MR3000TR

Traffic and Railways

The MR3000TR is dedicated to the monitoring of vibration induced by traffic and railways.

It is directly derived from the MR3000C and its primary characteristics are:

- 1 trigger input to start the measure with an external trigger
- 2 relay outputs for the connection to external devices

In the standard configuration, the MR3000TR is equipped with a 4G module and three external uniaxial velocity sensors.

Market Segments

- Traffic monitoring
- Construction sites
- Railway monitoring
- Mining/blasting

BARTEC SYSCOM

MR3000TR Traffic and Railways

The MR3000TR is a product developed specifically for the monitoring of vibration induced by traffic and railways. The MR3000TR is based on the MR3000C, and in addition it features a hardware trigger input and two relay outputs. This allows the user to

- trigger at any time, without using the Web User Interface
- connect external devices to have immediate information/alarms related to vibration levels.

The MR3000TR can be delivered with an internal or an external triaxial velocity sensor MS2003+, or with three external uniaxial velocity sensors MS2003+, solution dedicated to the traffic and railway measurements.

Major features

- 2 relay outputs
- 1 hardware trigger input
- Wireless connectivity
- Embedded 4G module
- Embedded Web Server for easy configuration and control
- Removable SD Card Memory
- Absolute time reference (GPS)
- Power over Ethernet (PoE)
- Velocity sensors with wide dynamic range

MR3000TR set for traffic/railway measurements

Front view of the MR3000TR

Data acquisition

Principle	4th order delta-sigma ADC per channel
Resolution	24 bit
Sampling-rate	50, 100, 200, 400, 500, 800, 1'000, 2'000 sps, others on request
Number of channels	3

Dimensions

Housing	Aluminum, 120 x 180 x 100 mm
Weight	1.5 kg
Protection degree	IP 65 (splash-proof)

Sensor

Sensor type	Velocity sensor with linearized frequency response A3HV 315/1 (triaxial) (according to DIN 45669)
Principle	Geophone
Number of axes	3, in different configurations – One internal triaxial sensor – One external triaxial sensor – Three external uniaxial sensors (recommended for traffic/railway surveys)
Measuring range full scale	± 100 mm/s
Frequency range	1 - 350 Hz (linear ±10% frequency response)
Case-to-coil motion	4 mm p-p
Dynamic range	> 130 dB
Linearity/Phase	According to DIN 45669 (class 1)
Cross axis sensitivity	According to DIN 45669 (<5%)

External MS2003+ triaxial

Dimensions	122 x 120 x 80 mm
Weight	1.55 kg
Connector	Metallic self-latching push - pull connector
Accessories	Mounting platform with levelling screws - weight: 1.9 kg

External MS2003+ single axis (horizontal or vertical)

Dimensions	80 x 75 x 57 mm
Weight	0.45 kg
Connection	3 m interconnection cable with metallic, self-latching push-pull connector
Accessories	Junction box (input for 3 single axis sensors, output like triaxial sensor) and extension lead

Trigger input

Principle	Digital Hardware trigger

Mobile connectivity

Mobile Network	Internal 4G modem, fallback 3G/2G

Relay outputs

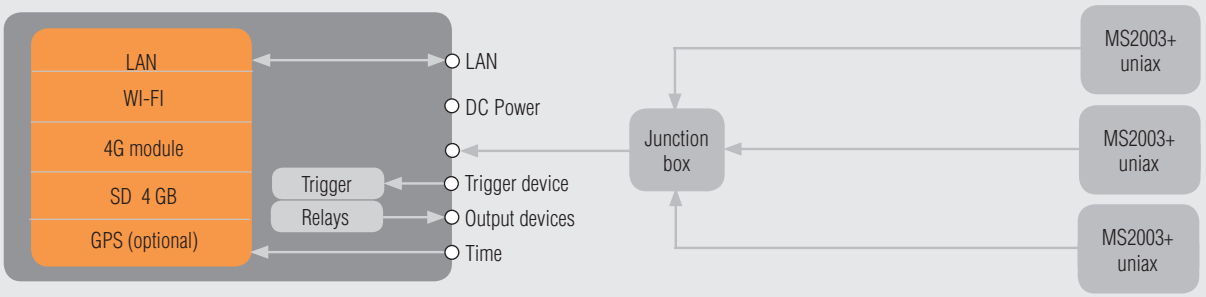
Configuration	2 output configurable relays, No/Nc
Current	2 A, 30 V DC
Alarms for relays	Multiple level triggers (individually settable for each axis)
Alarm range	0.1 % to 100% full scale

Optional alarm box

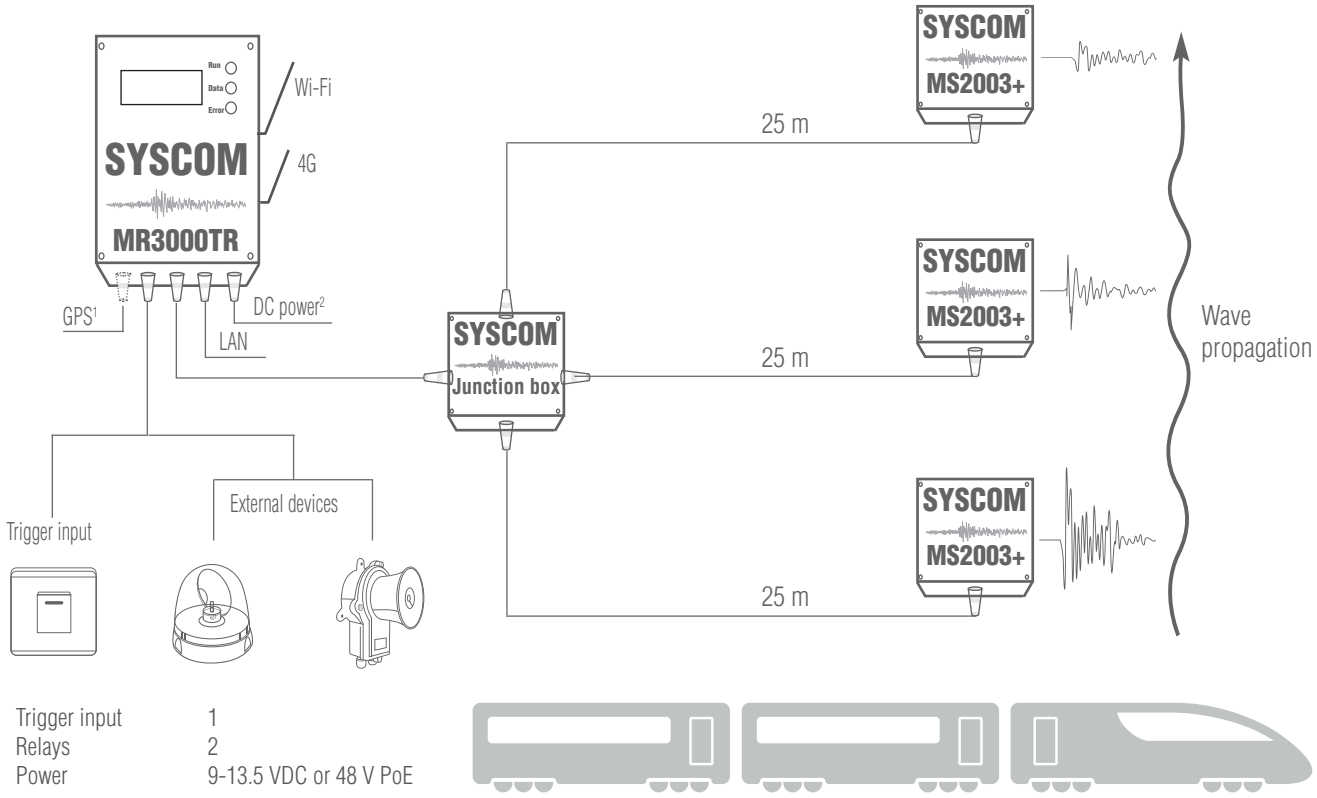
Input voltage	115-230 V
Maximum input current	5 A
Protection degree	IP 65 (splash-proof)

Please refer to the datasheet of MR3000C for all the other technical details.

Block diagram MR3000TR



Wiring diagram and typical installation



Trigger input	1
Relays	2
Power	9-13.5 VDC or 48 V PoE

[1] kit on request

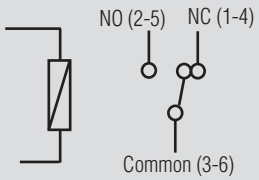
[2] an external battery is available (PN: 14100007)

Relays/trigger cable

Relays/trigger cable 81000580+

Signal name	Number	Colour
Relay1 NC	1	Red
Relay1 NO	2	Blue
Relay1 COM	3	Pink
Relay2 NC	4	Grey
Relay2 NO	5	Yellow
Relay2 COM	6	Green
Trigger	7	Brown
GND	8	White

Relays



Ordering information

Description	Part number	Internal triaxial sensor	External triaxial sensor	External uniaxial sensors	Sensor connecting cable
MR3000TR kits Example: **93106031-A-EU**					
Kits MR3000TR with: MR3000TR recorder - 4GB Memory - WiFi - Ethernet connectivity - Embedded web server for configuration and control - Internal 4G module - 3 m Ethernet cable - 3 m relay alarm cable for hardware trigger input and for 2 relay outputs - Battery pack with internal AC/DC & cable to MR - External AC/DC converter - Carrying case for MR3000TR/battery					
Internal triax: Internal triaxial velocity sensor - Horizontal mounting - MR3000TR mounting plate	93106034	x			
External triax: External triaxial velocity sensors MS2003+ - Sensor connecting cable - Sensor mounting plate	93106031		x		x
External 3 x uniax: 3 x external vertical uniaxial velocity sensors MS2003+ - Junction box with sensor connecting cable for 3x sensors - 3x 25 m extension cable - 3x sensor mounting plates - carrying case for external sensors	93106031			x	x
4G module for Europe, Middle East, Africa and Asia	A				
4G module for North America	B				
4G module for Australia, New Zealand and South America	C				
Cables to Swiss power grid	CH				
Cables to European power grid	EU				
Cables to US power grid	US				

Accessories for traffic/railways measurements (P/N 93111097)

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