

# NMG2

## Stop-Time Measuring System



### Processor Controlled Measuring System for Machine Safety Measurements according to DIN EN 99

- Portable and solid equipment, built-in matrix printer
- Free adjustable stop point
- Standstill detection down to  $v < 1$  mm/s
- Measurement of maximum velocity
- Measurement of velocity at stop point
- ISO9000 calibration certificate
- Traceability of measurement values
- RS-232 interface for PC connection
- Fast set-up time
- Actuator to release no-touch safety equipment as option

Specifications	Measurement Function Stop-Time	
	Measurement Range	0 ... 5000 ms
	Resolution	1 ms
	Accuracy of Time Base	0.5 ms -0,05 %
	Stability of Time Base (Temperature)	±50 ppm / K
	Relay Compensation	Time delay of release contact will be compensated at every measurement
	Standstill Detection	$v < 10$ mm/s
	Measurement Function Position	
	Measurement Range	0 ... +2500 mm (Standard) -9999 ... +9999 mm (Maximum) Sensor Measurement Range up to 30000 mm
	Determination of Stop Point	-9999 ... 9999 mm
	Resolution of Measuring Device	1 mm (with Printer Option: 0.1 mm)
	Resolution of Sensor	25 µm
	Accuracy	±0.05 % Full Scale ±1 Digit
	Influence of Temperature	±0.005 % Full Scale / K
	Measurement Function Velocity	
Measurement Range	-9999 ... +9999 mm/s	
Resolution	2,5 mm/s	
Accuracy	±2,5 mm/s	

Printer Material	Printer Paper, 1 roll	
		NMG2-DP
	Printer Ribbon, 1 piece	
	NMG2-DF	

Order Code NMG2

NMG2 - 2500

Model Name

Option Printer

P = Built-in matrix printer

Delivery of the NMG2 complete with sensor WS2.1, magnetic clamp and connector cables.

Order Example: NMG2 - 2500 - P

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## Stop-Time Measuring System



Specifications	General	
	Displays	2 x 4 Digit LED with Sign
	Trigger Output	Logic Signal 5 V, H → L at Stop-Point
	Stop Contact	NC / NO, 230 V AC / 5 A
	Fuse Protection of Stop Circuit	5 A slow-blow
	Supply Voltage	230 V AC
	Power Consumption	30 W max.
	Dimensions	425 x 325 x 205 mm
	Weight	10.5 kg incl. Case
	Operation Temperature	0 °C ... 40 °C
	Humidity	80 % R.H. max., non condensing
Immunity to Interference (EMC)	According to IEC 1000-4-2, 3, 4	

### Introduction

The NMG2 is designed to measure stop time, stop distance and velocity of power driven machinery like presses or punches. In accordance with national and international safety standards machines with dangerous movements have to be equipped with protection devices. The improper placement of a protection device (2-hand control, safety light curtain and so on) will result in the potential for injury of the operator. With the NMG2 all the important measurement values such as stop-time, stop-distance and velocity are provided to calculate the minimum safety distance. The safety distance is defined in national and international standards like DIN EN999. To ensure maximum safety the stop-time measurements have to be repeated periodically (6 months).

### Operating Principle

The measuring cable of the WS Position Sensor will be connected to the moving part of the machine with a magnetic device or a fixing screw. The Sensor sends an incremental pulse signal to the microprocessor controlled counter. The stop position can be selected by a digital encoder. If the position signal passes through the determined stop position in the selected direction a galvanic isolated contact will cause the stop of the machine and the stop-time measurement will be started. The position measurement values will be recorded until the machine has stopped completely. The two displays of the measuring device will show the measurement values of stop-time and distance. By pressing a button the velocity at the stop position can be displayed. A measurement protocol will be printed.

A velocity measurement can be made to locate the position of the maximum velocity, because the stop point should be located at this position. This measurement will determine the maximum velocity of the machine and its position.

The NMG2 can be used as a comfortable position and velocity measurement system in different applications. The measurement values can be transmitted to a PC or a Laptop via the RS-232 interface and processed with any software. Additionally an actuator can be controlled to interrupt a safety light curtain, so that it is not necessary to insert the relay contact into the machine circuit.

### Safety Distance

The minimum safety distance for 2-hand guards or safety light curtains is calculated as a product of the machine stop-time and a determined maximum hand speed. The definition for the maximum hand speed differs from country to country. The actual valid safety regulations (for example EN999) have to be regarded. The stop-time measurement must be made at the worst conditions of the machine to determine the maximum stop-time and the correct safety distance.