



LIBERTY SCALES INC

LS-7517

WEIGHING INDICATOR



USER M A N U A L



SAFETY INSTRUCTIONS



WARNING

Set, calibrate, inspect and fix the weighing indicator is prohibited by non-professional staff.

WARNING



Please make sure the weighing display well-earthing.



WARNING

The indicator is electrostatic sensitive device. Please power off during electrical connections, internal components touched by hand is prohibited, and please take the anti-static measure.



For safety operation, please follow the safety instruction..

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1. SUMMARY

The LS-7517 is a slim plastic indicator, custom-designed by our company for floor scale applications. This indicator can be installed within the body of the floor scale, making it convenient for transportation and packaging. The interface of the indicator display is user-friendly, offering straightforward operation, stable performance, power efficiency, and cost-effectiveness.

1.1: Main Function

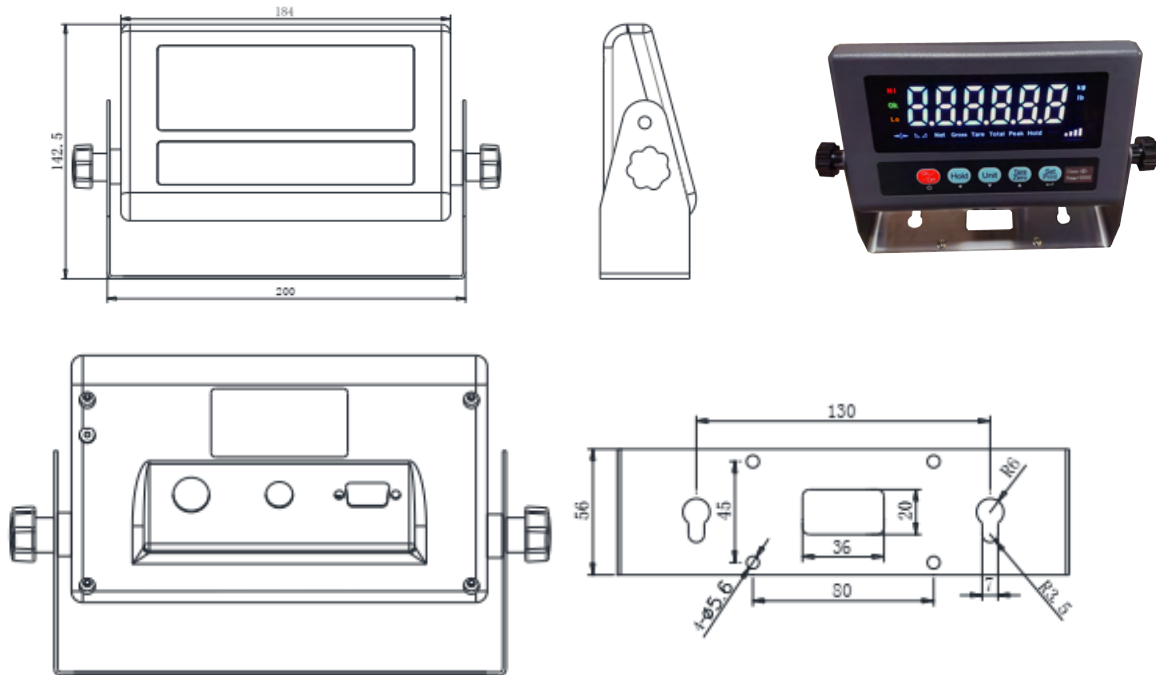
- » Basic weighing function: Zero /Tare /Total
- » Peak hold/Hold function/Auto hold/ Animal function
- » Battery capacity indication
- » Automatically power OFF
- » RS232 function can be optional by real time clock

1.2: Technical Parameters

- » Stimulating voltage: +3.3 VDC
- » A/D converting speed: 10 times/sec
- » Load capacity: It can connect 4 pcs 350Ω load cell at most
- » Resolution: 5000e
- » Interval: 1/2/5/10/20/50
- » Display: 6-digits LED word height: 20.3mm
- » Key: ON/OFF TOTAL TARE ZERO SET
- » Load Signal range: -7 ~12.8mV

- » Ambient temperature: -10 ~40°C
- » Optional power: Built-in power supply 3.7V/2Ah
Lithium battery life of 25 hours

1.3 : Outline and Installation Picture:



2. INSTALLATION & CALIBERATION

2.1: Installation:

Please open and inspect the accessories listed in the included packing list as per the instructions. If any parts are missing or damaged, kindly contact the company's after-sales service department promptly to ensure the proper use of the indicator. The indicator can be positioned directly on a desktop surface.

2.2: Electrical Connection:

2.2.1 : Power Supply: The indicator is powered by a 5V/1A adapter. To power it, simply plug the adapter directly into the "DC" pin on the back cover of the indicator. This will provide the necessary power supply for the indicator to function properly..

2.2.1: Connection indicator with loadcell:

It can connect 4 pcs 350Ω Load cells at most with M16-5 connector. As shown below



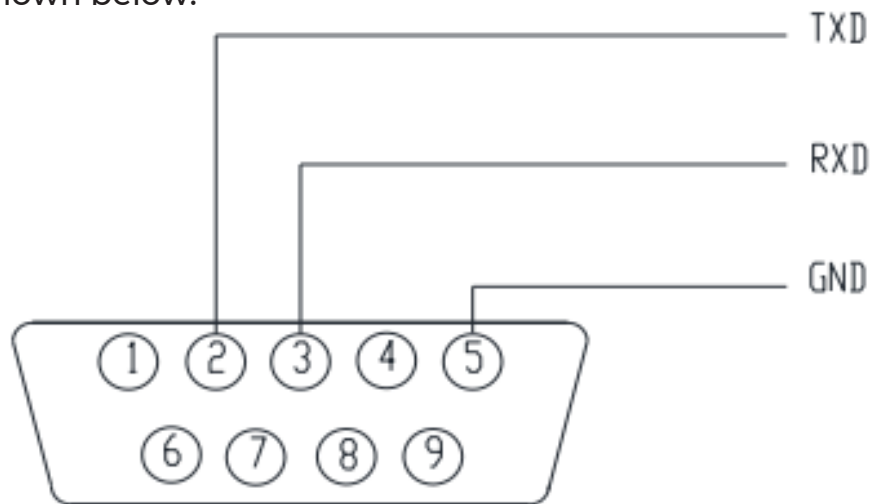
Load cell interface definition

2.2.2: Power connection:

The indicator is powered by 5V/1A adaptor, you plug the adapter directly into the “DC” pin at the back cover the indicator is ok.

2.2.3: Communication interface:

Serial port RS232 uses the DB9 to connect to a big display, printer or computer. As shown below:



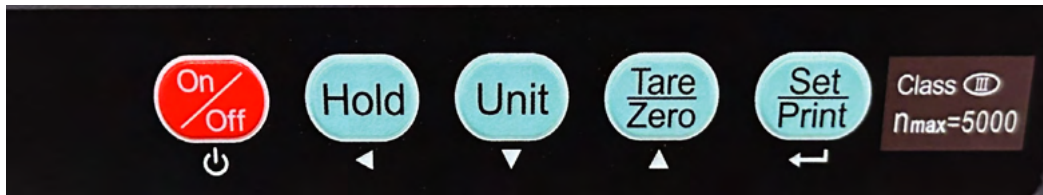
Pin	Definition	Instructions
2	TXD	Transmit data
3	RXD	Received data
5	GND	Ground

3. BASIC OPERATION

3.1 Key and display








DISPLAY






KEY

Weighing indicator Key's Function


Key symbol	Key name	Key function
	ON/OFF	1. Press 3 seconds to power on or power off 2. Press key to convert units
	HOLD	Enter and exit "Hold" mode.
	TOTAL	1. Accumulating operation 2. Work with "Print" to check the total weight


	TARE/ZERO	<ol style="list-style-type: none"> 1. Clear weight within zero range 2. Exceed zero range, tare function 3. Long press to preset tare
	PRINT	<ol style="list-style-type: none"> 1. Press with On/Off enter the calibration 2. Long press to print 3. Work with "Tare/Zero" weight 10 time


Weighing indicator display instructions


LED display	Instructions
	Weighing data display
Total	Accumulating
Hold	Hold weighing data
Peak	Hold the peak weight
Tare	Display tare weight
Net	Display net weight
Gross	Display gross weight
	Display data keep still
	Zero, indicating zero weight
Hi	Over setting weight
OK	Within setting weight
Lo	Below setting weight
Kg, lb	Weight uni kg, lb

3.2 Operation:

» Press  for 3 seconds to power on or power off.

» **Kg/Lb Conversion:** If you choose kg/lb conversion, in normal weighing mode, you can press  key to achieve kg/lb conversion.

» **TARE/ZERO:** When weighing exceed the zero range ($\pm 2\%$) and stable, press  to enter into net weighing mode, display net weight zero, Tare and Net light on, Gross light off.

When weighing in the zero range ($\pm 2\%$) and stable, press  to back to gross weighing mode, display gross weight zero, Gross light on, Tare and Net light off.



Preset tare.



Press "Tare" for 2 seconds and enter the Tare weight to tare function.

3.7 Hold Functions





This indicator include about peak hold, hold, auto-hold, animal function and trails of animal function.

C11=0 no hold function C11=1 Peak hold C11=2 Data hold
 C11=3 Auto-hold C11=4 Animal function C11=5 Trails of animal function
 C11=6 Stable hold function

Peak-hold: Press  key, then the Hold light is on, and show the maximum data on the weighing indicator. Press  key again to exit the hold function

Hold: Press  key, then the Hold light is on, and show the data on the weighing indicator. Press  key again to exit the hold function.

Auto-hold: If the weight on the scales above 20d and keep stable, the indicator will show the data for 6 seconds and the  light is on, after 6 seconds the indicator back to general weighing, and the  light is off.

Animal function: Press  key, the indicator will show "LOC" for 5 seconds, average the collected weight and show the calculated animal weight the  light is on. Press  key again to exit it. The  light is off.

Trails of animal function: In the trails, animals are automatically weighed with the front legs placed on the scale. The duration of the animal weighing process can be configured using C40.



Once the animal's weight has been determined, the indicator will briefly display "LOC" for 5 seconds.


During this time, the collected weights are averaged to calculate the animal's weight. After the animal steps off the scale, the indicator returns to its standard weighing mode, and the "Hold" light turns off.

Stable hold function: Once the animal is on the scale, it will automatically stabilize, and the indicator will calculate the weight of the animal. This automatic animal weighing function, when compared to the trail of animal function, doesn't require any manual triggering and offers a quicker response. It also has the capability to support the weighing of multiple animals on the scale simultaneously.

However, it is important to note that this function may not be suitable for very active animals. To use this function effectively, it is necessary to configure the parameters C28 and C29 for digital filtering.


3.7 TOTAL:

Accumulation operation: At Zero mode, load weight till stable, press  key go to accumulating mode,  light on, display "n001", and then display loaded weight;


unload weight, back to zero, load weight again till stable, press , display "n002", then show the loaded weight. Repeat it maximum 999 times.

Check the total weight operation: Press  hold it then press  at the same time, display "n**",



(accumulating times) then display total weight. If the total weight does not exceed 6 digits, it is displayed as 6 data totally, otherwise the total weight 8 data totally, it shows the first 4 digits, then the last 4 digits. For example, the first 4 digits is "0012", the last 4 digits is "34.56", it means the actual weight is "1234.56"

Exit accumulate function: At TOTAL (accumulate) mode, press  key the indicator show "clr n",

it means don't clear the total weight, press key confirm it and exit; If clear total weight, when display "clr n", press  to change to "clr y" it means clear

total weight display. Press  to clear the total weight and exit accumulating mode..


3.5 Ten times high resolutions

Press  and  key at the same time, you will get 10 times high resolutions. And it will back to normal weighing after 3 seconds.

3.6 Up and Under limit alarm

Please. set C13= Up limit, C14=Under limit, when the weight is over up limit, the “Hi” light will on, and indicator will make a sound to alarm
When the weight is below than the low limit, the “Lo” light will on. When the weight is within the limit, the “OK” light is on

3.7 Print



When the data is stable, connection with printer, it will be printed after press  1 second.

4. Caliberation and Parameter Settings

4.1 Enter setting

There have two methods to enter the setting menu:

1. When the switch “CAL” is off, press , then press  at the same time, hold it, you will enter C08-C39 setting.

2. Take out all of screws on the back of indicator, then press down the “span”, press  and then  press at the same time, you will enter C01-C39 setting.

4.2 Key Functions



Up



Power switch. exit setting



Down



Confirm, go to next step



Left

4.2.1 Steps of calibration operation:

Before going to next atep, kindly press  .

Step	Display	Remarks
1.	[C01]	After you enter to calibration mode, it display [C01]. Press Print.
2.	[C1 1] [C1 2]	Weight unit option:1=kg option:2=lb
3.	[C02] [C02 1] [C02 2] [C02 3] [C02 4]	Set decimal digits option:0/1/2/3/4 Select decimal digit example:two decimal point:[C02 2]
4.	[C03] [C03 1] [C03 5] [C03 10] [C03 20] [C03 50]	Division setting option:1/2/5/10/20/50 Select required disvion example:division 5:[C03 5]
5.	[C04] [0100.00] [0100.00]	Max capacity example:max weighing 100kg: [0100.00]
6.	[C05] [C05 0] [C05 1] [CAL 10]~ [CAL 0] ○○○○○ [0000.00]	Zero calibration option:0=non-calibration zero 1=need calibration zero calibration zero please choose 1 and ensure scale is empty and “stable” light is on Ensure zero calibration, countdown. Till show[0.00](example for two decimal point).

7.	<p>[C06] [C06 0] [C06 1] [SPAN] [0100.00] [0080.00] [CAL 9] [0080.00] [CALEnd]</p>	<p>Loading calibration Press "TARE/ZERO", change to [C6 1], press"print" show [SPAN] Basic on max capacity setting, add suitable weight on scale. close to the max capacity, heavier than 10% max at least.</p> <p>For example: the weight is 80kg As bellows: enter loading calibration, count down over, indicator shows loaded weight , loading calibration finish. If you want to set application Function parameter. Press "PRINT" if you want to exit press "ON/OFF"</p>
8.	<p>[C07] [07 0] [07 1]</p>	<p>Default parameters setting option:0=non-restore default parameters 1=restore default parameters</p>

NOTE: After completing the configuration of the parameters mentioned above, it is advisable not to frequently reset the default parameters. Doing so can help avoid the loss of the original parameter settings.

4.2.2 Application parameters setting chart

Functions	Setting Items	parameters setting and instruction
Warning tone	C08 warning tone	Options: 0 = close warning tone 1 = open warning tone
Automatic power off	C09 Automatic power off	Option:0=close auto power off 10= keep still within 10 min. power off automatically 30= keep still within 30 min. power off automatically 60= keep still within 60 min. power off automatically
Power saving setting	C10 Power saving setting power off	Option:0= close power saving setting 1= Close backlight after 3 minute 2= Close backlight after 5 minut
Hold function	C11 Hold mode	Option:0=close hold function 1=Peak hold /2=Data Hold /3=Auto-hold /4=Animal weighing /5=Trails of animal function Hold :it shows current weight value. Mainly application for animal weighing.

Hold time	C12 value	Hold time (if you choose C11=4, you can set the time) Enter a sampling time of 0-9 seconds
Upper/lower limit alarm	C13 Upper limit alarm value	At setting function mode, after directly enter C15, indicator will show inner code
	C14 Lower limit alarm value value	
Inner Code display	C15 Check inner code value	At setting function mode, after directly enter C15, indicator will show inner code
Date and time	C16 Date value	At setting function mode, after directly enter C15, indicator will show inner code
	C17 Time value	At setting function mode, after directly enter C15, indicator will show inner code

4.2.3 Communication Setting

Communication setting	C18 Serial interface data output method	Option:0= Close serial interface data output 1= Continuous sending, connect big display 2=print method, connect printer. 3= Command request method , connect computer. 4=PC continues to sending format, connect computer.
	C19 Baud rate value	0= 1200bit/sec 1= 2400bit/sec 2= 4800bit/sec 3= 9600bit/sec 4= 600bit/sec

4.2.4 Application setting

Zero range	C20 Manually zero range value	1=±1% Max. Capacity 2=±2% Max. Capacity 4=±4% Max. Capacity 10=±10% Max. Capacity 20=±20% max capacity 100= ±100% Max. Capacity
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	C21 Initial zero range value	1=±1% Max. Capacity 2=±2% Max. Capacity 5=±5% Max. Capacity 10=±10% Max. Capacity 20=±20% max capacity 100= ±100% Max. Capacity
Automatic zero tracking	C22 Automatic zero tracking range	option:0.0= close automatic zero tracking 0.5=±0.5d 1.0=±1.0d 2.0=±2.0d 3.0=±3.0d 4.0=±4.0d 5.0=±5.0d Automatic zero tracking range can not exceed manual zero setting range
	C23 Automatic zero tracking time	option:0= close automatic zero tracking time 1=1 second 2=2 seconds 3=3 seconds
Overload range	C24 Overload range	Over 9d than Max. Capacity
Negative display	C25 Negative display	Option:0=-9d 10=Less than -10% Max. Capacity 20=Less than -20% Max. Capacity 50=Less than -50% Max. Capacity 100=Less than -100% Max. Capacity
Standstill setting	C26 Standstill time	Option:0= quick 1= medium 2= slow
	C27 Standstill range	Option:1=1d 2=2d 5=5d 10=10d Note: d=division
Digital filter	C28 Dynamic filter Instruction:Dynamic filter is collecting the data filter before loaded weight stable. When loaded weight easily shaking (for example animal) , you can set this filter to make weight display more stable	Option:0= close dynamic filter 1=Low dynamic filter 2=Medium dynamic filter 5=High dynamic filter



Noise filter	C29 Noise filter	Option:0=close noise filter 1=Low noisy filterh 2=Medium noisy filter 3=High noisy filter
Date format	C30 Print date	C30=0 yy.mm.dd C30=1 mm.dd.yy C30=2 dd.mm.yy C30=3 yy.mm.dd
kg/lb Conversion	C31 Kg/lb conversion	0=Prohibit kg/lb conversion 1=Allow kg/lb conversion
Print fromat	C35 Print format	Enter 0~99
Gravitational acceleration	C36 Local gravitational acceleration	Enter local gravitational acceleration
	C37 Destination gravita- tional acceleration	Enter destination gravity acceleration
Version number view	C38 Version number view	Displays the date, software version, and hardware version, respectively
Multi-interval application	C39 Multi-interval applica- tio	0=normal mode 1=multiple interval mode
Animal scale delay	C40 Animal scale delay	Enter the scale delay of 0 to 9 seconds
	C41~C49	Print related configurations

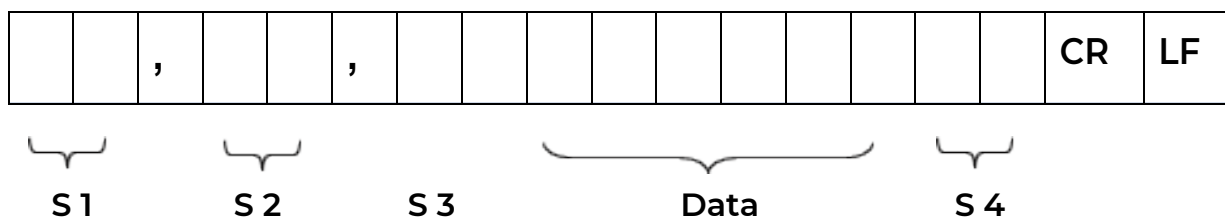
4.2.5 Exit setting

For example [C10 1], press  , confirm it and then press  to exit and save it.



5.OUTPUT DATA FORMAT

5.1 Computer continuous sending format



- S1:** weight status, ST= standstill, US= not standstill, OL= overload
- S2:** weight mode, GS=gross mode, NT=net mode
- S3:** weight of positive and negative, "+" or "-"
- S4:** measurement unit, "kg" or "lb"
- Data:** weight value, including decimal point
- CR:** carriage return
- LF:** line feed

5.2 Serial interface reception command :

RS232COM serial interface can receive simple ASCII command.
 Command word and role as follows:

Command	Name	Role
T	Tare command	Save the weight
Z	Zero command	Zero the weight
P	Print command	Print the weight
R	Read gross/ net weight	Read gross/net weight



5.4 Print output format:

Net	10.00kg
Tare	18.88kg
Gross	28.88kg

5.5 Computer continuous sending format



Output continuous format																	
S T X	S W A	S W B	S W C	X	X	X	X	X	X	X	X	X	X	X	X	C R	C K S
1	2			3				4				5	6				

State A			
Bits0,1,2			
0	1	2	Decimal point position
1	0	0	XXXXXX0
0	1	0	XXXXXXX
1	1	0	XXXXX. X
0	0	1	XXXX. XX
1	0	1	XXX. XXX
Bits3,4			Division
0		1	X1
1		0	X2
1		1	X5

State B	
BitsS	function
Bits0	gross=0, net=1
Bits1	symbol: positive=0, negative=1
Bits2	overload(or lower zero)=1
Bits3	dynamic=1
Bits4	unit: lb=0,kg=1
Bits5	Constant 1
Bits6	Constant0

6. Maintenance

6.1 Regular Error and maintain method:

Error	Reason Instructions	Solutions
Display 	1. The loaded weight exceeds the overload range of the maximum capacity. 2. Wrong connection with load cell or no connection with it. 3. Load cell unworkable	1. Decrease loaded weight 2. Check load cell connection 3. Checking load cell: check input and output resistance to judge it is good or not.
Display 	1. Calibration is no good 2. Cell single line is connect a wrong line. 3. The load cell is out of order.	1. Check scale is resisted or not, foot is kept level or not. 2. Check load cell connection. 3. Checking load cell: check input and output resistance to judge if it is good or not.

Err 1	During calibration, do not add any weight or exceed the scale's maximum capacity..	Input the correct weight
Err 2	During calibration, the added weights may not be sufficient.	Added weight at least 10%of Max. capacity, Recommended weights is 60-80% of Max. capacity
Err 3	During calibration, input single is negative.	1.Check if connection is correct or not. 2.Check load cell is damaged or not. 3.Renew calibration, if its still wrong. please replace the PCB
Err 4	During calibration, single is unstable	Ensure the added weight and scale is stable, start calibration
Err 5	EEPROM check error	Change PCB.
Err 6	Exceed Zero range	Unload weight
Err AD	AD chip fault	Change PCB.

6.2 Daily maintenance

To ensure a clear display on the indicator and extend its lifespan, please observe the following guidelines:

1. Avoid placing the indicator directly in sunlight.
2. Ensure a proper connection between the load cell and indicator. The system should have a robust ground and be kept away from strong electric or magnetic fields.
3. Refrain from using the indicator outdoors in rainy conditions, and it is recommended to keep it powered off in such situations.

6.3 Battery:

- In the lower right corner of the indicator, there's a visible battery voltage display.
- If the battery voltage becomes too low, the last grid will begin to blink, indicating that it's time to recharge.
- During the charging process, the battery grid will flicker, and typically, it takes around 6-8 hours to fully charge.
- Once the battery is fully charged, all the power grid lights will illuminate.
- It's worth noting that the indicator features a built-in intelligent charge management chip, which allows it to continue using the power supply after reaching a full charge, preventing overcharging of the battery.

6.4 Restore default parameters:

Enter setting menu, set C07= 1,press  then press  exit saving setting, all parameters will be back to default setting.

Note: Please avoid restoring default parameters if you lack professional knowledge and do not have experience with scale calibration.

Default parameter form

Parameter	Instruction	Default value
C01	Calibration unit	1
C02	decimal digits	0
C03	Division value	2
C04	Max capacity	10000

C05	Empty scales	0
C06	Capacity calibration	0
C07	restore the default parameters	0
C08	Warning tone	1
C09	Automatic power off	0
C10	Power saving mode	3
C11	Hold function	2
C12	Animal weighing mode	5
C13	Upper limit warning	000000
C14	Lower limit warning	000000
C15	Inner code display	
C16	Date	
C17	Time	
C18	Serial interface data output method	0
C19	Serial interface Baud rate	3=9600
C20	Manual zero setting	2
C21	Initial zero setting	10
C22	Automatic zero tracking range	0.5
C23	Automatic zero tracking time	1
C24	Overload range	9
C25	Negative display range	10
C26	Standstill time	1

C27	Standstill range	2
C28	Dynamic filter	1
C29	Noisy filter	2
C30	Date format	0 (1*)
C31	kg/lb conversion	0 (1*)
C35	Print format	1
C36	Local gravitational acceleration	9.7936
C37	Destination gravitational acceleration	9.7936
C38	Version number view	
C39	Multi-interval application	0
C40	Animal scale delay	

NOTE: "*" means this option only for NTEP version.