TSR4000

advanced train weighing systems

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 IndependentWeight 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

Modes:	Automatic Semi Automatic Manual
Control:	Local Remote
Direction:	Uni-directional Bi-directional
Speed:	0 to 110km/h (depending on application and desired accuracy class)
Train consist size:	999 vehicles maximum
Accuracy Classes: (OIML R106)	0.2, 0.5, 1 & 2Wagon 0.2, 0.5, 1 & 2 Train
Alarms:	Overspeed (programmed to suit application)
	Overcapacity (programmed to suit application)
Units:	Tons (T) Tonne (t) Kilogram (kg) Pounds (lb)

Weighing Functions

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

Data Display

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

Keypad

Type:	Embossed and with tactile feedback
No of switches:	25
Function:	Numeric 0 to 9 Function F1 to F5 StartWeigh Enter (E) EndWeigh Shift AbortWeigh Print Mode Select Alarm Acknowledge Display Test Cancel (C)

Physical Characteristics

Desk Mounted Unit	Width 520 mm
Dimensions:	Depth 500 mm Height 180 mm
Net Dimensions:	Width 484 mm Depth 460 mm Height 180 mm
Weight:	Gross 10.5 kg
Enclosure Types:	Desk Rack
Mountings:	Slide Runners

RAILWEIGHT

Site Configurability

Parameters configurable:	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

Calibration

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

Diagnostics

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

Analogue

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

Physical Characteristics

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

Digital Input

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

Wheel Sensor

Types:	Mechanical treadle Inductive proximity Photo electric
Excitation supply:	15 volts, 0.2 amperes

Connectivity

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

Computer Interface

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

Power Requirements

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

Environmental

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

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