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BATTERY POWERED THERMOMETER

TIB100

OPERATION MANUAL



Please read this Operation Manual before mounting and operating!
Save the Manual for future references!

TIB100 is a digital temperature indicator, designed for direct control over temperature processes when coupled with a TSEC or other compatible temperature probe. This model combines the power supply independence of the bimetallic/gas thermometers and the advantages of the digital temperature measuring instruments. TIB100 is a programmable device and allows current, minimum, and maximum temperature readings, alarm settings, unit selection, and user calibration.

Declaration of Conformity



The undersigned hereby declares, on behalf of COMECO Inc., that this battery powered thermometer model TIB100 has been manufactured in compliance with the standard EN 61326-1, and meets the requirements of Directive 2004/108/EC.

A handwritten signature in black ink, appearing to read 'K. Darakchiev'.

Krasimir Darakchiev, CEO
COMECO Inc.

Mounting and Wiring



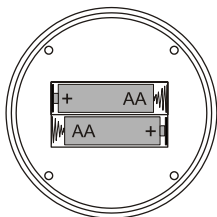
Important notes:

- ◆ *With operating temperatures above 200 °C, TIB100 should be distanced from the process connection site!*
- ◆ *Before wiring an axially mounted probe, ensure its sensor wires are at least 20 cm long!*
- ◆ *Never use the thermometer housing for process screwing!*
- ◆ Unscrew the device back lid with an appropriate tool.
- ◆ Using a proper wrench, screw a TSEC or other compatible temperature probe onto the device connection thread. Fit an appropriate gasket for thermal insulation.
- ◆ Connect the probe to the thermometer through the wiring terminals on the PCB.
- ◆ Put the lid back and screw it tightly.
- ◆ Mount the probe together with TIB100 to the object of control.



Important notes:

- ◆ Strictly follow the restrictions below! Disregarding may cause fire and/or explosion and may result in material losses or human injury!
- ◆ Use only the type of batteries given in '**Specifications**'!
- ◆ Do not burn up or disassemble batteries!
- ◆ Do not charge, short, shock, heat, or throw the batteries in fire!
- ◆ Do not put a battery as reserve!
- ◆ Do not solder on the battery directly!
- ◆ When disposing, insulate the battery with tape.
- ◆ Do not store under direct sun, high temperature, or humidity!
- ◆ Strictly observe the operating conditions given in '**Specifications**'!



Battery status



Battery life depends on sensor type, ambient temperature, and usage!

2xAA	Status	TIB100
< 1.9 V	empty	not functioning
1.9...2.3 V	weak	displays LBAT ; functions, but cannot be programmed
> 2.3 V	normal	fully functional



Never leave in discharged batteries for long after **LBAT** has appeared! Battery leakage is aggressive and may damage the unit!

Battery (re)placement



The following AA battery types may be used:

- R6 (≈ 35% of battery life)
- LR6 (≈ 70% of battery life)
- FR6 (≈ 100% of battery life)
- HR6 (≈ 65% of battery life)
- ZR6 (≈ 55% of battery life)

- ◆ Unscrew the back lid and find the battery holder inside the case.
- ◆ Remove the old batteries if any.
- ◆ Put new batteries observing their polarity.
- ◆ Close the device.

Turning ON/OFF

- ◆ To check the power status, press
- ◆ To turn the device on/off, press and hold
- ◆ If Auto-off Time has been set (see '**Parameter Programming**'), TIB100 turns itself off after the allotted time has expired. A message **FF** appears for approx. 2 s before the device turns automatically off.



If the batteries are weak, parameter values cannot be adjusted, only read.

●* - *Changing Point Position value reflects on the real value of the alarm parameters!*

E.g.: changing Point Position value from „1 to „1 would change a set-point value of 100 to 10.0!!!

Device parameters

TIB100 is a programmable device whose service behavior is determined by a set of parameters. All the parameters, along with their names, symbols, and value ranges, are given in the table on the next page.

Setting numerical parameter value

- ◆ Enter parameter value adjustment mode (see 'Program Levels').
- ◆ The whole part of the value together with the left zeroes appears on the display, and the rightmost digit blinks.
- ◆ To select another digit, press .
- ◆ The 3 rightmost digits can accept values from **0** to **9**, and the leftmost digit can also accept the values **-** and **1**.
- ◆ To increase or decrease the blinking digit value, use respectively  or .
- ◆ Confirm the adjusted value by pressing simultaneously  + .
- ◆ If the new value has not been confirmed and no key has been pressed for a certain period of time, value adjustment automatically ceases, and the parameter retains its initial value.

Setting symbolic parameter value

- ◆ Enter parameter value adjustment mode (see 'Program Levels').
- ◆ Read the blinking parameter value.
- ◆ To change the value, use  or , and to confirm, press  + .
- ◆ If the new value has not been confirmed and no key has been pressed for a certain period of time, value adjustment automatically ceases, and the parameter retains its initial value.

Parameter	Symbol	Description	Value	Notes
Access-Control Parameters (parameters of Hidden level)				
Access Control Level	Access Level	Controls the access to device parameters	Full	full access
			Pass	full access w/ password protected access to levels L2 and L3
			None	access only to parameters of Hidden and Basic levels
Password	Pass	Access password	-1999 ... 9999	
Mode Parameter (parameter of Basic level)				
Mode	Mode	Display mode	Temperature	current temperature
			Low	minimum measured temperature since last power-on
			High	maximum measured temperature since last power-on
Configuration Parameters (parameters of level L2)				
Unit	Unit	Temperature measurement unit	°C, °F, K	Changing the unit does not affect alarm set-point values!
Point Position	Point Position	Display decimal point position	1 or 0.1	resolution: 1 or 0.1 units
Input Correction	Input Correction	Constant to be added to the measured input value	-1999 ... 9999	display offset value; with the selected Unit and Point Position
Alarm Low	Alarm Low	Set-point value of low alarm	-1999 ... 9999	with the selected Unit and Point Position
Alarm High	Alarm High	Set-point value of high alarm	-1999 ... 9999	with the selected Unit and Point Position
Auto-off Time	Auto-off Time	Minutes till automatic power-off	0 ... 100	from last entry into Basic level; Value '0' disables auto power-off.
Calibration Parameters (parameters of level L3)				
Low Point	Low Point	User-calibration low-point temperature	-199.9 ... 999.9	with the selected Unit
High Point	High Point	User-calibration high-point temperature	-199.9 ... 999.9	with the selected Unit
User Setting	User Setting	Calibration settings	Factory	factory calibration applied
			Low	low-point calibration
			High	high-point calibration
			None	user calibration applied



If the whole part of a value cannot be entirely displayed, the unit generates an 'overflow' message (0L or -0L, depending on the value sign).



When FA, L message shows up, factory settings can be restored with pressing , provided the batteries are not weak.

Access control (Hidden level)

- ◆ Take out the batteries, wait at least 5 s, and put them back.
- ◆ Press  when all display segments light up, and hold it till **FA, L** appears.
- ◆ Set level of access to device parameters by adjusting the **Access Control Level** parameter and, if applicable, assign a password via the **Password** parameter.

Basic level

With turning on, TIB100 enters Basic level. At this level, the device indicates either the current, minimum, or maximum measured temperature (PV) depending on the values set to parameters **Mode** and **Unit**, and with a resolution, according to the **Point Position** parameter.

- ◆ To read the current **Mode** value, press and hold .
To enter value adjustment mode, press  while still holding .
- ◆ To see the measurement unit, press and hold .
- ◆ In case of an alarm / warning event, displayed PV alternates at an interval of approx. 2 s with the respective warning message:  (low alarm, defined by **Alarm Low**),  (high alarm, defined by **Alarm High**), or **LBAL** (weak batteries).
- ◆ With a failure event, TIB100 displays a failure message as follows:
SHRT (shorted sensor),
BRK (broken sensor), **INIT** (initialization / no measurement), or **FA, L** (corrupted data / permanent RESET).



If levels L2 and L3 are password protected via Access Control Level, at the first attempt at accessing programming, TIB100 displays PASS instead of L 2 and requires entering a valid password. A correctly entered password is in force till turn-off. In case of a wrong password entered, the device displays - - - - for about 10 s and returns to Basic level.

Programming (Levels L2 and L3)

- ◆ Enter from Basic level by pressing and holding + .
- ◆ To access and adjust the parameters from level L2, release the key while **L 2** is displayed. To enter level L3, release the key when **L 3** appears on the display.
- ◆ Scroll the parameters using or .
- ◆ To see the value of the displayed parameter, press and hold .
- ◆ To enter parameter value adjustment mode, press while holding .
- ◆ If no key has been pressed for a while, the device automatically returns to Basic level, storing all confirmed changes.
- ◆ For quick exiting and saving, use key combination + . Message **SEOr** confirms the adjustments.

Calibrating

- ◆ Enter level L3 and set low-point and high-point calibration temperatures via the **Low Point** and **High Point** parameters.
- ◆ Assign either value **cRL.L** or **cRL.H** to the **User Setting** parameter and return to Basic level.
- ◆ Read the corresponding message **cRL.L** or **cRL.H** alternating on the display with the measured temperature.
- ◆ Temper the probe to get a stable reading equal to the calibration temperature set for the selected calibration point.
- ◆ Hold to display **cRL**, then press to confirm the calibration.
- ◆ Repeat the previous 2 steps till the reading matches the set calibration temperature.
- ◆ Calibrate the device at the other point.
- ◆ Adjust **User Setting** to apply the calibration.

Specifications

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Input	☐ Pt100, ☐ Pt500, ☐ Pt1000
Measurement Range	-50...600 °C
Probe Connection	☐ G $\frac{3}{8}$ ", ☐ G $\frac{1}{2}$ ", ☐ $\frac{3}{8}$ " NPT, ☐ $\frac{1}{2}$ " NPT, ☐
Power Supply	3 V from 2 batteries AA 1.5 V
Batteries	☐ not included, ☐ 2 alkaline batteries
Battery Life	up to 20000 h
Auto-power-off Time	0...100 min, programmable
Measurement Error	$\leq \pm 0.3\%$ of span
Temperature Drift	$\leq 0.005\%$ from span for 1 °C
Non-linearity / Hysteresis	within measurement error
Ambient Temperature / Humidity	-10...50 °C / 0...85% RH
Protection Class	IP65

Waste Disposal



*Do not dispose of
electronic devices
together with
household waste
material!*

If disposed of within European Union,
this product should be treated
and recycled in accordance with the laws
of your jurisdiction implementing
Directive 2012/19/EU on waste electrical
and electronic equipment (WEEE).

Warranty and Support

Warranty

COMECO warrants this product
to be free from defects in materials
and workmanship for 2 years. If your unit
is found to be defective within that time,
we will promptly repair or replace it.
This warranty does not cover accidental
damage, wear or tear, or consequential
or incidental loss. This warranty
does not cover any defects caused
by wrong transportation, storage, installation,
or operating (see '**Specifications**').

Technical support

In the unlikely event that you encounter
a problem with your COMECO device,
please call your local dealer or contact
directly our support team.

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article number

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serial number

.....
manufacturing date

QC check mark(passed)
(stamp)

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