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Movement sensor with cable

12004-10

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Fig. 1: 12004-10 Movement sensor with cable

Operating instructions

CE The unit complies with the corresponding EC guidelines

CONTENTS

1 SAFETY PRECAUTIONS

- Carefully read these operating instructions completely before operating this instrument. This is necessary to avoid damage to it, as well as for user-safety.
- Only use the instrument for the purpose for which it was designed.
- Do not open up the instrument.

2 PURPOSE AND CHARACTERISTICS

The movement recorder is used as a sensor to detect linear and rotation movements. It is specially designed to be used with the COBRA computerized measurement system.
The universal connecting cable allows to use the movement recorder also in relation to other interface systems and digital counters. The rotation movements of the shaft of the movement recorder are recorded by a high resolution incremental transmitter (512 steps/360°) and given to the output as TTL pulses (BNC 1 At the same time, the rotational direction of the shaft is registered and communicated to the connected interface over one of two cables foreseen for this purpose. The rotation transmitter requires 5 V continuous voltage, which is provided by computer interfaces or by our digital counters.

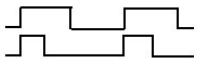
3 FUNCTIONAL AND OPERATING ELEMENTS

3.1 Mechanical set-up

The coupling of the movement sensor to the experimental set-up can be realized directly by means of a piece of flexible tube (interior diameter 7 mm) or of a pierced rubber stopper used to couple the sensor to the cylindrical connecting piece (rotational movements). In case of experiments with the trajectory of a car, a thread fastened to the investigated car runs over the groove with the largest diameter. More detailed information is to be found in the corresponding program descriptions or in the experimenting manuals.

2.2 Description of electrical connections

The movement recorder is connected to the computer interface (or to a digital counter) by means of the supplied cable. The following table gives a description of the functions of the single leads of the cable. The numeration of the pins of the 5 pole socket is given in Fig. 2.

Plug at the sensor	Function	Plug at the interface
Pin 1	Sensor signal 	BNC 1
Pin 2	GND	4 mm, black
Pin 3	Direction signal 1 or start signal for COBRA 	BNC „2"
Pin 4	Direction signal 2 Low/High	4 mm, yellow
Pin 5	Voltage supply +5 V	4 mm, red

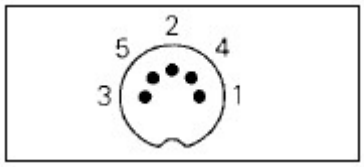


Fig. 2: Pin assignment for the movement recorder; view from above on the side of the pins.

4 NOTES ON OPERATION

Together with any one of the specified transmission instruments, Cobra4 Sensor-Unit Temperature fulfills the technical requirements combined in whole in current European Community Guidelines. The product characteristics justify the CE-mark.

5 HANDLING

5.1 Connection to Cobra4 (Sensor-Unit Timer/Counter)

The movement sensor is connected to the Cobra4 Sensor-Unit Timer /Counter (12651-00) as shown in Fig. 3. This is the included cable (171443):

- Red (jack plug) to TC1
- Black (jack plug) to TC2
- Black (4 mm-plug) to yellow „Start"-socket

Fig. 3: Connection of the movement sensor with cable 171443 to the Cobra4 Sensor-Unit Timer/Counter.

5.2 Connection to Cobra3

The movement sensor is connected to the Cobra3-Basic-Unit as shown in Fig. 4. The adapters (07542-20) and (07542-27) are additionally required. Cobra3 only functions with the software Translation/Rotation (14512-61) in connection with the movement sensor (12004-10). Further information can be found in the experimental literature for Cobra3, Handbook "Science with Cobra3, Part 2" (01301-02).

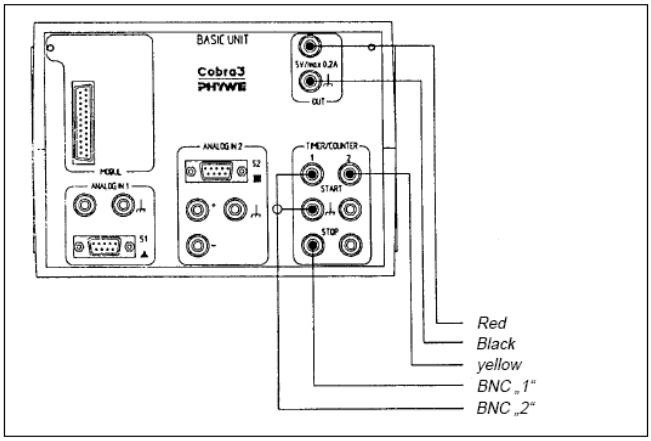


Fig. 4: Connection of the movement sensor (12004-10) to the Cobra3- Basic-Unit

6 TECHNICAL SPECIFICATIONS

Resolution:	512 paces / revolution
Requiered voltage:	5 V –
Diameter of the thread grooves:	6 mm/12 mm
Length of stem:	120 mm
Casing dimensions (mm):	72 x 32 x 114

7 PARTS SUPPLIED

The extent of delivery is as follows:

- Control cable for Cobra3
- Connecting cable for Cobra4
- Stem

8 ACCESSORIES

The movement recorder was developed especially in view of being used with the following interfaces and the corresponding software:

- Cobra4 Sensor-Unit Timer/Counter 12651-00
- Cobra4 Interface, either
  - Wireless-Link 12600-00 andWireless Manager 12601-00
  - or USB-Link 12610-00
  - or Junior-Link 12615-00
  - and Software measure Cobra4 14550-61

- Cobra3-Basic-Unit 12150-00 with the Software Translation/Rotation 14512-61

Required adapter to connect the BNC cable to the 4 mm sockets:

- Adapter BNC-socket/4-mm-plug 07542-20
- Adapter BNC-socket/pair of 4-mm-plugs 07542-27

9 NOTES ON THE GUARANTEE

We guarantee the instrument supplied by us for a period of 24 months within the EU, or for 12 months outside of the EU. Excepted from the guarantee are damages that result from disregarding the Operating Instructions, from improper handling of the instrument or from natural wear.
The manufacturer can only be held responsible for the function and technical safety characteristics of the instrument, when maintenance, repairs and alterations to the instrument are only carried out by the manufacturer or by personnel who have been explicitly authorized by him to do so.

10 WASTE DISPOSAL

The packaging consists predominately of environmentally compatible materials that can be passed on for disposal by the local recycling service.

Should you no longer require this product, do not dispose of it with the household refuse.

Please return it to the address below for proper waste disposal.

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