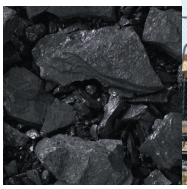
Thermo Scientific Ramsey Series 20

A belt scale system for conveyor weighing of bulk materials

The Thermo Scientific™ Ramsey™ Series 20 belt scale system monitors feed to crushers, mills, screens and other processes with an accuracy of ±0.5%, even in the harshest applications. The Ramsey Series 20 lets you monitor production output and inventory, or regulate product loadout, while providing vital information for the effective management and efficient operation of your business.



Applications

- **Crushing plants**
- **Chemical plants**
- **Asphalt plants**
- **Mines**
- **Cement mills**
- **Coal preparation plants**
- **Paper mills**
- **Gypsum mills**
- **Sand and gravel operations**
- **Coal-fired power plants**
- **Ore benefication processes**
- **Rail loadouts**

Designed for general in-plant belt conveyor weighing applications in the most demanding industrial environments, the Thermo Scientific Ramsey Series 20 belt scale system lets you control feed rates to crushers, mills, screens and other processes with incredible accuracy. It can monitor production output and inventory, or control product loadout, while providing vital information for the management and operation of your business.

The Ramsey Series 20 combines the proven reliability and versatility of the following Thermo Scientific products: Ramsey 10-20 single idler or Ramsey 10-22 dual idler weighbridge and the Ramsey 60-12 belt speed sensor with the advanced electronics in the Ramsey Micro-Tech 9000 series of electronic integrators.

For more information, refer to the separate product specification sheet on the Thermo Scientific Ramsey Micro-Tech series of electronic integrators.

Easy Installation

Easy to install, indoors or out, on fixed or portable conveyors, the rugged construction of the Ramsey Series 20 allows for installation in the harshest applications at a variety of locations.

The Weighbridge

Rigid and rugged, the Thermo Scientific Ramsey 10-20 and 10-22 weighbridges remain permanently aligned within the conveyor frame. This one-piece, drop-in style weighbridge is completely assembled at the factory and is quickly and easily installed and aligned properly on the conveyor. It is designed to provide additional stiffening and support to minimize conveyor deflection.

Both the single and the dual-idler models offer three-point suspension and employ trunnion-type, frictionless pivots. These sealed units are impervious to vibration, moisture and product build-up, which eliminates problems commonly associated with knife edges and bearings.

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Ramsey Series 10-20 Weighbridge

The Ramsey Series 10-20 weighbridge has a slim profile to minimize material build-up, has no moving or wearing parts and utilizes precision strain-gauge load cell(s) applied in tension to guarantee load cell alignment and accuracy. The series 10-20 is available with an optional counterweighted carriage for light belt loading applications or in a two idler or two load cell configuration to accommodate special applications.

Ramsey Micro-Tech 9101 Scale Integrator

The Ramsey Micro-Tech 9101 scale integrator incorporates advanced electronic design for improved performance and serviceability. This fifth-generation electronics enables you to accurately weigh your material and monitor your process.

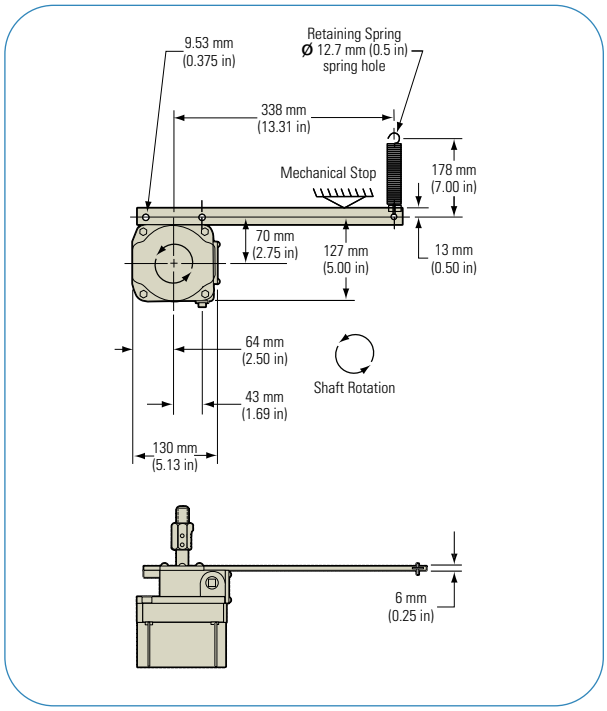
Ramsey 60-12 Belt Speed Sensor

The Thermo Scientific Ramsey 60-12 digital belt speed sensor is the most reliable and accurate speed-sensing device ever developed for belt scale service. Designed with a rugged, cast-aluminum housing suitable for outdoor installations it contains an AC pulse generator that doesn't have any brushes to adjust or replace. Direct-coupling the sensor to the conveyor tail pulley, snubbing roll, or a large diameter return roller ensures an accurate belt-travel readout. No wheels ride on the belt, which eliminates problems related to material build-up and slippage.

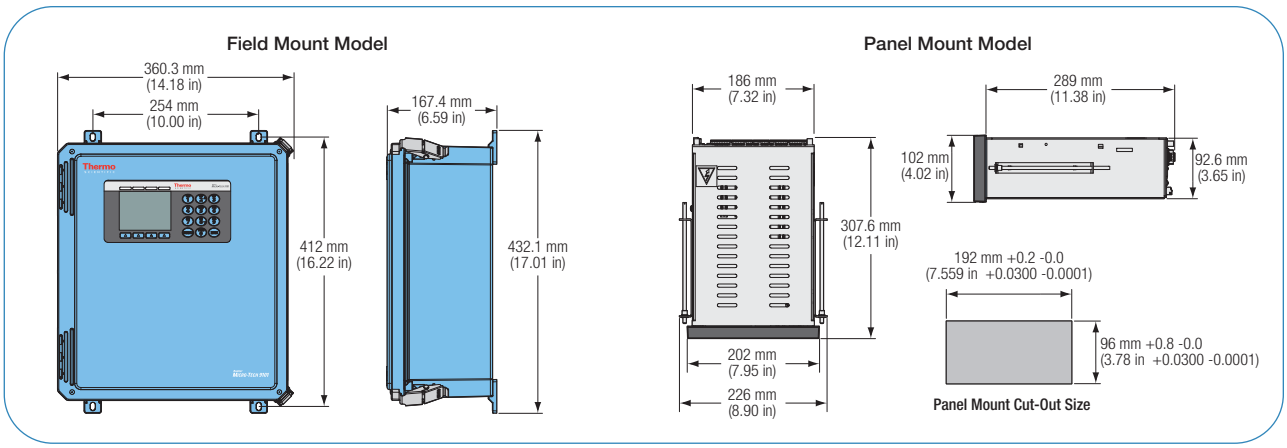
Performance Guarantee

On factory-approved installations, we warrant that the Ramsey Series 20 belt scale system will weigh and totalize to a value within ±0.5% of the test value when calibrated against a known test weight, chain, or our standard electronic calibration.

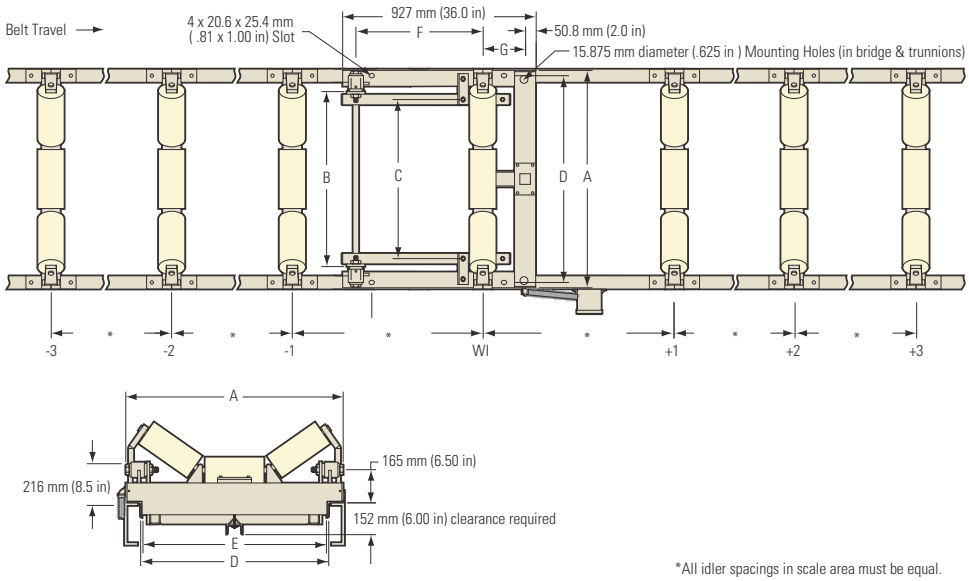
Ramsey 60-12 Speed Sensor



Dimensional drawings for Thermo Scientific Ramsey Micro-Tech 9101 belt conveyor scale integrators



Ramsey 10-20 Single Idler Weighbridge Dimensions



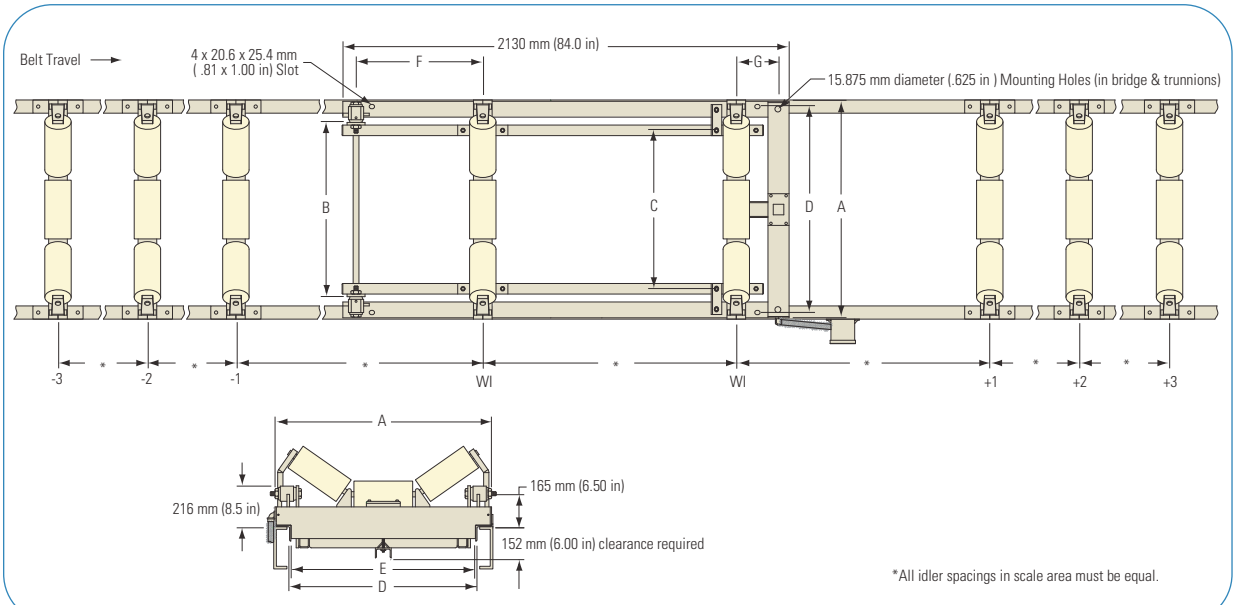
*All idler spacings in scale area must be equal.

Ramsey Series 20 Single Idler Belt Scale — Variable Belt Width Dimensions

BELT WIDTH	LENGTH (in) A	B	C	D	E	F	G
18	29.00	21.00	18.00	27.00	24.00		
20	31.00	23.00	20.00	29.00	26.00		
24	35.00	27.00	24.00	33.00	30.00	24.00	8.00
30	41.00	33.00	30.00	39.00	36.00		
36	47.00	39.00	36.00	45.00	42.00		
42	53.00	45.00	42.00	51.00	48.00		
48	59.00	51.00	48.00	57.00	54.00		
54	65.00	57.00	54.00	63.00	60.00	22.75	9.25
60	71.00	63.00	60.00	69.00	66.00		
72	83.00	75.00	72.00	81.00	78.00		

BELT WIDTH	LENGTH (mm) A	B	C	D	E	F	G
487	737	533	487	686	610		
508	787	584	508	737	660		
610	889	686	610	838	762	610	203
762	1041	838	762	991	914		
914	1194	991	914	1143	1067		
1067	1346	1143	1067	1295	1219		
1219	1499	1295	1219	1448	1372		
1372	1651	1448	1372	1600	1524	578	235
1524	1803	1600	1524	1753	1676		
1829	2108	1905	1829	2057	1981		

Ramsey 10-22 Dual Idler Weighbridge



*All idler spacings in scale area must be equal.

Ramsey Series 20 Dual Idler Belt Scale — Variable Belt Width Dimensions

BELT WIDTH	LENGTH (in) A	B	C	D	E	F	G
18	29.00	21.00	18.00	27.00	24.00		
20	31.00	23.00	20.00	29.00	26.00		
24	35.00	27.00	24.00	33.00	30.00	24.00	8.00
30	41.00	33.00	30.00	39.00	36.00		
36	47.00	39.00	36.00	45.00	42.00		
42	53.00	45.00	42.00	51.00	48.00	22.75	9.25
48	59.00	51.00	48.00	57.00	54.00		

BELT WIDTH	LENGTH (mm) A	B	C	D	E	F	G
487	737	533	487	686	610		
508	787	584	508	737	660		
610	889	686	610	838	762	610	203
762	1041	838	762	991	914		
914	1194	991	914	1143	1067		
1067	1346	1143	1067	1295	1219	578	235
1219	1499	1295	1219	1448	1372		

Thermo Scientific Ramsey Series 20 Belt Scale System

Ramsey 10-20 and 10-22 Weighbridges	
Weigh Span	One or two idler suspension; Weigh spans from 762 mm to 1829 mm (30 in to 72 in)
Weighbridge Design	Unitized assembly consisting of pivoted weigh platform and one support beam that spans the conveyor stringer; Rugged one-piece design stiffens scale's area of conveyor
Weighbridge Construction	Mechanical steel tubing; Conveyor sizes 457 mm to 1829 mm (18 in to 72 in) or 400 mm to 2000 mm (15.75 in to 78.74 in) belt widths as standard
Clearance Requirements	Fits any standard conveyor; No space required above belt line. See plan view drawings for deck plate cutout dimensions
Load Cell	
Quantity	1
Enclosure	Environmentally-protected "S" type cell
Mounting	Tension
Output	3 mV/V ± 0.1%
Non-Linearity	< 0.03% FS
Non-Repeatability	0.01% FS
Hysteresis	< 0.02% FS
Operating Temperature	-54°C to +93°C (-65°F to +200°F)
Temperature Sensitivity	Span 0.0014% FS/°C (0.0008% FS/°F); Zero 0.0027% FS/°C (0.0015% FS/°F)
Overload	Safe to 150% of load cell capacity; Ultimate to 300% FS; Sideload 50% FS
Rating	FM Approved for Class II, Div 1 & 2, Groups E, F & G; NTEP Type III, 5000 divisions; OIML R60
Micro-Tech 9101 Belt Scale Integrator	
Enclosure	Field mount, NEMA-4X fiberglass, IP66, dust and watertight, 432 mm (17 in) x 360 mm (14 in) x 167 mm (6.6 in) Panel mount, chromate mid steel chassis, front panel IP65, DIN 43700, 308 mm (12 in) x 102 mm (4 in) x 202 mm (7.9 in)
Temperature	Operating: -20ºC to +60ºC (-4ºF to +140ºF) Storage: -30ºC to +70ºC (-22ºF to +158ºF)
Power Requirements	Field mount 100-240 VAC, 50/60 Hz Panel mount 24 VDC +10%, -15% (user supplied), 24 VDC only, optional AC module available
Display	77 mm x 58 mm viewable LCD graphic display with status indicator lights for easy reading, continuous backlit for ease of viewing indoors and outdoors, available menu languages include English, German, Italian and Spanish
Load Cell Excitation	5 VDC +/-10%, 90 mA
Communication	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 Slots (5)	Optional boards include 4-20 mA output board, input/output expansion boards, digital or analog input/output boards, Profibus or Standard communication board
Ratings	cCSAus, CE
Ramsey 60-12 Digital Speed Sensor	
Type	Digital, brushless
Mounting	Direct to 15.88 mm (0.625 in) diameter stub shaft on tail pulley, bend pulley, or return roll
Housing	Weather-tight, epoxy finish, cast aluminum
Mounting Hardware	Supplied with coupling, restraint arm and restraint spring
Shipping Weight	3.6 kg (8 lb)

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