

# ACT100xx Weight Transmitter





# ACT100xx Weight Transmitter

## METTLER TOLEDO Service

### Essential Services for Dependable Performance of Your ACT100xx Weight Transmitter

Congratulations on choosing the quality and precision of METTLER TOLEDO. Proper use of your new equipment according to this Manual and regular calibration and maintenance by our factory-trained service team ensures dependable and accurate operation, protecting your investment. Contact us about a service agreement tailored to your needs and budget. Further information is available at [www.mt.com/service](http://www.mt.com/service).

There are several important ways to ensure you maximize the performance of your investment:

1. **Register your product:** We invite you to register your product at [www.mt.com/productregistration](http://www.mt.com/productregistration) so we can contact you about enhancements, updates and important notifications concerning your product.
2. **Contact METTLER TOLEDO for service:** The value of a measurement is proportional to its accuracy – an out of specification scale can diminish quality, reduce profits and increase liability. Timely service from METTLER TOLEDO will ensure accuracy and optimize uptime and equipment life.
  - a. **Installation, Configuration, Integration and Training:** Our service representatives are factory-trained, weighing equipment experts. We make certain that your weighing equipment is ready for production in a cost effective and timely fashion and that personnel are trained for success.
  - b. **Initial Calibration Documentation:** The installation environment and application requirements are unique for every industrial scale so performance must be tested and certified. Our calibration services and certificates document accuracy to ensure production quality and provide a quality system record of performance.
  - c. **Periodic Calibration Maintenance:** A Calibration Service Agreement provides on-going confidence in your weighing process and documentation of compliance with requirements. We offer a variety of service plans that are scheduled to meet your needs and designed to fit your budget.
  - d. **GWP® Verification:** A risk-based approach for managing weighing equipment allows for control and improvement of the entire measuring process, which ensures reproducible product quality and minimizes process costs. GWP (Good Weighing Practice), the science-based standard for efficient life-cycle management of weighing equipment, gives clear answers about how to specify, calibrate and ensure accuracy of weighing equipment, independent of make or brand.



© METTLER TOLEDO 2019

No part of this manual may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying and recording, for any purpose without the express written permission of METTLER TOLEDO.

U.S. Government Restricted Rights: This documentation is furnished with Restricted Rights.

Copyright 2019 METTLER TOLEDO. This documentation contains proprietary information of METTLER TOLEDO. It may not be copied in whole or in part without the express written consent of METTLER TOLEDO.

METTLER TOLEDO reserves the right to make refinements or changes to the product or manual without notice.

### **NOTICE**

This document is associated with an agency-approved product. No changes to this document are permitted without agency approval.

### **ORDERING INFORMATION**

It is most important that the correct part number is used when ordering parts. Parts orders are machine processed, using only the part number and quantity as shown on the order. Orders are not edited to determine if the part number and description agree.

### **COPYRIGHT**

METTLER TOLEDO® is a registered trademark of Mettler-Toledo, LLC. All other brand or product names are trademarks or registered trademarks of their respective companies.

**METTLER TOLEDO RESERVES THE RIGHT TO MAKE REFINEMENTS OR CHANGES WITHOUT NOTICE.**

### **FCC Notice**

This device complies with Part 15 of the FCC Rules and the Radio Interference Requirements of the Canadian Department of Communications. Operation is subject to the following 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 A digital device, pursuant to Part 15 of FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his or her expense.





- Declaration of Conformity is available at <http://glo.mt.com/global/en/home/search/compliance.html/compliance/>.



## Warnings and Cautions

- READ this manual BEFORE operating or servicing this equipment and FOLLOW these instructions carefully.
- SAVE this manual for future reference.
- DO NOT allow untrained personnel to operate, clean, inspect, maintain, service or tamper with this equipment.
- ALWAYS DISCONNECT this equipment from the power source before cleaning or performing maintenance.
- CALL METTLER TOLEDO for parts, information and accessories.

	<p style="text-align: center;"> <b>WARNING</b></p> <p><b>METTLER TOLEDO ASSUMES NO RESPONSIBILITY FOR CORRECT INSTALLATION OF THIS EQUIPMENT WITHIN A ZONE 2 AREA. THE INSTALLER MUST BE FAMILIAR WITH ALL ZONE 2 WIRING AND INSTALLATION REQUIREMENTS. THIS EQUIPMENT MUST NEVER BE INSTALLED IN A DIVISION 2 ENVIRONMENT.</b></p>
	<p style="text-align: center;"> <b>WARNING</b></p> <p><b>DO NOT USE THE ACT100xx TRANSMITTER WITHIN AREAS CLASSIFIED AS HAZARDOUS DIVISION 1 OR ZONE 0/1/20/21 BECAUSE OF COMBUSTIBLE OR EXPLOSIVE ATMOSPHERES. FAILURE TO COMPLY WITH THIS WARNING COULD RESULT IN BODILY HARM AND/OR PROPERTY DAMAGE.</b></p>
	<p style="text-align: center;"> <b>WARNING</b></p> <p><b>THE ACT100xx WEIGHT TRANSMITTER HAS A TEMPERATURE RATING OF T4 (135° C) FOR GAS IN A ZONE 2 ENVIRONMENT. IT MUST NOT BE USED IN AREAS WHERE THE AUTO IGNITION TEMPERATURE OF THE HAZARDOUS MATERIAL IS BELOW THIS RATING. THIS EQUIPMENT MUST NEVER BE INSTALLED IN A DIVISION 2 ENVIRONMENT.</b></p>
	<p style="text-align: center;"> <b>WARNING</b></p> <p><b>ONLY THE COMPONENTS SPECIFIED IN THIS MANUAL CAN BE USED IN THIS WEIGHT TRANSMITTER. ALL EQUIPMENT MUST BE INSTALLED IN ACCORDANCE WITH THE INSTALLATION INSTRUCTIONS DETAILED IN THIS MANUAL. INCORRECT OR SUBSTITUTE COMPONENTS AND/OR DEVIATION FROM THESE INSTRUCTIONS CAN IMPAIR THE SAFETY OF THE WEIGHT TRANSMITTER AND COULD RESULT IN BODILY INJURY AND/OR PROPERTY DAMAGE.</b></p>
	<p style="text-align: center;"> <b>WARNING</b></p> <p><b>VERSIONS OF THE ACT100 WEIGHT TRANSMITTER THAT ARE NOT FACTORY-LABELED AS ZONE 2 MUST NOT BE INSTALLED INTO A ZONE 2 ENVIRONMENT. NO VERSION OF THE ACT100 WEIGHT TRANSMITTER CAN EVER BE INSTALLED IN A DIVISION 2 ENVIRONMENT. VERSIONS FACTORY LABELED AS DIVISION 2 MUST BE INSTALLED IN A SAFE AREA BUT MAY TRANSMIT SIGNALS TO LOAD CELLS IN A DIVISION 2 ENVIRONMENT WITHOUT THE USE OF A SAFETY BARRIER.</b></p>

	<p style="text-align: center;"><b>! WARNING</b></p> <p>IN ORDER TO INSTALL THE ACT100xx TRANSMITTER IN THE US OR CANADA, METTLER TOLEDO CONTROL DRAWINGS 30565571 MUST BE FOLLOWED WITHOUT EXCEPTION. IN ORDER TO INSTALL THE CATEGORY 3 MARKED ACT100 UTILIZING THE EUROPEAN APPROVAL, THE APPROVAL CERTIFICATE FM19ATEX0213X / IECEx_FMG_19.0043X AND ALL LOCAL REGULATIONS MUST BE FOLLOWED WITHOUT EXCEPTION. FAILURE TO DO SO COULD RESULT IN BODILY HARM AND/OR PROPERTY DAMAGE.</p>
	<p style="text-align: center;"><b>! WARNING</b></p> <p>THE ACT100xx WEIGHT TRANSMITTER MUST BE INSTALLED AND MAINTAINED PER THE SPECIFIC CONDITIONS LISTED IN CHAPTER 2 OF THIS MANUAL WITHOUT EXCEPTION. FAILURE TO DO SO COULD RESULT IN BODILY HARM AND/OR PROPERTY DAMAGE.</p>
	<p style="text-align: center;"><b>! WARNING</b></p> <p>DO NOT INSTALL, DISCONNECT OR PERFORM ANY SERVICE ON THIS EQUIPMENT BEFORE POWER HAS BEEN SWITCHED OFF AND THE AREA HAS BEEN SECURED AS NON-HAZARDOUS BY PERSONNEL AUTHORIZED TO DO SO BY THE RESPONSIBLE PERSON ON-SITE.</p>
	<p style="text-align: center;"><b>NOTICE</b></p> <p>OBSERVE PRECAUTIONS FOR HANDLING ELECTROSTATIC SENSITIVE DEVICES.</p>

## Disposal of Electrical and Electronic Equipment

In conformance with the European Directive 2002/96/EC on Waste Electrical and Electronic Equipment (WEEE) this device may not be disposed of in domestic waste. This also applies to countries outside the EU, per their specific requirements.



Please dispose of this product in accordance with local regulations at the collecting point specified for electrical and electronic equipment.

If you have any questions, please contact the responsible authority or the distributor from which you purchased this device.

Should this device be passed on to other parties (for private or professional use), the content of this regulation must also be related.

Thank you for your contribution to environmental protection.



# Contents

- 1 Introduction ..... 1-1**
  - 1.1. Overview ..... 1-1
  - 1.2. FM Approvals ..... 1-1
  - 1.3. Product Markings ..... 1-2
- 2 Installation ..... 2-1**
  - 2.1. Before Installation ..... 2-1
  - 2.2. Installation Using Associated NIFW Approval ..... 2-1
  - 2.3. Non-Sparking Approval ..... 2-2
  - 2.4. Temperature Rating ..... 2-2
  - 2.5. Division 2 Application Example Using Load Cells ..... 2-2
  - 2.6. Installation Procedure ..... 2-4
- 3 Special Requirements ..... 3-1**
  - 3.1. Enclosure ..... 3-1
  - 3.2. Areas with Different Classifications ..... 3-1
  - 3.3. Specific Conditions of Use ..... 3-1
- A Approval Documents ..... A-1**
  - A.1. Approval Documents ..... A-1
  - A.2. Control Drawing (US and Canada) ..... A-2
  - A.3. Global and International (ATEX and IECEx) ..... A-3



# 1 Introduction

## 1.1. Overview

This installation guide describes some basic concepts about Division 2 and Zone 2/22 hazardous areas and provides guidelines for installing ACT100xx Weight Transmitter.

ATEX and IECEx certified versions of the ACT100xx Weight Transmitter are approved for installation and use in Zone 2 areas.

FM approved versions of the ACT100xx Weight Transmitter are approved as Associated Non-Incendive Field Wiring Apparatus and must always be installed in a safe area. The ACT100xx can be used with load cells located in Division 2 and Zone 2/22 hazardous areas without the use of a barrier.



	 <b>WARNING</b>
	<b>METTLER TOLEDO ASSUMES NO RESPONSIBILITY FOR CORRECT INSTALLATION OF THIS EQUIPMENT WITHIN A ZONE 2 AREA. THE INSTALLER MUST BE FAMILIAR WITH ALL ZONE 2 WIRING AND INSTALLATION REQUIREMENTS. THIS EQUIPMENT MUST NEVER BE INSTALLED IN A DIVISION 2 ENVIRONMENT.</b>

## 1.2. FM Approvals

The approval by FM Approvals applies to:

- The passing of the Analog Load cell connections from a safe area to a Division 2 location per the National Electrical Code (NEC) in the United States.
- The passing of the Analog Load cell connections from a safe area to a Division 2 location per the Canadian Electric Code (CEC) in Canada.
- Zone 2 applications that require compliance to European ATEX directive (2014/34/EU).
- Zone 2 applications installed to standard IEC 60079-14.

These approvals may also be acceptable in other worldwide locations. Confirm with the customer or with local authorities the acceptance of these approvals before installation. Regardless of the installation location, all local and national wiring and installation requirements must be followed during installation.

	 <b>WARNING</b>
	<p><b>IN ORDER TO INSTALL THE ACT100xx TRANSMITTER IN THE US OR CANADA, METTLER TOLEDO CONTROL DRAWINGS 30565571 MUST BE FOLLOWED WITHOUT EXCEPTION. IN ORDER TO INSTALL THE CATEGORY 3 MARKED ACT100 UTILIZING THE EUROPEAN APPROVAL, THE APPROVAL CERTIFICATE FM19ATEX0213X/ IECEx_FMG_19.0043X AND ALL LOCAL REGULATIONS MUST BE FOLLOWED WITHOUT EXCEPTION. FAILURE TO DO SO COULD RESULT IN BODILY HARM AND/OR PROPERTY DAMAGE.</b></p>

## 1.3. Product Markings

Due to Specific Conditions associated with the approval of the ACT100xx Weight Transmitter to U.S. and Canadian standards as well as the ATEX directive and IECEx standards, not all versions of the ACT100 Weight Transmitter are marked in exactly the same way.

When ordering an ACT100 Weight Transmitter, it is important to know which approval markings are required. Please have this information available for the local authorized METTLER TOLEDO sales representative.

### 1.3.1. U.S. Approval

The ACT100xx Weight Transmitter has been approved by FM Approvals(FM19US0223X) as Associated Non-Incendive Field Wiring Apparatus and includes the following markings:

**ACT100xx Transmitters**

ANI, Class I, II, III Division 2, Groups A, B, C, D, F and G; NIFW

ANI, Zone 2, IIC; NIFW

ANI, Zone 22 IIIB; NIFW

Ta = -10°C to +40°C

All approved versions must be installed per METTLER TOLEDO control drawings 30565571 without exception.

- Please note ACT100xx must always be installed in a safe area.

### 1.3.2. Canadian Approval

The ACT100xx Weight Transmitter has been approved by FM Approvals (FM19CA0119X) as Associated Non-Incendive Field Wiring Apparatus and includes the following markings:

**ACT100xx Transmitters**

ANI, Class I, II, III Division 2, Groups A, B, C, D, F and G; NIFW

ANI, Zone 2, IIC; NIFW

ANI, Zone 22 IIIB; NIFW


Ta = -10°C to +40°C

All approved versions must be installed per METTLER TOLEDO control drawings 30565571 without exception.

- Please note ACT100xx must always be installed in a safe area.

### 1.3.3. European ATEX Approval

The ACT100xx Weight Transmitters have been evaluated as Above ground Category 3 Gas environments by IECEx/ATEX Certifications, B.V. and issued Type Examination Certificate FM19ATEX0213X and FM21UKEX0065X. This authorizes METTLER TOLEDO to mark the Weight Transmitter as:

II 3 G Ex nA IIC T4 Gc  
 II 3 G Ex ec IIC T4 Gc  
-10°C ≤ Ta ≤ +40°C

### 1.3.4. Global IECEx Approval

The ACT100xx Weight Transmitters have been IECEx certified for use in Zone 2 locations and issued Certificate of Conformity IECEx\_FMG\_19.0043X. This authorizes METTLER TOLEDO to mark the Weight Transmitter as:

Ex ec IIC T4 Gc  
Ex nA IIC T4 Gc  
-10°C ≤ Ta ≤ +40°C

# 2 Installation

## 2.1. Before Installation

Before installing the ACT100xx Weight Transmitter in the US and Canada, read and understand METTLER TOLEDO control drawing 30565571, included in the appendix of this guide. Make note of the inputs and outputs that will be used and the type of protection required for each I/O.

Before installing the Category 3 rated ACT100xx Weight Transmitter into an area classified as Zone 2 according to the European ATEX directive, read and understand METTLER TOLEDO installation drawing 30562232 and the specific conditions of use listed on Type Examination Certificate FM19ATEX0213X included in the appendix of this guide.

For installation in an ATEX Zone 2 location, following special conditions of use need to be fulfilled:

1. The equipment shall only be used in an area of at least pollution degree 2, as defined in EN 60664-1
2. The equipment shall be installed in an enclosure that provides a minimum ingress protection of IP54 in accordance with EN 60079-0 and EN 60079-15
3. Transient protection shall be provided that is set at a level not exceeding 140% of the peak rated voltage value at the supply terminals to the equipment

The ACT100xx Weight Transmitter is not approved or marked for direct installation into a Zone 22 environment. For installation in an Zone 22 location, the ACT100xx Weight Transmitters relies on the dust protection provided by the supplemental ATEX approved dust tight enclosure of EPL c. (Ex tc Dc). Make sure the instructions of such enclosure is carefully followed.

For installation in an IEC Zone 2 location, following special conditions of use need to be fulfilled:

1. The equipment shall only be used in an area of at least pollution degree 2, as defined in IEC 60664-1
2. The equipment shall be installed in an enclosure that provides a minimum ingress protection of IP54 in accordance with IEC 60079-0 and IEC 60079-15
3. Transient protection shall be provided that is set at a level not exceeding 140% of the peak rated voltage value at the supply terminals to the equipment

The ACT100xx Weight Transmitter is not approved or marked for direct installation into a Zone 22 environment. For installation in an IECEx Zone 22 location, the ACT100xx Weight Transmitters relies on the dust protection provided by the supplemental IECEx approved dust tight enclosure of EPL c. (Ex tc Dc). Make sure the instructions of such enclosure is carefully followed.

Before beginning the installation, confirm that the correct markings are on the ACT100xx Weight Transmitter indicating that the Weight Transmitter has been approved for use in Zone 2 areas. The required markings are shown in section 1.3 of this guide.

If the ACT100 Weight Transmitter does not include the approval markings as shown in section 1.3 of this guide, the Weight Transmitter cannot be installed in the hazardous area.

## 2.2. Installation Using Associated NIFW Approval

Versions of the ACT100xx approved for the United States and Canada are approved as Associated Non-Incendive Field Wiring Apparatus and must only be installed in the unclassified (safe) area. Refer to the National Electrical Code, Canadian Electrical Code, or applicable local ordinance for allowed wiring methods.

### 2.2.1. Analog Load Cell

The analog load cell connection is rated non-incendive on the ACT100xx Weight Transmitter. Connection of the load cells must be per the details shown on control drawing 30565571. The ACT100xx Weight Transmitter must be powered using a Listed power supply that provides between 12 and 30VDC and at least 0.5 A. The non-incendive field circuit wiring (NIFW) parameters are listed here:

NIFW Parameters
$V_{oc} = 5.08 \text{ VDC}$
$I_{sc} = 221 \text{ mA}$
$C_a = 0.3 \text{ }\mu\text{F}$
$L_a = 160 \text{ }\mu\text{H}$

## 2.3. Non-Sparking Approval

The ACT100xx has been approved as a non-sparking device for Zone 2 environments. This permits the equipment to be physically located within a Zone 2 area. This includes analog load cells. Note that the load cell in the platform must also have a non-sparking approval and the maximum supply voltage listed on the certificate must not be exceeded by the ACT100xx Weight Transmitter.

## 2.4. Temperature Rating

It is important that the temperature rating of the ACT100xx Weight Transmitter be appropriate for the environment in which it will be used. The ACT100xx Weight Transmitter has been approved with a temperature rating of T4 (135°C) for gas. This value must be lower than the Auto Ignition Temperature (AIT) of the hazardous product in order to be safe. If the AIT of the hazardous product is lower than the temperature rating of the ACT100xx Weight Transmitter, the ACT100xx Weight Transmitter MUST NOT BE USED in that environment.



## WARNING

THE ACT100xx WEIGHT TRANSMITTER HAS A TEMPERATURE RATING OF T4 (135° C) FOR GAS. IT MUST NOT BE USED IN AREAS WHERE THE AUTO IGNITION TEMPERATURE OF THE HAZARDOUS MATERIAL IS BELOW THIS RATING.

## 2.5. Division 2 Application Example Using Load Cells

- Note: There are many methods that may be used to install properly approved equipment within hazardous areas. In our example, the non-incendive field circuit parameters (electrical approval data) were compared to those of the load cells connected to make sure the combination is safe. In other applications (specifically in Europe), only a confirmation of a certain IP rating and maximum surface temperature may be required to connect the devices.

The following is an example of applying the ACT100xx Analog Weight Transmitter in a Division 2 application connecting a model 2158 Vertex floor scale with 50 feet of load cell cable. The non-incendive field wiring circuit (NIFW) parameters for all devices and cables in the load cell line (including the load cells and junction box) must also be known.

Weight Transmitter model:	ACT100xx Weight Transmitter
Base model:	2158 VERTEX® (with approved cells)
Load cell model:	METTLER TOLEDO 0745A
Number of load cells:	4
Load cell cable length:	50 feet
Junction box model:	AJB641SX

ACT100xx Analog load cell NIFW parameters from control drawing 30565571:

$$V_{oc} / U_o = 5.08 \text{ VDC}$$

$$I_{sc} / I_o = 221 \text{ mA}$$

$$C_a / C_o = 0.3 \text{ } \mu\text{F}$$

$$L_a / L_o = 160 \text{ } \mu\text{H}$$

Load cell NIFW parameters from model 745A load cell control drawing:

$$V_{max} = 25 \text{ VDC}$$

$$I_{max} = 600 \text{ mA}$$

$$C_i = 0 \text{ } \mu\text{F}$$

$$L_i = 29 \text{ } \mu\text{H}$$

Default load cell cable values for ACT100xx Weight Transmitter:

$$C_{cable} = 60 \text{ pF / foot}$$

$$L_{cable} = 0.2 \text{ } \mu\text{H / foot}$$

The 2158 junction box is considered to be a simple apparatus. The 2158 is completely passive and has no components capable of storing energy, so there are no NIFW parameters associated with it.

Now, compare these values using the formulas provided in the previous section of this chapter and determine if all four criteria pass or fail. Note that the NIFW parameters for capacitance and inductance of the load cell must be multiplied by the quantity of load cells used. Also note that the field circuit parameters for the load cell cable must be multiplied by the total load cell cable length.

Formula	Pass or Fail
$U_i / V_{max}$ must be $\geq U_o / V_{oc}$ 25 VDC $\geq$ 5.08 VDC	PASS
$I_i / I_{max}$ must be $\geq I_o / I_{sc}$ 600 mA $\geq$ 221 mA	PASS
$C_i + C_{cable} \leq C_a$ $C_i = 0 \mu F * 4 \text{ cells} = 0 \mu F$ (load cells) $C_i = 0 \mu F$ (junction box) $C_{cable} = 60 \text{ pF} / \text{foot} * 50 \text{ feet} = 3000 \text{ pF} = 0.003 \mu F$ $(0 \mu F + 0 \mu F + 0.003 \mu F) \leq 0.3 \mu F$	PASS
$L_i + L_{cable} \leq L_a / L_o$ $L_i = 29 \mu H$ (load cells) * 4 cells = 0.116 mH $L_i = 0 \mu H$ (junction box) $L_{cable} = 0.2 \mu H / \text{foot} * 50 \text{ feet} = 10 \mu H = 0.01 \text{ mH}$ $(0.116 \text{ mH} + 0 \text{ mH} + 0.01 \text{ mH}) \leq 160 \mu H$	PASS

In addition to the formulas above, the temperature rating of the ACT100xx Weight Transmitter must be checked against the AIT (Auto Ignition Temperature) of the hazardous product. For this example, the hazardous product has an AIT of 200°C (393°F), which is higher than the rating of the ACT100xx Weight Transmitter approval value of 85°C (203°F) for dust and 100°C (211°F) for gas. This indicates the temperature comparison test passes.

Since all four NIFW parameters compare favorably and pass the formula evaluation and the temperature comparison test passes, the load cells listed in this example may be safely installed into a Division 2 area. All equipment must be installed according to their corresponding control drawing using all pertinent local and national codes and regulations.

## 2.6. Installation Procedure

Once the information in this chapter and in all other suggested regulatory documents has been read and understood, the ACT100xx Weight Transmitter may be installed.

Special installation requirements for the ACT100xx Weight Transmitter are described below.

Special installation requirements are also listed in the Specific Conditions for Safe Use section of this manual.



In addition to the information in this chapter, instructions, control drawings, installation drawings and details listed in the certificates found in Chapter 3 and Appendix A of this manual must be followed during the installation.

# 3 Special Requirements

When an ACT100xx Weight Transmitter is installed inside a hazardous area, some special requirements must be considered. This chapter discusses these items.

## 3.1. Enclosure

- Note that the ACT100xx Weight Transmitter cannot be installed in a hazardous area in the U.S. and Canada per METTLER TOLEDO control drawings 30565571.

An ATEX certified enclosure with a minimum ingress protection rating of IP54 is required for installation in Europe. An IECEx certified enclosure with a minimum ingress protection rating of IP54 is required for installation according to the IECEx approval.

## 3.2. Areas with Different Classifications

The ACT100xx Weight Transmitter has been approved for use with load cells located in an area classified as Division 2 or as Zone 2. This approval DOES NOT mean that the ACT100xx Weight Transmitter can be used in or connected directly to equipment located in Division 1, Zone 0/1 or Zone 20/21 areas. Different precautions must be taken when installing equipment into these areas. METTLER TOLEDO offers other Weighing Terminals for use in Division 1, Zone 0/1 or Zone 20/21 areas.

## 3.3. Specific Conditions of Use

To prevent ignition of flammable or combustible atmosphere, disconnect power before servicing.

1. The ACT100xx Weight Transmitter shall only be used in an area of at least pollution degree 2, as defined in EN 60664-1.
2. The ACT100xx Weight Transmitter shall be installed in an enclosure that provides a minimum ingress protection of IP54 in accordance with EN 60079-0 and EN 60079-15.
3. Transient protection shall be provided that is set at a level not exceeding 140% of the peak rated voltage value at the supply terminals to the equipment.

	 <b>WARNING</b>
	<b>THE ACT100xx WEIGHT TRANSMITTER MUST BE INSTALLED AND MAINTAINED PER THE ABOVE SPECIFIC CONDITIONS WITHOUT EXCEPTION. FAILURE TO DO SO COULD RESULT IN BODILY HARM AND/OR PROPERTY DAMAGE.</b>

# A Approval Documents

## A.1. Approval Documents

### A.1.1. United States

FM Approvals LLC has investigated the ACT100xx Weight Transmitter and issued a Certificate of Compliance indicating compliance to the U.S. requirements for a Division 2 and Zone 2/22 Associated NIFW apparatus. The certificate for this approval can be found at <https://www.mt.com/us/en/home/search/compliance.html>

### A.1.2. Canada

FM Approvals LLC has investigated the ACT100xx Weight Transmitter and issued a Certificate of Compliance indicating compliance to Canadian requirements for a Division 2 and Zone 2 Associated NIFW Apparatus. The certificate for this approval can be found at <https://www.mt.com/us/en/home/search/compliance.html>

### A.1.3. Control Drawing (U.S. and Canada)

In order to meet the U.S. and Canadian Division 2 requirements, control drawings 30565571 are provided. Review this drawing before installation. If there are any questions regarding the details in the control drawing, please contact the local METTLER TOLEDO representative. Refer to sections A.2 for the drawing.

### A.1.4. Europe (ATEX)

FM Approvals LLC has issued a Type Examination Certificate indicating compliance of the ACT100xx Weight Transmitter with European requirements for Essential Health and Safety Requirements and the ATEX directive 2014/34/EU for Category 3 equipment. Review this certificate for details of the approval. The certificate for this approval can be found at <https://www.mt.com/us/en/home/search/compliance.html>

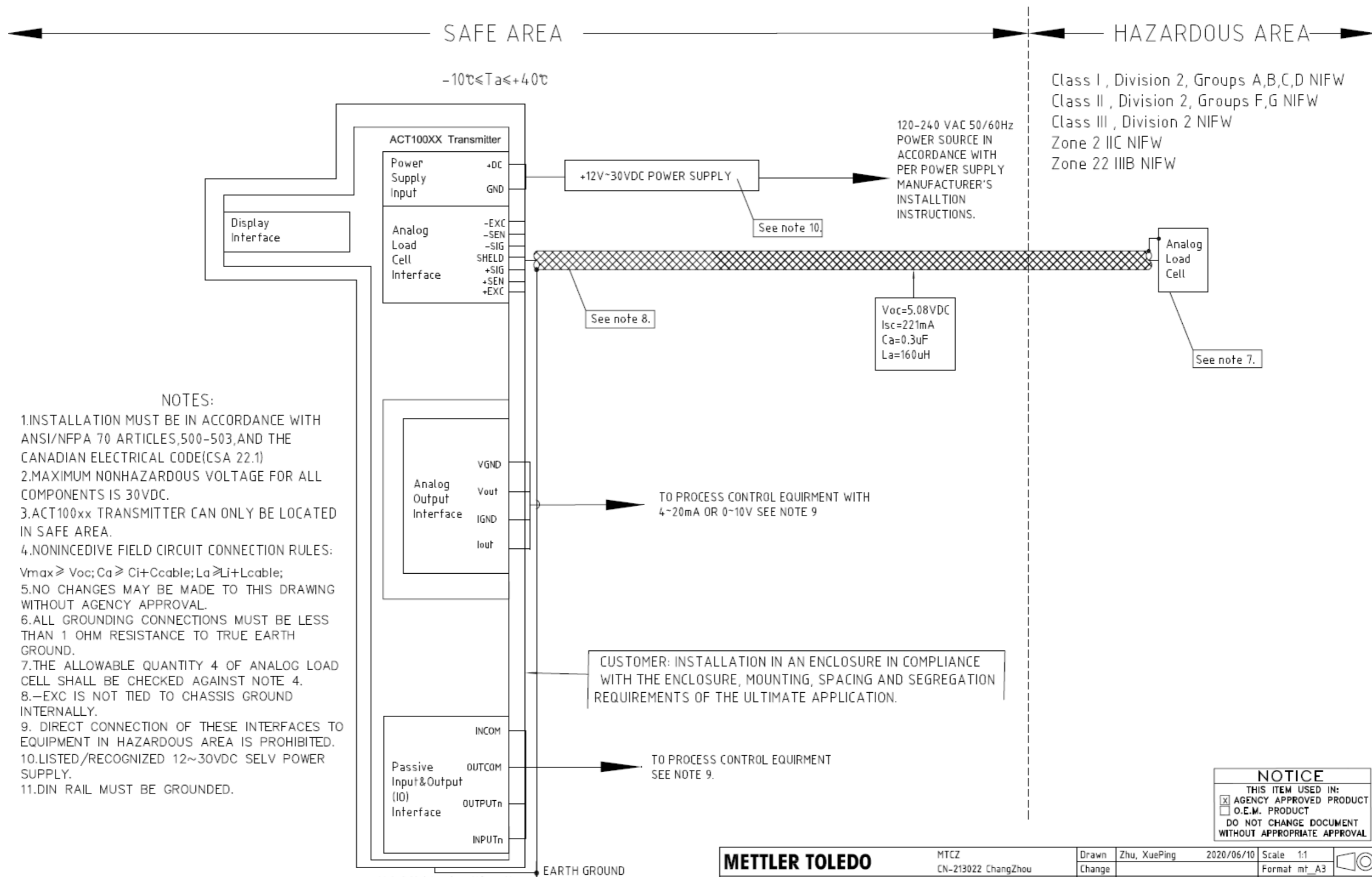
### A.1.5. Global and International (IECEx)

FM Approvals LLC has issued an IECEx Certificate of Conformity indicating compliance of the ACT100xx Weight Transmitter with IECEx Certification Scheme for Explosive Atmospheres. Review this certificate for details of the approval. The certificate for this approval can be found at <https://www.mt.com/us/en/home/search/compliance.html>

### A.1.6. Installation Drawing (ATEX and IECEx)

An ATEX/IECEx installation drawing was created to assist when installing the ACT100xx into Zone 2/22 areas. This drawing is a guide for installation and connection of the ACT100xx Weight Transmitter when used in a Zone 2 or Zone 22 hazardous area based on the ATEX or IECEx approval. Review this drawing before installation. If there are any questions regarding the details in the drawing, please contact the local METTLER TOLEDO representative. Refer to sections A.2 and A.3 for the drawing.

## **A.2. Control Drawing (US and Canada)**



**NOTES:**

1. INSTALLATION MUST BE IN ACCORDANCE WITH ANSI/NFPA 70 ARTICLES, 500-503, AND THE CANADIAN ELECTRICAL CODE (CSA 22.1)
2. MAXIMUM NONHAZARDOUS VOLTAGE FOR ALL COMPONENTS IS 30VDC.
3. ACT100xx TRANSMITTER CAN ONLY BE LOCATED IN SAFE AREA.
4. NONINCEDEIVE FIELD CIRCUIT CONNECTION RULES:  
 $V_{max} \geq V_{oc}$ ;  $C_a \geq C_i + C_{cable}$ ;  $L_a \geq L_i + L_{cable}$ ;
5. NO CHANGES MAY BE MADE TO THIS DRAWING WITHOUT AGENCY APPROVAL.
6. ALL GROUNDING CONNECTIONS MUST BE LESS THAN 1 OHM RESISTANCE TO TRUE EARTH GROUND.
7. THE ALLOWABLE QUANTITY 4 OF ANALOG LOAD CELL SHALL BE CHECKED AGAINST NOTE 4.
8. -EXC IS NOT TIED TO CHASSIS GROUND INTERNALLY.
9. DIRECT CONNECTION OF THESE INTERFACES TO EQUIPMENT IN HAZARDOUS AREA IS PROHIBITED.
10. LISTED/RECOGNIZED 12~30VDC SELV POWER SUPPLY.
11. DIN RAIL MUST BE GROUNDED.

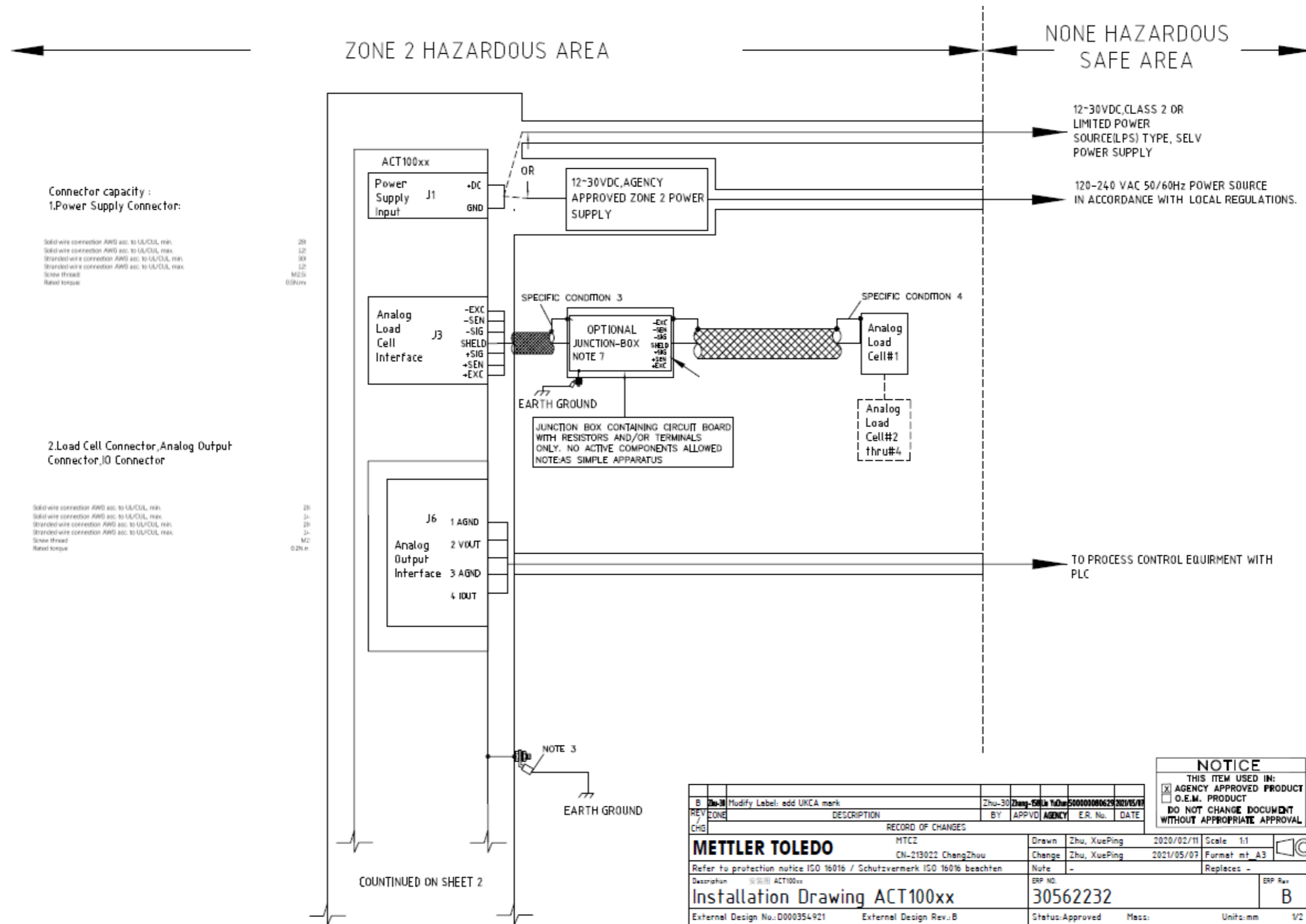
**NOTICE**  
 THIS ITEM USED IN:  
 AGENCY APPROVED PRODUCT  
 O.E.M. PRODUCT  
 DO NOT CHANGE DOCUMENT WITHOUT APPROPRIATE APPROVAL

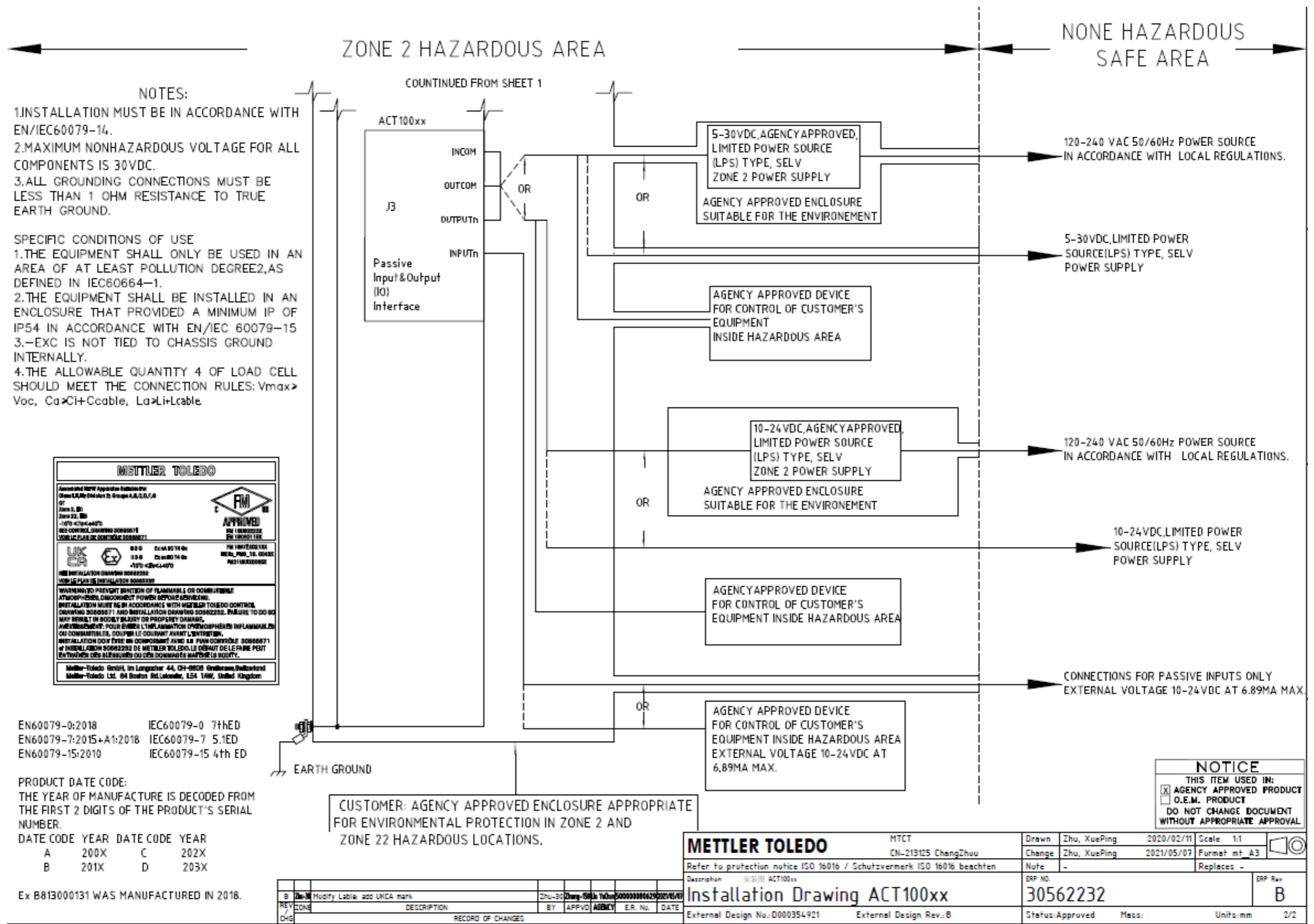
REV	ZONE	DESCRIPTION	BY	APPVD	AGENCY	E.R. No.	DATE
B	C3-C4	Modify enclosure requirement	zhu-30	Liu YuChun		500000080628	2020/05/20

RECORD OF CHANGES

<b>METTLER TOLEDO</b>		MTCZ	Drawn	Zhu, XuePing	2020/06/10	Scale	1:1
		CN-213022 ChangZhou	Change			Format	mt_A3
Refer to protection notice ISO 16016 / Schutzvermerk ISO 16016 beachten			Note	-		Replaces	-
Description 控制柜 ACT100xx			ERP NO.	30565571		ERP Rev	B
Control Drawing ACT100xx			Status	Approved	Mass:	Units	mm 1/1
External Design No.: D000354928		External Design Rev.: B					

### A.3. Global and International (ATEX and IECEx)





**NOTES:**

- 1.INSTALLATION MUST BE IN ACCORDANCE WITH EN/IEC60079-14.
- 2.MAXIMUM NONHAZARDOUS VOLTAGE FOR ALL COMPONENTS IS 30VDC.
- 3.ALL GROUNDING CONNECTIONS MUST BE LESS THAN 1 OHM RESISTANCE TO TRUE EARTH GROUND.

**SPECIFIC CONDITIONS OF USE**

- 1.THE EQUIPMENT SHALL ONLY BE USED IN AN AREA OF AT LEAST POLLUTION DEGREE2,AS DEFINED IN IEC60664-1.
- 2.THE EQUIPMENT SHALL BE INSTALLED IN AN ENCLOSURE THAT PROVIDED A MINIMUM IP OF IP54 IN ACCORDANCE WITH EN/IEC 60079-15
- 3.-EXC IS NOT TIED TO CHASSIS GROUND INTERNALLY.
- 4.THE ALLOWABLE QUANTITY 4 OF LOAD CELL SHOULD MEET THE CONNECTION RULES:  $V_{max} > V_{oc}$ ,  $C_a > C_l + C_{cable}$ ,  $L_a > L_l + L_{cable}$

**METTLER TOLEDO**

Approved for use in Zone 2, Group I, A, B, C, D, E, F, G

June 23, 2018

UK CA

WARNING TO PREVENT RISK OF FLAMMABLE OR COMBUSTIBLE ATMOSPHERES, DISCONNECT POWER BEFORE SERVICING.

INSTALLATION MUST BE IN ACCORDANCE WITH METTLER TOLEDO CONTROL DRAWING 30562232 AND INSTALLATION DRAWING 30562232. FAILURE TO DO SO MAY RESULT IN BODY INJURY OR PROPERTY DAMAGE.

Mettler-Toledo GmbH, Im Langgasser 44, CH-9500 Osterode, Switzerland  
Mettler-Toledo Ltd. 84 Boscon Rd, Leicester, LE5 1AW, United Kingdom

EN60079-0:2018 IEC60079-0 7th ED  
EN60079-7:2015+A1:2018 IEC60079-7 5.1ED  
EN60079-15:2010 IEC60079-15 4th ED

**PRODUCT DATE CODE:**  
THE YEAR OF MANUFACTURE IS DECODED FROM THE FIRST 2 DIGITS OF THE PRODUCT'S SERIAL NUMBER.

DATE CODE	YEAR	DATE CODE	YEAR
A	200X	C	202X
B	201X	D	203X

Ex B813000131 WAS MANUFACTURED IN 2018.

CUSTOMER: AGENCY APPROVED ENCLOSURE APPROPRIATE FOR ENVIRONMENTAL PROTECTION IN ZONE 2 AND ZONE 22 HAZARDOUS LOCATIONS.

**NOTICE**

THIS ITEM USED IN:

AGENCY APPROVED PRODUCT

O.E.M. PRODUCT

DO NOT CHANGE DOCUMENT WITHOUT APPROPRIATE APPROVAL

<b>METTLER TOLEDO</b>		MTCT	Drawn	Zhu, XuePing	2020/02/11	Scale	1:1
		CN-213125 ChangZhou	Change	Zhu, XuePing	2021/05/07	Format	mt_A3
Refer to protection notice ISO 16016 / Schutzvermerk ISO 16016 beachten			Note	-		Replaces	-
Description 称重仪 ACT100xx		ERP NO.	30562232		ERP Rev.	B	
Installation Drawing ACT100xx		Status	Approved		Mass:	Units:mm 2/2	
External Design No.:D000354921		External Design Rev.:B					

REV / CHG	DESCRIPTION	BY	APPROV	DATE
B	Modify Label: add UKCA mark	Zhu-30	Dang-Sun	2021/05/07

## METTLER TOLEDO Service

### To protect your product's future:

Congratulations on choosing the quality and precision of METTLER TOLEDO. Proper use according to these instructions and regular calibration and maintenance by our factory-trained service team ensure dependable and accurate operation, protecting your investment. Contact us about a service agreement tailored to your needs and budget.

We invite you to register your product at [www.mt.com/productregistration](http://www.mt.com/productregistration) so we can contact you about enhancements, updates and important notifications concerning your product.

[www.mt.com/ind-ACT100-downloads](http://www.mt.com/ind-ACT100-downloads)

For more information

**Mettler-Toledo, LLC**  
1900 Polaris Parkway  
Columbus, OH 43240

© 2019 Mettler-Toledo, LLC  
30529641 Rev. 02, 07/2021



3 0 5 2 9 6 4 1