Explosion-Proof Electronic Weighing

EX-GT · EX-TCS Series

Flameproof weighing for chemical, paint and mining industries



ABSTRACT

A flameproof EX-GT / EX-TCS weighing engineered for hazardous atmospheres. EX-GT / EX-TCS pairs a high-stability A/D front end and single-chip microcontroller with an enclosure designed to **IEC 60079-0** and **IEC 60079-1** (flameproof "d"), an internal **4 V / 4 Ah** rechargeable battery for AC/DC dual use, and **IP68** ingress protection — with four relay outputs and optional **RS-232C** for integration into plant systems.

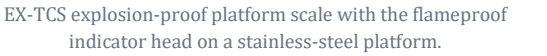
Product Overview

Single-chip precision weighing, certified for hazardous areas.

The **EX-GT / EX-TCS** explosion-proof weighing indicators are built around the latest single-chip microcomputer technology, designed for accurate weighing in **chemical, paint/coatings and mining** industries where flammable substances are present.

Core functions include:

- Tare and automatic zero tracking
- Simple external calibration
- Unit conversion — **g, kg, lb, oz** — with unit memory
- Adjustable filter for stable readings in any environment
- Zero-centre, tare, negative and weighing-unit indicators
- Low-battery and charging status indication
- Overload indication (beyond capacity + `9 d`, display "------")
- Built-in rechargeable battery, efficient charging circuit — AC/DC dual use
- Optional **RS-232C** port with selectable baud rate and output mode



EX-TCS explosion-proof platform scale with the flameproof indicator head on a stainless-steel platform.

IEC 60079-1	0.5 g	IP68	4 V / 4 Ah
FLAMEPROOF "d" DESIGN	FINEST READABILITY*	INGRESS PROTECTION	BUILT-IN BATTERY

* EX-TCS-30A nameplate; see Technical Specifications for the full range.

Seven Key Advantages

Why EX-GT / EX-TCS is specified where ordinary indicators cannot go.

Explosion-Proof

Flameproof enclosure designed to IEC `60079-1` (flameproof "d") together with IEC `60079-0` — dedicated to chemical, paint and mining plants.

High Precision

High-stability A/D conversion and single-chip control deliver fine readability — `30` kg × `0.5` g on the EX-TCS-30A.

Rugged Construction

Metal flameproof housing, five sealed membrane keys and gold-plated sealed terminals — built for daily use on the factory floor.

Corrosion Resistance

Sealed enclosure and easy-wipe surfaces stand up to the corrosive vapours found in chemical and coatings plants.

Long-Term Reliability

Automatic zero tracking, adjustable filter and overload protection keep readings dependable shift after shift.

IP68 Waterproof

Dust-tight and protected against continuous immersion — sealed against washdown-grade moisture ingress.

Standards & Compliance

IEC `60079-0` explosive atmospheres — general requirements · IEC `60079-1` flameproof enclosure "d".

Two-Year Warranty

Every indicator is backed by a 24-month manufacturer warranty covering parts and workmanship from the date of delivery.

Sealed Membrane Keys

Five fully sealed keys with gold-plated sealed terminals — no exposed switch contacts in the hazardous area.

Technical Specifications

Standards, performance and electrical interfaces.

Explosion-proof standards

Item	Standard
Explosive atmospheres — general requirements	IEC **60079-0**
Explosive atmospheres — flameproof enclosure "d"	IEC **60079-1**
Protection concept	Flameproof "d" — suitable for Zone **1** and Zone **2**

Typical model pairing (platform scale)

Model	Max. capacity	Readability (d)
EX-TCS-30A	**30 kg**	**0.5 g**
EX-TCS-30K	**30 kg**	**1 g**

Other capacity classes are available — verify model, capacity class and marking against the instrument nameplate before installation.

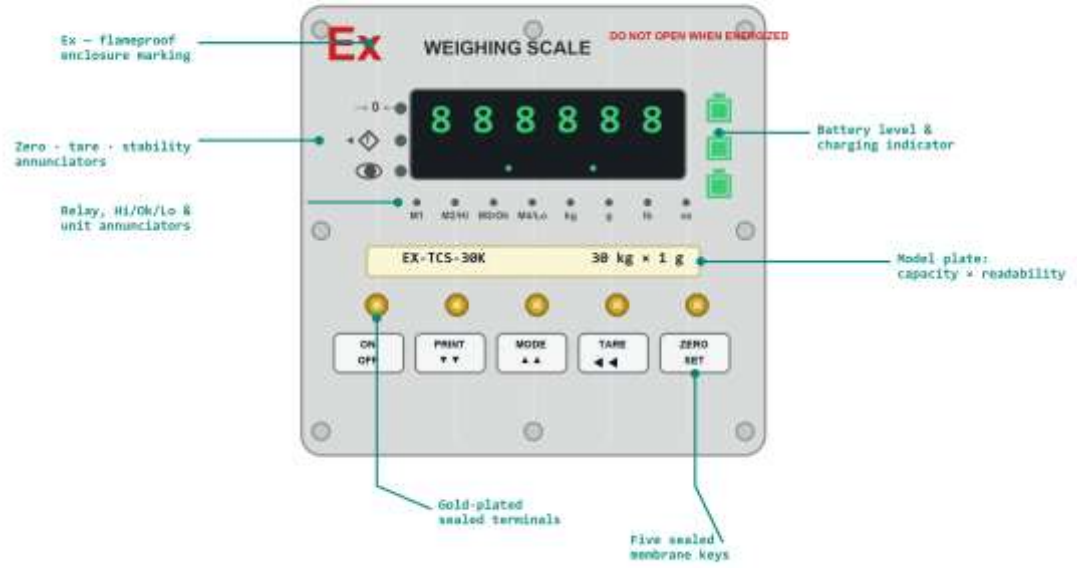
General specifications

Mains supply	AC **220 V** (+**10 %** to −**15 %**) / **50 Hz**
DC adapter	**5 V / 600 mA**
Battery	**4 V / 4 Ah** rechargeable pack — AC/DC dual use; charge only in a safe (non-hazardous) area
Operating temperature	**0 °C** to +**40 °C**
Storage temperature	−**25 °C** to +**55 °C**
Relative humidity	≤ **85 %RH**
Warm-up time	**10 – 15** minutes
Display	**6**-digit bright LED with status annunciators
Weighing units	g · kg · lb · oz (with unit memory)
Zero range	Selectable at power-up: **2.7 %** / **3 %** / **20 %** / **50 %** / **100 %** FS
Filter	Adjustable filter parameter for different environments
Overload indication	Display "------" beyond capacity + **9 d**
Relay outputs	Up to **4** internal relays (M**1** – M**4**), three-colour signal lamp Hi / Ok / Lo, external **12 V** supply
Serial output	Optional **RS-232C** — **1200** / **2400** / **4800** / **9600 bps**, selectable transmission and stable-output modes

Display & Controls

Clear LED indicators and five sealed keys — readable at a glance.

LED indicator layout



Front panel of the EX-TCS indicator — LED window, model plate and the five sealed keys. The panel legends are translated opposite.

Indicator legend

→ 0 ←	Zero status — weight within the zero range.
TARE	Net-weight status — tare weight is subtracted.
○	Stability status — reading is stable and valid.
kg · g · lb · oz	Active weighing unit.
M1 – M4	Four relay output annunciators.
Hi · Ok · Lo	Three-colour signal-lamp alarm annunciators.
••• battery ×3	Battery remaining-charge and charging indication.

Keypad legend

Key	Function
ON/OFF	Power the indicator on or off.
PRINT	Output the current reading to a printer or PC via the serial port.
MODE	Switch weighing unit · increment digit in setting mode.
TARE	Remove tare weight · shift digit left in setting mode.
ZERO/SET	Zero when the scale is empty · confirm settings.

In setting mode: TARE shifts the digit left, MODE increments the digit, ZERO/SET confirms — as specified in the operation manual.

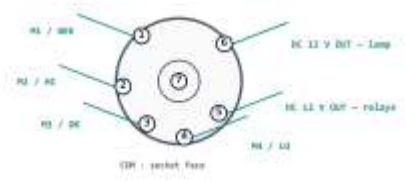


EX-TCS-**30**K nameplate: **30 kg × 1 g**. The LED window shows zero, tare and stability annunciators at the left, battery level at the right.

Wiring, Power & Safety

Connections, long runtime and safe-area charging.

Relay & signal-lamp connector



M1/BEE · M2/HI	Relay outputs **1 – 2** / signal-lamp drive
M3/OK · M4/LO	Relay outputs **3 – 4**
COM	Common end of relays / signal lamp
DC 12 V OUT	External **12 V** supply — lamp (pin **6**) or **4** relays (pin **5**)

Pins **1 – 4** connect to the normally-open contacts of the four internal relays. A maximum of **4** relays or one three-colour signal lamp can be wired externally.

Load-cell connection

+E / −E	Excitation — positive / negative power supply
+S / −S	Sense — load-cell feedback signal
Shield	Load-cell cable shield (**5**-core screened cable to the JLAD socket)

Power & battery

Charging	Charge **4 – 6 h** in a safe area only — the charger is not explosion-proof designed
Low battery	Below **3.5 V** the display shows "Lo" then powers off; recharge before further use
Long storage	Recharge every three months to preserve battery life

4 – 6 h	0 – 40 °C	≤ 85 %RH	IP68	24 months
SAFE-AREA RECHARGE	OPERATING RANGE	HUMIDITY	SEALED ENCLOSURE	WARRANTY

Safety & installation notes

- Place the indicator on a level, stable, vibration-free surface away from direct sunlight and air-conditioning outlets.
- Ensure reliable earthing before use.
- Cut the power supply before electrical wiring — never touch internal components with bare hands and take anti-static precautions.
- Never open the flameproof cover while the circuit is energised (panel marking: DO NOT OPEN WHEN ENERGIZED).
- Do not expose the unit to rain or wash it with water — wipe the housing with a dry or damp cloth.
- Never charge the battery inside the hazardous area.

Product views

Side elevation — low-profile platform with sealed adjustable feet and tilting indicator column.

Underside — single-sensor load cell, column mount and levelling feet.

Typical Applications & Standard Supply

Specified wherever a spark is not an option.

Chemical & Petrochemical

Process weighing in classified areas of chemical plants — where flammable vapours are permanently present.

Paint & Coatings

Solvent, resin and pigment batching in paint and coatings production.

Mining & Industry

Weighing in mining enterprises and general industrial sites with dust or gas hazards.

Standard supply

Item	Qty	Notes
Explosion-proof weighing indicator	1	EX-GT / EX-TCS series
AC adapter with power cord	1	DC `5 V` / `600 mA` output
Operation manual	1	This document

Two-Year Warranty

Every indicator is supplied with a **24-month** manufacturer warranty covering parts and workmanship from the date of delivery. Defective components are repaired or replaced free of charge. The warranty does not cover damage from unauthorised opening of the flameproof enclosure, improper use or natural disasters.

24
MONTHS

Note.
Specifications are typical and subject to change without notice. Verify model, capacity class and approval marking against the instrument nameplate before installation. The charger is not explosion-proof designed — always charge the indicator in a safe (non-hazardous) area.

Explosion-Proof Electronic Weighing Indicator
EX-GT · EX-TCS Series — flameproof weighing for hazardous areas

Shenzhen Definition Electric Co., Ltd
Explosion-Proof Instrument Division