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 GPRS module and three external uniaxial velocity sensors.

Market Segments

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

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 GPRS 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	Multi-Band UMTS / HSDPA / WCDMA / GSM / GPRS / EDGE

Relay outputs

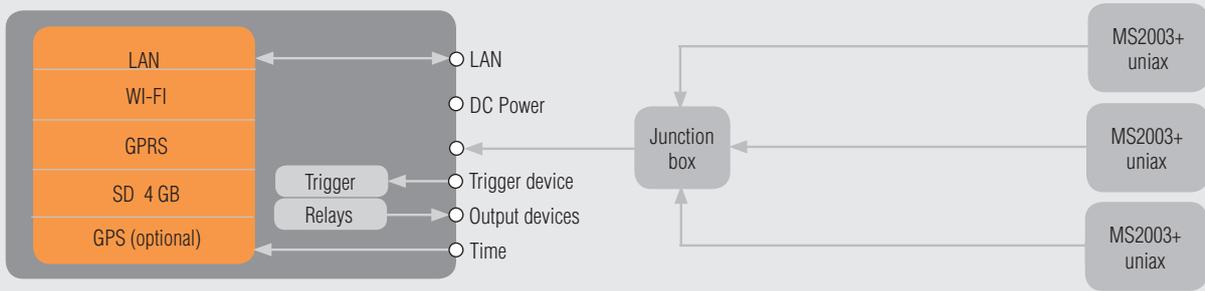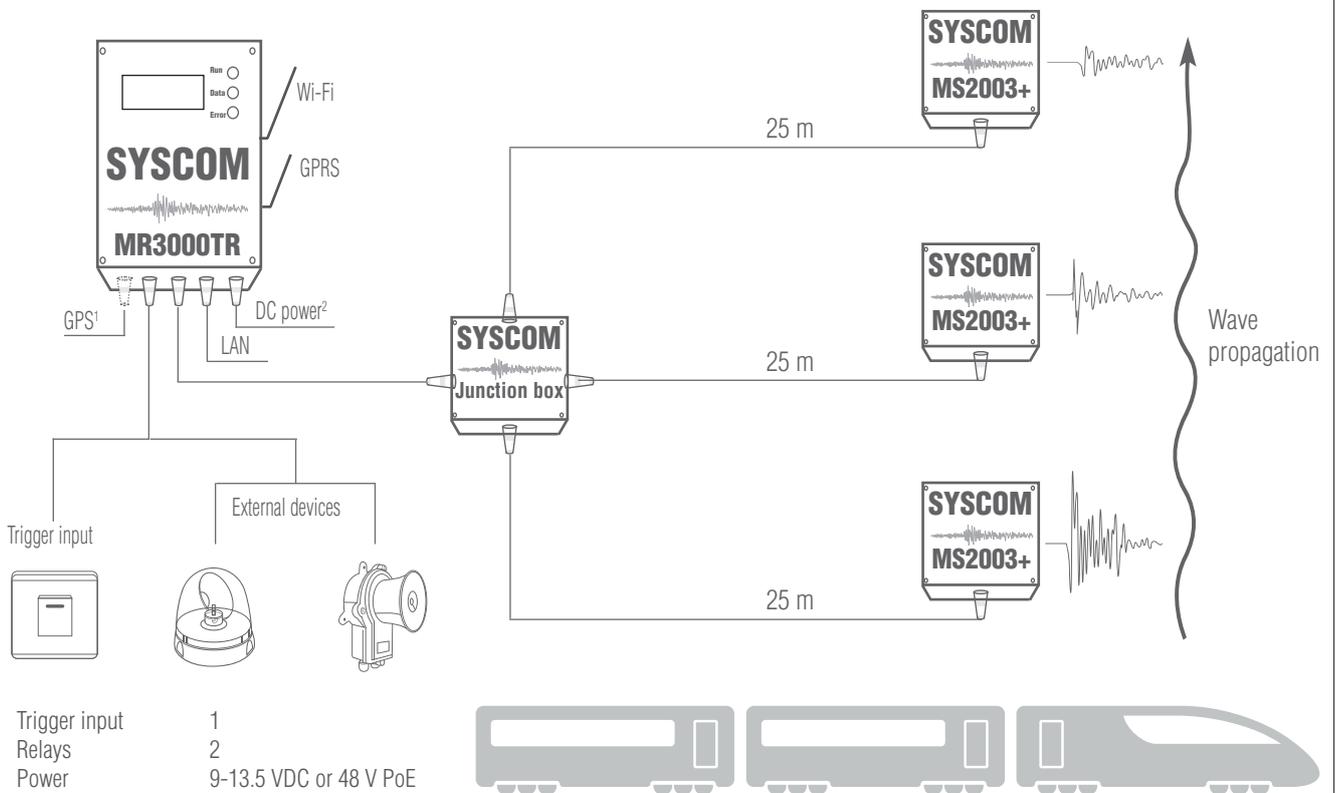|	
Configuration	2 output configurable relays, No/Nc
Current	2 A, 30 V DC
Alarms for relays	Multiple level triggers (individually settable for each axis)
Alarm range	0.1 % to 100% full scale

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

LAN	LAN
WI-FI	DC Power
GPRS	
SD 4 GB	Trigger device
GPS (optional)	Output devices
Trigger / Relays	Time

Junction box — MS2003+ uniax (×3)

Wiring diagram and typical installation

SYSCOM MR3000TR
- Run
- Data
- Error
- Wi-Fi
- GPRS

GPS[1]
LAN
DC power[2]

SYSCOM Junction box

25 m — SYSCOM MS2003+
25 m — SYSCOM MS2003+
25 m — SYSCOM MS2003+

Wave propagation

Trigger input

External devices

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

NO (2-5) NC (1-4)

Common (3-6)

BARTEC SYSCOM
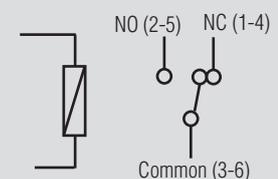
Ordering information

MR3000TR - 4GB Memory - 3 channels - WiFi - Ethernet connectivity - GPRS module - Embedded web server for configuration and control - 3 m Ethernet cable

Description	Part number	Battery pack[1] with internal AC/DC & cable[2] to MR 14100007[1] 81000527[2]	External AC/DC converter 87000268	Carrying case 74710112	Relay alarm cable, 3 m 81000580+	Sensor connecting cable 81010006
MR3000TR main units						
MR3000TR main units with internal triaxial velocity sensor	93106034	x	x	x	x	
MR3000TR main unit with 3 external uniaxial velocity sensors (vertical sensors)	93106031	x	x	x	x	x
MR3000TR units without accessories						
MR3000TR, with internal velocity sensor and mounting plate	14101029					
MR3000TR, configured for external velocity sensor, without sensor	14101031					
Accessories						
MS2003+ 3 x uniaxial external velocity sensor (3 vertical) with 3 x mounting plate, 3 x 25 m extension cable, junction box and carrying case	93111097					
Relay alarm cable, 3 m	81000580+				x	
Sensor connecting cable for external MS2003+	81010006					x
Uniaxial sensor cable extension 25 m	81000144					
Alarm box for MR3000TR	14100200					
Other accessories		Please refer to MR3000C datasheet				

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

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