

Thermo Scientific Ramsey Micro-Tech 9104

Loss-in-weight feeder controller

Features

- Designed for continuous or batch loss-in-weight or gain-in-weight applications
- State-of-the-art LCD graphic display with four line display
- Self-diagnostics, alpha numeric alarm messages
- Built-in USB for information upload and download
- Multiple language interface
- Improved communication capabilities including Modbus TCP and Ethernet IP as standard
- Utilizes PID control and PEIC control with two independent control loops
- Easy operation and calibration
- Audit trail
- Alarms and failure detection
- Available in panel-mount and field-mount versions



The Thermo Scientific™ Ramsey™ Micro-Tech 9104 Loss-in-Weight Controller is specifically designed for continuous or batch loss-in-weight or gain-in-weight applications. The Ramsey Micro-Tech 9104 provides easy operation and calibration with large easy-to-read displays, straight-forward, tactile-touch keyboard and software that prompts you step-by-step through the proper set-up and operational procedures.

Thermo Scientific Ramsey Loss-in-Weight Feeder

The continuous loss-in-weight principle involves weighing the entire feeding system (hopper, feeder and bulk material) by means of a static-type scale system, and controlling the discharge feed rate of the bulk material by means of a variable speed motor.

Material is discharged from the system via screw or vibratory tube or tray, with the measured "loss in weight" per unit time (dv/dt) compared to the desired (set) feed rate. The difference between the actual (measured) rate and the desired (set) rate produces a corrective

action by the feed rate controller, the Thermo Scientific Ramsey Micro-Tech 9104, which automatically adjusts the feeder speed, thus maintaining accurate feed rates with no process lag.

When the measured weight in the hopper reaches the hopper low (refill) level, the controller affixes the feed system into volumetric control. The hopper is then quickly recharged (manually or automatically), and the loss-in-weight control action repeats.

In a batch loss-in-weight system, the design is similar to a continuous loss-in-weight system except that the accuracy of the final weight at the end of the feed (batch) cycle is typically more critical than the actual feed rate control. The Ramsey Micro-Tech 9104 controller accomplishes this by providing a high feed rate signal to the variable speed drive for quick filling and then switching to a low feed rate control signal for precise, fine control at the end of the batch.



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Thermo Scientific Ramsey Micro-Tech 9104 Loss-in-Weight Feeder Controller

General Specifications

Material	Field Mount: Reinforced fiberglass housing, NEMA 4X, IP66, dust and watertight Panel Mount: Chromate mild steel chassis, front panel IP65, DIN 43700
Dimensions	Field Mount: 432 mm (17.01 in) x 360 mm (14.18 in) x 167 mm (6.59 in) Panel Mount: 308 mm (12.11 in) x 102 mm (4.00 in) x 202 mm (7.95 in)
Weight	Field Mount: 9 kg (20 lb); Panel Mount: 2.5 kg (5.5 lb)
HMI or Instrument Front	77 mm x 58 mm viewable LCD graphic display for easy reading, continuous backlight for ease of viewing indoors and outdoors; Available menu languages include English, German, Italian and Spanish
Control Modes (standard)	PID: Proportional 5-500 band, Integral 0.01-10.0 min repetition rate, Derivative 0.0-10.0 min repetition rate; Periodic Error Integrating Control (P.E.I.C.): Integral 0.01-10.0 min repetition rate, Delay 1-100 seconds; Two independent control loops: One control feed rate and one for additional device

Environmental Specifications

Storage Temperature	-30°C to +70°C (-22°F to +158°F)
Operating Temperature	-20°C to +60°C (-4°F to +140°F)
Environmental Tolerances	Relative humidity 80% maximum up to +31°C (+88°F) decreasing linearly to 50% at +40°C (+104°F) Altitude up to 2000 m (6,561 ft); Field Mount suitable for outdoor mounting

Electrical Specifications

Nominal Voltage	Field Mount: 100-240 VAC; Panel Mount: 24 VDC +10%, -15% (user supplied)
Nominal Frequency	Field Mount: 50/60 Hz; Panel Mount: 24 VDC only, optional AC module available
Power Consumption	50 VA maximum
Load Cell Excitation Power Supply	5 VDC \pm 10%, 90 mA, minimum load impedance (58 ohms)
Load Cell	Load cell input circuits (2 each); Number: Up to six (6) 350-ohm load cells in parallel; Cable distance: 61 m (200 ft) or less without sense, or 914 m (3000 ft) with sense; Sensitivity: 0.5mV/V to 3.5 mV/V (keyboard selectable); Input Impedance: 1 M-ohm minimum; Maximum Usable Signal: 114% of 3 mV/V; Internal A/D counts: (3 mV/V): 6,440,000, one open collector output for pulse total (default) or alarms
Inputs/Outputs	Includes one solid state DC pulse output open collector for pulse output (default) or alarms, one Analog Input/Output Board (2 inputs/2 outputs)

Communications Specifications

Standard Serial Interface	RS-232C provides support for modem; RS-485, 2- and 4-wire multi-drop
Communication Protocols	Modbus RTU, Allen Bradley DF-1, Siemens
Ethernet	Ethernet/IP and Modbus/TCP
Built-in USB Port	Configuration and data storage

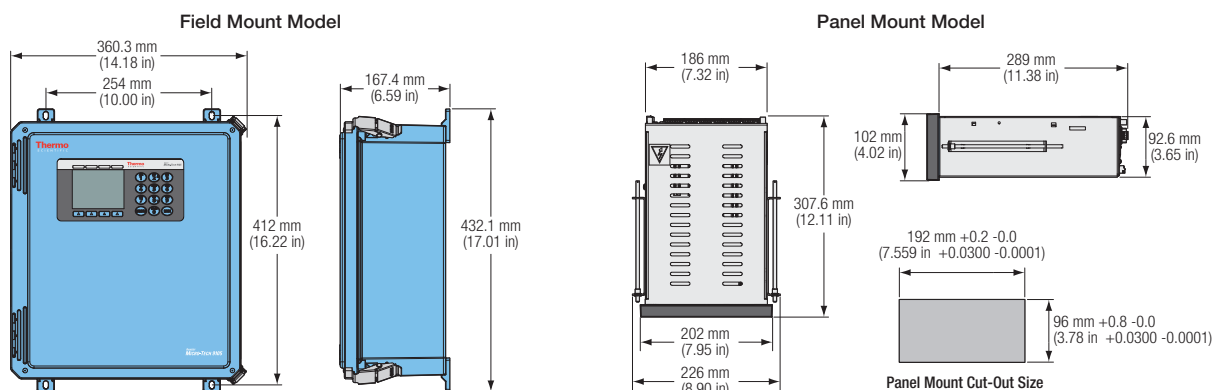
Expansion Options, (4) Slots

Optional 4-20 mA Out Board (0 to 20 mA or +4 to 20 mA); available in single channel or dual channel
Optional Input/Output Expansion Boards:
Relay output board (4 outputs); Opto-22 output board (4 outputs); DC input board (3 inputs); Opto-22 input board (3 inputs)
Optional Digital Input/Output Board (8 inputs/8 outputs)
Optional Analog Input/Output Board (2 inputs/2 outputs).
Profibus Board or Standard Comms Board

Certifications

Approvals	cCSAus, CE
Pending Approvals	SIL-2, Tick Mark, GOST, and additional ATEX classifications

Dimensional drawings for Thermo Scientific Ramsey Micro-Tech 9104 Loss-in Weight feeder controller



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