Explosion-Proof Electromagnetic Force Weighing Module

EX-MQ Series

Electromagnetic force weighing for integration into hazardous-area processes



ABSTRACT

A compact explosion-proof weighing module built around a monolithic electromagnetic force sensor — readability from `10 mg` down to `0.01 mg`, flameproof **Ex db IIB T6 Gb** construction and DB9, RS-232 / RS-485 connectivity for direct integration with PLCs and process equipment.

Product Overview

Precision weighing, certified for hazardous areas.

The EX-MQ series explosion-proof electromagnetic force weighing modules employ a monolithic electromagnetic force sensor with readability of **10 mg**, **1 mg**, **0.1 mg** and **0.01 mg** — excellent repeatability, linearity and extremely fast weighing response for high-speed, high-precision weighing.

Weighing data is transferred to computers and industrial control equipment through the data interfaces, allowing direct integration with production equipment. The sealed stainless-steel construction runs reliably in industrial environments over the long term.



EX-MQ module front view — draft shield, weighing pan and adjustable feet.

Ex db IIB T6 Gb	0.01 mg	RS-232 · RS-485	24 months
Protection marking	Finest readability	Communications	Warranty cover

Eight Key Advantages

Why the EX-MQ series is specified where ordinary modules cannot go.

Explosion-Proof

Certified Ex db IIB T6 Gb

Flameproof enclosure for Zone 1 and Zone 2 gas atmospheres — no purge or pressurisation equipment required.

Integrated Design

Sensor + electronics in one housing

Compact monolithic structure saves space in the host equipment and simplifies wiring.

High Precision

Readability down to 0.01 mg

Electromagnetic force compensation with excellent repeatability and linearity.

Rugged & Durable

Full stainless steel

Housing with built-in overload protection keeps results stable over the long term.

Easy Calibration

User-definable weight

External calibration with a weight of about 1/3 of Max capacity — done in minutes.

Simple Installation

Standard Ø 12 mm load receiver

Supplied pan and standard receiver allow quick, easy on-site installation.

Flexible Communication

DB9 · RS-232 · RS-485

Standard SBI and Modbus protocols for cost-effective networking.

2-Year Warranty

24 months cover

Warranty covering parts and workmanship, with lifelong technical support.

Technical Specifications

Capacity, performance and electrical interfaces.

Capacity and readability

Model	Max. capacity	Readability (d)	Repeatability (std dev)	Weighing pan
EX-MQ SERIES — 10 mg READABILITY · HIGHEST CAPACITY				
EX-MQ2202	2200 g	10 mg	± 20 mg	Ø 100 mm
EX-MQ3202	3200 g	10 mg	± 20 mg	Ø 100 mm
EX-MQ4202	4200 g	10 mg	± 20 mg	Ø 100 mm
EX-MQ6202	6200 g	10 mg	± 20 mg	Ø 100 mm
EX-MQ SERIES — 1 mg READABILITY				
EX-MQ223	220 g	1 mg	± 2 mg	Ø 40 mm
EX-MQ323	320 g	1 mg	± 2 mg	Ø 40 mm
EX-MQ423	420 g	1 mg	± 2 mg	Ø 40 mm
EX-MQ523	520 g	1 mg	± 2 mg	Ø 40 mm
EX-MQ623	620 g	1 mg	± 2 mg	Ø 40 mm
EX-MQ SERIES — 0.1 mg READABILITY				
EX-MQ604	60 g	0.1 mg	± 0.2 mg	Ø 40 mm
EX-MQ124	120 g	0.1 mg	± 0.2 mg	Ø 40 mm
EX-MQ224	220 g	0.1 mg	± 0.2 mg	Ø 40 mm
EX-MQ SERIES — 0.01 mg READABILITY · HIGHEST RESOLUTION				
EX-MQ315	31 g	0.01 mg	± 0.02 mg	Ø 40 mm
EX-MQ515	51 g	0.01 mg	± 0.02 mg	Ø 40 mm
EX-MQ815	81 g	0.01 mg	± 0.02 mg	Ø 40 mm

Note. kg-range modules differ in outline dimensions — please contact the factory for the dimension sheet of the 10 mg class.

General specifications

Calibration	External — user-definable calibration weight (about 1/3 of Max capacity)
Preload	Adjusted according to the installed device
Operating temperature	+10 °C ~ +30 °C
Permissible temperature	+5 °C ~ +40 °C
Below-weighing	M3 tapped hole in the base
Load receiver	Standard Ø 12 mm receiver, weighing pan supplied
Housing	Stainless steel with built-in overload protection
Data interfaces	DB9 · RS-232 · RS-485
Protocol	SBI (RS-232) and Modbus compatible
Protection marking	Ex db IIB T6 Gb — certificate SHExC22.2400
Standards	IEC 60079-0 · IEC 60079-1

Power, Sealing & Supply

Sealed construction, flexible supply and everything in the box.

Power & Environment

Mains power
AC 220 V · 50–60 Hz mains supply, or DC 9 V external supply.

Easy calibration
External calibration with a user-definable weight of about 1/3 of Max capacity.

Operating temperature
+10 °C ~ +30 °C operating; +5 °C ~ +40 °C permissible.

Below-weighing capability
M3 tapped hole in the base allows under-floor weighing hook-up.

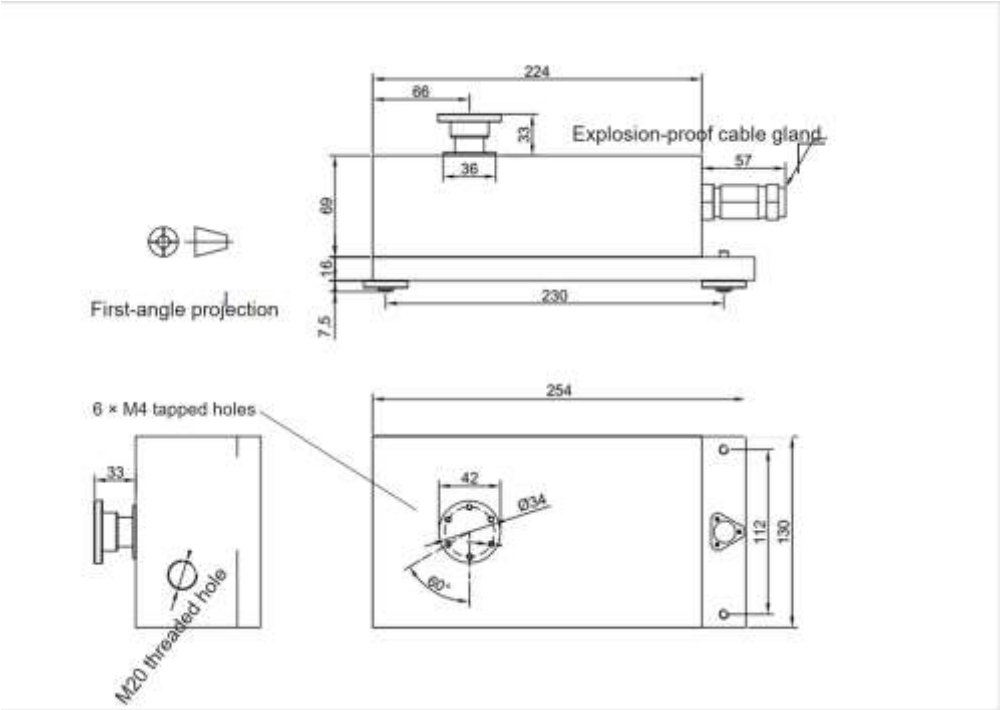
Load receiver
Standard Ø 12 mm receiver with the weighing pan supplied — mount, level and weigh.

Materials & Sealing

Housing	Stainless steel with built-in overload protection
Load receiver	Standard Ø 12 mm receiver, pan supplied
Protection marking	Ex db IIB T6 Gb — flameproof enclosure
Standards	IEC 60079-0 · IEC 60079-1
Data interfaces	DB9 · RS-232 · RS-485
Protocol	SBI (RS-232) and Modbus compatible
Dimensions (L×W×H)	260 × 130 × 118 mm (≤ 620 g models)
Net weight	See nameplate per model

AC 220 V	DC 9 V	+5 – +40 °C	Ex db IIB T6 Gb	24 months
Mains supply	Alternative supply	Operating range	Protection marking	Warranty cover

Dimensions

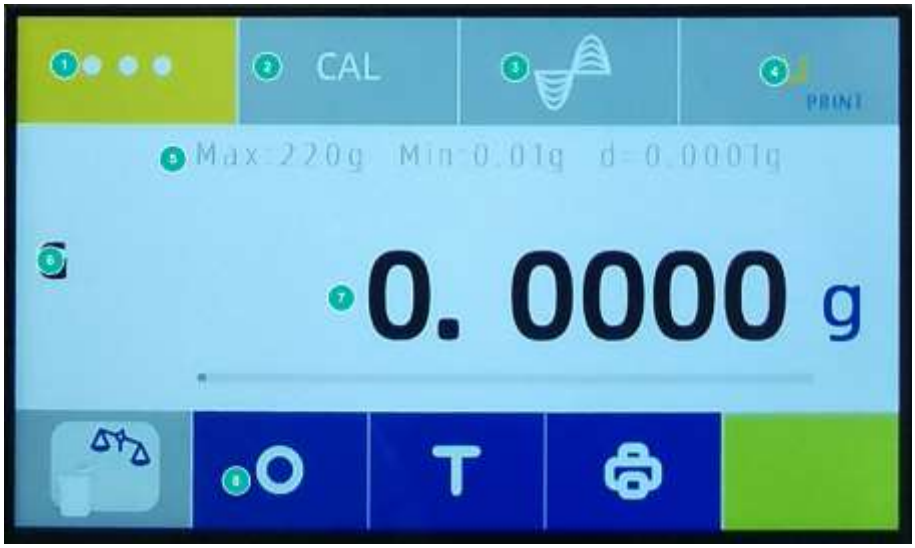


Outline dimensions in mm — first-angle projection. Explosion-proof cable gland on the right side face; M20 threaded entry; six M4 tapped holes on the pan mount (Ø 34 mm bolt circle).

Display & Controls

A sealed touch display — clear at a glance.

Touch display layout



Touch display of the EX-MQ module — ①-⑧ mark the legends explained below.

Touch interface legend

1	Menu (•••)	Opens the function and settings menu.
2	CAL	One-touch shortcut to calibration.
3	Stability indicator	Wave symbol — reading is stable and valid for recording.
4	PRINT	Sends the current reading to a printer or host system.
5	Max / Min / d	Capacity, minimum load and readability of the active model.
6	Unit (G)	Shows the active weighing unit — grams.
7	Weight readout	Large, high-contrast display of the current weight value.
8	Touch keys	Function, zero, tare and print keys on sealed glass.

Weighing data abbreviations

Max	Maximum capacity of the active model — 220 g for the unit pictured.
Min	Minimum load of the active model — 0.01 g for the unit pictured.
d	Readability (digital step) of the active model — 0.0001 g pictured.
G	Active weighing unit — grams.

Keypad legend



Touch display of the EX-MQ module — sealed touch glass with the function, zero, tare and print keys along the bottom.

Key	Function
Function	Balance symbol — opens the function and settings menu.
Zero	O — sets the display to the zero reference.
Tare	T — tares off the container weight.
Print	Printer symbol — sends the reading to a printer or host.
Action key	Green key at right — confirms the selected function.

Sealed by design. All keys are touch-operated on a sealed glass surface — no moving parts, no gaps for dust or vapour ingress, and wipe-clean operation in process areas.

Typical Applications

Specified wherever a spark is not an option.

Chemical & Petrochemical

Solvent, reagent and catalyst weighing in classified areas.

Pharmaceutical

API dispensing, batch formulation and in-process control.

Laboratory & R&D

Sample preparation where flammable solvents are present.

Industrial Process

Ingredient portioning and dosing in dust-hazard areas.

Food & Beverage

Additive dosing and check-weighing on production lines.

Oil, Gas & Energy

Field and plant weighing in Zone 1 and Zone 2 areas.

Reading the Protection Marking

Element	Meaning
Ex	Explosion-protected equipment
db	Flameproof enclosure, to IEC 60079-1
IIB	Gas group IIB — suitable for ethylene atmospheres
T6	Maximum surface temperature ≤ 85 °C
Gb	Equipment protection level Gb — Zone 1 and Zone 2

Certified protection. The flameproof enclosure is approved under explosion-proof certificate **SHExC22.2400** and conforms to **IEC 60079-0** and **IEC 60079-1**.

Specifying your module. Round-pan Ø 40 mm models cover resolutions down to 0.01 mg (31 g – 620 g); the Ø 100 mm class carries the 10 mg models up to 6.2 kg.

Two-Year Warranty

Every EX-MQ module is supplied with a 24-month manufacturer warranty covering parts and workmanship from the date of delivery.

24
MONTHS

Explosion-Proof Electromagnetic Force Weighing Module

EX-MQ Series — certified Ex db IIB T6 Gb

Shenzhen Definition Electric Co., Ltd
www.definitionscale.com

Specifications are typical and subject to change without notice. Verify model, capacity class and approval marking against the instrument nameplate before installation.