

# HAND HELD CALIBRATOR

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## SUPPLEMENTAL MANUAL for Use in Hazardous Environments

REVISION 0.4 06/18/14



LOOK FOR THESE MARKS ON OUR PRODUCTS



Includes warnings and installation drawings for using the Hand Held Calibrator in Hazardous areas as defined by Factory Mutual:

Class I, Division 1, Groups A, B, C and D  
Intrinsically Safe location Groups

Class I, Division 2, Groups A, B, C and D Non  
Incendive Hazardous location Groups

Includes warnings and installation drawings for using the Hand Held Calibrator in Hazardous areas as defined by CSA:

Class 1, Division 1, Groups A,B,C,D

Includes warnings and installation drawings for using the Hand Held Calibrator in Hazardous areas as defined by ATEX:

II 1 G FM12ATEX0035X

Ex ia II C T4 Ga -20°C<Ta<+50

ENTITY PARAMETERS

Ui=33Vdc li=300mA Ci=0 Li=0 Pi=1.5W

Uo=5.735Vdc Io=586µA Co=46µf L0=1H

Po=840µW

Additional Warnings for Intrinsically Safe approved versions

- An “Ex/hazardous” area as used in this manual refers to an area made hazardous by the potential presence of flammable or explosive gases or vapors. These areas are also referred to as hazardous locations.
- When marked with the following Symbols the calibrator is approved by Factory Mutual (FM) for use in Class I Division 1, Groups A,B,C,D hazardous areas, by ATEX for use in Ex ia II C T4 Ga -20°C<Ta<+50°C and by CSA for use in Class 1, Division 1, Groups A,B,C,D

- When marked as approved the ATE-2/PTE-2 calibrator is agency approved for use in areas when potentially flammable or explosive gas or vapor may occur. These areas are referred to as hazardous (classified) location in the United States, as Hazardous Locations in Canada, as Potentially Explosive Atmospheres in Europe and as Explosive Gas Atmospheres in other parts of the world. The HHC’s voltage and current input jacks have entity parameters and as such can be utilized in a hazardous location to connect to other apparatus as long as said apparatus meets the requirements of the entity parameters.
- Before entering a hazardous area, close and secure with the lock screw both the battery door and USB/SD card door prior to use in a hazardous area.
- Replace batteries only in a non-hazardous area.
- Use only Duracell Model MN1500 AA alkaline batteries primary cell batteries.
- The apparatus contains exposed metal parts that have a capacitance of 14pf, do not use in unsuitable application.
- The battery access cover is not to be removed while in a hazardous area.
- The USB/SD access door is not to be removed while in a hazardous area.
- The USB connection-data transmission and power input- are restricted to be used in a non-hazardous area only.
- The non-hazardous area USB apparatus –computer port, wall supply, etc., connected to the USB port of the HHC, must be assessed and conform to section 6.2.5 of EN60079-11. This precaution is to protect the integrity of the safety components within the HHC, which insures its intrinsic safety rating while in the hazardous location.
- For use with non- assessed USB equipment accessory part number 101C225-01 is to be inserted between the HHC USB port and the non-assessed apparatus. not power the calibrator by USB cable in a hazardous area, this action will render the calibrator not intrinsically safe.
- Intrinsically safe installation diagrams, entity parameters and warnings are included in drawing 825A028 included in this manual.

		250 EAST MAIN ST. STRATFORD, CT 06614 <a href="http://www.ashcroft.com">www.ashcroft.com</a>	
INTRINSICALLY SAFE/SÈCURITÉ INTRINSÈQUE Exia CL I, DIV 1, GR A, B, C, D. T4 -20°C≤Ta≤+50°C			
			
(Ex) II 1 G FM12ATEX0035X			
			
Ex ia II C T4 Ga -20°C≤Ta≤+50°C			
ENTITY PARAMETERS			
Ui=33Vdc li=300mA Ci=0 Li=0 Pi=1.5W			
Uo=5.735Vdc Io=586µA Co=46µf L0=1H Po=840µW			
			
0518			
WARNING: See Dwg #825A028 for installation, batteries and warnings			
HAND HELD CALIBRATOR 6D49 E171189			
Unit contains a lithium battery. Panasonic #BR1225 is the approved replacement battery. Use of another battery may present a risk of fire or explosion. See owners manual			
			
for safety instructions.			
Label Part# 238A746-01Rev D			

### **Battery Installation**

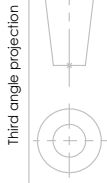
Use only Duracell Model MN1500 AA alkaline batteries primary cell batteries, quantity four.

1. To gain access to the battery compartment, loosen the strap assembly by detaching the Velcro connection and moving the strap to the side to allow access to the Philips head screw on the battery cover door.
2. Open the battery compartment by loosening the Philips head screw located in the battery compartment door immediately above the product label.
3. Using thumb and forefinger gently lift battery door up and toward the top of the calibrator to remove door.
4. Install four new AA Alkaline batteries. Observe polarity markings to install batteries correctly. Never mix old and new batteries.
5. Reinstall battery door. Be sure that lower latch tab is engaged beneath clasp hook to ensure proper watertight sealing of battery compartment.
6. Tighten Philips head screw in top of cover.

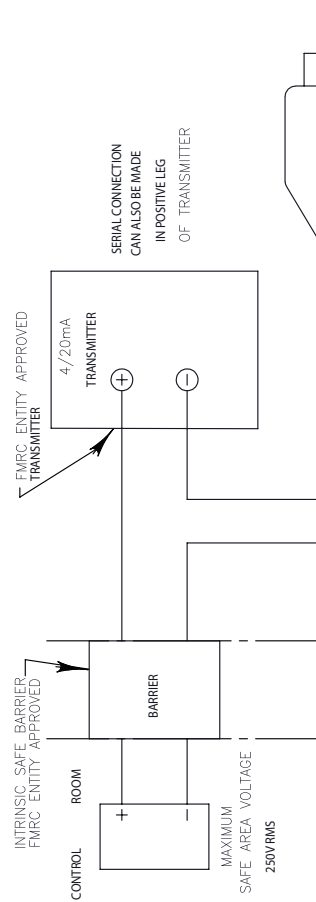
Replace strap by tightening strap and secure with Velcro.

The Panasonic lithium ion battery used to maintain power to the real time clock is not user serviceable. Return the calibrator to Ashcroft factory or an authorized service agent for replacement.

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Item Qty.	Part No.	Description	Material	Finish	Dwg. No.	Used On
		INSTALLATION DIAGRAM - H.H.C.F.M IS			825A028	877D039



ENTITY PARAMETERS (DIVISIONS/ZONES):

- $U_i/U_{max} = 33Vdc$      $U_o/U_{oc} = 5.735Vdc$
- $I_i/I_{max} = 300mA$  dc     $I_o/I_{sc} = 586\mu A$  dc
- $P_i/P_i = 1.5W$      $P_o/P_o = 840mW$
- $C_i/C_i = 0$      $C_o/C_o = 46\mu f$
- $L_i/L_i = 0$      $L_o/L_o = 1H$

MODEL PTE-2 OR ATE-2  
HAND HELD CALIBRATOR (HHC)

- NOTES:
1. ENTITY CONCEPT DEFINITION: THE ENTITY CONCEPT ALLOWS INTERCONNECTION OF INTRINSICALLY SAFE APPARATUS TO ASSOCIATED APPARATUS NOT SPECIFICALLY EXAMINED IN SUCH COMBINATION. THE CRITERIA FOR INTERCONNECTION IS THAT THE VOLTAGE & CURRENT WHICH INTRINSICALLY SAFE APPARATUS CAN RECEIVE AND REMAIN INTRINSICALLY SAFE, CONSIDERING FAULTS, MUST BE EQUAL TO OR GREATER THAN THE VOLTAGE (V) & CURRENT (I) LEVELS, WHICH CAN BE DELIVERED BY THE ASSOCIATED APPARATUS, CONSIDERING FAULTS AND APPLICABLE FACTORS. IN ADDITION, THE MAXIMUM UNPROTECTED CAPACITANCE (C) AND INDUCTANCE (L) OF THE INTRINSICALLY SAFE APPARATUS, INCLUDING INTERCONNECTING WIRING, MUST BE EQUAL TO OR LESS THAN THE CAPACITANCE & INDUCTANCE WHICH CAN BE SAFELY CONNECTED TO ASSOCIATED APPARATUS.
  2. USE OF THE HAND HELD CALIBRATOR IN THE FIELD SHALL BE IN ACCORDANCE WITH THE TRANSMITTER MANUFACTURER'S INSTRUCTIONS AND THE TRANSMITTER MANUFACTURER'S INSTALLATION DIAGRAM, AS REFERENCED ON THE TRANSMITTER'S LABEL.
  3. INTRINSIC SAFETY IS CONTINGENT UPON THE HAND HELD CALIBRATOR'S USB / COMMUNICATIONS PORT COVER AND THE BATTERY COMPARTMENT COVER BEING PROPERLY INSTALLED ON THE CALIBRATOR AS REFERENCED IN THE OPERATING MANUAL.
  4. THE I/O OF THE MODEL PTE-2 & ATE-2 WHEN ADDED TO THE I/O OF THE ASSOCIATED APPARATUS MUST NOT EXCEED THE I/O OF THE TRANSMITTER.
  5. THE I/O OF THE MODEL PTE-2 & ATE-2 WHEN ADDED TO THE I/O OF THE ASSOCIATED APPARATUS MUST NOT EXCEED THE I/O OF THE TRANSMITTER.
  6. NO REVISIONS TO OCCUR WITHOUT PRIOR FACTORY MUTUAL RESEARCH AUTHORIZATION.
  7. INSTALLATION SHOULD BE IN ACCORDANCE WITH ANSIRISA RP12.6 "INSTALLATION OF INTRINSICALLY SAFE SYSTEMS FOR HAZARDOUS (CLASSIFIED) LOCATIONS" AND THE NATIONAL ELECTRICAL CODE (ANSINFPFA 70).
  8. A SIMPLE APPARATUS IS A DEVICE WHICH WILL NEITHER GENERATE NOR STORE MORE THAN 1.2V, 0.1A, 25mW OR 20uJ.
  9. EXAMPLE: SWITCHES, THERMOCOUPLES, LEDs, OR R.T.D.'S.
  10. THE MAXIMUM CABLE LENGTH BETWEEN THE SIMPLE APPARATUS AND THE UNIVERSAL RTD INTERFACE PERIPHERAL IS A SIMPLE APPARATUS FOR USE ONLY WITH USERS RTD PROBE. SEE NOTES 7, 8 & 9.

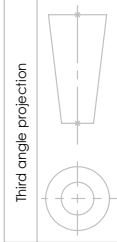
**IMPORTANT:** DIMENSIONS WITHIN OVAL AND NOTES IDENTIFIED WITH "\*" REQUIRE MANDATORY INSPECTION.

DIMENSIONAL TOLERANCES UNLESS OTHERWISE SPECIFIED ALL DIMENSIONS ARE IN INCHES		INSTALLATION DIAGRAM, HAND HELD CALIBRATOR, FM IS CL.1 DIV.1, Groups A,B,C,D, CURRENT MEASUREMENT, SUPPLY - RETURN HOOK-UP	
TOLERANCES ARE:			
3 place decimal .000	±.007	SIZE	DWG. NO.
2 place decimal .00	±.015	<b>A</b>	<b>825A028</b>
1 place decimal .0	±.030	Scale 1:1	Sheet 1 of 6
Angle	Chamfer ± 5 deg	REV.	<b>A</b>
DO NOT SCALE DRAWING			

CAD GENERATED DRAWING, DO NOT MANUALLY UPDATE	
DRAWN BY	DATE
AP	8/14/2013

REV	ECO	DESCRIPTION	BY	DATE
A	6317	INITIAL RELEASE	AP	8/14/2013

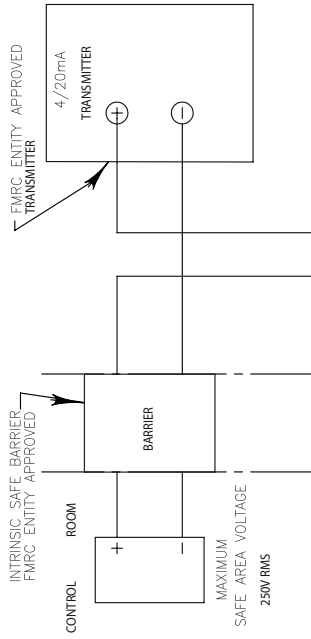
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Item	Qty.	Part No.	Description	Material	Finish	Dwg. No.	Used On
---						825A028	877D039

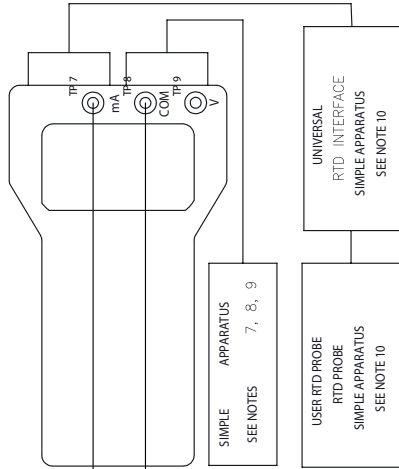
**NOTES:**

1. ENTITY CONCEPT DEFINITION: THE ENTITY CONCEPT FOLLOWS INTERCONNECTION OF INTRINSICALLY SAFE APPARATUS TO ASSOCIATED APPARATUS NOT SPECIFICALLY EXAMINED IN SUCH COMBINATION. THE CRITERIA FOR INTERCONNECTION IS THAT THE VOLTAGE & CURRENT WHICH INTRINSICALLY SAFE APPARATUS CAN RECEIVE AND REMAIN INTRINSICALLY SAFE, CONSIDERING FAULTS, MUST BE EQUAL TO OR GREATER THAN THE VOLTAGE (V) & CURRENT (I) LEVELS, WHICH CAN BE DELIVERED BY THE ASSOCIATED APPARATUS, CONSIDERING FAULTS AND APPLICABLE FACTORS. IN ADDITION, THE MAXIMUM UNPROTECTED CAPACITANCE (C) AND INDUCTANCE (L) OF THE INTRINSICALLY SAFE APPARATUS, INCLUDING INTERCONNECTING WIRING, MUST BE EQUAL TO OR LESS THAN THE CAPACITANCE & INDUCTANCE WHICH CAN BE SAFELY CONNECTED TO ASSOCIATED APPARATUS.
2. USE OF THE HAND HELD CALIBRATOR IN THE FIELD SHALL BE IN ACCORDANCE WITH THE TRANSMITTER MANUFACTURER'S INSTRUCTIONS AND THE TRANSMITTER MANUFACTURER'S INSTALLATION DIAGRAM, AS REFERENCED ON THE TRANSMITTER'S LABEL.
3. INTRINSIC SAFETY IS CONTINGENT UPON THE HAND HELD CALIBRATOR'S USE; COMMUNICATIONS PORT COVER AND THE BATTERY COMPARTMENT COVER BEING PROPERLY INSTALLED ON THE CALIBRATOR AS REFERENCED IN THE OPERATING MANUAL.
4. THE U<sub>o</sub> OF THE MODEL PTE-2 & ATE-2 WHEN ADDED TO THE U<sub>o</sub> OF THE ASSOCIATED APPARATUS MUST NOT EXCEED THE U<sub>i</sub> OF THE TRANSMITTER.
5. THE I<sub>o</sub> OF THE MODEL PTE-2 & ATE-2 WHEN ADDED TO THE I<sub>o</sub> OF THE ASSOCIATED APPARATUS MUST NOT EXCEED THE I<sub>i</sub> OF THE TRANSMITTER.
6. NO DEVIATIONS TO OCCUR WITHOUT PRIOR FACTORY MUTUAL RESEARCH AUTHORIZATION.
7. INSTALLATION SHOULD BE IN ACCORDANCE WITH ANSIBISA IFT2.6 "INSTALLATION OF INTRINSICALLY SAFE SYSTEMS FOR HAZARDOUS (CLASSIFIED) LOCATIONS" AND THE NATIONAL ELECTRICAL CODE (ANSI/NFPA 70).
8. A SIMPLE APPARATUS IS A DEVICE WHICH WILL NEITHER GENERATE NOR STORE MORE THAN 1.2V, 0.1A, 25mW OR 20uJ.
9. EXAMPLE: SWITCHES, THERMOCOUPLES, L.E.D.s, OR I.T.D.'s AND THE MAXIMUM CABLE LENGTH BETWEEN THE SIMPLE APPARATUS AND THE HAND HELD CALIBRATOR IS 5000 FT.
10. THE UNIVERSAL RTD INTERFACE PERIPHERALS AS SIMPLE APPARATUS FOR USE ONLY WITH USERS RTD PROBE. SEE NOTES 7, 8 & 9.



**ENTITY PARAMETERS (DIVISIONS/ZONES):**

- U<sub>i</sub>/U<sub>max</sub> = 33Vdc U<sub>o</sub>/U<sub>oc</sub> = 5.735Vdc
- I<sub>i</sub>/I<sub>max</sub> = 300mA dc I<sub>o</sub>/I<sub>sc</sub> = 586uA dc
- P<sub>i</sub>/P<sub>i</sub> = 1.5W P<sub>o</sub>/P<sub>o</sub> = 840uW
- C<sub>i</sub>/C<sub>i</sub> = 0 C<sub>o</sub>/C<sub>o</sub> = 46uF
- L<sub>i</sub>/L<sub>i</sub> = 0 L<sub>o</sub>/L<sub>o</sub> = 1H



MODEL PTE2 OR ATE2  
HAND-HELD CALIBRATOR (HHO)

CAD GENERATED DRAWING, DO NOT MANUALLY UPDATE	
DRAWN BY	DATE
AP	8/14/2013

REV	ECO	DESCRIPTION	BY	DATE
A	6317	INITIAL RELEASE	AP	8/14/2013

**IMPORTANT: DIMENSIONS WITHIN OVAL AND NOTES IDENTIFIED WITH " \* " REQUIRE MANDATORY INSPECTION.**

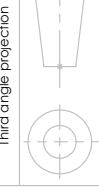
DIMENSIONAL TOLERANCES UNLESS OTHERWISE SPECIFIED ALL DIMENSIONS ARE IN INCHES

TOLERANCES ARE:

- 3 place decimal .000 ±.007
- 2 place decimal .00 ±.015
- 1 place decimal .0 ±.030

Angle Chamfer  
± 1 deg ± 5 deg

SIZE	DWG. NO.	REV.
A	825A028	A
Scale 1:1		Sheet 2 of 6

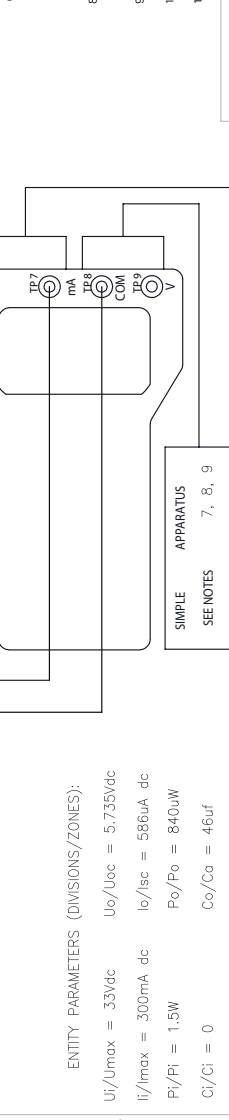
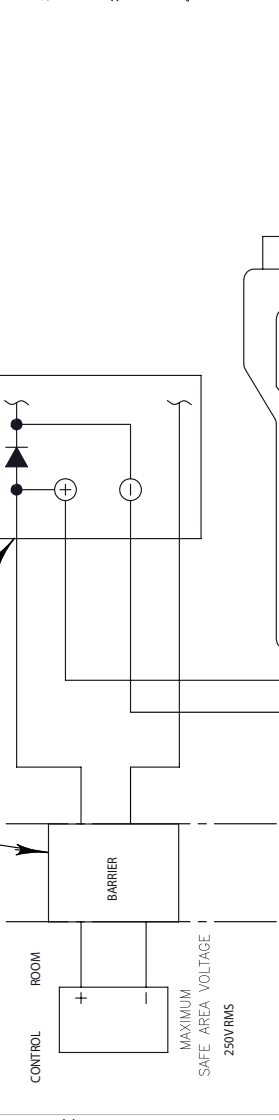


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Item	Qty.	Part No.	Description	Material	Finish	Dwg. No.	Used On
	---					825A028	877D039

**NOTES:**  
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 THE ENTITY CONCEPT ALLOWS INTERCONNECTION OF INTRINSICALLY SAFE APPARATUS TO ASSOCIATED APPARATUS NOT SPECIFICALLY EXAMINED IN SUCH COMBINATION. THE CRITERIA FOR INTERCONNECTION IS THAT THE VOLTAGE & CURRENT WHICH INTRINSICALLY SAFE APPARATUS CAN RECEIVE AND REMAIN INTRINSICALLY SAFE, CONSIDERING FAULTS, MUST BE EQUAL TO OR GREATER THAN THE VOLTAGE (V) & CURRENT (I) LEVELS, WHICH CAN BE DELIVERED BY THE ASSOCIATED APPARATUS, CONSIDERING FAULTS AND APPLICABLE FACTORS. IN ADDITION, THE MAXIMUM UNPROTECTED CAPACITANCE (C) AND INDUCTANCE (L) OF THE INTRINSICALLY SAFE APPARATUS, INCLUDING INTERCONNECTING WIRING, MUST BE EQUAL TO OR LESS THAN THE CAPACITANCE & INDUCTANCE WHICH CAN BE SAFELY CONNECTED TO ASSOCIATED APPARATUS.  
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 3. INTRINSIC SAFETY IS CONTINGENT UPON THE HAND HELD CALIBRATOR'S USE / COMMUNICATIONS PORT COVER AND THE BATTERY COMPARTMENT COVER BEING PROPERLY INSTALLED ON THE CALIBRATOR AS REFERENCED IN THE OPERATING MANUAL.  
 4. THE U<sub>o</sub> OF THE MODEL PTE-2 & ATE-2 WHEN ADDED TO THE U<sub>o</sub> OF THE ASSOCIATED APPARATUS MUST NOT EXCEED THE U<sub>o</sub> OF THE TRANSMITTER.  
 5. THE I<sub>o</sub> OF THE MODEL PTE-2 & ATE-2 WHEN ADDED TO THE I<sub>o</sub> OF THE ASSOCIATED APPARATUS MUST NOT EXCEED THE I<sub>o</sub> OF THE TRANSMITTER.  
 6. NO REVISIONS TO OCCUR WITHOUT PRIOR FACTORY MUTUAL RESEARCH AUTHORIZATION.  
 7. INSTALLATION SHOULD BE IN ACCORDANCE WITH ANSISA RPT12.6 "INSTALLATION OF INTRINSICALLY SAFE SYSTEMS FOR HAZARDOUS (CLASSIFIED) LOCATIONS" AND THE NATIONAL ELECTRICAL CODE (ANSINFPFA 70).  
 8. A SIMPLE APPARATUS IS A DEVICE WHICH WILL NEITHER GENERATE NOR STORE MORE THAN 1.2V 0 I<sub>a</sub> 25mW OR 20uJ.  
 EXAMPLE: SWITCHES, THERMOCOUPLES, L.E.D.'S, OR R.T.D.'S.  
 9. THE MAXIMUM CABLE LENGTH BETWEEN THE SIMPLE APPARATUS AND THE HAND HELD CALIBRATOR IS 5000 FT.  
 10. THE CALIBRATOR MUST BE USED WITH THE SIMPLE APPARATUS FOR USE ONLY WITH USER'S RTD PROBE. SEE NOTES 7 & 8.  
 11. THIS HOOKUP IS ACCEPTABLE ONLY IF THE "TEST POINT" HAS BEEN APPROVED BY FM AS INTRINSICALLY SAFE.



**ENTITY PARAMETERS (DIVISIONS/ZONES):**  
 U<sub>o</sub>/U<sub>max</sub> = 33vac U<sub>o</sub>/U<sub>oc</sub> = 5.735Vdc  
 I<sub>i</sub>/I<sub>max</sub> = 300mA dc I<sub>o</sub>/I<sub>sc</sub> = 586uA dc  
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MODEL PTE2 OR ATE2  
 HAND HELD CALIBRATOR (IHK)

REV	ECO	DESCRIPTION	BY	DATE
A	6317	INITIAL RELEASE	AP	8/14/2013

DIMENSIONAL TOLERANCES UNLESS OTHERWISE SPECIFIED ALL DIMENSIONS ARE IN INCHES		TOLERANCES ARE:	
3 place decimal	±.007	SIZE	DWG. NO.
2 place decimal	±.015	ANGLE	CHAMFER
1 place decimal	±.030	± 1 deg	± 5 deg
DO NOT SCALE DRAWING		Scale 1:1	

**IMPORTANT: DIMENSIONS WITHIN OVAL AND NOTES IDENTIFIED WITH "\*" REQUIRE MANDATORY INSPECTION.**

INSTALLATION DIAGRAM, FM IS CL.1, DIV.1, Groups A,B,C,D, CUSTOMER "TEST POINT" HOOK-UP

REV. **A**

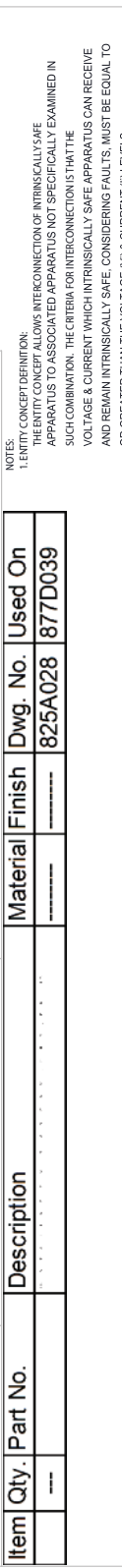
Scale 1:1

Sheet 3 of 6

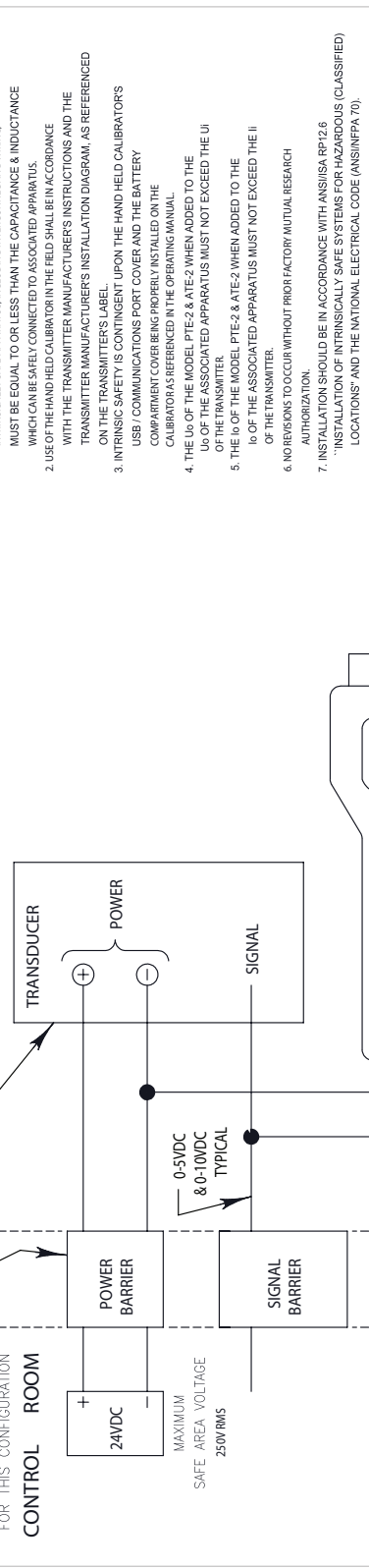
**ASHCROFT INC.**  
250 EAST MAIN STREET,  
STRAITFORD, CT 06614

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Item	Qty.	Part No.	Description	Material	Finish	Dwg. No.	Used On
	---					825A028	877D039



Entity Parameters (Divisions/Zones):  
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 $I_i/I_{max} = 300mA$      $I_o/I_{sc} = 586\mu A$      $dc$   
 $P_i/P_t = 1.5W$      $P_o/P_o = 840\mu W$   
 $C_i/C_i = 0$      $C_o/C_o = 46\mu f$   
 $L_i/L_i = 0$      $L_o/L_o = 1H$



Entity Concept Definition:  
 1. ENTITY CONCEPT ALLOWS INTERCONNECTION OF INTRINSICALLY SAFE APPARATUS TO ASSOCIATED APPARATUS NOT SPECIFICALLY EXAMINED IN SUCH COMBINATION. THE CRITERIA FOR INTERCONNECTION IS THAT THE VOLTAGE & CURRENT WHICH INTRINSICALLY SAFE APPARATUS CAN RECEIVE AND REMAIN INTRINSICALLY SAFE, CONSIDERING FAULTS, MUST BE EQUAL TO OR GREATER THAN THE VOLTAGE (V) & CURRENT (I) LEVELS, WHICH CAN BE DELIVERED BY THE ASSOCIATED APPARATUS.  
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 9. EXAMPLE: SWITCHES, THERMOCOUPLES, L.E.D.S. OR R.T.D.'S AND THE MAXIMUM CABLE LENGTH BETWEEN THE SIMPLE APPARATUS AND THE HAND HELD CALIBRATOR IS 5,000 FT.  
 10. THE UNIVERSAL RTD INTERFACE PERIPHERAL IS A SIMPLE APPARATUS FOR USE ONLY WITH USERS RTD PROBE. SEE NOTES 7, 8 & 9.

**IMPORTANT: DIMENSIONS WITHIN OVAL AND NOTES IDENTIFIED WITH " \* " REQUIRE MANDATORY INSPECTION.**

DIMENSIONAL TOLERANCES UNLESS OTHERWISE SPECIFIED ALL DIMENSIONS ARE IN INCHES	INSTALLATION DIAGRAM, HAND HELD CALIBRATOR, FM IS CL.1, DIV.1, Groups A,B,C,D, VOLTAGE MEASUREMENT, 3 WIRE SYSTEM HOOK-UP
TOLERANCES ARE:	
3 place decimal .000 ± .007	
2 place decimal .00 ± .015	
1 place decimal .0 ± .030	
Angle ± 1 deg	Chamfer ± 5 deg

DO NOT SCALE DRAWING	SCALE 1:1
DRAWN BY	DATE
BY	DATE
AP	8/14/2013

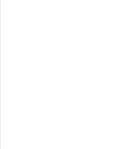
REV	ECO	DESCRIPTION	BY	DATE	INITIAL RELEASE
A	6317	HAND HELD CALIBRATOR (HHC) MODEL PTE2 or ATE2	AP	8/14/2013	

DO NOT SCALE DRAWING

Scale 1:1

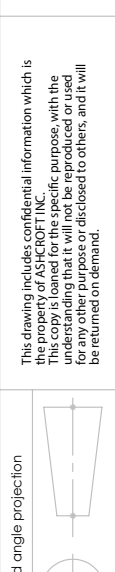
Sheet 4 of 6





Third angle projection

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Item	Qty.	Part No.	Description	Material	Finish	Dwg. No.	Used On
						825A028	877D039



FIMRC ENTITY APPROVED INTRINSIC SAFE BARRIER VOLTAGE BARRIERS MUST BE APPROVED BY FIMRC (FACILITY INTERLOCK) FOR THIS CONFIGURATION

0-5VDC & 0-10VDC TYPICAL

MAXIMUM SAFE AREA VOLTAGE 250V RMS

ENTITY PARAMETERS (DIVISIONS/ZONES):

$U_i/U_{oc} = 33Vdc$

$U_o/U_{oc} = 5.735Vdc$

$I_i/I_{max} = 300mA$  dc

$I_o/I_{sc} = 586\mu A$  dc

$P_o/P_i = 1.5W$

$P_o/P_o = 840\mu W$

$C_i/C_i = 0$

$C_o/C_o = 46\mu f$

$L_i/L_i = 0$

$L_o/L_o = 1H$



IMPORTANT: DIMENSIONS WITHIN OVAL AND NOTES IDENTIFIED WITH " \* " REQUIRE MANDATORY INSPECTION.

DIMENSIONAL TOLERANCES UNLESS OTHERWISE SPECIFIED: ALL DIMENSIONS ARE IN INCHES

TOLERANCES ARE:

3 place decimal .000 ± .007

2 place decimal .00 ± .015

1 place decimal .0 ± .030

Angle Chamfer ± 1 deg ± 5 deg

DO NOT SCALE DRAWING

INSTALLATION DIAGRAM, HAND HELD CALIBRATOR, FM IS CL.1, DIV.1, Groups A,B,C,D, VOLTAGE MEASUREMENT, 4 WIRE (ISOLATED) SYSTEM HOOK-UP

REV	ECO	DESCRIPTION	BY	DATE
A	6317	INITIAL RELEASE	AP	8/14/2013

SIZE	DWG. NO.	REV.
A	825A028	A

Scale 1:1 Sheet 5 of 6

NOTES:

1. ENTITY CONCEPT DEFINITION: THE ENTITY CONCEPT ALLOWS INTERCONNECTION OF INTRINSICALLY SAFE APPARATUS TO ASSOCIATED APPARATUS NOT SPECIFICALLY EXAMINED IN SUCH COMBINATION. THE CRITERIA FOR INTERCONNECTION IS THAT THE VOLTAGE & CURRENT WHICH INTRINSICALLY SAFE APPARATUS CAN RECEIVE AND REMAIN INTRINSICALLY SAFE, CONSIDERING FAULTS, MUST BE EQUAL TO OR GREATER THAN THE VOLTAGE (V) & CURRENT (I) LEVELS, WHICH CAN BE DELIVERED BY THE ASSOCIATED APPARATUS, CONSIDERING FAULTS AND APPLICABLE FACTORS. IN ADDITION, THE MAXIMUM UNPROTECTED CAPACITANCE (C) AND INDUCTANCE (L) OF THE INTRINSICALLY SAFE APPARATUS INCLUDING INTERCONNECTING WIRING, MUST BE EQUAL TO OR LESS THAN THE CAPACITANCE & INDUCTANCE WHICH CAN BE SAFELY CONNECTED TO ASSOCIATED APPARATUS.
2. USE OF THE HAND HELD CALIBRATOR IN THE FIELD SHALL BE IN ACCORDANCE WITH THE TRANSMITTER MANUFACTURER'S INSTRUCTIONS AND THE TRANSMITTER MANUFACTURER'S INSTALLATION DIAGRAM, AS REFERENCED ON THE TRANSMITTER'S LABEL.
3. INTRINSIC SAFETY IS CONTINGENT UPON THE HAND HELD CALIBRATOR'S USB / COMMUNICATIONS PORT COVER AND THE BATTERY COMPARTMENT COVER BEING PROPERLY INSTALLED ON THE CALIBRATOR AS REFERENCED IN THE OPERATING MANUAL.
4. THE U<sub>i</sub> OF THE MODEL PTE2 & ATE2 WHEN ADDED TO THE U<sub>o</sub> OF THE ASSOCIATED APPARATUS MUST NOT EXCEED THE U<sub>i</sub> OF THE TRANSMITTER.
5. THE I<sub>o</sub> OF THE MODEL PTE2 & ATE2 WHEN ADDED TO THE I<sub>o</sub> OF THE ASSOCIATED APPARATUS MUST NOT EXCEED THE I<sub>o</sub> OF THE TRANSMITTER.
6. NO REVISIONS TO OCCUR WITHOUT PRIOR FACTORY MUTUAL RESEARCH AUTHORIZATION.
7. INSTALLATION SHOULD BE IN ACCORDANCE WITH ANSISISA RP12.6 "INSTALLATION OF INTRINSICALLY SAFE SYSTEMS FOR HAZARDOUS (CLASSIFIED) LOCATIONS" AND THE NATIONAL ELECTRICAL CODE (ANSINFPFA 70).
8. A SIMPLE APPARATUS IS A DEVICE WHICH WILL NEITHER GENERATE NOR STORE MORE THAN 1.2V, 0.1A, 25mW OR 20uJ. EXAMPLE: SWITCHES, THERMOCOUPLES, LEDs, OR R.T.D. S.
9. THE MAXIMUM CABLE LENGTH BETWEEN THE SIMPLE APPARATUS AND THE UNIVERSAL RTD INTERFACE PERMITTED FOR A SIMPLE APPARATUS FOR USE ONLY WITH USERS RTD PROBE - SEE NOTES 7, 8 & 9.

CAD GENERATED DRAWING. DO NOT MANUALLY UPDATE DRAWING DATE

Third angle projection



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250 EAST MAIN STREET,  
STRAITFORD, CT 06614

Item	Qty.	Part No.	Description	Material	Finish	Dwg. No.	Used On
---			INSTALLATION DIAGRAM - HHC, FM IS	-----	-----	825A028	877D039

**INDEX OF PRESSURE MODULES APPROVED BY FACTORY/MUTUAL RESEARCH**

PRESSURE MODULES HM2 FOR USE WITH MODEL PTEZ BASE UNIT; PRESSURE MODULE MODELS AM2 FOR USE WITH MODEL ATEZ BASE UNIT OF THE HAND HELD CALIBRATOR (HHC).

Pressure ranges include Vacuum, Compound, Differential, Absolute, and Gauge pressures ranging from .25"H2O to 10,000 PSI, and their equivalents in other engineering units.

- WARNING: USE ONLY DURACELL MODEL MN1500 AA ALKALINE PRIMARY CELL BATTERIES;
- WARNING: BATTERIES ARE TO BE REPLACED ONLY IN A NON-HAZARDOUS LOCATION;
- WARNING: THE BATTERY ACCESS COVER IS NOT TO BE REMOVED, WHILE IN A HAZARDOUS LOCATION;
- WARNING: USE ONLY PANASONIC BR1225 LITHIUM COIN BATTERIES FOR REAL TIME CLOCK BACKUP.
- WARNING: REFER TO OPERATING MANUAL FOR PROPER LITHIUM BATTERY INSTALLATION INSTRUCTIONS.
- WARNING: THE USB/SD ACCESS COVER IS NOT TO BE REMOVED, WHILE IN A HAZARDOUS LOCATION;
- WARNING: THE USB CONNECTION -DATA TRANSMISSION AND POWER INPUT- ARE RESTRICTED TO BE USED IN A NON-HAZARDOUS AREA ONLY;
- THE NON-HAZARDOUS AREA USB APPARATUS -COMPUTER PORT, WALL SUPPLY, ETC. CONNECTED TO THE USB PORT OF THE HHC, MUST BE ASSESSED AND CONFORM TO SECTION 6.2.5 OF EN60079-11. THIS PRECAUTION IS TO PROTECT THE INTEGRITY OF THE SAFETY COMPONENTS WITHIN THE HHC, WHICH INSURES ITS INTRINSIC SAFETY RATING WHILE IN THE HAZARDOUS LOCATION.
- FOR USE WITH NON-ASSESSED EQUIPMENT:
- ASHCROFT ACCESSORY P/N 101C225-01, USB PROTECTION DEVICE, IS INTENDED TO PROTECT THE HHC IN A NON-HAZARDOUS AREA, WHEN USED WITH NON-ASSESSED EQUIPMENT.
- TO INSURE THE PROTECTION, THE DEVICE (ASHCROFT P/N 101C225-01) IS TO BE INSERTED BETWEEN THE HHC USB PORT AND A NON-ASSESSED APPARATUS.
- THE MAX. INPUT VOLTAGE TO BE 5.25 VDC

USB PORT ENTITY PARAMETERS (DIVISIONS/ZONES)

$$U_0/U_{oc} = 5.735VDC \quad P_0/P_o = 179mW$$

REV	ECO	DESCRIPTION	BY	DATE
A	6317	INITIAL RELEASE	AP	8/14/2013
B	7243	REMOVED INDIVIDUAL PRESSURE RANGES - SH16	TB	6/18/2014

CAD GENERATED DRAWING,  
DO NOT MANUALLY UPDATE  
DRAWN BY: DATE

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TOLERANCES ARE:

3 place decimal .000 ±.007

2 place decimal .00 ±.015

1 place decimal .0 ±.030

Angle Chamfer ± 5 deg

SIZE A 825A028

DO NOT SCALE DRAWING

Scale 1:1 Sheet 6 of 6

REV. B



Ashcroft Inc.  
250 E. Main Street  
Stratford, CT 06614-5145  
Tel: 203-378-8281  
Fax: 203-385-0402  
email: [info@heise.com](mailto:info@heise.com)  
[www.heise.com](http://www.heise.com)

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