

# TSR4000

automatic rail weighing instrumentation



The TSR4000 is a digital weight indicator specifically designed for dynamic rail weighing. It can be used in conjunction with conventional load cell weighbridges or with Weighline\* transducers ('in-track' weighbridge).

## Principal Features

The main features of the indicator are:

- Automatic Operation
- 16 Independent Weight Processing Channels
- Weighing Speeds from 0 to 110km/h
- Simple User Interface comprising liquid crystal display and a 25 way membrane keypad
- Printer and Communications Ports
- Simple to Maintain and Service
- Highly configurable
- Extensive diagnostics
- Conforms to OIML R106 Requirements



## Technical Specification

### Weighing Characteristics

<b>Modes:</b>	Automatic Semi Automatic Manual
<b>Control:</b>	Local Remote
<b>Direction:</b>	Uni-directional Bi-directional
<b>Speed:</b>	0 to 110km/h (depending on application and desired accuracy class)
<b>Train consist size:</b>	999 vehicles maximum
<b>Accuracy Classes:</b>	0.2, 0.5, 1 & 2 Wagon 0.2, 0.5, 1 & 2 Train
<b>Alarms:</b>	Overspeed (programmed to suit application)  Overcapacity (programmed to suit application)
<b>Units:</b>	Tons (T) Tonne (t) Kilogram (kg) Pounds (lb)

### Weighing Functions

<b>Direction of travel:</b>	Automatically selected, displayed and printed
<b>Speed of weighing:</b>	Individual wagons, Max and Min train speed
<b>Wagon sequential number:</b>	Displayed and printed
<b>Wagon weight:</b>	Displayed and printed
<b>Total train weight:</b>	Printed
<b>Wheel weight:</b>	Printed (optional)
<b>Axle weight:</b>	Printed (optional)
<b>Bogie weight:</b>	Printed (optional)
<b>Overspeed indicator:</b>	Displayed and printed
<b>Overload indicator:</b>	Printed (optional)
<b>Imbalance indicator:</b>	Side to side - printed (optional) End to end - printed (optional)

### Data Display

<b>Type:</b>	Liquid Crystal (Backlight)
<b>Viewing area:</b>	115 x 90 mm
<b>Character Sizes:</b>	
Control characters -	3 mm
Weight data -	12.5 mm

### Keypad

<b>Type:</b>	Embossed and with tactile feedback
<b>No of Switches:</b>	25
<b>Functions:</b>	Numeric 0 to 9 Function F1 to F5 Start Weigh      Enter (E) End Weigh        Shift Abort Weigh     Print Mode Select     Alarm Acknowledge Display Test     Cancel (C)

### Physical Characteristics

<b>Desk Mounted Unit</b>	Width	520 mm
<b>Dimensions:</b>	Depth	500 mm
	Height	180 mm
	<b>Net Dimensions:</b>	Width
	Depth	460 mm
	Height	180 mm
<b>Weight:</b>	Gross	10.5 kg
<b>Enclosure Types:</b>	Desk	
	Rack	
<b>Mountings:</b>	Slide Runners	

## Site Configurability

<b>Parameters configurable:</b>	Transducer channel allocating Transducer excitation voltage A - D sampling rate Memory space Printer port Communications port Data transmission characteristics Vehicle type data Wheel sensor position data Speed measurement sensors Overspeed limit Overcapacity limit Overload limit
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## Calibration

<b>Mode:</b>	By front panel keyboard
<b>Functions:</b>	Transducer/weighbridge static calibration Dynamic calibration IN-direction Dynamic calibration OUT-direction

## Diagnostics

<b>Modes:</b>	Automatic at programmable intervals On demand
<b>Functions:</b>	Memory check Analog power supplies Transducer voltage Analog span check Transducer shunt calibration Zero drift Wheel sensors
<b>Printouts:</b>	Diagnostic configuration 90 day event diary 90 day diagnostic check diary Wheel sensor & Transducer Operations Report Wheel sensor Trace

## Analogue

<b>No. of Channels:</b>	4 standard 16 maximum
<b>Transducer types:</b>	Weighline Load cells
<b>Amplification:</b>	Pre amplifier with variable gain to suit transducer
<b>Filtering:</b>	Amplifier input single pole RC Amplifier output 3 pole active
<b>Analog-digital conversion:</b>	Successive approximation
<b>Aggregate sampling rate:</b>	200,000 samples/second
<b>Transducer excitation:</b>	24 Volt

## Temperature Sensing

<b>No of channels</b>	2
<b>Type of sensing:</b>	Linear voltage
<b>Sensing Sensitivity:</b>	10 mV/°C
<b>Sensing Range</b>	-50°C to +100°C

## Digital Input - Output

<b>Wheel sensor inputs:</b>	16 (optically isolated)
<b>Control function inputs:</b>	4 (optically isolated)
<b>Status function outputs:</b>	4 (optically isolated)
<b>Isolation potential:</b>	3kV

## Wheel Sensor

<b>Types:</b>	Mechanical treadle Inductive proximity Photo electric
<b>Excitation supply:</b>	15 volts, 0.2 amperes

## Connectivity

<b>No of Serial Ports:</b>	2
<b>No of Parallel Ports:</b>	1
<b>Serial Port Type:</b>	RS232 or RS422 - Jumper Selectable
<b>Parallel Port Type:</b>	Printer (Centronics)

## Computer Interface

<b>Interface type:</b>	RS232C or RS422
<b>Data protocols:</b>	Enquiry (standard) Asis (optional) Eureka (optional)
<b>Protocol messages:</b>	Transducer weight Wheel weight Vehicle weight Train weight Status Train start Train end

## Power Requirements

<b>Voltage:</b>	115 or 230 +10% Vac
<b>Frequency:</b>	50 - 60 Hz
<b>Power:</b>	40 VA

## Environmental

<b>Operating Temperature:</b>	- 10°C to + 40°C
<b>Storage Temperature:</b>	0°C to + 80°C
<b>Humidity Operating:</b>	10 to 90%
<b>Humidity Storage:</b>	10 to 90%
<b>IP Rating:</b>	20

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Your local distributor:

Railweight is a trading name of Avery Weigh-Tronix



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