Specification Sheet
Digital Revolution Meter CMO-3/S

Manufacturer:

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ZBMD Sp. z o.o.
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Table of contents

1. Intended Use

The CMO-3/S digital revolution meter is used to measure the rotational speed of centrifugal couplings (triggers) requiring a significantly higher torque to set the centrifugal triggers in motion. The instrument consists of a planetary motor synchronised with the CMI-1 digital pulse meter. It is powered by compressed air, which makes the measuring disc rotate and triggers the centrifugal triggers that are used in the overhead rail brake trolley, diesel tractors, electric tractors, pneumatic tractors, shunt tractors and drive-braking modules. The CMO-3/S digital revolution meter can be used in mine workings endangered with methane and coal dust explosion. The digital pulse meter CMI-1 has been granted the EC type examination certificate: JSHP 20 ATEX0024X.

2. Operation of the instrument - measuring

Before measuring, check that the housing is properly attached to the turbine body. Check that the battery has been charged. Connect the magnetic probe plug to the instrument and **fix the measuring head directly on the centrifugal trigger actuating screw so that the screw, when actuated, is outside the magnetic field of the measuring probe head (fig.no.2a and 2b).**
Then switch on the meter with the ON/OFF button.

Before direct measurement, press the INIT button on the left. Start the turbine by pressing the drain button, and using the control valve knob slowly increase the revolution, which will cause the measuring disc to rotate faster and increase the readings on the device display. The central and lower part of the display shows the result in revolutions per minute (RPM) and the upper part the result in revolutions per second (RPS). When the trigger actuating screw is moved, the measurement in the central part of the display will stop and the measurement in the upper and the lower part will continue showing the value of the still rotating measuring disc. **If the magnetic probe is not in direct contact with the trigger screw, pressing INIT will not initiate a new measurement (fig.2a and 2b)**

IMPORTANT! The instrument and pneumatic spanner KP-1 may only be used for measuring speed of centrifugal triggers. It is forbidden to use for drilling, screwing!

3. Design of the instrument

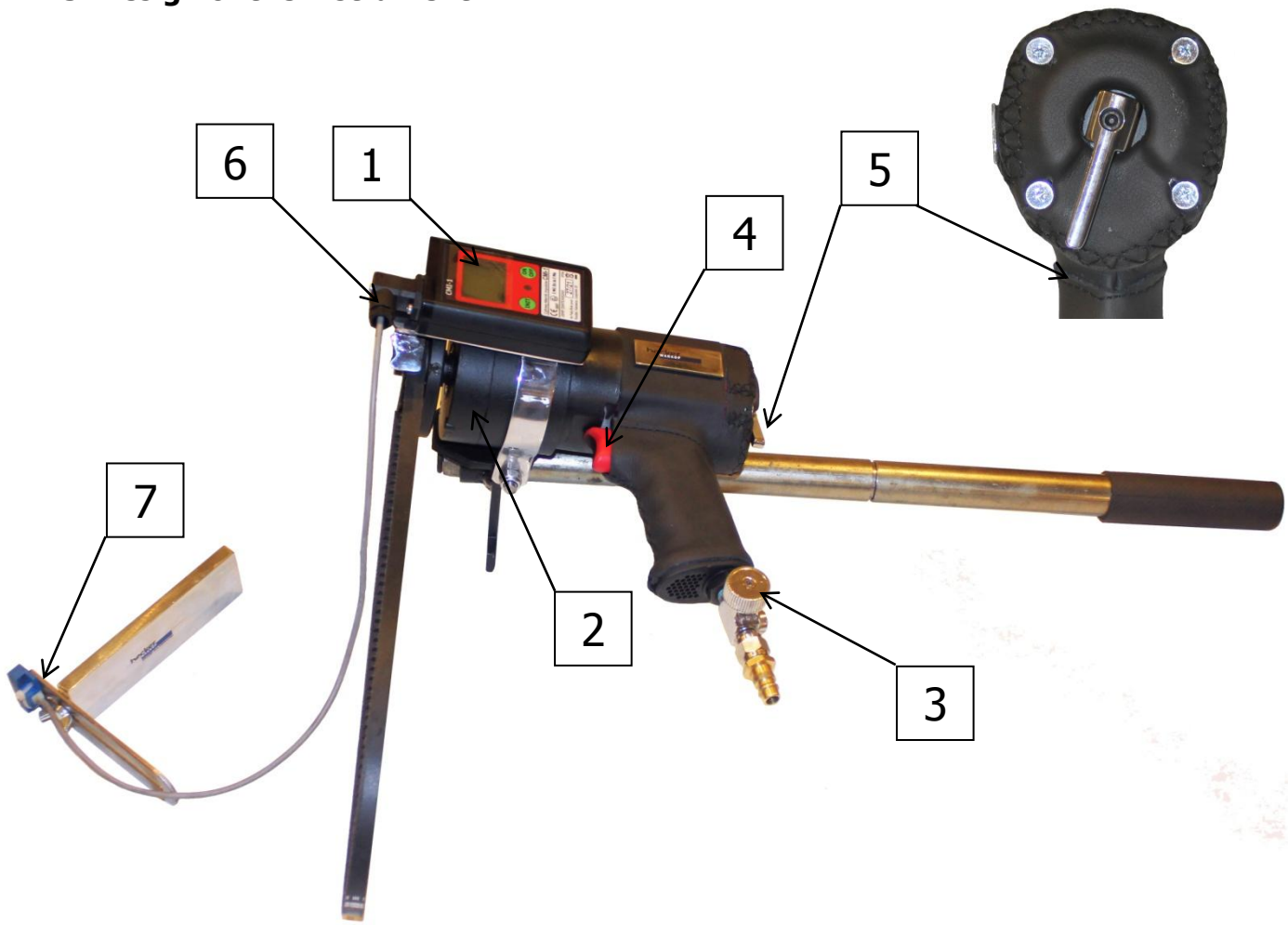

Fig. no. 1. Digital revolution meter CMO-/S-3 design

LEGEND:
Digital pulse meter with LCD display.
2. planetary motor.
3. control valve.
4. Button to start the turbine.
5. Reversing switch.
6. Socket for charging the battery and connecting the magnetic probe.
7. Measuring head with magnet tripod.

4.Display description

The LCD display (fig. 3) shows the measured speed of the rotating element driven by the measuring turbine during normal operation. In the central part of the display the speed measured in revolutions per minute RPM is indicated, whereas in the upper part of the display the speed measuredin revolutions per second RPS.

The top section indicates the battery charge status.

A magnetic probe is connected to the connector at the top of the device, which controls the pulse counting process.

Fig. No. 3. View of LCD display -CMI- digital impulse meter1

Fig. 2a. CMO-3/S Digital Revolution Meter - magnetic probe positioning in relation to the triggering screw during measurement (head in direct contact with the screw)

Fig. no. 2b. CMO-3/S Digital Rotation Meter - magnetic probe positioning in relation to the trigerring screw after trigger activation - end of measurement (Leverage outside the magnetic field).

5. Technical data

Digital Revolution meter

Type	CMO-/S3
EC Type Examination Certificate CMI-1	JSHP 20 ATEX 0024X
KP-1 certificate	KOMAG/21/ZAŚW/0278
Designation	ZBMD-CMO--sequential3 number/year of manufacture
Manufacturer	ZBMD Sp. z o.o.
Max. turbine supply pressure	6,3 bar.
Pneumatic connection of the turbine	1/ 4inch
Max length, min. hose diameter	10 m. fi 8mm
Mass	3 kg
Degree of protection for housing	IP 54
Ambient temperature	$-20C^0$ to $+40C^0$
Relative humidity	up to 96% RH without condensation.
Performance	intrinsically safe
Maximum measured speed	1500 rpm.
Measurement error	0.1 per cent
Automatic switch-off time	after approx. 30 sec.

6. Scope of delivery

Delivery includes:
- complete CMO-3/S meter in a mining bag with the logo of ZBMD ®or your company (illustration below)
- CMO-3/S User's Manual
- warranty card
- EC type examination certificate (Atex)
- EC/EU declaration of conformity

7. Ordering the product

The CMO-/S3 digital revolution meter can be ordered in:
Zakład Budowy Maszyn Doświadczalnych Sp. z o.o.
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