

# MR3003TR

## Traffic and Railways



The MR3003TR is dedicated to the monitoring of vibration induced by traffic and railways.

It is directly derived from the MR3003C 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 MR3003TR is equipped with a 4G module and three external uniaxial velocity sensors.

### Market Segments

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

## MR3003TR Traffic and Railways

The MR3003TR is a product developed specifically for the monitoring of vibration induced by traffic and railways. The MR3003TR is based on the MR3003C, 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/alerts related to vibration levels.

The MR3003TR 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



Front view of the MR3003TR

### Data acquisition

<b>Principle</b>	4 <sup>th</sup> order delta-sigma ADC per channel
<b>Resolution</b>	24 bits
<b>Sampling-rate</b>	250, 500, 1'000, 2'000, 4'000 sps
<b>Number of channels</b>	3

### Dimensions

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

### Sensor

<b>Sensor type</b>	Velocity sensor with linearized frequency response A3HV 315/1 (triaxial) (according to DIN 45669)
<b>Principle</b>	Geophone
<b>Number of axes</b>	3, in different configurations <ul style="list-style-type: none"> <li>- One internal triaxial sensor</li> <li>- One external triaxial sensor</li> <li>- Three external uniaxial sensors (recommended for traffic/railway surveys)</li> </ul>
<b>Measuring range full scale</b>	± 100 mm/s
<b>Frequency range</b>	1 - 350 Hz (linear ±10% frequency response)
<b>Case-to-coil motion</b>	4 mm p-p
<b>Dynamic range</b>	> 130 dB
<b>Linearity/Phase</b>	According to DIN 45669 (class 1)
<b>Cross axis sensitivity</b>	According to DIN 45669 (<5%)

### External MS2003+ triaxial

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

### External MS2003+ single axis (horizontal or vertical)

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

### Trigger input

<b>Principle</b>	Digital Hardware trigger
------------------	--------------------------

### Mobile connectivity

<b>Mobile Network</b>	Internal 4G modem, fallback 3G/2G
-----------------------	-----------------------------------

### Relay outputs

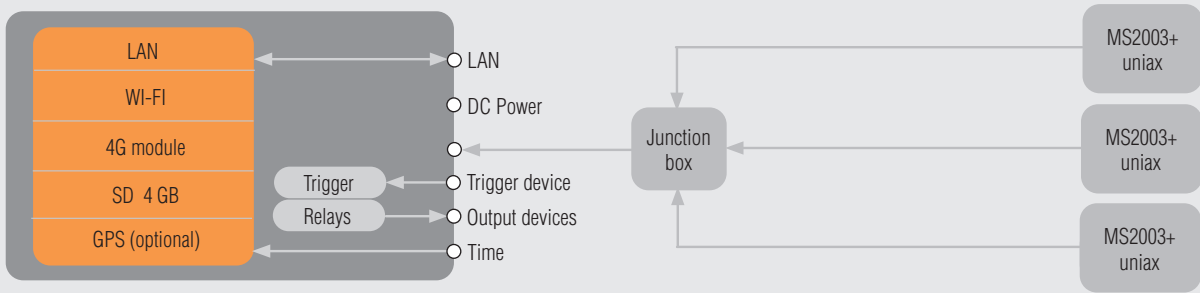
<b>Configuration</b>	2 output configurable relays, No/Nc
<b>Current</b>	2 A, 30 V DC
<b>Alarms for relays</b>	Multiple level triggers (individually settable for each axis)
<b>Alarm range</b>	0.1 % to 100% full scale

### Optional alarm box

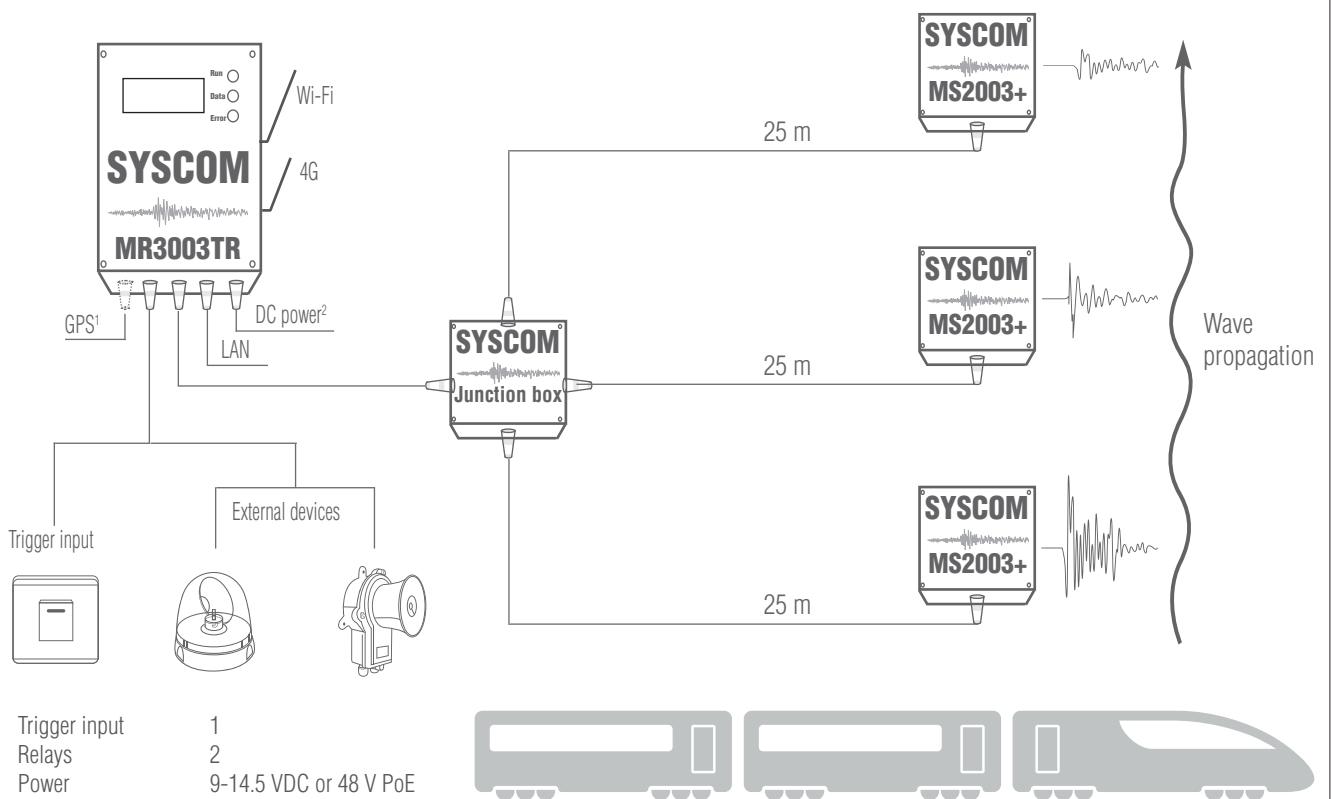
<b>Input voltage</b>	115-230 V
<b>Maximum input current</b>	5 A
<b>Protection degree</b>	IP 65 (splash-proof)

Please refer to the datasheet of MR3003C for all the other technical details.

## Block diagram MR3003TR



## Wiring diagram and typical installation

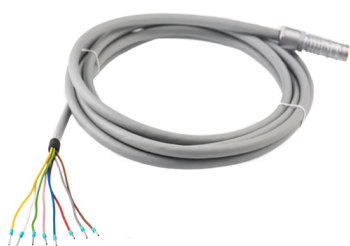


- Trigger input 1
- Relays 2
- Power 9-14.5 VDC or 48 V PoE

<sup>1</sup> kit on request

<sup>2</sup> an external battery is available (PN: 14100007)

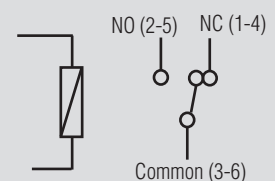
## Relays/trigger cable



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
<b>MR3003TR kits</b> Example: <b>93106334-A-EU</b>					
<b>Kits MR3003TR with:</b> MR3003TR 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 MR3003TR/battery					
<b>Internal triax:</b> Internal triaxial velocity sensor - Horizontal mounting - MR3003TR mounting plate	93106334	x			
<b>External triax:</b> External triaxial velocity sensors MS2003+ - Sensor connecting cable - Sensor mounting plate	93106335		x		x
<b>External 3 x uniax:</b> 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	93106331			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)

### SYSCOM Instruments SA

Rue de l'Industrie 21  
1450 Sainte-Croix  
SWITZERLAND

T. +41 (0) 24 455 44 11  
F. +41 (0) 24 454 45 60

www.syscom.com  
 SCS scs.syscom-instruments.com  
 info@syscom-instruments.com