

Preset type Torque Wrench with Wired Data Transfer function Model LD/LDC

Operating Instruction



CSPLD100N3X15D



CSPLDC25N3X10D

To use this product properly and safely, please read this manual carefully before use. If you have any question about the product and its operations, please contact your nearest distributor or TOHNICHI Mfg. Co., Ltd.

Safety Precautions

Please read this operating instruction carefully before use. For any questions, contact a Tohnichi authorized distributor or Tohnichi office. Keep this instruction for future use.

Safety symbol



This symbol indicates attention is required for your safety. When this symbol appears in this instruction, pay particular attention for your safety concerns. Take preventative measures according to the written message for appropriate operation and management.

Signal Words

A signal word accompanies the safety symbol, which indicates the level of cautions on safety of people and the appropriate use of the equipment. Signal words are classified into 3 levels: "danger", "warning" and "caution" by the degree of risk.

"  **Danger**": Imminent danger which may cause serious damage

"  **Warning**": Potential danger which may cause serious damage

"  **Caution**": Potential danger which hinder ordinary operation but may not lead to serious damage.

Warning

- Do not give exceed rated current to the circuit
- Do not cut or hurt the cable. It may cause electric shock or malfunction.
- Do not open the case on the wrench, it may result in malfunction by contamination of dust or dirt.
- Do not disassemble or modify this product. It may result in loss of safety, degradation in functions, shortening of product life, or failure.
- Do not give vibration or shock to this product. It may cause damage or breakage.
- Before use, make a pre-operation inspection and check the settings.
- Be sure to conduct a periodic inspection of torque wrenches.
- Use a torque wrench within the measurement range specified in the operating instruction.
- Be sure to re-adjust the setting when the cable changed, replaced or added an extension cable.
- Before connecting this wrench and a display, be sure to power off of the display unit.
- Do not handle the torque wrench roughly.
- Be sure to read the operation manual of the torque wrench.
- Use a torque wrench within the measurement range specified in the operating instruction.
- Stop using the product when smoke comes out or strange smell or unusual noise occurs. In such occasions immediately turn off the power, remove the AC adapter from the outlet and contact your nearest distributor or Tohnichi mfg. co., ltd.
- If you adjust the socket set screw in the torque wrench tube part, the switch mechanism may not work properly. Contact to Tohnichi dealer or Tohnichi.

Contents

1. Outline	1
2. Feature	1
3. Specifications	1
4. Outside Figure and Name of Part	2
4-1. Torque Output Part	2
4-2. Connecting Cable Part	3
5. Circuit Diagram	3
5-1. Diagram	3
5-2. Pin Assignment	3
6. LD/LDC Product lines	4
7. Optional Accessories	4
8. Example of Use	5
Example 1: Connect to CD5 display unit ver. 1.4	5
Example 2: Connect to CD5 display ver. 1.4 and PLC	7
Example 3: Connect to CD5 display ver. 1.3 or less	9
Example 4: Manage several CD5 display to indicate workflow	11

1 Outline

The wired data transmission module LD/LDC type is used together with a preset torque wrench with torque gauge to securely transmit the actual applied torque value to the display unit model CD5 by wired communication.

LED on the module illuminates the judgment result to notify the result to the operator at hand.

2 Feature

1. Notify the tightening result by Blue/Red LED to the operator at hand.

2. Tool Selection lamp function

Since command input from PC to CD5 display unit, LED on the LD/LDC module can be turned on in blue/red as an instruction of the next use torque wrench.

3. Applied more smaller controller case

Compare to previous model "CSPD/ACQSPD", reduced the size of case part by 60%.

4. Establish torque and count number management system

With connecting LD/LDC to the display unit model CD5 (Sold separately),

can be built tightening and count management system. CD5 display unit output torque data with judgment result to PC/PLC and output OK/NG relay signal to an external device.

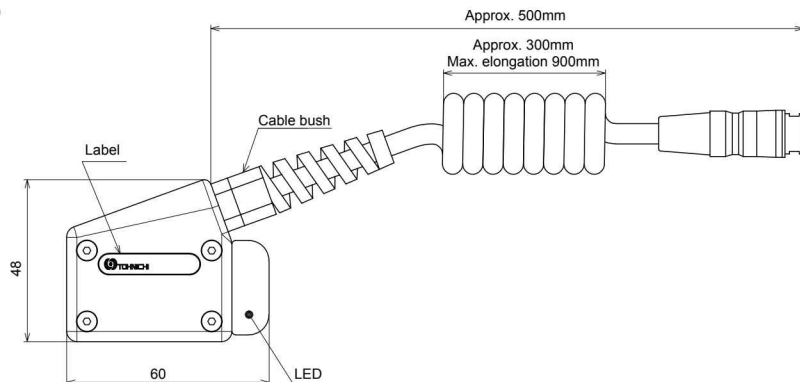
3 Specifications

Display		Blue/Red LED for judgment result and tool selection functions.
Accuracy		±3% +1digit (With connecting to CD5 display)
Rated	Sensor	Input is prohibited Output 2mV/V
	Switch	AC・DC30V, less than 1A
	LED	DC5 - 24V, 500mW
Cable form		LD: Fixed type LDC: Quick connector type
Cable type		Straight/Curled cable
Cable Length		Curled cable 300mm (Max. elongation approx.900mm) + Straight 3m
Temperature in use		0 - 40°C

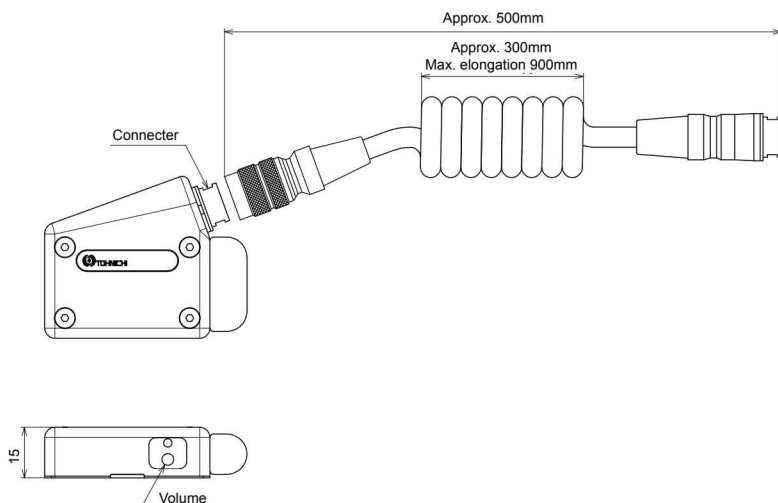
4 Outside Figure and Name of Part

4-1. Torque Output Part

LD



LDC



Volume : It is used to change the rated output value from LD/LDC module.

Turn it to clockwise: down

Turn it to counter clockwise: up

* When delivered from Tohnichi, the volume is sealed by a sticker.

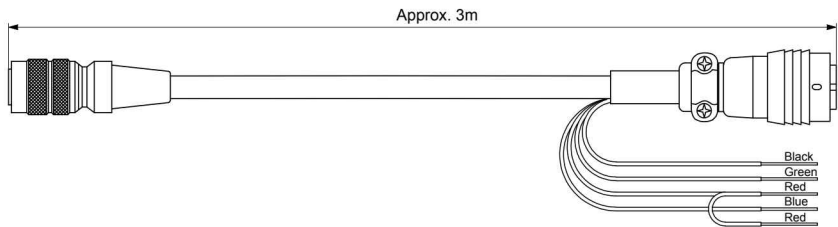
Do not touch this volume without knowledge of adjusting,
torque wrench tester or equipment for proper use.

Plate: Setting torque value will be engraved when requested to Tohnichi for torque setting.

LED : It indicates judgment result by blue(OK)/red(Hi/Lo NG) or next use torque wrench notification.

4-2. Connecting Cable Part

Cable C

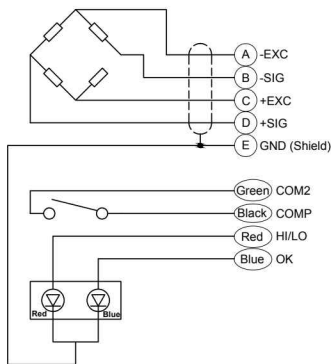


Connecting Cable : This straight cable connects LD/LDC of curled cable and CD5 display unit.

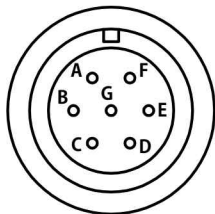
* Standard length 3m, optionally 1 to 10 m are available with extra cost.

5 Circuit Diagram

5-1. Circuit



5-2. Pin Assignment



6 LD/LDC Product lines

Model		Torque Range [N·m]	Overall Length [mm]	Weight [kg]
Fixed Cable type	Quick Connect type			
CSPLD25N3-10NX10D	CSPLDC25N3-10NX10D	2 - 10	193	0.42
CSPLD25N3X10D	CSPLDC25N3X10D	5 - 25		
CSPLD50N3X12D	CSPLDC50N3X12D	10 - 50	214	0.56
CSPLD50N3X15D	CSPLDC50N3X15D		217	
CSPLD100N3X15D	CSPLDC100N3X15D	20 - 100	290	0.75
CSPLD140N3X15D	CSPLDC140N3X15D	30 - 140	349	0.87
CSPLD200N3X19D	CSPLDC200N3X19D	40 - 200	429	1.3
CSPLD280N3X22D	CSPLDC280N3X22D	40 - 280	627	1.75

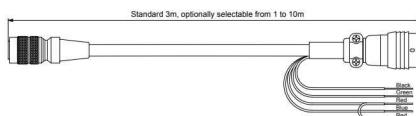
- * 1. CSPLD/CSPLDC wrench and CD5 display are calibrated together.
At time of order, provide torque set value and confirm cable types and length.
2. Wrench only are supplied as backups or for replacement.
3. Consult to Tohnichi for any other torque range of product or a special product which combined LD/LDC module to any other preset type torque wrench.

7 Optional Accessories

Cable C

To right on judgment LED of LD/
LDC with connecting to a CD5 ver.

1.3



Cable G

Intermediary Joint Cable to extend
cable to be connected between LD/
LDC to Cable C.



AC adapter

To right on judgment LED of LD/LDC
with connecting to a CD5 ver. 1.3

Spare Cable for LDC

LDC Quick Connector type spare cable



8 Example of Use

Shown below is typical example of LD/LDC and CD5 display settings.

- * Be sure to use dedicated cable to connect LD/LDC and CD5 display.
- * To connect LD/LDC to CD5 via previous CSPD/CSPD-KN cable, it is required a conversion cable G/H. (Cable G for CSPD cable and H for CSPD-KN). In case using it with LD/LDC, LED light is unavailable.

Example 1: Connect to CD5 display unit ver. 1.4

- Details
 - Judgment will be conducted by a negative edge completion signal
 - Auto Memory Reset
 - Notify the judgment result by LED
- Composition
 - CSPLD100N3X15D
 - CD5 (version 1.4 or the the version that has VOUT terminal on the back)
 - * Version is shown on the CD5 display when turns on the power and after all the display illumination light on and off.
- Setting Conditions

OK/NG Judgment : Upper limit 55N · m
Lower limit 45N · m

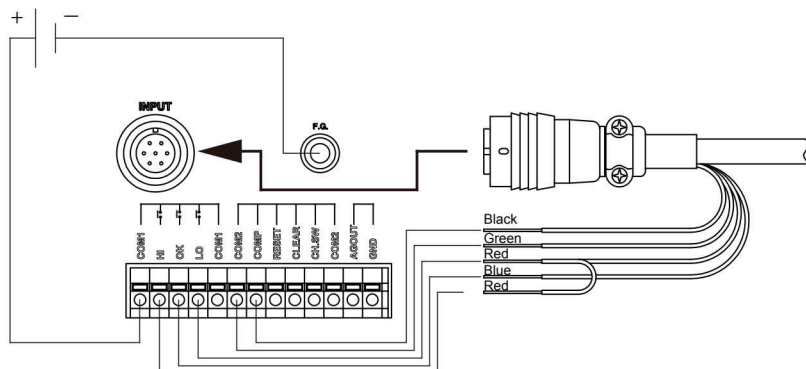
Auto Judgment Timer : 0 sec.

Auto Memory Reset : 2.0 sec.

External Input Signal setting : FALL
- Wiring:

Connect the coupler of Cable C to INPUT terminal of CD5.

Connect the black completion signal cable to COMP terminal and Green to COM2. Connect the both red judgment result signal cable to HI and LO terminal and connect blue to OK. Short the VOUT and the COM1 terminal by a jumper cable comes with CD5 ver. 1.4.



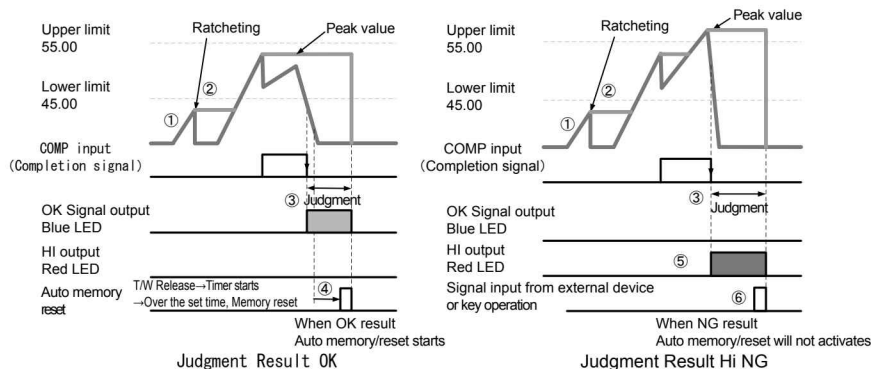
● Operation

————In case Torque was within Hi/Lo Limit————

1. When applied loading, the peak value increases.
2. Even if conducts ratcheting action, judgment function will not be activated until COMP signal is input to CD5.
3. After reaching set torque, wrench gives click sounds and vibrations. By releasing the loading, wrench sends negative edge COMP signal to CD5 and the display judges whether the value is within the upper and lower limits. In case the result is OK, CD5 sends OK signal to wrench and LED on the wrench lights up in blue.
4. After set time passage, auto reset will be activated and saved the measured torque data in the CD5. CD5 outputs it through RS232C terminal and counts up and resets the display. Meanwhile, LED lamp on the wrench will be turned off.

————In case Torque exceeds Hi Limit————

5. After reaching set torque, wrench gives click sounds and vibrations. By releasing the loading, wrench sends negative edge COMP signal to CD5. In case the torque value exceeded the Hi limit, CD5 sends HI signal to wrench and LED on the wrench lights up in red.
6. When the judgment result in HI, auto reset/memory will not activated. Press MEM key or send a signal to the RESET terminal to save data or clear it by pressing C key or send a signal to the CLEAR terminal to reset and turn the LED on the wrench off.



Example 2: Connect to CD5 display ver. 1.4 and PLC

● Details

- Control by PLC
- Notify the judgment result by LED

● Composition

- CSPLD100N3X15D
- CD5 (version 1.4 or the version that has VOUT terminal on the back panel)
 - * Version is shown on the CD5 display when turns on the power and after all the display illumination light on and off.
- PLC

● Setting Conditions

OK/NG Judgment : Upper limit 55N · m
 Lower limit 45N · m

Auto Judgment Timer : 0 sec.

Auto Memory Reset : 0 sec.

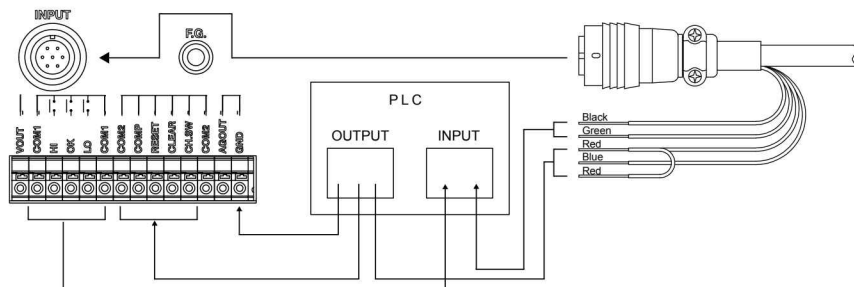
External Input Signal setting : rISE

● Wiring :

Connect the coupler of Cable C to INPUT terminal of CD5.

Connect completion signal lead wire black and green, judgment signal lead wire red and green to PLC. Connect terminals of CD5 to PLC (For the connection of GND, it is alternative to be connected to COM2 or F.G. terminal).

* Be sure to read the operating manual of CD5 before connecting with PLC.

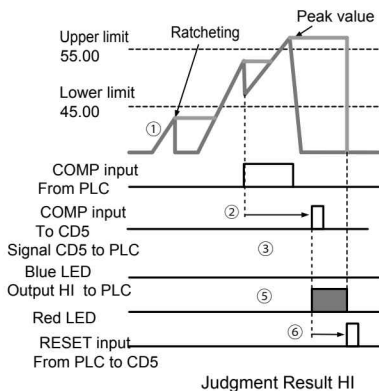
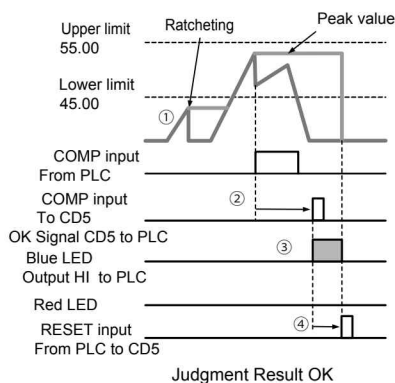


● Operation

1. When applied loading, the peak value increases.
2. After reaching set torque, wrench gives click sounds and vibrations.
By releasing the loading, wrench sends COMP signal to PLC. After PLC receiving COMP signal, it sends positive COMP signal to CD5 after certain period of time.
3. As CD5 receives positive COMP signal, it gives judgment.
In case the torque value is within Hi/Lo limit, outputs OK signal.
During PLC receiving OK signal, it applies DC+5V to 24V to the blue signal line to light the LED on in blue.
4. After off the OK signal, send a RESET signal from PLC to CD5 for saving the data and counting up, then CD5 will be reset.

———In case of HI judgment———

5. As CD5 receives positive COMP signal, it gives judgment. In case the torque value exceeds Hi limit, outputs HI signal. During PLC receiving HI signal, it applies DC+5V to 24V to the red signal line to light the LED on in red.
6. After off the HI signal, send RESET signal to CD5 or press C key on the display to save and output the data. To clear the data without saving or outputting, send CLEAR signal to CD5 or press C key on the display.



Example 3: Connect to CD5 display ver. 1.3 or less

● Details

- Judgment is conducted by a negative completion signal.
- Activated Auto Memory and Auto Reset timer
- Notify the judgment result by LED

● Composition

- CSPLD100N3X15D
- CD5 (version 1.3 or less the version that does not have VOUT terminal on the back panel)
- * Version is shown on the CD5 display when turns on the power and after all the display illumination light on and off.
- In case using LED light on LD/LDC with CD5 version 1.3 or less, external power supply DC+5V to +24V is required.
To use AC100V to AC240V as an external power supply, optional AC Adapter is required. Ask to Tohnichi.

● Setting Conditions

OK/NG Judgment : Upper limit 55N · m
Lower limit 45N · m

Auto Judgment Timer : 0 sec.

Auto Memory Reset : 2.0 sec.

External Input Signal setting : FALL

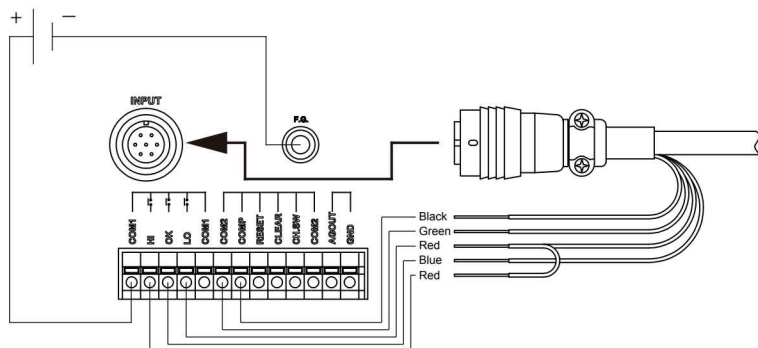
● Wiring :

Connect the coupler of Cable C to INPUT terminal of CD5.

Connect completion signal lead wire black to COMP terminal and green to COM2.

Connect judgment signal red lead wires to each HI and LO terminal and blue for OK. Connect DC+5V - +24V power supply wire to COM1 and GND to F.G.

- * In case not to be used the judgment LED function, it is not necessary to connect DC+5V-+24V.

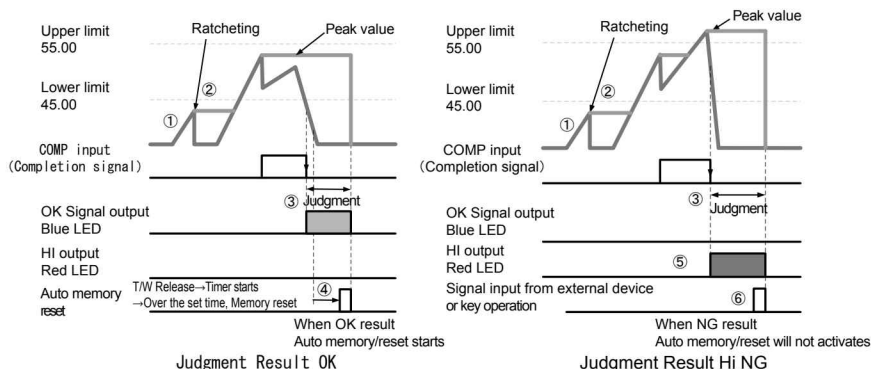


● Operation

1. When applied loading, the peak value increases.
2. Even if conducts ratcheting action, judgment function will not be activated until COMP signal is input to CD5.
3. After reaching set torque, wrench gives click sounds and vibrations.
By releasing the loading, wrench sends negative edge COMP signal to CD5.
After CD5 receiving negative edge COMP signal and the display judges whether the value is within the upper and lower limits. In case the result is OK, CD5 sends OK signal to wrench and LED on the wrench lights up in blue.
4. After set time passage, auto reset will be activated and saved the measured torque data in the CD5. CD5 outputs it through RS232C terminal and counts up and resets the display. Meanwhile, LED lamp on the wrench will be turned off.

———In case of HI judgment———

5. After reaching set torque, wrench gives click sounds and vibrations.
By releasing the loading, wrench sends negative edge COMP signal to CD5.
In case the torque value exceeded the Hi limit, CD5 sends HI signal to the wrench and LED on the wrench lights up in red.
6. When the judgment result in HI, auto reset/memory will not activated. Press MEM key or send a signal to the RESET terminal to save data or clear it by pressing C key or send a signal to the CLEAR terminal to reset and turn the LED on the wrench off.



Example 4: Manage several CD5 display to indicate workflow

By sending a command input from PLC to CD5 display unit through RS232C terminal, LED on the wrenches can be illuminated in blue or red ("M6CRLF" to light on in blue and "M6CRLF" in red), to indicate workflow.

After using a torque wrench, the LED turns off by judgment result or clearing the display.

* Refer to page 7, Chapter 6, Example 1 for setting conditions and wiring.

Operation: When the work flow display LED is lit in blue

In case judgment result is OK, Auto Memory Reset timer activated and it turns of the LED.

In case judgment result is Hi/Lo, LED changes from blue to red.

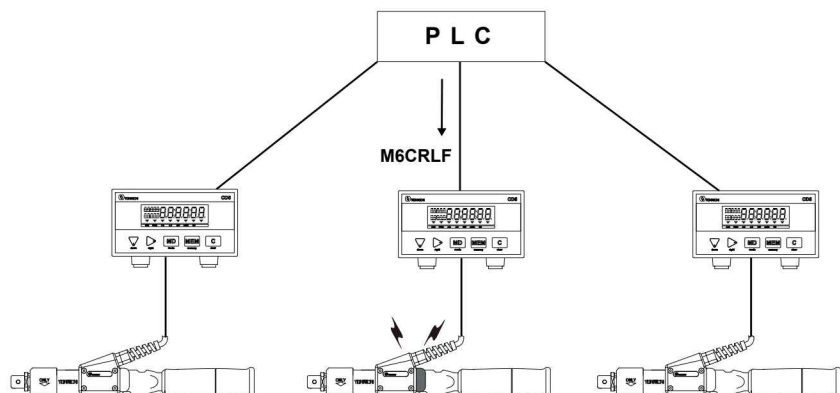
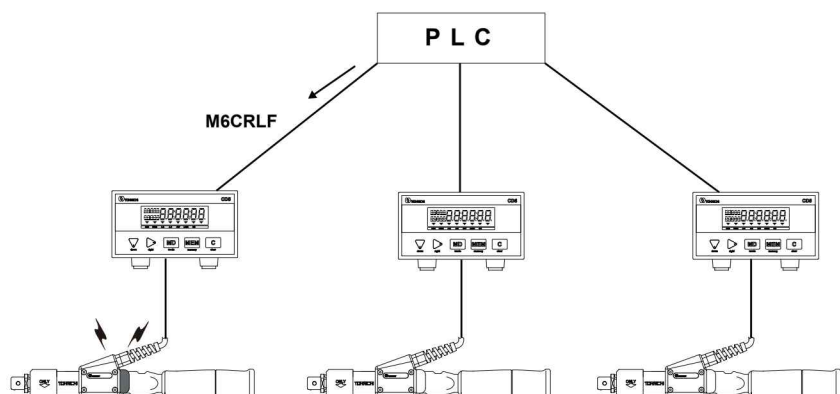
When the judgment NG, Auto Memory Reset timer will not be activated so it keeps LED turning on in red. To turn off red LED, conduct any key operation or input RESET/CLEAR signal from external device.

Operation: When the work flow display LED is lit in red

In case judgment result is Hi/Lo, it keeps LED turning on in red.

When the judgment NG, Auto Memory Reset timer will not be activated so it keeps LED turning on in red. To turn off red LED, conduct any key operation or input RESET/CLEAR signal from external device.

In case judgment result is OK, LED changes from red to blue and Auto Memory Reset timer activated and it turns of the LED.



Designs and specifications are subject to change without prior notice.

■TOHNICHI MFG.CO.,LTD.

TEL.+81-3-3762-2455 FAX.+81-3-3761-3852
2-12, Omori-Kita, 2-Chome Ota-ku, Tokyo JAPAN
E-mail: overseas@tohnichi.co.jp
Website: <http://www.global-tohnichi.com>

■N.V.TOHNICHI EUROPE S.A.

TEL.+32 16 60 66 61 FAX.+32 16 60 66 75
Industrieweg 27 Boortmeerbeek, B-3190 BELGIUM
E-mail: europe@tohnichi.com

■TOHNICHI AMERICA CORP.

TEL.+1 847 947 8560 FAX.+1 847 947 8572
1303 Barclay Blvd. Buffalo Grove,IL 60089 USA
E-mail: inquiry@tohnichi.com
Website: <http://tohnichi.com>

■TOHNICHI SHANGHAI MFG. CO., LTD.

东仁扭矩仪器（上海）有限公司
TEL.+86 21 3407 4008
FAX.+86 21 3407 4135
RM.5 No.99 Nong1919, Du Hui Road, Minhang,
Shanghai, P.R.China
E-mail: sales@tohnichi-sh.com



- All rights reserved. No reproduction or republication without written permission.
- © TOHNICHI Mfg. CO., LTD. All Rights Reserved