

### Product Description

The model 921B and 922B Handheld Thermometer, with thermocouple inputs, are Intrinsically Safe instruments, which may be used in Non-Hazardous or Hazardous (Classified) Locations.

### Product Markings

The following information will be marked on a label affixed to the 921B or 922B product.

TEGAM Inc.  
 10 Tegam Way, Geneva OH 44041  
 Handheld Thermometer for Haz. Loc. Only as to Intrinsic Safety



E506162



0539



II 1 G

Ex ia IIB T4 Ga

Class I, Division 1, Group C and D, T4

Class I, Zone 0 AEx ia IIB T4 Ga

Zone 0 Ex ia IIB T4 Ga

DEMKO 19 ATEX 1970

IECEX UL 19.0010

-20 °C ≤ Ta ≤ +50 °C

**NOTE: THIS IS AN AGENCY CONTROLLED DOCUMENT. NO CHANGES CAN BE MADE WITHOUT APPROVAL OF THE NOTIFIED BODY.**

### Product Warnings

These warnings are provided as informational and are not marked on the product. Refer to the 921B Operation Manual for further detail.

**WARNING – EXPLOSION HAZARD** – To reduce the ignition risk of a flammable or explosive atmosphere, batteries must be changed in a location known to be non-hazardous.

**AVERTISSEMENT – RISQUE D'EXPLOSION** - Afin de réduire le risque d'allumage dans une atmosphère inflammable ou explosive, les batteries doivent être remplacées dans un endroit connu pour être non dangereux.

**WARNING – EXPLOSION HAZARD** – Batteries are part of the intrinsically safe system. Use only the specific battery type, manufacturer, and manufacturer's part listed in the Manual. Use of other batteries could impair intrinsic safety. Batteries may not be mixed.

**AVERTISSEMENT – RISQUE D'EXPLOSION** - Les batteries font partie du système de sécurité intrinsèque. Utiliser uniquement le type et le modèle spécifique de batterie et les pièces du fabricant mentionnées dans le manuel. L'utilisation d'autres batteries pourrait affecter la sécurité intrinsèque.

**WARNING – EXPLOSION HAZARD** – Use only the probe types as listed in the manual. Use of other probe types could impair intrinsic safety.

**AVERTISSEMENT – RISQUE D'EXPLOSION** - Utiliser uniquement les types de sondes spécifiés dans le manuel. L'utilisation d'autres types de sondes pourrait affecter la sécurité intrinsèque.

### Product Operational Consideration

The following is provided as a user operational cautionary statement. It is not a requirement of the Standards nor is it marked on the product. Refer to the 921B Operation Manual for further detail.

**This instrument has a temperature classification of T4 or 135 °C maximum surface temperature.** Consideration should be given when using approved thermocouple probes in sensing environments exceeding this temperature class. The probe sheath and/or tip can be at a temperature which may cause auto ignition in an explosive hazardous location.

### Protective Components

F1 – Fuse, rated 80 mA; manufactured by Littlefuse, Inc., Part No. 451.080MRL.

R15 – Resistor, rated 8.25 – 8.75  $\Omega$ , 1%, 1/4 W, 1206 size, Thin or Thick Film.

VR1, VR2, VR3, VR4 – Diode, Zener, rated 5.6 V, 5%, 1 W, manufactured by Central Semiconductor, Part No. CLL4734A. Alternate – Vishay Semiconductor, Part No. ZM4734A-GS08.

### Safety Critical Component

L1 – Inductor, rated 10  $\mu$ H, manufactured by Panasonic, Part No. ELLVGG100M.

### Controlled Section Text Listing for the Operation Manual

Refer to the Operation Manual, TEGAM part number 921B-900, for the following controlled text content.

#### Compliance and Markings



TEGAM Inc.  
10 Tegam Way  
Geneva OH 44041

Handheld Thermometer for Hazardous Locations Only as to Intrinsic Safety

CE 0539 Ex II 1 G

Ex ia IIB T4 Ga  
Class I, Division 1, Group C and D, T4  
Class I, Zone 0 AEx ia IIB T4 Ga  
Zone 0 Ex ia IIB T4 Ga

DEMKO 19 ATEX 1970  
IECEX UL 19.0010

#### 2.3 Agency Compliance and Safety Warnings

Ex Hazardous Safety Information


This instrument is intrinsically safe. **WARNING:** substitution of components may impair intrinsic safety. This instrument complies with Agency Standards and is listed as:

- Ex II 1 G Ex ia IIB T4 Ga
- Ex ia IIB T4 Ga
- Class I, Division 1, Group C and D, T4
- Class I, Zone 0 AEx ia IIB T4 Ga
- Zone 0 Ex ia IIB T4 Ga


This operation manual contains safety information and warnings that must be observed for safe operation under the conditions described. Failure to comply with the information and instructions can have serious consequences. Read this manual in its entirety before using the instrument.


<b>WARNING</b>	<b>WARNING – EXPLOSION HAZARD</b>	To reduce the ignition risk of a flammable or explosive atmosphere, batteries must be changed in a location known to be non-hazardous.
	<b>AVERTISSEMENT – RISQUE D'EXPLOSION</b>	Afin de réduire le risque d'allumage dans une atmosphère inflammable ou explosive, les batteries doivent être remplacées dans un endroit connu pour être non dangereux.
<b>WARNING</b>	<b>WARNING – EXPLOSION HAZARD</b>	Batteries are part of the intrinsically safe system. Use only the specific battery type, manufacturer, and manufacture's part listed in the Operation Manual. Use of other batteries could impair intrinsic safety. Batteries may not be mixed.
	<b>AVERTISSEMENT – RISQUE D'EXPLOSION</b>	Les batteries font partie du système de sécurité intrinsèque. Utiliser uniquement le type et le modèle spécifique de batterie et les pièces du fabricant mentionnées dans le manuel. L'utilisation d'autres batteries pourrait affecter la sécurité intrinsèque.
<b>WARNING</b>	<b>WARNING – EXPLOSION HAZARD</b>	Use only the probe types as listed in the manual. Use of other probe types could impair intrinsic safety.
	<b>AVERTISSEMENT – RISQUE D'EXPLOSION</b>	Utiliser uniquement les types de sondes spécifiés dans le manuel. L'utilisation d'autres types de sondes pourrait affecter la sécurité intrinsèque.

These warnings must be observed and are noted on the instrument's battery door as shown.

 **WARNING**  
DO NOT OPEN BATTERY COMPARTMENT IN POTENTIALLY HAZARDOUS ENVIRONMENT, DISCONNECT PROBES BEFORE OPENING.

 **AVERTISSEMENT**  
NE OUVREZ PAS LE COMPARTIMENT DE LA PILE DANS UN ENVIRONNEMENT POTENTIELLEMENT DANGEREUSE. DÉCONNECTEZ LES CORDONS D'ESSAI AVANT D'OUVRIER LE COMPARTIMENT À PILE.

 **WARNING**  
Use only batteries listed in the manual.

 **AVERTISSEMENT**  
Utilisez uniquement des piles dans le manuel d'instruction.

**2.5 Use of Certified Thermocouple Probes**




Use only TEGAM IS9 Series of thermocouple probes or simple apparatus thermocouple leads, with either the 921B or 922B, in potentially hazardous locations. Use of any other probe or device invalidates the type certification and may cause auto ignition in an explosive hazardous location.

Standard thermocouple leads, considered simple apparatus, which for example may have a welded bead end or similar, can be used. Thermocouple extension wire can be used with either the TEGAM IS9 Series probes, or standard thermocouples, up to a total length of 50 ft. (15.24 m).

The model 921B and 922B provides a maximum current of 0.551 A and power of 0.62 W for the thermal evaluation of simple apparatus or extension wire.

**2.7 Battery Installation and Replacement**

Three (3) AA 1.5 V batteries are supplied with the instrument, but not installed. Read the following battery replacement instructions before attempting to install or remove the batteries.

- WARNING** Always change the product’s batteries outside Ex Hazardous areas.
- CAUTION** Always turn the instrument off and disconnect any input connections before replacing the batteries. Re-install the battery compartment cover before resuming use of the instrument.
- CAUTION** The battery compartment is sealed with a rubber gasket. Use care to not damage the gasket when removing or installing the battery compartment cover.
- CAUTION** Remove the batteries when storing the instrument for an extended period or in a high temperature environment to prevent battery leakage and possible damage to the instrument.
-  All measurement parameters may be reset to factory default if batteries are removed while the instrument is powered on. Always turn the instrument off before changing batteries.

To install or replace batteries:

*Required Tools:* Phillips Head Screwdriver

1. Identify the battery compartment located on the back of the instrument ( see *Figure 1 below*);
2. Remove the two (2) battery compartment retaining screws;
3. Remove the battery compartment cover;
4. If present, carefully remove old batteries being careful to not damage the battery contacts;
5. Use only Zinc-Manganese Dioxide or Alkaline-Manganese Dioxide AA cells that have been tested by a nationally recognized laboratory to meet the requirements of UL 60079-11, Sixth Edition. Use of any other battery will invalidate the Type Certificate and create a hazardous condition. The only batteries that TEGAM, Inc. has secured such testing, which are approved for use in either a 921B or 922B, are listed on the Type Certificate. They are:
  - Energizer E91
  - Duracell MN1500

6. Observing proper polarity, install three (3) new, AA alkaline (IEC LR6, ANSI 15) batteries;
7. Re-install the battery cover and two (2) retaining screws;
8. At initial power on after battery replacement, allow approximately 30 seconds for instrument to stabilize.

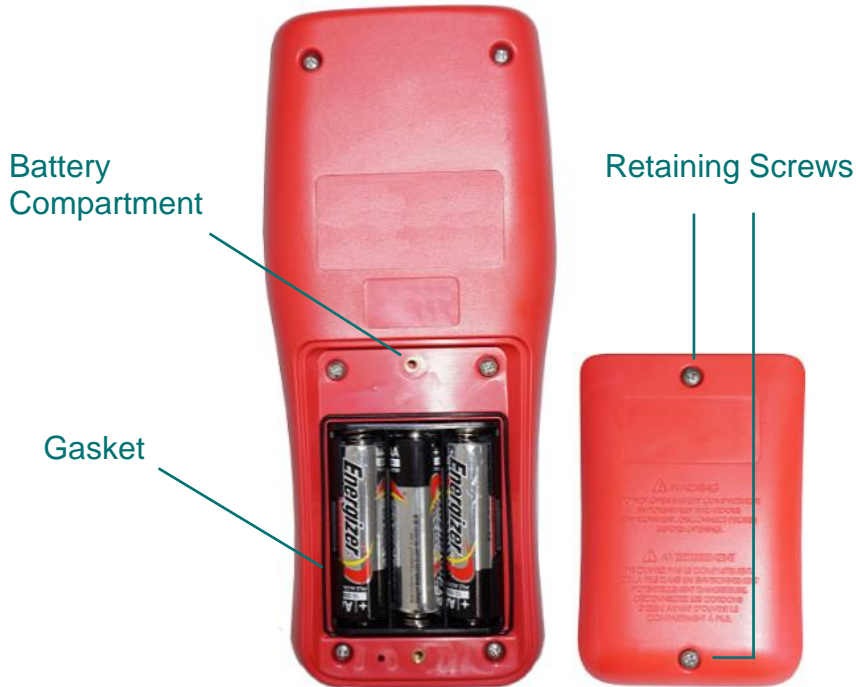


Figure 1: Battery Installation

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**Typical Thermocouple IS9 Series Probe Connections with a 921B or 922B (Shown)**



**Typical Thermocouple (as Standard Apparatus) Wired Connections with a 921B or 922B (Shown)**



<b>Revision Record</b>			
<b>Revision</b>	<b>Date</b>	<b>ECO#</b>	<b>Summary of Changes</b>
C	9/29/2020	6544	Change to new format.
D	8/30/2021	6843	Change allowable wire length as will be noted in Sect. 2.5 of the manual.