

Digital readout

Type: BC-03



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Note:

*Before you proceed to operate the digital readout, acquaint yourself thoroughly with this manual.
Warranty claims caused by improper operation cannot be accepted.*

1. Basic features of the device

BC-03 digital readout is a multi-purpose device designed for incremental encoders with TTL and RS422 quadrature signals.

Standard features:

- 8-digit LED display, height of the digits 14 mm
- measurement direction setting
- absolute / incremental measurement
- mm/inch display
- diameter / radius display
- halving the measured value
- zeroing, presetting a value
- encoder resolution setting
- decimal point setting
- possibility to lock any button
- reference point setting / machine reference point setting
- encoder linear compensation setting
- memorizing after switching off

Options:

- remote controller
- numerical keyboard with a cable

2. General information concerning the application of the digital readout

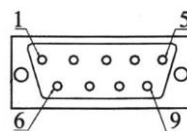
- The BC-03 digital readout is designed for linear and rotary incremental encoders with TTL 5V and RS422 output signals.
- 2 MHz maximum counting frequency.
- Install the digital readout out of influence of coolants, oils and chips.
- Install the digital readout at least 0.5m from high voltage sources, power relays etc.
- Cables from the encoders must not be installed together with the power cables of the machine.
- Protect the digital readout from strokes and vibrations.

3. Technical specifications

Power supply:	7V ~ 24V AC/DC, optional: 5V DC
Power mains adapter:	input: 230V/50 Hz (included into delivery)
Power current:	80 mA (5VDC) without encoder
Operating temperature:	+10°C up to +40 °C
Measuring range:	+/- 9999.999m at micron resolution
Input signals:	TTL 5V / RS 422, 5VDC
Encoder resolution:	0.001mm ~ 1.000mm
Counting frequency:	max. 2MHz
Linear compensation:	+/- 1mm / 1m
Weight:	0.25kg

Power connector

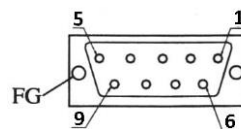
- type D-SUB9 – male



Pin	1	2	3	4	5	6	7	8	9
Signal	0 V	-	-	-	+Ucc	0 V	-	-	+Ucc

Connector for the TTL signal

- type D-SUB9 – female



Pin	1	2	3	4	5	6	7	8	9
Signal	-	OV	-	-	-	A	+5V	B	Z

(Grounding of the cable is connected to the connector body)

Connector for the RS-422 signal

Pin	1	2	3	4	5	6	7	8	9
Signal	-A	0 V	-B	-	-Z	A	+5V	B	Z

(Grounding of the cable is connected to the connector body)

4. Digital readout setting (setup)

Setup mode activation: press and hold the MODE button and switch the digital readout on. Keep the MODE button till the „P00“ indication on the display.

Functions of the keys in the setup mode:

MODE – activation of the parameter setting / exit from the parameter setting

ABS – selection of parameters (down)

INC – selection of parameters (up)

Parameter settings must be confirmed by the END parameter: „YES“ for saving, „NO“ for exit without saving.

Parameter 00 - function selection of indication (0)

- 0 – linear measurement
- 1 – angular measurement – display in the decimal system
- 2 – angular measurement – display in the DDD.MM.SS system (degrees, minutes, seconds)

Parameter 01 – counting direction (OFF)

ON / OFF

Parameter 02 – halving the measured value enabled/disabled (OFF)

ON / OFF

Parameter 03 – MODE button locking (OFF)

ON / OFF

Parameter 04 – ABS button locking (OFF)

ON / OFF

Parameter 05 – INC button locking (OFF)

ON / OFF

Parameter 06 – remote control enabled/disabled (OFF)

ON / OFF

Parameter 07 – RS422 data signal enabled/disabled (OFF)

ON / OFF

Parameter 08 – reference point setting (0)

- 0 – reference point function is disabled
- 1 – reference point function is enabled
- 2 – machine reference. After indication of the reference point, a previously set value (in the U01 parameter) appears on the display. This function can be used e.g. for centering tables of horizontal milling machines.

Parameter 09 – direction of indication of the reference point (0)

- 0 – bidirectional indication
- 1 – indication from left
- 2 – indication from right

Parameter 10 – logic level of the reference point signal (0)

0 – logic level 5V / 0V

1 – logic level 0V / 5V (used for the TIGRE encoders)

Parameter 11 – decimal places on the display (3)

Selection - 0 / 1 / 2 / 3

Parameter 12 – refresh rate of the display (50)

Default – 50ms

Setting range – 50ms ~ 1400ms

Parameter 13 – measured units: mm / inch (OFF)

Default – OFF (mm)

ON – inch

Parameter 14 – measured value setting: diameter / radius (1)

0 – the MODE button enables you to select diameter / radius

1 – radius is set; not possible to change

2 – diameter is set; not possible to change

Default – 2 - radius

Parameter 15 – encoder resolution in μm (0,005)

Setting range: 1 μm ~ 1000 μm

Parameter 16 – number of encoder pulses for 1m (it is automatically calculated with the parameter 15)

Default setting – 200000 (for 5 μm resolution)

Setting range: 1 ~ 9 999 999

Parameter 17 – linear compensation (0)

Setting range: -1.000000 μm ~ 1.000000 μm / 1m

Parameter 18 – factory reset

Select 5 to perform factory reset. After that restart the digital readout. (the indication will be set to the values in parentheses)

END - exit from the setup (NO)

YES – exit with saving the set values

NO – exit without saving

5. Operation

5.1 MODE button

- Press this button to confirm entered values in the setting mode or in the absolute scale.

5.2 ABS button

- press this button shortly to select absolute scale of measurement (it is indicated by the light of the ABS button).

Button in red – display of radius

Button in blue – display of diameter (e.g. for an X axis of a lathe)

- press this button long to switch the readout to the mode of presetting value of the absolute scale (this value is retained also after switching the power off)

ABS button – moves the active position to the left

INC button – increases value of the digit on the active position (values 0 to 9)

MODE button - confirms the set value

Fast zeroing the ABS scale – press and hold the ABS button + press the INC button

Calling up a preset value (fixed) from the memory – press and hold the ABS button + press the MODE button.
This function can be used e.g. for sawing machines.

5.3 INC button

- press the button to clear the display and to select incremental scale of measurement (it is indicated by the light of the INC button).
- press this button long when the function HALF active to halve the displayed value.

6. Setting of user parameters

U01 – coefficient of the absolute scale

Press and hold the ABS button + press the INC button to call this coefficient up.

END - exit from the setup

YES – exit with saving the set values

NO – exit without saving

7. Remote control

Setting a value in the ABS scale: press the MODE button and enter a value from the numerical keyboard. Press the MODE key again to confirm the setting.

ABS – absolute scale selection

INC – incremental scale selection

X / Y / Z / W buttons – selection of a required axis (for multiaxis readouts only).

MENU – entrance into a user parameter.

8. Troubleshooting

8.1 Cannot switch the display on

Check the power inlet and the mains adapter.

8.2 Incorrect measured values

- 1) Check correct connection between the readout and the encoder.
- 2) Check correct installation of the encoder.
- 3) Check correct setting of the readout resolution.
- 4) Check correct setting of the compensation factor.