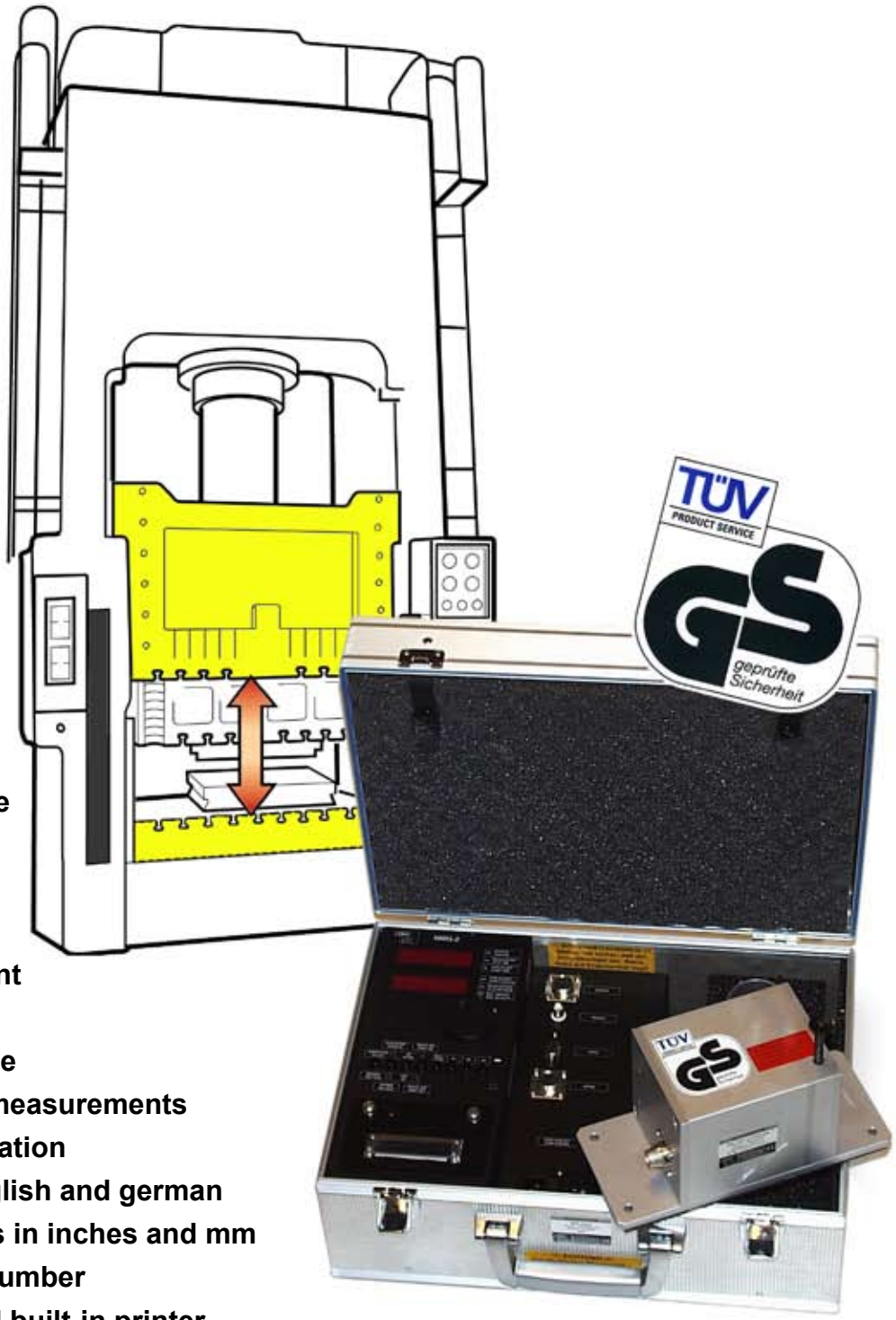
Stop-Time Measuring System NMG2



- A quick-to-use instrument in a carrying case
- Very solid, for industrial environments
- TÜV/GS certification
- Calculation and documentation of the safety distance according to ISO 13855 (EN999)
- Velocity measurement
- Traceable ISO9001 Calibration Certificate
- Automatic multiple measurements with statistical evaluation
- User interface in english and german
- Measurement results in inches and mm
- Input of a machine number
- RS-232 interface and built-in printer
- PC software for movement analysis
- Actuator to release light curtains
- Integrated memory for protocol and measurement values
- Sensors for all kinds of applications

NMG2
Stop-Time Measuring System

Measuring system for machine safety measurements according EN ISO 13855

- **Solid case equipment, built-in matrix printer**
- **Standstill detection down to v<1 mm/s**
- **Velocity measurement**
- **Calculation of the safety distance**
- **ISO9001 calibration certificate**
- **Traceability of measurement values**
- **RS-232 interface for data transmission**
- **Quick ready for use**
- **Actuator to release light curtains**

Introduction

The NMG2 is designed to measure stop time, stop distance and velocity of power driven machinery like presses, robots and other machines with user access. 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 EN ISO 13855 (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. Additional 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

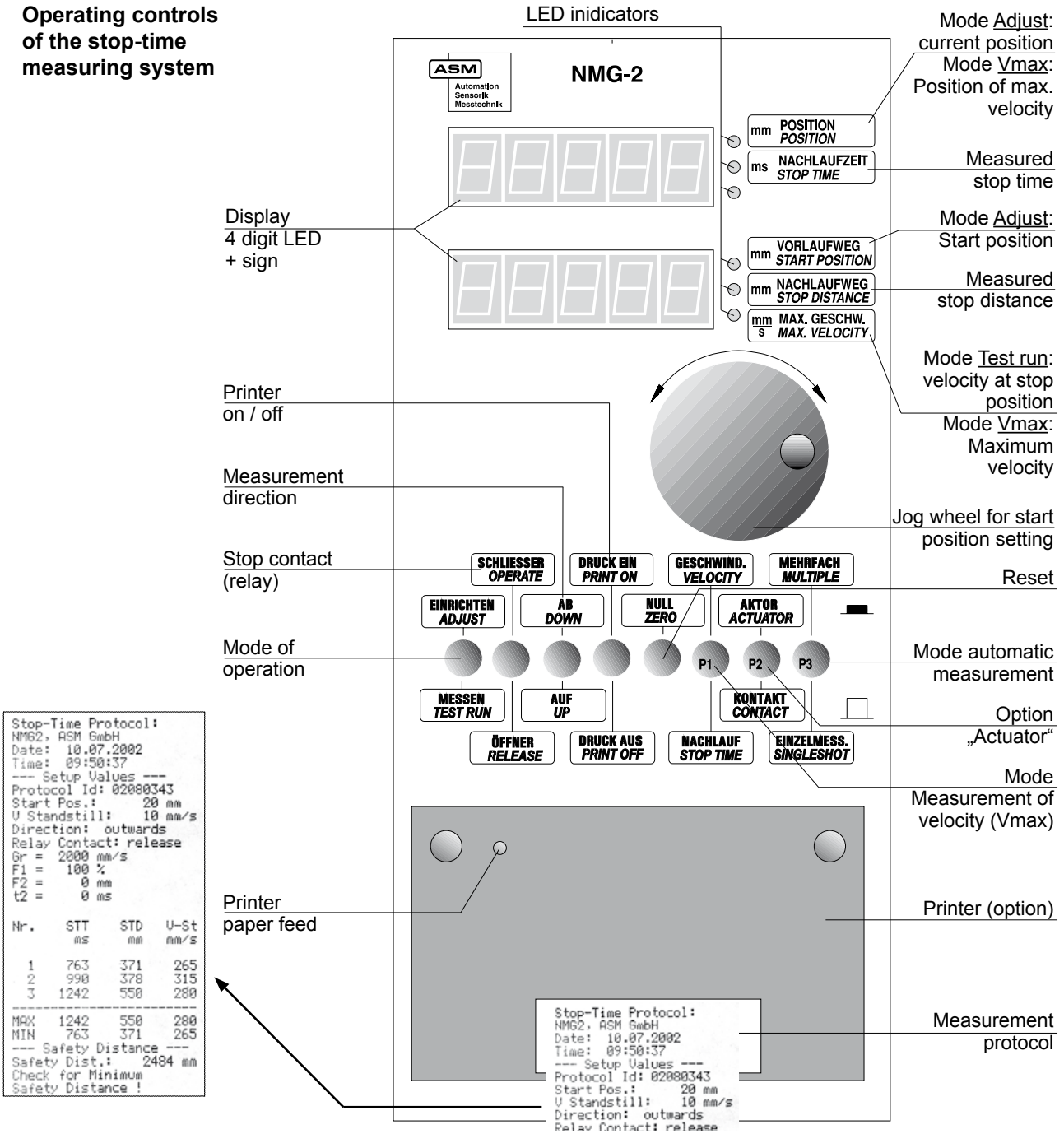
The minimum safety distance for 2-hand guards or safety light curtains is calculated as a product of the machine stop-time and a determined maximum hand speed. The definition for the maximum hand speed differs from country to country. The actual valid safety regulations (for example ISO 13855, EN999) 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.

NMG2
Stop-Time Measuring System

Suitable sensors for NMG2	WS2.1-2500-10-PP530-NMG	Standard sensor up to 2500 mm Measurement range
	WS10-1250-10-PP530-NMG	Compact sensor up to 1250 mm Measurement range
	WS19KT-5000-PP24VC-NMG	Sensor for medium ranges up to 5000 mm
	WS-KABEL-5M-NMG-PP24VC	Connecting cable for WS19KT
	WS7.5-30000-10-PP530-NMG	Long range sensor up to 30000 mm

Accessories for NMG2	NMG2-MESSRAD-ENCODER-10P/MM	Friction wheel encoder to measure continuous move-ments (can be mounted on the magnetic stand), usable with the - MEM option only
	NMG2-AKTOR	Actuator to release light curtains
	NMG2-RS232/USB-WINSOFT	Software and cable for PC (Windows) for data transmission
	NMG2-MAGNET-MESS-STATIV	Stand with switchable magnet base
	NMG2-VAKUUMSOCKEL	Optional suction base for non-magnetic surfaces

Operating controls of the stop-time measuring system

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Stop-Time Protocol:
NMG2, ASM GmbH
Date:  10.07.2002
Time:  09:50:37
--- Setup Values ---
Protocol Id: 02080343
Start Pos.:      20 mm
V Standstill:    10 mm/s
Direction:  outwards
Relay Contact: release
Gr =  2000 mm/s
F1 =   100 %
F2 =     0 mm
t2 =     0 ms

Nr.    STT     STD    V-St
         ms      mm    mm/s

  1    763     371     265
  2    990     378     315
  3   1242     550     280
-------------------------
MAX   1242     550     280
MIN    763     371     265
--- Safety Distance ---
Safety Dist.:    2484 mm
Check for Minimum
Safety Distance !
```

NMG2
Stop-Time Measuring System

Specifications

Stop-time measurement	
Measurement range	0 ... 5000 ms
Resolution	1 ms
Accuracy of time base	0,5 ms -0,05 %
Stability of time base	±50 ppm / K
Relay compensation	Time delay of release contact wil be compensated at every measurement
Standstill detection	1 ... 10 mm/s adjustable
Position measurement	
Measurement range	-9999 ... +9999 mm (depends on the sensor type). Sensor ranges up to 30000 mm
Determination of stop point	-9999 ... +9999 mm
Resolution of the measuring device	0,1 mm (display: 1 mm)
Resolution of the sensor	25 µm
Accuracy	±0,05 % f.s. ± 1 Digit
Influence of the temperature	±0,005 % f.s. / K
Velocity measurement	
Measurement range	-9999 ... +9999 mm/s
Resolution	2,5 mm/s
Accuracy	±2,5 mm/s
General	
Displays	2 x 4-digit LED with sign
Trigger output	Logic signal 5 V, H → L at stop position
Stop contact	NC / NO 230 V AC / 5 A
Fuse protection of stop circuit	5 A slow blow
Supply voltage	100 ... 240 V AC
Power consumption	30 W max.
Dimensions	425 mm x 325 mm x 205 mm
Weight	10,5 kg incl. case
Operating temperature	0 °C bis 40 °C
Humidity	80 % R.H. max., non condensing
EMC	According to IEC 1000-4-2, 3, 4

Order code NMG2

NMG2 – [ ] – [ ] – [ ]

Model name

Measurement range of the sensor (in mm)
2500 (standard sensor WS2.1 in carrying case)
Not applicable when using another sensor type

Option printer
P = Built-in matrix printer

Option memory
MEM = Non-volatile memory for data storage, measurement of continuous movements

Consumables

Printer paper, 1 roll	NMG2-DP
Printer ribbon, 1 piece	NMG2-DF
Calibration	NMG2-KAL

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