MA-1040

Magnetic Analyzer

The Magnetic Analyzer (MA-1040) is useful for detecting minute quantities of iron in a wide range of materials including high-purity glass used for fiber optics to plastics used in wiring insulation. It can also be used to detect low metallic iron levels in food, precious gems, pharmaceuticals, and many other materials. Detecting low levels of iron in raw materials is critical to the outcome of the final product.

MA-1040 Magnetic Analyzer

Particulate Systems' MA-1040 Magnetic Analyzer detects and measures low levels of magnetic iron, nickel or cobalt content in sample materials. Whether it be ultra high-purity glass used in the manufacture of fiber optics or plastic used to produce insulation for electrical wires, knowing the concentration of metallic iron in the raw material is critical to controlling the quality of the finished product.

The first MA-series Magnetic Analyzer was developed to meet the expressed need of the abrasive grain industry, which primarily wanted a highly sensitive and accurate instrument for the detection and quantification of trace quantities of magnetic iron in raw materials. They also needed the device to be easy to use and be able to withstand the harsh environment of a production area.

Since then, the MA-series Magnetic Analyzers have undergone numerous improvements including greater sensitivity (down to ~0.00001% magnetic content), increased accuracy, a smaller footprint, and numerous ease-of-use features. Today, the MA-1040 is also used to detect minuscule levels of magnetic iron in food, precious gems, pharmaceuticals, and many other materials. As evidence of its acceptance in industry, the MA-1040 has been referenced in American National Standards Institute (ANSI) and Abrasive Grain Association bulletins.

Particulate Systems' MA-1040 Magnetic Analyzer incorporates modern electronics and features 0.1 parts-per-million (ppm) resolution, a wide dynamic range, and low power consumption. Other improvements include reduced mechanical pick-up (microphonics) and mu-metal shielding of the sensing coils.

System Concept

The MA-1040 Magnetic Analyzer utilizes two matched air core coils, one as a reference, and the other receives the sample material to be analyzed. The coils are energized with an AC source of 683 Hz to reject stray 50 or 60 Hz line frequencies, a potential interference source always present in an industrial environment. Any imbalance in resonance between the two coils resulting from the presence of magnetic material in the sample will produce a signal of strength proportional to the amount of such material. After synchronous detection, the signal is displayed digitally as percent magnetic content.

All of the MA-1040 Magnetic Analyzer components are enclosed in a small aluminum module designed specifically for housing electrical controls and instruments. The controls are located on top of the enclosure for easy visibility and convenient access. The power switch and the serial port are mounted on the side.

Operation is simple and straightforward. A sample, the weight of which has been entered, is lowered into the center of the sample coil. A digital readout immediately displays the results.

Specifications

Operational

Sample weight:	0.010 – 999 grams
Magnetic Content:	0.1 ppm – 1999.9 ppm

Physical

Height:	16.76 (6.6 in.)
Width:	25.40 cm (10 in.)
Depth:	13.34 cm (5.25 in.)
Weight:	6.8 kg (15 lbs)

Electrical

Voltage:	95 – 250 VAC
Frequency:	50 to 60 Hz

Environment

Temperature:	10 to 45 °C (50 to 113 °F), operating; -10 to 55 °C (14 to 131 °F), non-operating

In keeping with a policy of ongoing product improvement, specifications are subject to change without notice.

Particulate Systems

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