

ISO 9001
ISO14001



Manufacturer

TLV CO., LTD.

Kakogawa, Japan

is approved by LRQA Ltd. to ISO 9001/14001



Instruction Manual

(Information for Use in Hazardous Locations)

iTrapSensor Monitoring System

Data Station: iT5-ZB-DSN

(ATEX/IECEX/UKEX-certified Model)

172-65796M-01

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Introduction

Thank you for purchasing the TLV iT5 monitoring system.

This product has been thoroughly inspected before being shipped from the factory. When the product is delivered, before doing anything else, check the specifications and external appearance to make sure nothing is out of the ordinary. Also be sure to read this manual carefully before use and follow the instructions to be sure of using the product properly.

To ensure safe and correct use of this product, be sure to observe the safety precautions listed in this manual as they relate to installation, operation, maintenance and repair of the product. Please keep it in a safe place for future reference.

TLV accepts no responsibility for incorrect use of the product by the customer or any third-party, malfunction occurring during use, other defects and any damage caused by this product, excluding cases in which it is under obligation to pay reparations by law.

This product has undergone strict quality management and product inspection before being shipped from the factory. However, in the event of malfunction or defects, please contact your local TLV representative or the TLV customer service center.

This instruction manual and product are subject to modification without notice, for the purpose of improvement.

Unauthorized reprinting or reproduction, in whole or in part, of this instruction manual or contents of the hardware/software of the product is strictly prohibited.

This instruction manual contains information for use in hazardous locations. Be sure to read this instruction manual carefully before installing in hazardous locations. Please use correctly and safely.

Safety Considerations

- Read this section carefully before use and be sure to follow the instructions.
- Installation, inspection, maintenance, repairs, disassembly, adjustment and valve opening/closing should be carried out only by trained maintenance personnel.
- The precautions listed in this manual are designed to ensure safety and prevent equipment damage and personal injury. For situations that may occur as a result of erroneous handling, three different types of cautionary items are used to indicate the degree of urgency and the scale of potential damage and danger: DANGER, WARNING and CAUTION.
- The three types of cautionary items above are very important for safety: be sure to observe all of them as they relate to installation, use, maintenance and repair. Furthermore, TLV accepts no responsibility for any accidents or damage occurring as a result of failure to observe these precautions.

Cautionary items and definitions



Danger

Indicates an urgent situation which poses a threat of death or serious injury



Warning

Indicates that there is a potential threat of death or serious injury



Caution

Indicates that there is a possibility of injury or equipment/product damage

General Precautions



Danger

DO NOT disassemble or modify. Failure to observe this precaution could result in personal injury, electrocution, ignition or fire.



Danger

DO NOT OPEN WHEN ENERGISED OR WHEN AN EXPLOSIVE ATMOSPHERE MAY BE PRESENT.



Danger

DO NOT wipe/rub the surfaces of this product with a dry cloth etc. There is the danger of electrostatically charging the unit, which may result in ignition or explosions, especially in hazardous locations.



Danger

DO NOT use this product in hospitals or airplanes. Failure to observe this precaution could result in malfunction of medical equipment, instrumentation, etc.



Danger

DO NOT use oil, organic solvents or pesticides for cleaning, and avoid any contact with the antenna, as the antennae (polycarbonate resin) are affected by these substances.



Danger

Ensure the specifications for the intrinsically safe structure of this product meet the requirements for installation in hazardous locations. Specifications for the intrinsically safe structure of this product are described in the "Specifications" section.

**Danger**

Aluminum is used in this product. Do not expose the product to impact or friction. Exposure to impact or friction may result in ignition or accidental explosions.

**Danger**

When installing or working at high elevations, take measures to ensure against dropping the product or parts. Failure to take such measures could result in personal injury if persons passing below are struck by a falling object, or other accidents.

**Danger**

Check to make sure that no wireless instrumentation other than the product is being used. Failure to observe this precaution could lead to interference of important transmissions or accidents.

**Danger**

Use fasteners with yield stress 450 N/mm² (65 ksi).

**Warning**

As this is an industrial product, it is not to be used on consumer applications nor in residential areas.

**Warning**

DO NOT substitute components, as this may impair the intrinsic safety of the product.

**Warning**

DO NOT install directly on high temperature locations such as steam piping. Overheating could result in damage to internal parts, excessive heat generation, rupture or ignition.

**Warning**

DO NOT subject the unit to strong shocks or throw it against anything. Failure to observe this precaution could result in damage to internal parts, excessive heat generation, rupture, ignition or personal injury.

**Warning**

DO NOT place device in microwave ovens or high-pressure vessels, or in the vicinity of electromagnetic devices. Such handling could result in excessive heat generation, smoke, damage to circuitry, battery fluid leakage, rupture or ignition.

**Warning**

The weight of this product is approximately 16.3 kg (36 lb). Take safety measures against dropping and to prevent back pain, etc.

**Caution**

Do not allow any foreign matter to enter the unit. In areas with small foreign matter such as metal dust, use the product after taking measures to prevent foreign matter entering the unit. Failure to observe this precaution could result in fire or malfunction.

**Caution**

Do not let the unit become immersed in water. If liquid gets inside the unit, it may result in excessive heat generation, electrical shock or unit malfunction. Be mindful of the location of use and handling.

**Caution**

Cable, wiring, and glands suitable for 70 °C (158 °F) or higher shall be used.

**Caution**

Be careful when connecting wires to terminal connections, because the terminals are inside the product.



Caution

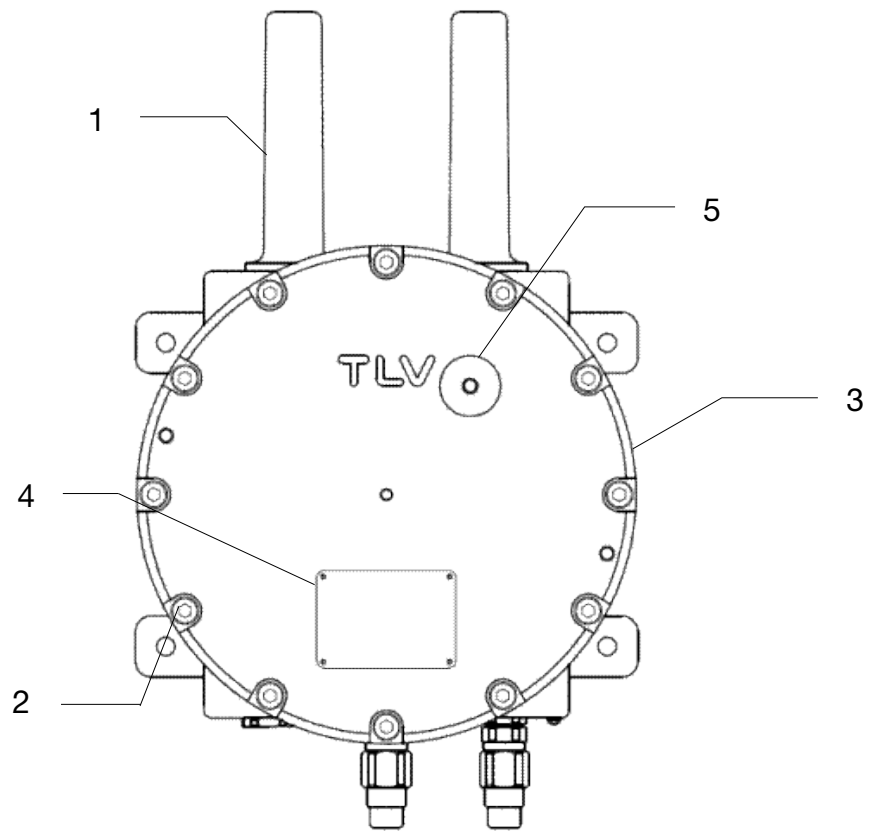
A UL Listed 2-pole switch or circuit breaker rated min. 240 V, 2 A, shall be installed near the equipment for use as an equipment disconnecting device, and shall be marked accordingly.



Caution

A UL Listed Class 2 device shall be used as a DC power source.

Part Names



No.	Part Name
1	Antenna (Polycarbonate)
2	Mount Hole (for Fixing Data Station)
3	Case/Cover (Aluminum Alloy)
4	Nameplate Mounting Position
5	LED Display Window

Installation



Danger

Ensure the specifications for the intrinsically safe structure of this product meet the requirements for installation in hazardous locations. Specifications for the intrinsically safe structure of this product are described in the "Specifications" section.

Aluminum is used in this product. Do not expose the product to impact or friction. Exposure to impact or friction may result in ignition or accidental explosions.

DO NOT wipe/rub the surfaces of this product with a dry cloth etc. There is the danger of electrostatically charging the unit, which may result in ignition or explosions, especially in hazardous locations.

The antennae are made from polycarbonate resin. Make sure that chemical substances which degrade polycarbonate do not come into contact with the antennae.

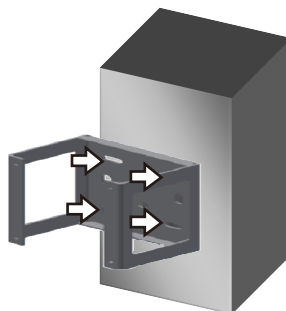


Note

Install in accordance with National Electric Code, Canadian Electrical Code or other applicable Local Codes.

Installing the Data Station

1. Fix the data station mount to the structure.

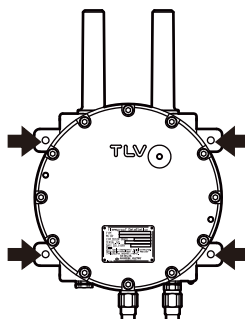


Note

Make sure to select a structure which can bear the weight of the data station.

2. Fix the data station mount with four bolts (included with the product) on each corner of the data station.

The antennae should point upward as shown in the figure below.



Connection Method



Danger

DO NOT REMOVE THE COVER WHEN THIS PRODUCT (iT5-ZB-DSN) IS CONNECTED TO A POWER SOURCE.

DO NOT OPEN WHEN ENERGISED OR WHEN AN EXPLOSIVE ATMOSPHERE MAY BE PRESENT.

Aluminum is used in this product. Do not expose the product to impact or friction. Exposure to impact or friction may result in ignition or accidental explosions.

DO NOT wipe/rub the surfaces of this product with a dry cloth etc. There is the danger of electrostatically charging the unit, which may result in ignition or explosions, especially in hazardous locations.

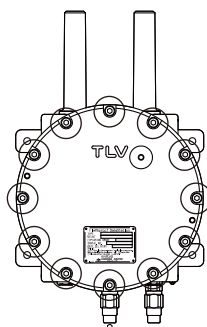


Caution

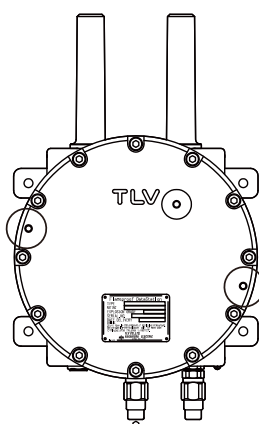
A UL Listed 2-pole switch or circuit breaker rated min. 240 V, 2 A, shall be installed near the equipment for use as an equipment disconnecting device, and shall be marked accordingly.

A UL Listed Class 2 device shall be used as a DC power source.

1. Loosen the twelve hexagon bolts on the data station.



2. Two special bolts are included with the product to ease removal of the cover. Insert the bolts in the holes shown below. Turn the bolts to raise the cover from the product, then remove the cover by hand.

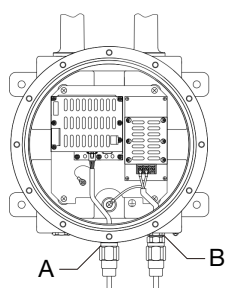


3. Connect wiring

Cable types applicable for use and the compatible cable glands are listed below.

Item	Description	No. of cores	Finish outer diameter	Cable gland
Power cable	CV 2.0 mm ²	3	11 mm	CGW-16 Inner diameter of packing: 12 mm
	CVV 2.0 mm ²			
	CVVS 2.0 mm ²			
	M-CV 2.0 mm ²			
	FPM-CV 2.0 mm ²			
	2PNCT 2.0 mm ²		11.1 mm	
LAN cable	0.5 mm × 4 pcs. (with shield) Recommended cable: FS-TPCC5-LAP	8	9.5 mm	CGW-16 Inner diameter of packing: 10 mm

For information regarding cable glands, refer to the electrical wire leading-in device (CGK, CGW series) instruction manual (JAPAN SAFETY SYSTEM INC).





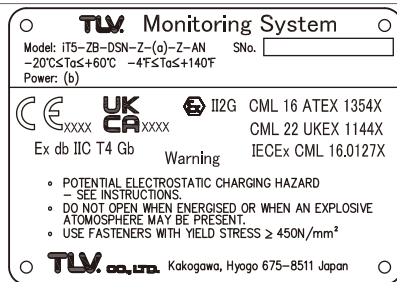

A	LAN Cable Connection Port
B	Power Cable Connection Port

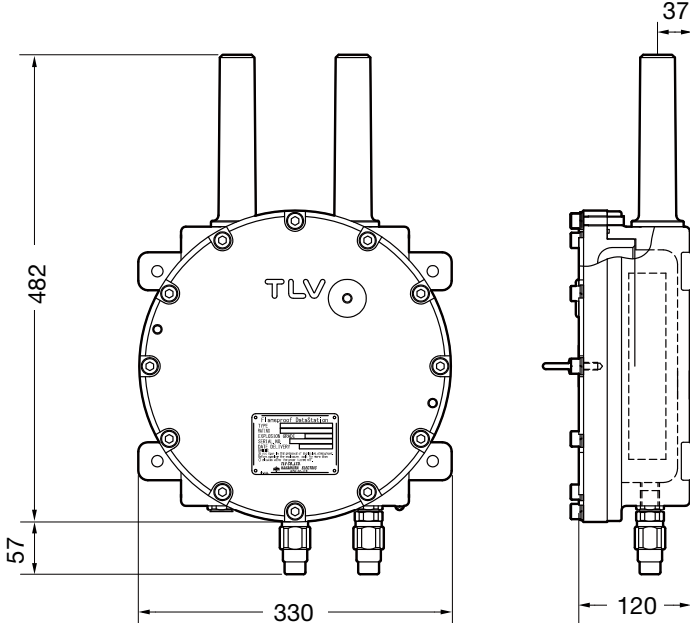
4. Close the cover.

Coat the sealing surfaces of the case and cover with fluorinated grease when closing the cover. Sumitec F931 (Suiko Lubricant Co., Ltd.) grease is applied when shipped from the factory. (Grease not provided with the product.)

Tightening torque of the bolts: 24 N·m

Specifications

Type	iTrapSensor Monitoring System – Data Station								
Model	iT5-ZB-DSN								
Classification	ATEX  2776  II 2 G Ex db IIC T4 Gb (Certificate No.: CML 16ATEX1354X)								
Markings of Hazardous Locations	IECEX Ex db IIC T4 Gb (Certificate No.: IECEX CML 16.0127X)								
	UKEX Ex db IIC T4 Ga (Certificate No.: CML 22UKEX1144X)								
	Mark for Certified Electrical Equipment	Ex	—						
	Type of Protection	db	Flameproof type						
	Applicable Gas Groups	IIC	Applicable to gases (Hydrogen, Acetylene, etc.) with minimum ignition current ratio is less than 0.45.						
	Temperature Class	T4	Applicable when maximum surface temperature of the unit is 130 °C and gas ignition temperature is 135 °C or more.						
	EPL (Equipment Protection Level)	Gb	This product can be used in Zone 1 hazardous locations.						
Applicable Standards	ATEX/UKEX: <ul style="list-style-type: none">• EN 60079-1:2014• EN IEC 60079-0:2018 IECEX: <ul style="list-style-type: none">• IEC 60079-1:2011:2014-06, Edition 7• IEC 60079-0:2017, Edition 7								
Nameplate	<div></div> <table><tr><td>(a)</td><td>PA</td><td>PD</td></tr><tr><td>(b)</td><td>100 V to 240 V AC/5 W, 50/60 Hz</td><td>24 V DC/1 A</td></tr></table> <div>Note The nameplate layout is subject to changes, but its contents will remain identical.</div>			(a)	PA	PD	(b)	100 V to 240 V AC/5 W, 50/60 Hz	24 V DC/1 A
(a)	PA	PD							
(b)	100 V to 240 V AC/5 W, 50/60 Hz	24 V DC/1 A							
Power Source	AC-powered type: 100 to 240 V AC/5 W, 50/60 Hz DC-powered type: 24 V DC/1 A								
Enclosure	IP54 (Protected from limited dust ingress/Protected from water spray from any direction, limited ingress protection)								

Ambient Temperature Range	-20 to 60 °C										
Wireless Module	TLV owned wireless network: TELEC: ㊤R018-150222 Frequency band: 2.400 to 2.480 GHz RF power output: 10 mW/MHz Transmitting range: Approx. 400 m (437 yd) (line of sight) WLAN: TELEC: ㊤R003WWA110792 Compliance: IEEE 802.11b/g/n Security: 802.11i compliance AES, WPA/WPA2-PSK, WEP (64/128 bit, TKIP)										
Material	Case/Cover: Cast aluminum alloy (AC4C-T6) Antenna cover: Polycarbonate										
Cable Gland	JAPAN SAFETY SYSTEM INC: CGW-16 Tightening torque: Approx. 8 N·m										
Dimensions	<div></div> <p>The flamepath dimensions of the cylindrical joints for the enclosures, as detailed in the table below, are greater than the relevant minimum or maximum specified in EN/IEC 60079-1:2014, Table 1.</p> <table><tr><th>Location</th><th>Flamepath Type</th><th>Max. Gap mm</th><th>Min. Length mm</th></tr><tr><td>Cover to body</td><td rowspan="2">Cylindrical</td><td rowspan="2">0.15</td><td>27</td></tr><tr><td>Window to window frame</td><td>26</td></tr></table>	Location	Flamepath Type	Max. Gap mm	Min. Length mm	Cover to body	Cylindrical	0.15	27	Window to window frame	26
Location	Flamepath Type	Max. Gap mm	Min. Length mm								
Cover to body	Cylindrical	0.15	27								
Window to window frame			26								
Weight	16.3 kg										



Note
Contact TLV for details on explosion-proof connectors.

TLV EXPRESS LIMITED WARRANTY

Subject to the limitations set forth below, TLV CO., LTD., a Japanese corporation ("**TLV**"), warrants that products which are sold by it, TLV International Inc. ("**TII**") or one of its group companies excluding TLV Corporation (a corporation of the United States of America), (hereinafter the "**Products**") are designed and manufactured by TLV, conform to the specifications published by TLV for the corresponding part numbers (the "**Specifications**") and are free from defective workmanship and materials. The party from whom the Products were purchased shall be known hereinafter as the "**Seller**". With regard to products or components manufactured by unrelated third parties (the "**Components**"), TLV provides no warranty other than the warranty from the third party manufacturer(s), if any.

Exceptions to Warranty

This warranty does not cover defects or failures caused by:

1. improper shipping, installation, use, handling, etc., by persons other than TLV, TII or TLV group company personnel, or service representatives authorized by TLV; or
2. dirt, scale or rust, etc.; or
3. improper disassembly and reassembly, or inadequate inspection and maintenance by persons other than TLV or TLV group company personnel, or service representatives authorized by TLV; or
4. disasters or forces of nature or Acts of God; or
5. abuse, abnormal use, accidents or any other cause beyond the control of TLV, TII or TLV group companies; or
6. improper storage, maintenance or repair; or
7. operation of the Products not in accordance with instructions issued with the Products or with accepted industry practices; or
8. use for a purpose or in a manner for which the Products were not intended; or
9. use of the Products in a manner inconsistent with the Specifications; or
10. use of the Products with Hazardous Fluids (fluids other than steam, air, water, nitrogen, carbon dioxide and inert gases (helium, neon, argon, krypton, xenon and radon)); or
11. failure to follow the instructions contained in the TLV Instruction Manual for the Product.

Duration of Warranty

This warranty is effective for a period of one (1) year after delivery of Products to the first end user. Notwithstanding the foregoing, asserting a claim under this warranty must be brought within three (3) years after the date of delivery to the initial buyer if not sold initially to the first end user.

ANY IMPLIED WARRANTIES NOT NEGATED HEREBY WHICH MAY ARISE BY OPERATION OF LAW, INCLUDING THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE AND ANY EXPRESS WARRANTIES NOT NEGATED HEREBY, ARE GIVEN SOLELY TO THE INITIAL BUYER AND ARE LIMITED IN DURATION TO ONE (1) YEAR FROM THE DATE OF SHIPMENT BY THE SELLER.

Exclusive Remedy

THE EXCLUSIVE REMEDY UNDER THIS WARRANTY, UNDER ANY EXPRESS WARRANTY OR UNDER ANY IMPLIED WARRANTIES NOT NEGATED HEREBY (INCLUDING THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE), IS **REPLACEMENT**; PROVIDED: (a) THE CLAIMED DEFECT IS

REPORTED TO THE SELLER IN WRITING WITHIN THE WARRANTY PERIOD, INCLUDING A DETAILED WRITTEN DESCRIPTION OF THE CLAIMED DEFECT AND HOW AND WHEN THE CLAIMED DEFECTIVE PRODUCT WAS USED; AND (b) THE CLAIMED DEFECTIVE PRODUCT AND A COPY OF THE PURCHASE INVOICE IS RETURNED TO THE SELLER, FREIGHT AND TRANSPORTATION COSTS PREPAID, UNDER A RETURN MATERIAL AUTHORIZATION AND TRACKING NUMBER ISSUED BY THE SELLER. ALL LABOR COSTS, SHIPPING COSTS, AND TRANSPORTATION COSTS ASSOCIATED WITH THE RETURN OR REPLACEMENT OF THE CLAIMED DEFECTIVE PRODUCT ARE SOLELY THE RESPONSIBILITY OF BUYER OR THE FIRST END USER. THE SELLER RESERVES THE RIGHT TO INSPECT ON THE FIRST END USER'S SITE ANY PRODUCTS CLAIMED TO BE DEFECTIVE BEFORE ISSUING A RETURN MATERIAL AUTHORIZATION. SHOULD SUCH INSPECTION REVEAL, IN THE SELLER'S REASONABLE DISCRETION, THAT THE CLAIMED DEFECT IS NOT COVERED BY THIS WARRANTY, THE PARTY ASSERTING THIS WARRANTY SHALL PAY THE SELLER FOR THE TIME AND EXPENSES RELATED TO SUCH ON-SITE INSPECTION.

Exclusion of Consequential and Incidental Damages

IT IS SPECIFICALLY ACKNOWLEDGED THAT THIS WARRANTY, ANY OTHER EXPRESS WARRANTY NOT NEGATED HEREBY, AND ANY IMPLIED WARRANTY NOT NEGATED HEREBY, INCLUDING THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, DO NOT COVER, AND NEITHER TLV, TII NOR ITS TLV GROUP COMPANIES WILL IN ANY EVENT BE LIABLE FOR, INCIDENTAL OR CONSEQUENTIAL DAMAGES, INCLUDING, BUT NOT LIMITED TO LOST PROFITS, THE COST OF DISASSEMBLY AND SHIPMENT OF THE DEFECTIVE PRODUCT, INJURY TO OTHER PROPERTY, DAMAGE TO BUYER'S OR THE FIRST END USER'S PRODUCT, DAMAGE TO BUYER'S OR THE FIRST END USER'S PROCESSES, LOSS OF USE, OR OTHER COMMERCIAL LOSSES. WHERE, DUE TO OPERATION OF LAW, CONSEQUENTIAL AND INCIDENTAL DAMAGES UNDER THIS WARRANTY, UNDER ANY OTHER EXPRESS WARRANTY NOT NEGATED HEREBY OR UNDER ANY IMPLIED WARRANTY NOT NEGATED HEREBY (INCLUDING THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE) CANNOT BE EXCLUDED, SUCH DAMAGES ARE EXPRESSLY LIMITED IN AMOUNT TO THE PURCHASE PRICE OF THE DEFECTIVE PRODUCT. THIS EXCLUSION OF CONSEQUENTIAL AND INCIDENTAL DAMAGES, AND THE PROVISION OF THIS WARRANTY LIMITING REMEDIES HEREUNDER TO REPLACEMENT, ARE INDEPENDENT PROVISIONS, AND ANY DETERMINATION THAT THE LIMITATION OF REMEDIES FAILS OF ITS ESSENTIAL PURPOSE OR ANY OTHER DETERMINATION THAT EITHER OF THE ABOVE REMEDIES IS UNENFORCEABLE, SHALL NOT BE CONSTRUED TO MAKE THE OTHER PROVISIONS UNENFORCEABLE.

Exclusion of Other Warranties

THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, AND ALL OTHER WARRANTIES, INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE EXPRESSLY DISCLAIMED.

Severability

Any provision of this warranty which is invalid, prohibited or unenforceable in any jurisdiction shall, as to such jurisdiction, be ineffective to the extent of such invalidity, prohibition or unenforceability without invalidating the remaining provisions hereof, and any such invalidity, prohibition or unenforceability in any such jurisdiction shall not invalidate or render unenforceable such provision in any other jurisdiction.

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