type: Open-drain.
- Maximum load: 24VDC relay with 230Ω minimum resistance.
- Maximum open circuit voltage: 32V.
- Functionality: ON- Pulse with configurable width.
- Maximum ON pulse width: 10Sec.
- Protection diode should be connected externally on relay terminals.

Extension cord (IGSPVEC01) pinout diagram:

	PIN #
RED	1
GREEN	2
WHITE	3
BLACK	4



FRONT VIEW

6. Technical specifications.

Power requirements

Power Source	3.6V internal Lithium battery
Life Expectancy	4 years at 50 readings per day

Communication channels:

Low frequency	125 kHz
Low-frequency range	Up to 40cm
High frequency	Model:IGSxV40433 433.92MHz
	Model:IGSxV40916 916.50MHz
High-frequency range	Up to 100m (in open space)

Antenna Characteristics

Beam Divergence	Omni-directional on non-metal wall Hemispherical on metal wall
Polarization	Vertical

Physical Characteristics:

Dimensions	63 x 49 x 37mm (without pin and lock)
Weight	150gr
Environmental Conditions	Operating Temperature : -40°C to +70°C Storage Temperature : -40°C to +80°C Protection Classification : IP65

I/Os

Input type	Dry contact
Polarity	Internally pulled HIGH, Activated when pulled LOW. Protections: ESD.

7. ATEX Marking

II – Equipment Group II: Surface (no-mining) equipment.

2 - Equipment Category 1: Very high degree of protection for use in Zone 0.

G – Atmosphere Group: Gases, Vapors, Mists

Ex- Explosion proof equipment: The Equipment that has been certified for use in a Potentially Explosive Atmosphere

ia - A protection technique based upon the restriction of electrical energy within the apparatus and in the interconnecting wiring, exposed to a explosive atmosphere, to a level below that which can cause ignition by either sparking or heating effects. "ia" - Indicates that the electric circuit is not able to cause an ignition when there are two failures ("ib" is for a single failure situation).

IIB - Gas group B: Ethylene - typical gas in petrochemical environment.

T4- Temperature classification (max.135ºC)

Translation

(1) EC-Type Examination Certificate

TÜV NORD

(2) Equipment and protective systems intended for use in potentially explosive atmospheres, **Directive 94/9/EC**

(3)	**Certificate Number**	**TÜV 10 ATEX 555831 X**
(4)	for the component:	SPDS wireless adapter RFID tag
(5)	of the manufacturer:	HI-G-TEK Ltd.
(6)	Address:	16 Hacharoshet St. Or-Yehuda 60375 ISRAEL
	Order number:	8000555831
	Date of issue:	2010-05-23

(7) This component of an equipment or protective system and any acceptable variation thereto are specified in the schedule to this certificate and the documents therein referred to.

(8) The TÜV NORD CERT GmbH, notified body No. 0044 in accordance with Article 9 of the Council Directive of the EC of March 23, 1994 (94/9/EC), certifies that this equipment or protective system has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres given in Annex II to the Directive. The examination and test results are recorded in the confidential report No. 10 203 555831.

(9) Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN 60079-0:2006 **EN 60079-11:2007** **EN 60079-26:2007**

(10) If the sign "U" is placed after the certificate number, it indicates that this certificate must not be confounded with an EC-Type Examination Certificate which is destined for an equipment or protective system. This partial certificate must only be used as a basis for an EC-Type Examination Certificate.

(11) This EC-type examination certificate relates only to the design, examination and tests of the specified equipment in accordance to the Directive 94/9/EC. Further requirements of the Directive apply to the manufacturing process and supply of this equipment. These are not covered by this certificate.

(12) The marking of the component must include the following:

II 1 G Ex ia IIB T4

TÜV NORD CERT GmbH, Langemarckstraße 20, 45141 Essen, accredited by the central office of the countries for safety engineering (ZLS), Ident. Nr. 0044, legal successor of the TÜV NORD CERT GmbH & Co. KG Ident. Nr. 0032

The head of the certification body

Schwedt

Hanover office, Am TÜV 1, 30519 Hanover, Fon +49 (0)511 986 1455, Fax +49 (0)511 986 1590

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(13) **SCHEDULE**

(14) **EC-Type Examination Certificate No. TÜV 10 ATEX 555831 X**

(15) Description of component

The device is a RFID Tag with a transmitter- and receiver unit and an external connecting facility for a switch, which switching status is detected. The device is supplied by an irreplaceable battery.

Type Key

IG-SBV-40-433
IG-SPV-40-433

Technical data

Permitted range of the ambient temperature: (For explosion hazardous areas that require electrical apparatus of the category 2)	- 40 °C to +70 °C
Permitted range of the ambient temperature: (For explosion hazardous areas that require electrical apparatus of the category 1)	- 20 °C to +60 °C
Supply.....	Battery type Tadiran TL-2135
External connections..... (total values for Sensor-1, Sensor-2, Sensor-3 with Common)	Only to be connected to passive components according to the special conditions for save use U_o = 3.7 V I_o = 1.1 A P_o = 1007 mW

(16) Test documents are listed in the test report No. 10 203 555831.

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Schedule EC-Type Examination Certificate No. TÜV 10 ATEX 555831 X

(17) Special conditions for safe use

The device must not be used within non-conductive flowing media.

To the external terminals (Sensor-1, Sensor-2, Sensor-3 and Common) only passive components, according to the user manual of the manufacturer, must be connected. Switches and resistors must meet the simple apparatus requirements according to EN 60079-11. Resistors must also meet the current-limiting resistors requirements according to EN 60079-11. The assembly of the connected components must comply with the clearances and creepage distances requirements according to EN 60079-11.

(18) Essential Health and Safety Requirements

no additional ones

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