

TORQUE CHECKER

*MODEL*

KTM-4B-25

DI-4B-25

# 数字扭力计操作手册

**DIGITAL TORQUE CHECKER  
INSTRUCTION MANUAL**

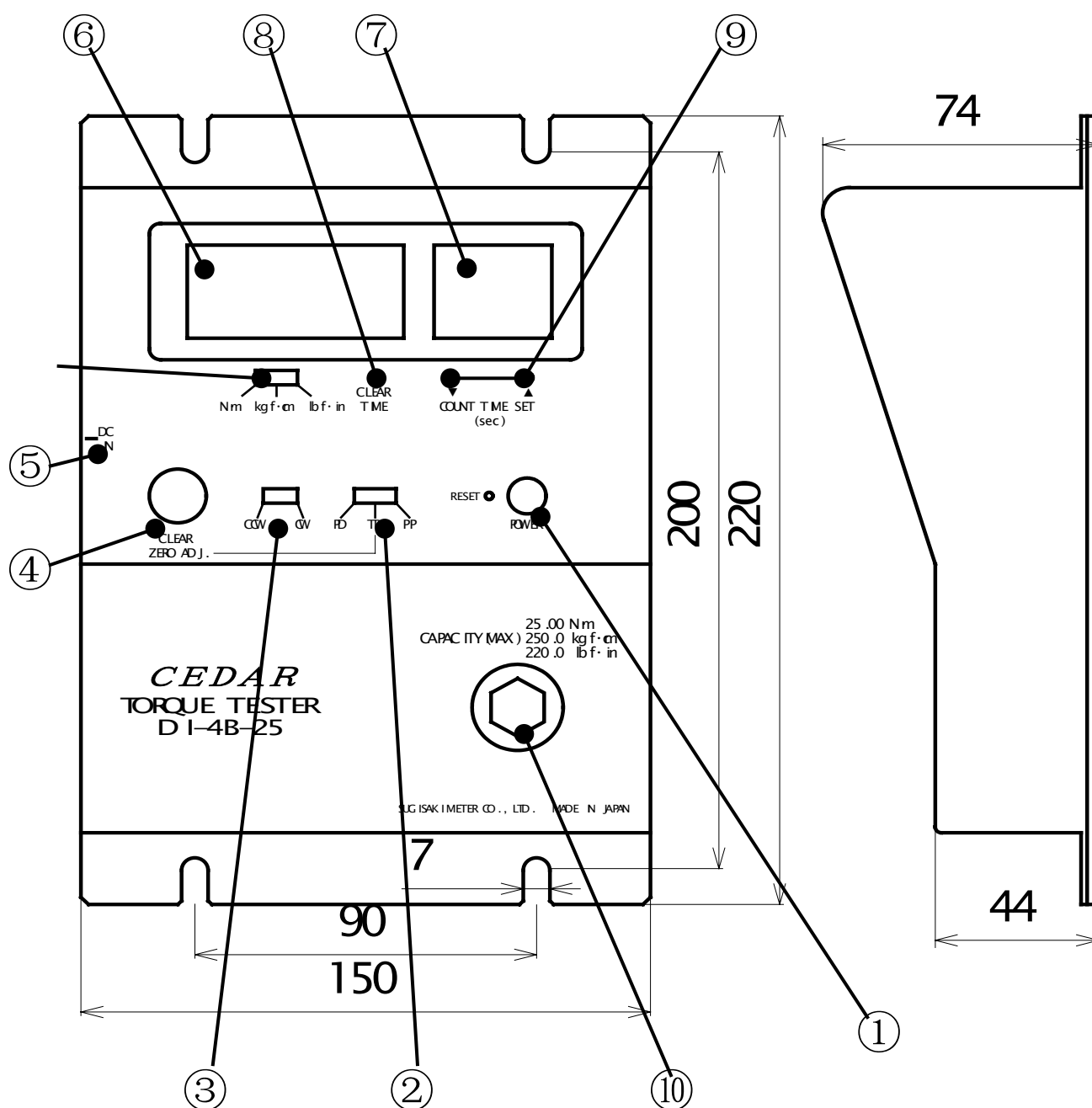
### 1. 安全警告

1. 工作场所保持干净。
  - ◎杂乱的工作区域及台面容易造成伤害。
2. 注意工作场所的环境。
  - ◎勿将扭力计置放于雨中或潮湿处。
  - ◎在固定温度下(约 24℃)使用扭力计。
  - ◎工作场所照明良好。
  - ◎勿于有易燃液体或气体之处使用或充电扭力计。
3. 请勿让孩童靠近。
  - ◎除操作人员以外, 皆不可靠近工作场所。
4. 请穿着适宜。
  - ◎勿穿着太宽松之衣服或佩戴首饰, 以免操作工具时勾扯拉到。
5. 请谨慎操作。
  - ◎操作扭力计时, 务必小心使用, 注意操作方式和工作场所等相关事宜。
6. 请稳定的固定机身主体。
  - ◎当测试较大扭力时, 请使用夹子或虎头钳等工具来固定起子, 如此会较以手拿持安全, 同时也可以双手操控起子。
7. 请勿测试超过负荷量的扭力。
  - ◎若测试超过负荷量, 会使仪器损坏甚至产生意外或伤害。
8. 请勿拆卸、撞击或震动仪器。
  - ◎避免拆卸产品, 因其为精密仪器。如扭力计因过度撞击或震动而损坏, 将无法正常运作同时可能造成意外或伤害。
9. 电击警告。
  - ◎勿以潮湿双手碰触电源插头, 如此可能会遭到电击。
10. 请用专用的充电器帮电池充电。
  - ◎使用非专用的充电器充电可能会引起火灾或导致伤害。
11. 适当的充电。
  - ◎使用指示电压充电, 勿使用直流电或发电机充电, 如此会产生高热, 引起火灾。
  - ◎充电勿超过八小时, 过量充电会引起爆炸, 过热和电池漏液, 导致火灾。
  - ◎在空气流动处充电, 充电时勿以布覆盖。
12. 绝对不可将电池(嵌装于扭力计内)投入火中。
  - ◎如此会导致爆炸或放出有毒物质。(丢弃电池的程序因依照当地之废弃物处理法令, 若无相关法令, 则应将电池送到专门回收处。)
13. 如有下列情况, 应关上主开关并拔掉插头。
  - ◎当扭力计没有在使用或充电时。
  - ◎维修扭力计时。
  - ◎扭力计有可能发生危险时。
14. 请细心保养扭力计。
  - ◎为更好、更安全的操作, 经常检查测量接头, 勿使用畸形或坏掉的接头。
  - ◎根据操作手册更换零件。
  - ◎定期检查电线和延长线, 更换有损坏的线材。

15. 不可猛烈拉扯电线。
  - ◎不可搬运悬挂着电源线的仪器，也不可拉扯电线来拔出插头。
  - ◎不可将电线放在高温、油腻或有锐利边缘之处。
16. 检查有无因零件损坏所造成的功能损失。
  - ◎在进一步使用仪器前，仔细检查有无损坏，能否正常运作和可以运用的功能。
  - ◎ 检查任何有可能会影响运作的零件是否正常。
17. 请由专业人员来修理仪器。
  - ◎勿随意更改此产品。
  - ◎应在购买的经销商处维修产品，若由非专业人员修理此产品，有可能会无法正常运作甚至引起意外或伤害。
18. 请使用专用配件或附件。
  - ◎勿使用本操作手册规定以外的配件或附件。
19. 不使用时需小心存放。
  - ◎扭力计需存放在干燥且儿童无法接触之处、或是安全的地方。在运送时可再利用此产品原有之包装盒。

## 2. 外观

① 电源开关	⑥ 液晶显示器
② 测试模式选择开关	⑦ 撞击次数显示器
③ 方向开关 (L/R)	⑧ 显示时间设置开关 (INDI-OFF TIME)
④ 归零开关	⑨ 计数器设置开关
⑤ 充电孔	⑩ 测试底座
	计量单位选择开关



## 3. 规格

型号		KTM-4B-25; DI-4B-25
测试范围	N·m	0.50~25.00
	kgf·cm	5.0~250.0
	lbf·in	5.0~220.0
精度		500 ~ 5000 数字显示 误差 +/-0.5% 30 ~ 499 数字显示 误差 +/-3%
显示		4 位数液晶显示
测试方向		方向开关选择左右
三种测量模式	PP peak	显示负荷力最高值(峰值模式)
	TR track	显示负荷力值的变化(变质模式)
	PD peak down	会保持在载重从上升至下降的瞬间(初值模式)
清零		按下清零键归零
数据传输 (选择)		RS232C 系列接口 (波特率: 9600Baud)
电源		6VDC (Ni-Cd 可充电电池 1.2Vx5cells)
自动节约能源		5 分钟之内不使用, 自动关闭开关
测量单位		lbf·in - kgf·cm - N·m (可选择)
充电时间		少于 8 小时
连续工作时间		大约 13 小时
电池寿命		可充电 300 次以上 但是, 会由于工作环境而变化
专用充电器		输入: AC120V 或 AC230V 50/60Hz 输出: DC7.25V (120mA)
尺寸		150(W)x115(D)x40(H)
重量		大约 2.1k g

※不要测超出扭力计测量范围的扭力。

#### 4. 准备与测量方法

##### 4.1 安装方法

如图「外观」所示，配合各端子的凹凸部，将 测试接头（输入） 及 测试接头（输出） 端子用附属的电缆线予以连接。尤其是 测试接头（输出） 端子，用手指握紧电缆线端子上部的黑色部份插入，直至听到卡声为止。另外要拔下 测试接头（输出） 端子时，握住电缆线端子的银色部份，拔下即可。

高扭力测定时，会有被弹回的可能，故需利用孔穴等来确实固定。在扭力计的背部，附有固定孔，使用者可将此扭力计固定。

##### 4.2 测定方式的说明

利用 测量模式选择开关，配合使用的目的，有三种方式的选择。

- ① PP (peak 测定) 峰值模式：显示测量到的最大扭力值。
- ② TR (track 测定) 变值模式：显示实时的扭力值。
- ③ PD (peak down 测定) 初值模式：显示地个峰值，需配合归零开关使用。

##### 4.3 测量方式

- ① 打开电源，压按电源开关约 1 秒左右。
- ② 先确认显示部显示面板是否为 0。若没有，则将 测量模式选择开关(MODE)转为 TR 并按压 清除键(Clear)，进行归零。
- ③ 当要设置计算打击次数时，可利用定时计数器 (Count Time) (▲▼) 设定时间；定时计数器能计算固定的时间内计数打击多少次。进行测试时可以测出工具的异常
- ④ 确认方向开关 (DIRECTION) 是否选择正确，若欲测试方向与方向开关不同，不会显示其扭力值。R：顺时针方向；L：逆时针方向
- ⑤ 在传感器设定，欲要测定的工具，并在传感器接近欲要测定工具的负载扭力，就会开始进行②测定。
- ⑥ 确认工具的动作正常，并停止后，读取显示部的扭力测定值，完成测定的作业。
- ⑦ 完成测定的作业后，按压 清除键(Clear)，显示会被清除成为 0。若要继续测定，则从②项开始重复以前的作业即可。

##### 4.4 自动归零设定（设定时间、清除显示数值。）

设定方法：

- ① 按压内置开关 IND.OFF TIME 设定自动归零的时间。
- ② 显示器画面会显示 0.0C。每按 1 次按键则数值会变；直至欲设定的数值处停止时，会回复成测定状态。
- ③ 在 3 秒钟以内未完成设定的场合，请从①开始再重复操作。显示数值最低为 0.0 秒，最高为 3.0 秒当显示 0.0C 则表示取消自动归零的功能。设定秒数后静待数秒，仪器会自动进入待测状态。

※ 设定时间的选择 0.0C→0.1C→0.5C→1.0C→1.5C→2.0C→2.5C→3.0C→0.0C 循环。

※ PP 测定是自 30 digit 以上、PD 测定是自 50 digit 以上开始作动。

**5. 数据传输**（仅限 P-P、P-D 模式）

数据的传输是以 RS-232C 为传输的依据。故需用适合于 RS-232C 的打印机或计算机等设备来配合数据的传输；在每次测量完毕按归零开关时（或机器自动归零时），扭力计会自动将测得的数据经传输装置输出到计算机上。

※搭配用的传输装置为选购产品。

**6. 数据的传输**

在测试完成后按 清除键(Clear)同时会将数据传输。

**7. 充电**

本扭力计放置 10 分钟以上没有操作时会自动切断电源。

当显示器上出现 -- L -- 字样时表示扭力计电量不足，需再进行充电。

请关闭扭力计电源，以随机配备的充电器，接妥正确的电源与扭力计充电孔即可进行充电。

充电时间请勿超过 8 小时。以免造成电池过热、漏液甚至燃烧等伤害。

**8. 服务保证**

本产品在购买后一年内若有因生产或运送过程瑕疵而产生之故障情况，本公司无条件提供维修服务。

若有以下情况，则在保证期间内修理必须付费。

- ◎ 不当使用、修理或重组仪器而导致故障。
- ◎ 在购买后因摔落等事故而导致的故障。
- ◎ 因自然灾害、污染和不正常的电压所导致的故障。

**9. 调修服务**

本产品于出厂前皆已做过可靠且符合国际标准的准确度校正，但为维持扭力计的精确度，应将扭力计作定期的校验。本公司另提供专业并符合标准的调修服务，唯保证期间外的校验服务得另收费用

购买时或校正后附带文件：

- ◎ 校正报告表。
- ◎ 校正标准追溯表。

**10. 疑难排除**

不良情况	发生原因	处理方法
用测定方式 PP—PD 液晶屏幕无法固定数值	有设定 Auto clear，自动归零装置	请再次确认 Auto clear 的机能设定项目。（Auto clear 的机能会以 10digit 以上的负载扭力作动）若无此必要时，请设定在 0.0C。
虽将电源开关 ON，而 LO BATT 显示后电源即断掉	充电不足	请用所附的专用充电器，依规定的充电时间充电。
依规定的充电时间充电后，虽输入电源，仍无显示。	长期间未使用，则内部的电池会完全放电。	请将 AC 充电器接续后，按压侧面的 SYSTEM RESET 按钮，就会复归。复归后，将测定方式开关置于 TR 的位置，然后按压 CLEAR 按钮，使显示为 0。

本产品若功能上发生不良状况时，请依上表进行确认。经对照处理仍无法解除时，请向公司或经销商提出修理的申请。

**1. Caution for safety**

1. Keep work area always clean.
  - Cluttered areas and benches may invite injuries.
2. Consider work area environment.
  - Do not use torque meter in the rain or in the damp or wet place.
  - Use the product at a place left at constant temperature (about 24°C).
  - Keep work place well lighted.
  - Do not use or charge the product in presence of flammable liquids or gases.
3. Keep children away.
  - Keep any person other than the operator(s) away from work area.
4. Dress properly.
  - Do not wear loose clothing or jewelry, which may be caught in moving parts.
5. Work with the most care.
  - When using the product, carefully work, with consideration to how to handle, how to work, work environment, etc.
6. Fix main body firmly.
  - When operated for measuring a large torque, use clamps or a vise, etc.
  - It is not only more safe than holding by hand but also makes it possible to grip the torque wrench by both hands.
7. Do not apply a torque exceeding the permissible load.
  - If applied beyond the permissible load, it may cause damage to the detector, resulting in accident or injury.
8. Do not disassembly, shock and vibrate this product.
  - Avoid disassembling the product that is a precise instrument. If the torque meter is damaged by excessive shock or vibration, the product may not only show the full performance but also result in accident or injury.
9. Caution to electric shock
  - Do not touch power plug by wet hand. It may cause electric shock.
10. For charging the battery be sure to use only exclusive charger.
  - Using a charger other than specified may cause a fire or injury.
11. Charge properly.
  - Charge on the indicated voltage. Do not use DC power or engine generator. It may cause abnormal heat, resulting in a fire.
  - Keep the charging time not longer than 8 hours. Overcharge may bursting, overheat and liquid leakage, resulting in a fire or injury.
  - Charge in a well-ventilated place. While being charged, do not cover with cloth.
12. Never throw the battery (built-in the torque meter) into fire.
  - It may cause burst or give off toxic substance. (The procedure for scrapping the battery shall be followed in accordance with local or regional law on waste disposal. If there is no local or regional law on waste disposal, be sure to dispose of the battery at a recycling shop.)
13. In the following cases, turn off the main switch and disconnect the plug from outlet.
  - When not used or charged;
  - When repaired;
  - When any other danger is expected.
  -

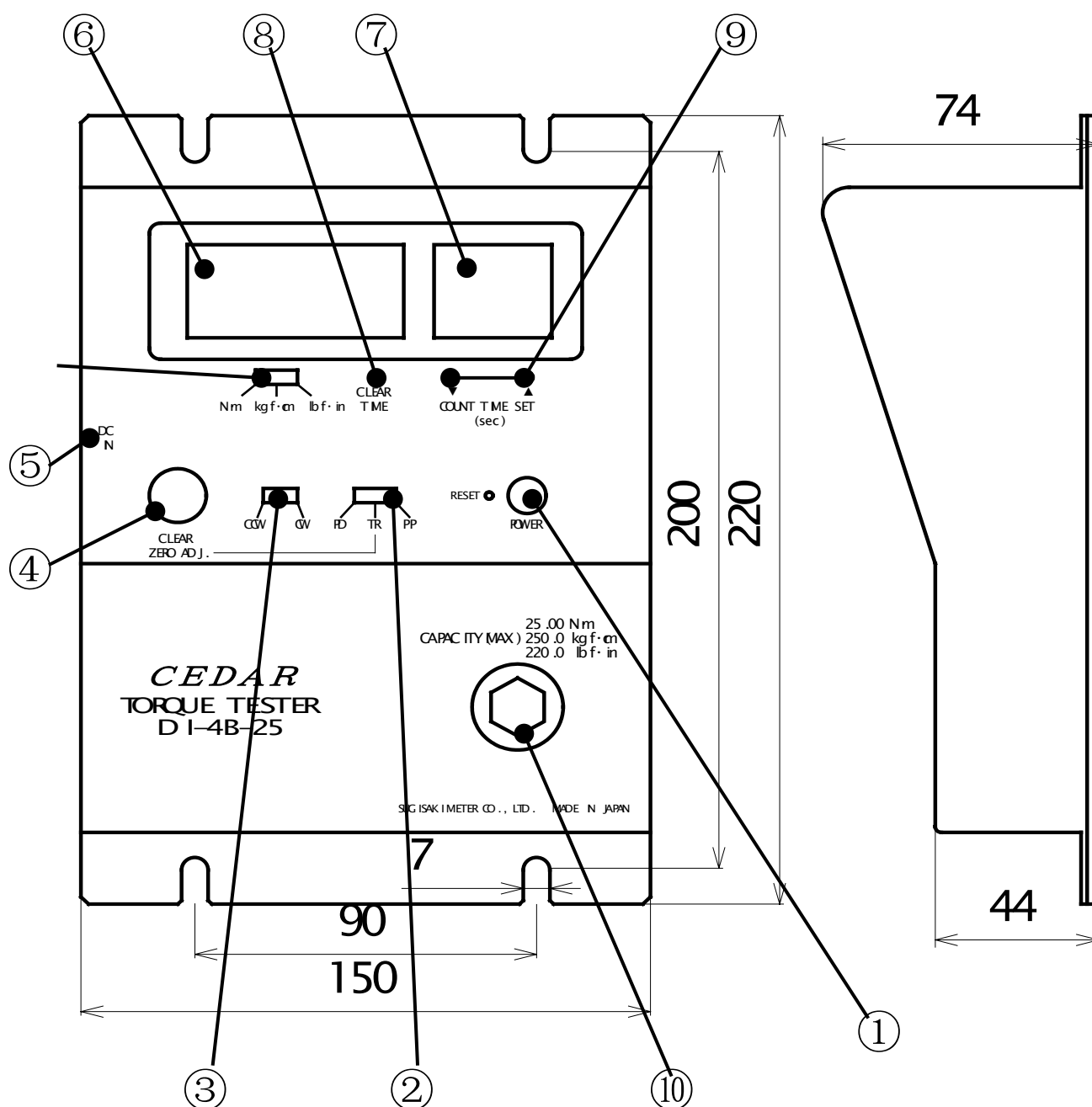


14. Maintain torque meter with care.
  - For better and safer performance, check measuring joints regularly and use ones whose tips are free from deformation and wear down.
  - For replacement of accessories follow the instruction manual.
  - Inspect cords and extension cords periodically and if damaged, replace them.
15. Do not handle cord violently.
  - Do not carry the product hanging by cord or draw out socket from outlet by pulling cord.
  - Do not put cord near to a hot, oily or edgy part.
16. Check for absence of damaged parts.
  - Before further use of the product, carefully check for no damage, normal operation, or intended functions.
  - Check whether or not any other components that may affect its operation are normal.
  - Replace parts according to the instruction manual.
17. Have the product repaired by the specialized dealer.
  - Do not modify this product.
  - Repair should be made always by the dealer where you purchased the product.

If repaired by any person with no knowledge or skills of repair, it may not only show the full performance but also may cause any accident or injury.
18. Use only the specified accessories and attachments.
  - Do not use any accessories and attachments other than ones specified in this instruction manual.
19. Store properly when not in use.
  - Store the torque meter in a dry place and in a height out of children's reach, or secured area.
  - To transport the product, reuse the packing case with which this product was delivered.
20. The cautions on use of a main part and a detector
  - The display part and the detector are separated, and this product is proofread and managed by the same serial NO. Be sure to use it by same serial NO.

## 2. Appearance

① POWER switch	⑥ LED display
② Measuring MODE select switch	⑦ Blow count display
③ DIRECTION switch (L/R)	⑧ Display time setup switch (INDI-OFF TIME)
④ CLEAR key	⑨ COUNT TIME setup switch
⑤ AC ADAPTOR terminal	⑩ Socket
	UNIT switch



### 3. Specifications

MODEL		DI-4B-25
Measuring range	N·m	0.50~25.00
	kgf·cm	5.0~250.0
	lbf·in	5.0~220.0
Accuracy		From 500 ~ 5000 digit display within +/- 0.5 % From 30 ~ 499digit display within +/-3digit
Display		4 figures of LED
Measuring direction		L and R are chosen with a direction switch.
Measuring mode 3 way	PP peak	Peak load value hold.
	TR track	Indication of real time torque value.
	PD peak down	Indication peak down point and hold.
One-touch zero		Return to zero by pressing clear button.
Data transfer (Option)		Serial interface RS232C (Baud rate : 9600)
Power Supply		6VDC (Ni-Cd chargeable battery 1.2Vx5cells)
Auto power save		5 minutes no use, automatically switch off.
Measuring unit		lbf·in - kgf·cm - N·m (selectable)
Charging time		From empty - 8 hours
Continuous working time		About 13 hours
Battery life		Chargeable for 300 times or more However, it varies depending on operating conditions.
Exclusive charger		INPUT: AC120V or AC230V 50/60Hz OUTPUT: DC7.25V 120mA
Dimension		150(W)x115(D)x40(H)
Weight		About 2.1k g

\*Do not apply more than the specified torque.

When turning off a power supply, a power supply SW is pushed for about 1 second.

#### 4. Preparation and the measuring method

##### 4.1 The connection method

A detector input terminal and detector output terminal is connected in attached cable code.

Each terminal should unite a concavo-convex part and insert it.

Insert especially a detector output terminal until it pushes firmly the black part portion of the cable terminal upper part with a finger and sounds it.

And when you remove a detector output terminal, pinch the silver portion with cable terminal and extract.

##### 4.2 Installation

Since a detector may be brandished at the time of high torque measurement, a detector should use a fixed hole etc. and fix it firmly.

A bodystand is in the reverse side of a indicator. A indicator can be made slanting if a bodystand is stood.

##### 4.3 A setup in the measuring mode

The 3 following modes can be chosen with the setting measuring MODE switch in the measuring mode. It unites with the use purpose and please choose.

- (1) PP (peak measurement) : The maximum under measurement is always displayed.  
A setting of torque value can be used in this mode.  
\*PP measurement operates from 30 or more numerical value.
- (2) TR(track measurement) : The value of the load torque concerning detector is displayed as it is.
- (3) PD(peak down measurement) : Value when load torque value changes from a rise to descent is displayed. When you apply re-load, carry out after pushing a clear button.

##### 4.4 A setup of the measuring direction

Set up the measurement directions L (left) or R (right) with DIRECTION switch.

##### 4.5 Measuring method

- (1) Turn on POWER switch.  
\*Switch operation is a push type and is pushed for about 1 second (At the time of OFF).
- (2) It checks that the display part is zero. If it is not zero, measuring MODE select switch is set to TR, push CLEAR key, and perform zero adjustment.
- (3) It is set as the time which wants to count the number of blows with a COUNT TIME setup switch.(▲▼) About a blow count : It counts how many times it hit within fixed time.  
The abnormalities of a tool can be judged by managing the number.
- (4) It is measurement start, when a tool to measure into a detection part is set and load torque is applied.
- (5) It checks that operation of a tool has been completed normally, the measurement torque value of a display part is read, and it is a measurement end.
- (6) After a measurement end, if CLEAR key are pushed, a display will be cleared by zero. When continuing measurement, it repeats from (2).

#### 4.6 A setup of INDI-OFF TIME

Time selection of zero reset can be performed in this measuring instrument, without pushing a clear button.

Insert and push a thin stick etc. into the hole of an INDI-OFF TIME portion.

Since display time is displayed in the order of 0.0/0.5/1.0/1.5/2.0/2.5/3.0, choose either.

Since 0.0 is usually the mode, it pushes a clear button and becomes display zero.

\*PP measurement operates from 30 or more numerical value.

\*PD measurement operates from 50 or more numerical value.

### 5. Date output (Option)

#### 5.1 Data format

Date transfer is RS-232C output conformity. Data can be outputted to the printer corresponding to RS-232C, or a personal computer etc.

Spec.

Spec.	Data bit length	Start bit 1 + data bit 8 + stop bit 2 + NO parity									
	Baud rate	9600bps									
	Connector form	D-Sub-9pin									
	Connector spec.	No. 3 pin: Data output / No. 5 pin: GND									
18	000	OE	20	+/-	000000	20	OF	0000000	OD		
Measured											
CAN	※	SO	Space	Mark	value	Space	SI	Unit	CR		
All data 21											

CAN : Cancellation

Measured value: A decimal point is also included. The last is a space when there is no decimal point.

1

0

.

0

0

 → 10.00 SI.

Unit : In the case of N·m etc., the remainder space

N

.

m

 → N·m ( 

k

g

f

.

c

m

 → kgf·cm )

Pulse : The number of blows within a set time

P : example 10P=10Pulse

S : Seconds

CR : Carriage return

△ cautions An interface cable is used for connection of a computer.

Unite with a computer and prepare a cable.

Please inquire about a cable of a dealer where you purchased the product.

#### 5.2 Data output method

Data is outputted whenever it pushes CLEAR key after a measurement end.

### 6. About charge

If this measuring instrument is left 5 minutes or more or battery capacity stops being sufficient, -L- will be displayed and a power supply will be turned off automatically. Charge should be made by inserting the connector of the charger of exclusive use in AC ADAPTOR terminal. The fully charge is in the state which turned OFF the power supply switch, and takes about 8 hours. Do not perform charge of 8 hours or more. (It may become the cause of the fire by a burst of a battery, generation of heat, and liquid leak, or an injury by fault charge.)

### 7. About system reset

After a Ni-Cd battery discharges completely (when not using it for a long period of time), even if it charges and it turns on a power supply, CPU in equipment may not start. If you become such a situation, please push a system reset button at once. It will be in an initial state. (it is the same as that of the time of purchase) A system reset button is in the inside of a main part.

### 8. Guarantee

It is allowed to fix gratuitously, if the fault which will originate in manufacture, transportation, etc. of our company within one year after a purchase should occur, although product was manufactured under sufficient quality control.

In the following case, it becomes the charge also within a guarantee term.

- Failure by the error, and unjust repair and unjust reconstruction and damage on use
- Failure by fall etc. and damage after a purchase
- Failure by the natural disaster, pollution, and unusual voltage and damage

### 9. Calibration trust service

Periodical calibration is required in order to manage the accuracy of torque meter. By our company, the with the high reliability traced to the national standard is performed, and in order to use it within accuracy, I recommend you of one year. I offer a result of calibration document, a certification on calibration, and a traceability system figure by demand. (Periodical calibration is a charge.)

Documents appended at the time of product purchase  
Result of calibration document  
Certification on calibration document  
Traceability system figure

### 10. Checkpoint when being Troubled

- Before judging it as failure -

When functional fault arises, please check based on a table, without judging it as failure immediately. By the corresponding processing, when fault is not canceled, please tell repair to our company or a store.

In addition, it is allowed to make the guarantee term of torque tester into one year from a purchase. However, also in an onerous case, it is according to the contents of repair.

The situation of torque tester	It does not hold by measurement mode PP-PD.
The cause of generating	It is used by setting up an auto clearance.
The processing method	Please check the setting item of an auto clear function again. When you do not use an auto clearance, please set it as 0.0C.

The situation of torque tester	Even if it turns on a power-supply switch, a power supply will go out immediately after LOBAT display.
The cause of generating	Charge is insufficient.
The processing method	Regular time charge is carried out using the exclusive charger appended.

The situation of torque tester	Even if it turns on a power supply after charge of regulation time, it does not display.
The cause of generating	If it is not used for a long period of time, internal battery will carry out full electric discharge.
The processing method	If AC adapter is connected and the S.RESET button of the side is pushed, it will return. After a return, please make a measurement mode switch the position of TR, push a clear button and make a display into zero.

如有疑问请与经销商联系	<b>CEDAR</b> 杉崎計器株式会社 
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