Avery Weigh-Tronix

ZT DIGITAL LOAD CELL
Smart - Rugged - Accurate

Frequently Asked Questions

KEY FACTS

1. What are the applications of the ZT Digital Load Cell?

The **ZT Digital Load Cells** are factory pre-calibrated and have an industry standard height of 7.87 in (200 mm), making them ideal for vehicle weighing applications.

2. Does the ZT Digital Load Cell need a junction box?

No, the **ZT Digital Load Cells** are connected directly to a secure bus network without the need of a dedicated junction box or termination connector.

3. Is the ZT Digital Load Cell approved?

Yes, approved to NTEP Class III L, 10,000d and OIML R60, C6 6,000 verification intervals.

4. What indicators are compatible with the ZT Digital Load Cell?

The Avery Weigh-Tronix ZM605/ZM615 Series Indicators support the **ZT Digital Load Cell**.

5. How many ZT Digital Load Cells can be linked together?

Up to 32 **ZT Digital Load Cells** can be connected together.

6. ZT Digital Load Cells are connected to a backbone network through a single connector. What are the advantages?

Unlike other systems, this design:

› Simplifies the cable routing and connection process
› Keeps the connectors away from adverse environmental conditions (e.g. flood and dust) and protected from accidental damage.
› Makes each cell and connection always individually accessible for inspection.
› Allows each sensor to be preconfigured, even before installation.
› In addition, the scale can be kept functioning in a limited capacity even when one sensor fails (Ghosting feature, non-trade approved mode).

7. Can the ZT Digital Load Cell System handle multiple and separate scales?

Yes, when configuring the indicator in Ztools, each of the **ZT Digital Load Cells** on the network can be grouped into logically independent platforms.
› The ZM605/ZM615 supports up to eight scales
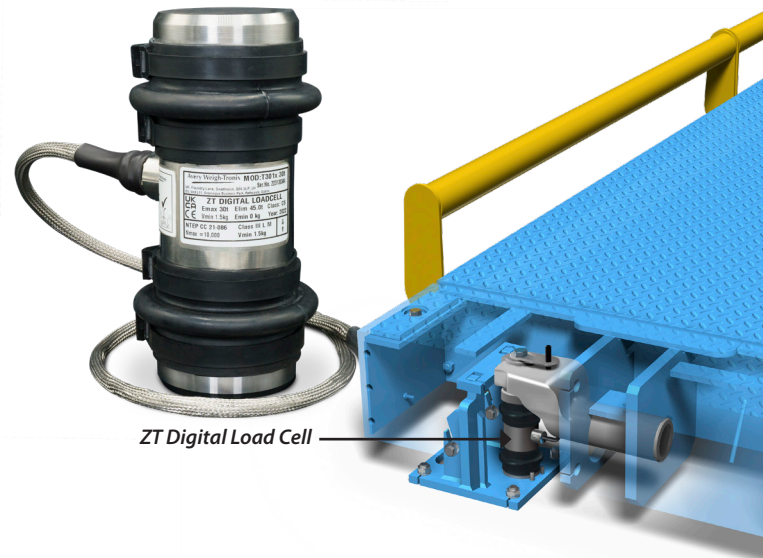
ZT Digital Load Cell

SERVICE AND INSTALLATION

8. What are the advantages of having the ZT Digital Load Cell with pre-fitted load buttons?

› Faster and uniform installation.
› Buttons are pre-greased at factory using the correct type and amount of grease.
› The load buttons properly coupled to the specially designed load bearing surfaces, i.e. rocker-column, guarantee the correct alignment full up to 10,000d and help to reduce the cell motion.
› The sealed rubber gaiter bellows protect the weighing element from external factors and reduce the cell motion that can cause damage.
› The bottom load button is secured by a dual pin system to eliminate cell rotation.

9. How are the ZT Digital Cells networked to each other?

The **ZT Digital Load Cells** are connected using Amphenol LTW® connectors as shown below. The connectors create a backbone network linked to a ZM605/ZM615 Avery Weigh-Tronix indicator.

up to 655 ft (200m)

Up to 32 ZT Digital Load Cells over two separate networks

Amphenol LTW® cables and X-Lok connectors

***Maximum length of the interface cable is subject to the number of cells connected**

10. What is the maximum length of the home run cable?

Number of ZT Digtal Cells	Max Home Run Cable	Max System Cable Length
Up to 8	655 ft (200m)	865 ft (264m)
10	570 ft (175m)	840 ft (257m)
12	490 ft (150m)	820 ft (250m)
14	410 ft (125m)	795 ft (243m)
16	325 ft (100m)	770 ft (236m)

11. What is the "Weighbridge Balance Check" feature?

To make sure that the truck scale modules are not only level but also standing on their static balance point, this feature displays the dead weight on each cell before performing the calibration.

If required, the **ZT Digital Load Cell** alignment can then be adjusted to evenly balance the platform dead weight and prevent any problems with repeatability and calibration errors.

12. What is the "Ghosting" feature?

Ghosting detects one faulty weight sensor output, isolates the weight sensor, and replaces the faulty sensor output with a simulated replacement. It can allow a scale to keep functioning in a limited capacity (not trade mode) until repairs can be made. The "Ghost" alert will pop up on the ZM605/ZM615 screen and the "Non-Legal Weight" message will be printed on any tickets.

13. How accurate is the weighbridge in Ghosting mode?

The accuracy of a weighbridge working in Ghosting mode depends on:
› The current mechanical conditions of the platform and last calibration date.
› The module design and number of active sensors.
› The load distribution of each truck axle (shaft) across the deck sections.

For reference only, the tests conducted by Avery Weigh-Tronix demonstrate that the accuracy of a uniformly distributed load may vary ±4%.

14. What diagnostics specific to the ZT Digital Load Cells are available in the indicator diagnostics menus?

The parameters monitored are:
› Communication status
› Temperature
› Overload counts and peak weight
› Live weight and counts
› ZT firmware version

15. What are the errors logged in the ZM605/ZM615 Indicators internal database?

If the **ZT Digital Load Cell** detects an error, the following messages will be shown on the upper right of the indicator display.

The error log is an SQLite database file stored in the indicator that can be accessed by the indicator's Diagnostic Menu and copied to a computer using FTP, a USB memory stick or sent simply to a printer.

The errors logged are:
› Scale over/under load
› ZT cell overload
› Communication status
› Ghosting activation

PROTECTIONS

16. What is the ZT Digital Load Cell IP rating?

The **ZT Digital Load Cell** is hermetically sealed to IP68, 1 m - 7 days submersion (IEC 60529) and designed to survive the world's most extreme weather conditions with operating temperature range from -40°F to +149°F / -40°C to +65°C.

The cell-cable entry is featured with a Glass-to-Metal header that makes it hermetic to IP69K (DIN 40050-9 certified) while the proven industry leading cable and connectors (Amphenol LTW®) conform to the EIA364 and IP68 standards to ensure maximum protection against external agents.

17. Can the ZT Digital Load Cell be used in a hazardous area?

The **ZT Digital Load Cell** is not currently rated for hazardous areas.

18. Is the ZT Digital Load Cell immune from high voltage surges and RFI interference?

Yes, the system has been tested to and passes IEC61000-4-5 simulating lighting surge at Level 4: servere harassment environment such as civil aerial, high-pressure power substation without protections.

19. Is the ZT Digital Load Cell fraud-protected?

Yes, as part of the continuous monitoring diagnostic features, the ZT digital communication protocol is designed to recognize only the **ZT Digital Load Cells** which serial number has been linked to a unique address generated by the indicator. The watchdogs inside the indicator and each cell monitor the ZT network status contributing to prevent any attempt at fraud.

20.   How is the ZT Digital Load cell protected from mechanical shock and operating stress?

›   The thick stainless steel outer wall protects the internal elements (e.g. the eight strain gauges and 24-bit ADC) from accidental damage.

›   The stainless steel aircraft-quality alloy column guarantees a safe load limit 150% of the rated capacity and outstanding weighing performance (6 million internal divisions) even when weighing loads up to 3° off center loads.

›   The Amphenol LTW® X-Lok cable's tough polyurethane sheath is designed to be electrically, mechanically and chemically tough for maximum protection. A stainless steel overbraid is standard on truck scale applications.

›   The Amphenol LTW® X-Lok connectors comply with the EIA364 environmental performance requirements and meet the highest industrial standards by using UL94V-0 and UL-f1 rated thermoplastic materials for flammability and UV exposure protection.

PROGRAMMING

21.   What version of Ztools and indicator firmware does the ZT Digital Load Cell need?

›   Ztools software version 2.3.5.0 or newer is required

›   ZM indicator firmware version 2.5.0.0 or newer is required

22.   What information can a Lua application within the ZM indicator pull from the ZT Digital Load Cell?

Version 2.5.0.0 of the ZM firmware adds the following LUA keyword to the 'awtx.protocol' namespace. See the API for full descriptions:

›› getScaleCellPercentage
›› getScaleCellWeights
›› getScaleCellStatus
›› getScaleCellZero
›› getScaleCellOverloadCounts
›› getScaleCellTemperatures
›› getScaleCellCounts
›› getScaleConfiguredSerialNumbers

A Lua indicator application can be written to register the event and use the information for any purpose:

›   Email, webpage, printer output

›   Custom system initialization

›   Advanced applications and monitoring: connection and sensor status change, motion, out of balance (ratio metric error), sensor over capacity, multiscale

DOCUMENTATION

COLLATERAL	
ZT Digital Load Cell Technical Specifications	AWT35-100151
ZT Digital Load Cell Brochure	AWT35-100149
ZT Digital Load Cell FAQ	AWT35-100150
ZT Digital Load Cell Preventative Maintenance Document	AWT35-100175
Truck Scale Preventative Maintenance Document	AWT35-100176
MANUALS	
BridgeMont Series Truck Scales ZT Installation and Service Instructions	AWT35-100171
ZT/ZM Interface Card Installation Instructions	AWT35-100171 Section 6
ZT Digital Load Cell Configuration and Calibration	AWT35-100171 Section 7
ZT Digital Load Cell Diagnostics and Error Log Menus	AWT35-100184
ZM600 Series Indicator	Service and User Manuals
LUA API Reference Manual	2.0.0.0 or newer
APPROVALS	
NTEP	CC 21-086
OIML Certificates of Conformity	R60/2000-A-GB1-21.01
EU DoC and UKCA	Certificate on file
Surge Immunity Class	IEC 61000-4-5: Class 4 test reports on file
IP69K Rating	DIN 40050-9 and IEC 60529 test reports on file

Avery Weigh-Tronix

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