INDUSTRIAL DIGITAL INDICATOR

CTI-1000AE

User Guide

1. INTRODUCTION

We greatly appreciate for your purchase of the industrial indicator. These goods have hold excellent performance and splendid properties through strike tests as well as devoting ourselves under severe quality management.

CTI-1000 indicator is shaped firmly and delicately designed a coincide with the special requirements of several industrial fields and includes many functions and various external interfaces. Also, it is programmed on the basic of the user's convenience and contains help display functions to be used easily.

Before using Ctl-1000, It is recommended to read this manual carefully and to apply the function application fully.

CAUTIONS

- Do not press the keys hardly, for the keys are in operation with soft touch.
- Avoid sudden temperature change.
- Do not install CTI-1000 in a place with high voltage and excessive electrical noises.
- Do not use at the place with excessive electrical noises and vibration.

2. THE FEATURES OF CTI-1000

- Appropriate for weight and measurement system.
- Easy operation and various options.
- Simple Full Digital Calibration.
  (SPAC : Single pass automatic span calibration)
- WATCHDOG circuitry (System restoration).
- Panel mount type

3. TECHNICAL SPECIFICATION

◆ Analog Part

Load Cell Excitation Voltage	DC 5V, Up to 6 x 350Ω load cells
Full Scale Input Signal	20 mV, including dead load
Zero adjust range	0.05 mV ~ 5 mV
Input Sensitivity	2 μV/D (H-44,OIML) 0.5 μV/D (Non H-44,OIML)
System Linearity	Within 0.01% of FS
A/D internal resolution	Approximately 200,000 counts
A/D external resolution	5,000 dd (H-44,OIML) 30,000 dd (Non H-44,OIML)
A/D conversion speed	20 times/sec

◆ Digital PART

Span calibration	Full Digital Calibration : SPAC (Single pass automatic span calibration)
Display	LED (5 digit)
Size of letter	14 mm (Height)
Display below zero	"-" minus signal
Additional Symbols	ST, Zero, CAL, HOLD
POWER	AC 110V/220V 50/60 Hz
Power Consumption	10 W
Operating Temperature	-10℃ to + 40℃
Weight	1 kg

◆ Option Part

Standard	Serial Interface : RS-232C
Option-1	Serial Interface : RS-422/485
Option-2	Relay Output 2 or 3
Option-3	Voltage Output (0 ~ 10V, 4 ~ 20mA)

- Functions Keys

1)Calibration Program[PRG]: To enter Calibration Mode

2)[▲]: Increment key (0,1,2,3 ...)

3)[▶]: Multiply key

4)ENTER[ENT]: ENTER key

5)ZERO[ZERO] : Used to manually set the zero point

6)Select Voltage Output Range[▶]: Refer to next page.

- DESCRIPTION OF THE CONNECTION TERMINAL

COM				IN(ZERO)					
11	12	13	14	15	16	17	18	19	20
1	2	3	4	5	6	7	8	9	10
Ex+	Ex-	Sig+	Sig-	GND	TXD	RXD			

4. CALIBRATION MODE

Turn on the power while pressing the [PRG] key on the front of the indicator.
Display " CAL" Message.

CAL 1 : Maximum Capacity

CAL 2 : Minimum Division

CAL 3 : Setting Weight

CAL 4 : Zero Calibration

CAL 5 : Span Calibration

CAL 1

FUNCTION : Maximum Capacity SET

RANGE ---> 1 ~ 99,999 kg

KEY	DISPLAY	DESCRIPTION
▲: Increase of no. ◀: Shift of digit. ENTER(↲): Store and move into next menu	CAL 1 100	CAL 1 condition 100 kg

REF 1. The maximum capacity means the maximum weight that scale can measure.

CAL 2

FUNCTION : Minimum Division SET

RANGE ---> 0.0005 ~ 100 kg

KEY	DISPLAY	DESCRIPTION
▲: Input the next division. ENTER(↲) : Store and move into next menu	CAL 2 0.01	CAL 2 condition 0.01 kg

REF 1. The minimum division means the value of one division.

REF 2. External resolution is obtained by division the min. division by the maximum capacity. Set the resolution to be within 1/30,000.

CAL 3

FUNCTION : Setting Weight In Span CALIBRATION RANGE ---> 1 ~ 99,999 kg		
KEY	DISPLAY	DESCRIPTION
▲:Increase of no. ◀: Shift of digit ENTER(↲) :Store and move into next menu	CAL 3 100	CAL 3 condition 100 kg

REF 1. The weight shall be within the range of 1% ~ 100 % of maximum weight.

CAL 4

FUNCTION : Zero Calibration		
KEY	DISPLAY	DESCRIPTION
ENTER(↲): Zero calibration and Move into next menu.	CAL 4 ULoAd - - - GOOD	CAL 4 condition Unload the tray and press ENTER Under zero calibration Zero calibration is completed.

REF 1. If Zero calibration is done without any error, GOOD message is displayed and program moves into CAL 5 automatically.

CAL5

FUNCTION : Span Calibration		
KEY	DISPLAY	DESCRIPTION
ENTER(↲): Span calibration and Move into next menu.	CAL 5 LoAd - - - GOOD	CAL 5 condition Load the weight which was set in CAL 3 and press "ENTER" key. Under span calibration. Span calibration is completed. Remove the Setting weight. Press the "ENTER" key to save the value

REF 1. If Span calibration is done without any error, GOOD message is displayed
The weight of setting weight is displayed on Display screen.
Check the weight.

REF 2. If the span is low, Check message (Che 24) is displayed.
Calibrate with lower resolution.

REF 3. After setting the exact value, Remove the setting weight and Press the "ENTER" key to save the value

5. SET MODE

Press [ENT] key while 3 seconds, display " SET " Message.

F03 : Automatic zero tracking compensation

F04 : Digital Filter

F07 : Weight Back-up (Power-on Actual Weight)

F10 : Device ID

F11 : Designation of Serial Interface Baud rate

F12 : Designation of Serial Interface output mode

F13 : Designation of Serial Interface Data Format

F15 : Set HOLD type

F20 : Select relay ouput mode (only Option)

Automatic Zero Tracking			
F03	0	None Automatic zero	
	1 ~ 9	1 : 0.5 digit . 9 : 4.5 digit	Autozero tracking will automatically bring the display back to "0" when there are small deviations.

Digital Filter			
F04	1 ~ 99	1 : Less Vibration . . 99 : Much Vibration	Adjust the set value according to the condition.

Select the weight back-up mode		
F07	0	Weight back-up is off (Power on Zero)
	1	Weight back-up is on (Display setting weight)

Device ID			
F10	1 ~ 99	1 : ID/01 . . 99 : ID/99	Adjust the device ID.

Baud Rate		
F11	0	600 bps
	1	1200 bps
	2	2400 bps
	3	4800 bps
	4	9600 bps
	5	19200 bps

Output Mode			
F12	0		Command Mode
	1		Stream mode

Data Format		
F13	0	CAS Format
	1	Curiosity Technology(CurioTec), A&D Format

Set HOLD type		
F15	0	Average hold : Compute the average weight of oscillating weights.
	1	Peak hold : Compute the maximum weight among oscillating weights.

Tuning the Analog Out Current in the ZERO Weight. (Option : Analog Out)			
F17	0.000 to 24.000 (mA)	4.000 : at Zero 4mA (Forward Type)) 20.000 : at Zero 20mA (Backward Type)	Adjust the set value according to the condition.

Tuning the Analog Out Current in the Maximum Weight. (Option)			
F18	0.000 to 24.000 (mA)	20.000 : at Max. 20mA (Forward Type) 4.000 : at Max. 4mA (Backward Type)	Adjust the set value according to the condition.

Select Relay Mode (Option : Relay 2)		
F20	0	Don't use relay option
	1	Limit Mode (A CONTACT)
	2	LO(B)/HIGH(B) LIMIT MODE
	3	LO(B)/HIGH(A) LIMIT MODE

Select Relay Mode (Option : Relay 3)		
F20	0	Don't use relay option
	1	Limit Mode
	2	Limit Type Checker MODE
	3	Reserved
	4	Reserved
	5	3 Stage Limit Mode
	6	2 Stage Packer Mode (External Input : START Key)
	7	Reserved

6-1. Setting the Lo/High value (Relay 2)

Press [▶]key while 3 seconds. display “ LO " message.

LO VALUE (RY1)	
LO 50.0	If the display weight is LO value(50.0kg), RY1 is ON. Use the [▲]&[▶] keys to toggle the value. Use the [ENT] key to store the displayed value.

HIGH VALUE (RY2)	
HIGH 200.0	If the display weight is HIGH value(200.0kg), RY2 is ON. Use the [▲]&[▶] keys to toggle the value. Use the [ENT] key to store the displayed value.

MODE	OUTPUT	CONDITION
LIMIT	HIGH Signal (RY2)	Display Weight ≥ High value
LIMIT	LO Signal (RY1)	Display Weight ≤ Lo value

6-2. Setting the Lo/High value (Relay 3)

Press [▶]key while 3 seconds. display “ LO " message.

ZERO BAND (RY1)	
ZERO 1.0	If the display weight is below ZERO value(1.0kg), RY1 is ON. Use the [▲]&[▶] keys to toggle the value. Use the [ENT]key to store the displayed value.

LO VALUE (RY2)	
LO 50.0	If the display weight is LO value(50.0kg), RY2 is ON. Use the [▲]&[▶] keys to toggle the value. Use the [ENT] key to store the displayed value.

HIGH VALUE (RY3)	
HIGH 200.0	If the display weight is HIGH value(200.0kg), RY3 is ON. Use the [▲]&[▶] keys to toggle the value. Use the [ENT] key to store the displayed value.

▣ Setpoint Condition

Output is done according to the following condition in batching operation.

MODE	OUTPUT	CONDITION
LIMIT	ZERO BAND (RY1)	Display Weight ≤ ZERO BAND value
LIMIT	LO Signal (RY2)	Display Weight ≥ Lo value
LIMIT	HIGH Signal (RY3)	Display Weight ≥ High value

MODE	OUTPUT	CONDITION
Checker	LO Signal (RY1)	Display Weight < Lo value
Checker	HIGH Signal (RY2)	Display Weight > High value
Checker	OK Signal (RY3)	Lo ≤ Display Weight ≤ High

7. Weight constant calibration (Option)

Turn on the power while pressing the [▲] key on the front of the indicator.
Display " PASS" Message.

Input Password PASS 1111 GOOD	Type the Password. Use the [▲]&[▶] keys to toggle the value. Use the [ENT] key to store the displayed value.
Modify Factor 34280 41136	Type the New Factor Ex1) Now weight: 250kgf, Wished weight : 300kgf Factor = 300 * 34280 / 250, New Factor = 41136 Ex2) Now weight: 250kgf, Wished weight : 200kgf Factor = 200 * 34280 / 250, New Factor = 27424 Use the [▲]&[▶] keys to toggle the value. Use the [ENT] key to store the displayed value.

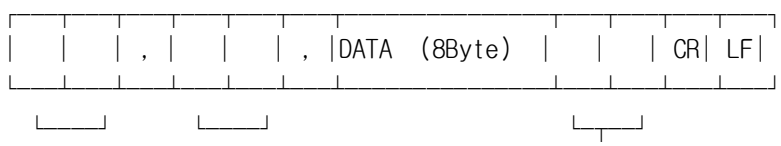
8. Serial Interface

Command List Table (N,8,1)

To CTI-1000	Description	ACTION
[ID] RW CR LF	Request Weight Data	
[ID] MZ CR LF	Command ZERO Status	

- [ID] : Device ID 2 Byte (예 ID:01, 0x30,0x31), CR :(0x0d), LF : (0x0A)

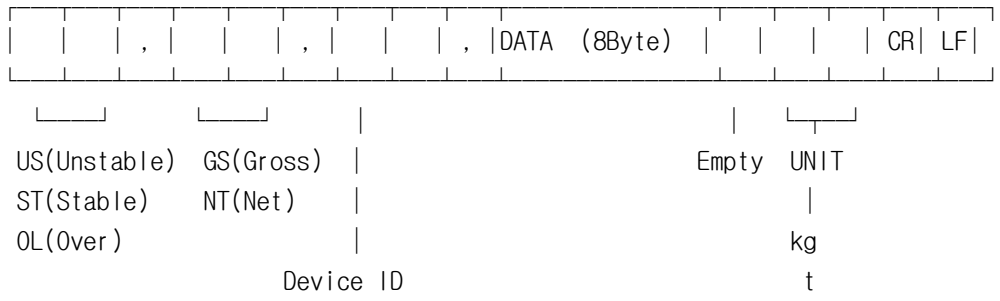
A&D Data Format (19 Byte)



US(Unstable) GS(Gross) UNIT
ST(Stable) NT(Net)
OL(Over) kg/ t

▣ Weight Data(8 byte)
1. 13.5 kg : ‘ ’ , ‘ ’ , ‘ ’ , ‘ ’ , ‘1’ , ‘3’ , ‘.’ , ‘5’
2. 135 kg : ‘ ’ , ‘ ’ , ‘ ’ , ‘ ’ , ‘1’ , ‘3’ , ‘5’ , ‘ ’
3.- 135 kg : ‘-’ , ‘ ’ , ‘ ’ , ‘ ’ , ‘1’ , ‘3’ , ‘5’ , ‘ ’
Each ASCII code of Weight transmitted by 8 byte. (Ex, ‘ ’ : 0x20)

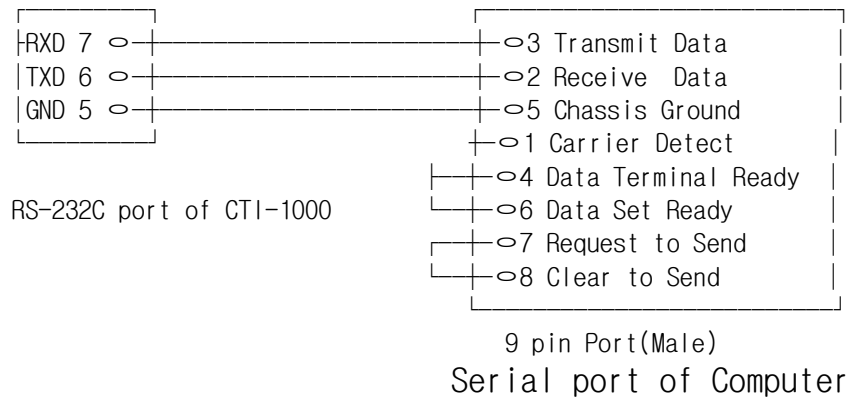
Curiotec/CAS Data Format (22 Byte)



▣ Device ID
Transmit 1 byte device ID so that the receiver can receive data selecti vely which indicator send.
(Device ID is selected in F10)

▣ Weight Data(8 byte)
1. 13.5 kg : ' ' , ' ' , ' ' , ' ' , '1' , '3' , '.' , '5'
2. 135 kg : ' ' , ' ' , ' ' , ' ' , '1' , '3' , '5' , ' '
3.- 135 kg : '-' , ' ' , ' ' , ' ' , '1' , '3' , '5' , ' '
Each ASCII code of Weight transmitted by 8 byte. (Ex, ' ' : 0x20)

RS232C Port Connection



8-1. Analog Output (Option : 0~10V, 4~20mA)

▣ Specification

Analog Out	4 - 20mA / 0~10V
Resolution	below 0.1%

Terminal No.	Function	
11 PIN	GND	
12 PIN	Iout	
13 PIN	Vout	
14 PIN	ZERO Remote Input	

9. CHECK MESSAGE AND TROUBLE SHOOTI

(1) IN WEIGHTING MODE

Che 02

▣ Reason

Load cell connection failure or error in A/D conversion part.

☞ Trouble shooting

Check the load cell connector to see if the polarity of signal is reversed.

Over

▣ Reason

The weight on platform is too heavy to be measured.

☞ Trouble shooting

Do not load the item exceeds the maximum tolerance.

If the load cell is damaged, the load cell should be replace.

(2) IN CALIBRATION MODE

Che 24

▣ Reason

The load cell output is too small at SPAN calibration.

☞ Trouble shooting

Setting of current resolution is not possible due to the error in load cell.

Proceed calibration again with less resolution.

Che 25

▣ Reason

The load cell output is too large at SPAN calibration.

☞ Trouble shooting

Setting of current resolution is not possible due to the error in load cell.

Proceed calibration again with less resolution.

Guarantee Regulation

1. Guarantee Contents and Terms

We will repair for free during 1 year from due date for breakdown occurred in normal use state of this machine.

2. Exception of Guarantee Repair

Breakdowns occurred following reasons are excluded from guarantee repair target.

- In occasion of breakdown occurred by reconstruction and repair of machine at random without approval from head office or place of business, an agency etc. recognized by head office.
- Breakdown by user's careless treatment
- Reconstruction inside machine, that is, when sells or supply or product and damaged contents of product except our company and sale trade person.
- Breakdown or damage that was produced by missing cautions at use
- Breakdown or damage by natural disaster such as fire, flood damage etc..
- When there is no presentation of warranty
- This warranty has validity only in Korea.

3. Others

Warranty that has no seal of approval affixing a seal is regarded as not valid.

To keep in mind at use

- Use and storage in where is not sudden temperature change or dry place.
- Use within range of use
- Confirmation (zero setting at abnormality) whether or not correct indication of early 0 point.
- Use in where is no electrical noise
- Prohibited immoderate impact

approved and sealed	

Number of Unit	
Company Name	
Address	
Date of delivery	
Selling agent	Telephone
Address	
Sales man	

Certificate of Quality

Curiocity Technology Co., Ltd.

In case of occurred breakdown of product purchased from Curiocity Technology Co., Ltd. during term of guarantee, we will repair according to guarantee regulation of the top portion.