Quality control: SANYO MACHINE WORKS, LTD.

Product brochure

No.180828

SmartAutomation™ SANYO MACHINE WORKS, LTD.

http://www.smartautomation.jp/

Smart Digital production Wrench

(Torque Wrench with data communicating function)

DPW Series

SmartAutomation® Solution device

Visualization POKAYOKE

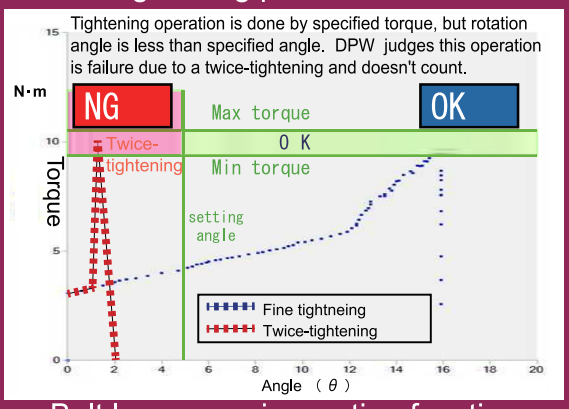
Radio IoT Tool

ZigBee

(IEEE 802.15.4 2.4GHz

Twice-tightening prevention function

Tightening operation is done by specified torque, but rotation angle is less than specified angle. DPW judges this operation is failure due to a twice-tightening and doesn't count.



Bolt looseness inspection function

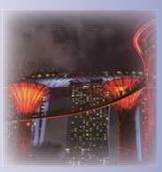
Indicator OK / NG Torque/Angle

Automotive

Aerospace

Railway/Ship

Building



Power plant

Chemical plant

The face

DPW-10NM

The back

DPW-25NM

DPW-100NM

DPW-200NM

DPW-50NM,DPW-300NM are in product lineup.
lbf· in:custom order

SANYO MACHINE WORKS, LTD.

Smart Digital Production Wrench

(Torque Wrench with data communicating function)

DPW Series

DPW Series

Torque Wrench with wireless communicating & vibration & angle detecting function

Smart Digital Production Wrench

You can reduce the number of times of over-torque by achieving a target torque correctly because this torque wrench has a vibration function and can send a torque data by wireless communication. Also, you can judge tightening OK or NG by the option of spec for angle.

Characteristics

- **Ultra-Light Torque Wrench**
  Compared to conventional Torque Wrench, it achieves weight saving.
- **Tightening with analog sensation.**
  You can do tightening with analog sensation by using LED indicator.
- **Great function for notifying POKAYOKE.**
  DPW notifies a torque-up to an associate by vibration, & LED lamp with the sense of touch, vision, and hearing.
- **Best way for tightening traceability**
  DPW can save 6,000 tightening data. You can make the best use for traceability by recording the tightening.
- **We have the socket exchangeable model**
  You can do tightening several kinds of bolt and nut by exchanging a socket.
- **High Level measurement accuracy**
  Measurement accuracy:
  Torque ±3% +1digit / Angle±2% +1digit
- **It can be output for torque data**
  Industrial ratchet torque wrench has the data sending function. You can get the tightening data by communicating with an outside computer by USB in real time.
- **Specification for angle (option)-*** -Ang**
  Both sides OK for CW/CCW :Measurement area: 1° ~999°
  Snug torque:5% ~100% :Angled measurement split function
- **Communicating function for ZigBee(R) wireless data**
  Frequency is 2.4GHz, communicating distance is about 60m.
  You can use 25 sets per 1 receiver.
- **With the software standard accessories**
  You can change the setting of torque wrench with your PC. You can show the history of tightening torque and real time condition, and do the output to Excel and CSV.
  *Support to Windows
- **The best tool for system construction**
  Controller with next-generation open control architecture function CETOP(R) A tracebility system and an POKAYOKE system are built by CETOP connection.

- **Tighten state**
  It can make the working environment which is doing LED lamp, vibration and big sound buzzer. As the tightening torque approaches to the setting torque, LED lamps turn on sequentially.

SANYO MACHINE WORKS, LTD.

Smart Digital Torque Wrench

(Torque Wrench with data communicating function)

DPW *Series*

Main function of display

● Setting function for tightening torque range

You can set the lower limit and upper limit of the tightening range as you like. It informs an associate after the torque passes the lower limit with vibration, buzzer, or LED ramp by this setting. This is the POKAYOKE function for less or over target tightening torque.

During the tightening | Tightening is completed | Tightening is failure

Tightening failure:

(1)Over torque
(2)Detect a Twice-tightening
(3)Detect a bolt looseness

● Managing function for tightening times

It can set the tightening times which you hope, and manage by 999 times at maximum.

Setting for tightening times | Show the rest times of tightening | Done tightening

Not count:

(1)Over torque (*)
(2)Detect a Twice-tightening
(3)Detect a bolt looseness

*Can be changed setting

● Tightening support function

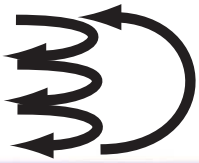
You can transfer the 10 pattern tightening settings as maximum automatically. It supports the final tightening after temporary tightening.

Temporary tightening ⇄ Auto transition ⇄ Tightening

*** Example of setting**

Procedure 1:CW (10N·m) 6 places (Temporary)
Procedure 2:CW (18N·m) 6 places (Final)
Procedure 3:CW (8N·m) 4 places (Temporary)
Procedure 4:CW (14N·m) 4 places (Final)

Auto transition



Transition condition

(1)Done set count of tightening, change to next procesure
(2)Repeat
(3)Return original state (*)

*Can be changed setting

● Twice-tightening prevention function

If you tight the bolt which is tightened with correct torque again, it can prevent twice-tightening by checking the torque and angle. It informs an associate with buzzer. It doesn't count it as the tightening times by twice-tightening, so it can do prevention the forgetting of tightening as POKAYOKE.

*Twice-tightening prevention function and Bolt looseness inspection function is option item.

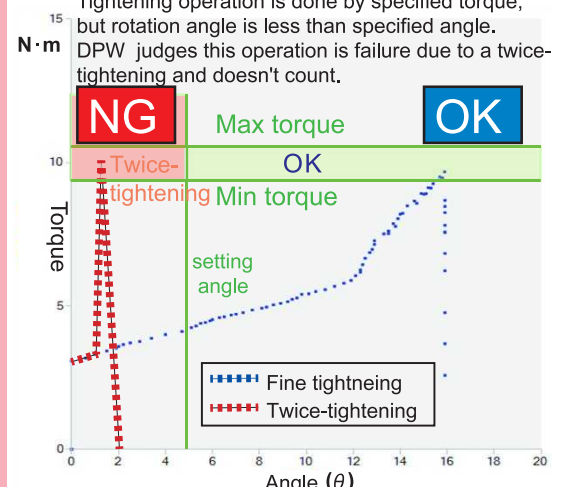
*Gyro sensor built-in.

● Bolt looseness inspection function

This function inspects looseness of a tightened bolt.
You opearate retightening to the bolt which is tightened.
DPW inspects the looseness by checking the torque and angle and memory the result. It informs an associate with buzzer.

● Detection method: Twice-tightening prevention

Tightening operation is done by specified torque, but rotation angle is less than specified angle. DPW judges this operation is failure due to a twice-tightening and doesn't count.



*PATENT PEND.

SANYO MACHINE WORKS, LTD.

Smart Digital Torque Wrench

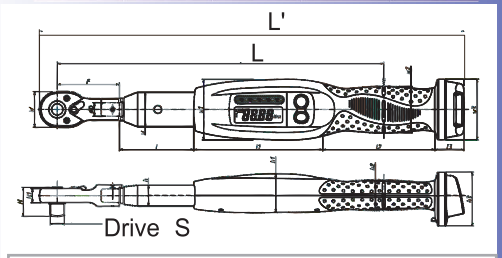
(Torque Wrench with data communicating function)

DPW Series

Kind of Smart Digital Production Wrench

DPW

DPW Main body



FCC ID:2AVOZ-CETOPZWTW R001-WWCA1226 CCAB20LP0240T6 Complies with IMDA Standards DA108416

Model Number	Range (CW・CCW)	Resolution	L	S	L'	Weight
CETOP-DPW-10NM	(1.0) 2.0～10N・m	0.01N・m	247mm	6.35mm	324mm	0.39kg
CETOP-DPW-25NM	(2.5) 5.0～25N・m	0.01N・m	252mm	9.53mm	333mm	0.39kg
CETOP-DPW-50NM	(5.0)10.0～50N・m	0.01N・m	289mm	9.53mm	375mm	0.52kg
CETOP-DPW-100NM	(10) 20～100N・m	0.1N・m	340mm	12.7mm	430mm	0.64kg
CETOP-DPW-200NM	(20) 40～200N・m	0.1N・m	369mm	12.7mm	573mm	1.12kg
CETOP-DPW-300NM	(30) 60～300N・m	0.1N・m	650mm	19.05mm	766mm	1.40kg
CETOP-DPW-400NM	(40) 80～400N・m	0.1N・m	904mm	19.05mm	1015mm	2.45kg
CETOP-DPW-600NM	(60) 120～600N・m	0.1N・m	1123mm	19.05mm	1240mm	3.64kg
CETOP-DPW-1000NM	(100) 200～1000N・m	1N・m	1500mm	25.4mm	1620mm	6.26kg

(Lower Opt.)

Not included in the weight of an exchangeable head

Angle option

You can use the method of angled tightening and twice-tightening prevention function.
Also, you can measure the relationship between angle and torque.

Model	Angle calibration	Range	Minimum snug torque	Resolution	Angle Accuracy
A	○	1° ～999°	Max torque 5%～	0.1°	±2° +1digit
D	×		Max torque 1%～		

Model Description

An option name attaches after a model name.

Ex：100NM Full option　　*lbf・in : custom order

CETOP - DPW - 100 NM - ZE - A 1 P

Model / Max torque / *Unit system / Radio / Angle / Lower / Pin-lock

Model	Max torque	Radio	Angle	Lower limit	Head
CETOP-DPW-	( )	Nothing (No function)	Nothing (No function)	Nothing (Effective 20%～)	Nothing (Ball joint)
		ZE (With wireless)	A (Angle verified)	1 (Effective 10%～)	P (Pin -lock)
			D (Twice-tightening prevention function) (Bolt looseness inspection function)		

Option apply list

Exchangeable type has 2 type heads:
"quick-change type (standard)" and "pin-lock type".

Ex : DPW-10NMP-Dch

Model	ZE	A	D	1	P
CETOP-DPW-10・25・50・100・200	○	○	○	○	○
CETOP-DPW-300・400・600・1000	○	○	○	○	Screw

Radio Reciever

World products　CE FC　R001-WWCA1226　CCAB20LP0240T6　Complies with IMDA Standards DA108416

RS232C , USB I/F

FCC ID:2AVOZ-CETOPZW101W

CETOP-ZC-101W

USB I/F (Dongle type)

FCC ID:2AVOZ-CETOPZW202W

CETOP-ZC-202W

●Japanese domestic products　R001-WWCA1226

USB I/F

CETOP-ZC-201W

Ethernet 2ch , USB , RS232C I/F

(option: Isolated output 16 points)

CETOP-ZC-501W

Model	I/O	Wireless standard	Frequency band	Communication distance	Shape	Size
CETOP-ZC-101W	USB miniB・D-Sub9pin	IEEE802.15.4	2.4GHz	30～60m	BOX	67 x 67 x 34 mm
●CETOP-ZC-201W	USB A				BOX	67 x 67 x 34 mm
CETOP-ZC-202W	USB A				USB dongle	70 x 23 x 9 mm
●CETOP-ZC-501W	USB miniB・D-Sub9pin・Ethernet				BOX	190 x 86 x 35 mm

*It is possible to change by your using situation and condition.

ZC-501W option specification
No-voltage output I/F
Open collector output
5-24VDC 0.5AMAX
8-points common (2AMAX)
●Direct output mode
(1) Final data signal 8-points
(2) Over torque signal 8-points
(3)LAN state signal 1-point
(4) Error signal 1-point
●Binary output mode
(1) Wrench ID 8bit
(2) Tighten management completion 1-point
(3) Over torque signal 1-point
(4) Data Output completion 1-point
(5)LAN state signal 1-point
(6) Error signal 1-point

SANYO MACHINE WORKS, LTD.

Smart Digital Torque Wrench

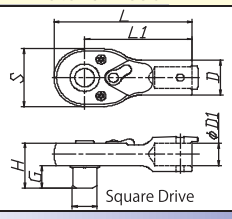
(Torque Wrench with data communicating function)

DPW Series

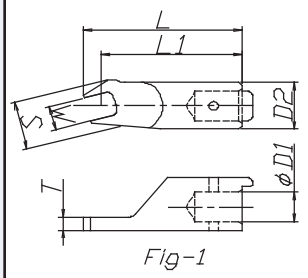
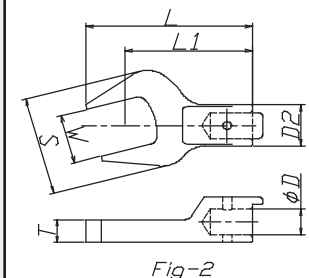
DPW exclusive exchange head

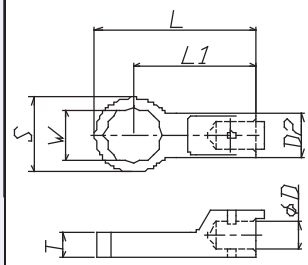
Specifications are subject to change.

● DPW Standard goods

QPH Ratchet head	Model	Square drive	Ratchet gear	S	H	G	D	L1	ϕ D1	Applicable model
	QPH10	6.35(1/4)	72 teeth	25	17.5	8	16	45	10	DPW-10NM
	QPH25	9.53(3/8)		32	25.5	12	19	50		DPW-25NM
	QPH50							55	12	DPW-50NM
	QPH100	12.7(1/2)		39	33	16	26	65	15	DPW-100NM
	QPH200							80	18	DPW-200NM
	QCH400	19.0(3/4)	24 teeth	54	43	20	30	100	22	DPW-300NM

● DPW Build to order

SPH Spanner head	Model	Width W	S	T	Width W	S	T	L1	ϕ D1	D2	L	Applicable model
 Fig-1	SPH10	5.5	11	4.5	13	26	7	45	10	16	(49) ~ (60)	DPW-10NM
		6	12		14	28						
		7	14		16	32						
		8	16		17	34						
		9	18		18	36						
	SPH25	10	20		19	38	9					DPW-25NM
		11	22	7	21	42						
		12	24									
	SPH50	9	18	7	17	34	9	55	12	18	(62) ~ (74)	DPW-50NM
		10	20		18	36						
		11	22		19	38						
		12	24		21	42						
		13	26		22	44						
		14	28		24	48	12					
		16	32	9	27	54						
 Fig-2	SPH100	12	24	8	21	42	12	65	15	24	(74) ~ (88)	DPW-100NM
		13	26		22	44						
		14	28		24	48						
		16	32		27	54						
		17	34		30	60	14					
		18	36		32	64						
		19	38									
	SPH300	17	34	10	27	56	12	80	18	26	(92) ~ (110)	DPW-200NM
		18	36		30	62						
		19	38		32	66						
		21	44		36	74	15					
		22	48		41	84						
		24	50	12								
	SCH400	17	34	12	29	58	15	100	22	32	(115) ~ (136)	DPW-300NM
		18	36.5		30	60						
		19	38.5		32	72						
		21	42		34	78						
		22	44		36	72						
		23	46		38	76						
		24	48		41	82	17					
		26	52		46	92						
		27	60		50	100						

RPH Box end head	Model	Width W			S	T	L1	ϕ D1	D2	L	Applicable model
	RPH10	6	7	8	13~ 16	4.5	45	10	16	(54)~ (61)	DPW-10NM
		9	10								
	RPH25	11	12	13	18~ 21	7					DPW-25NM
		14	17		22~ 26						
		19	22		28~ 35	9					
	RPH50	8	10	11	15~ 18	7	55	12	18	(65)~ (71)	DPW-50NM
		12	13	14	19~ 22						
		17	19	22	26~ 35	9					
		24	27		35~ 40	12					
	RPH100	12	13	14	19~ 22	8	65	15	24	(78)~ (86)	DPW-100NM
		17	19		26~ 30						
		22	24	27	35~ 42	12					
		30	32		47~ 50	14					
	RPH200	17	19	22	26~ 35	10	80	18	26	(98)~ (110)	DPW-200NM
		24	27	30	38~ 50	12					
		32									
		36	41		56~ 65	15					
	RPH300	17	19	22	26~ 35	12	100	22	32	(115) ~ (136)	DPW-300NM
		24			38						
		27	30	32	42~ 52						
		34	36		54~ 56	15					
		41	46	50	65~ 80	17					

● Special order goods

Adjustable head, Box end ratchet head, hexagonal bar head, plus driver head, and etc.

Smart Digital Torque Wrench

(Torque Wrench with data communicating function)

DPW Series

Specification

*Specification may change without a preliminary announcement.

Item	Contents
The load direction	A set of both left and right is possible. A direction is automatic detection.
Measurement accuracy	±3%+1digit
Memory capability	A maximum of 6,000
Measurement mode	Peak hold
Tightening operation mode	Auto / Manual
MEMO mode	Peak torque value・Time information Effective / Invalid
Buzzer / Vibration	ON / OFF
Tightening torque setting	Setting range 10%~ 100% (Maximum torque value)
The unit of setup	N・m (*1 lbf・in:custom order)
Setting function to manage tightening condition	・Condition; It can register by 10 patterns ・Managing times: continuity 1-999 times setting which you like ・Action after completion: Auto transfer/ Manual transfer ・Tightening Condition: Auto transfer function (Setting for combination at max 10 levels)
Sleep function / Auto power off function	Sleep：OFF / 5m / 10m / 30m / 60m Auto Power off：OFF / 1h / 4h / 8h
Power supply	AA battery 2 cells (Ni-MH battery recommended) About 70 hours(100times / H) When recommended battery used
Interface	RS232C conformity ・ USB connector 〈Wireless option〉 Communication band：2.4GHz Number of concurrent use：Maximum 25(using standard software) Maximum 255 (using DLL) (oppose to 1 Wireless receiver) Construction design attestation of TELEC *Changed by environment
Standard accessory	1)Traceability management system software 2)USB cable 3)2 AA battery (For check the operation)

●System of units

*1 On Measurement Act., in Japan, a customer except a special person cannot use a torque equipment without using SI unit (Nm).

Radio specification

*Specification may change without a preliminary announcement.

Wireless	Applicable model: ZC-101W / ZC-201W / ZC-202W / ZC-501W
Wireless standard	Zigbee / IEEE 802.15.4
Frequency band	2.4GHz (2405 ~ 2480MHz)
Channel number	11ch~ 26ch (Total16ch)
Group ID	1 ~ 15

Server	Applicable model: ZC-501W
Software	Standard softoware included
File format	CSV (default)
	Databese integration: relational database
	(PostgreSQL / MySQL / SQL-Server / Oracle / etc) discuss separately

I/O	Applicable model: ZC-501W
LAN connector	10/100BASE-T 1port *1
USB port	1port
	1,152,000bps・data length 8bit・parity bit Even・stop bit 1bit
RS232C	D-Sub 9pin *1
	Baud rate：9,600・19,200・38,400・115,200(set by DIP-switch)
	data length 8bit・parity bit none・stop bit 1bit

*1 Data communication of output port will be either the Ethernet or RS-232C.(Switched by DIP-s)

Output option	Applicable model: ZC-501W
External output	No-Voltage output 16 points
Mode A	OK / NG signal each 8 point output (ID: 1 ~ 8)
Mode B	OK / NG Count management completed signal torque wrench ID (1 ~ 255)
Connector	Fujitsu component FCN-365P024-AU

●Fit for smart factory, Industry4.0

DPW data send to server with wireless connection in realtime.
DPW tighten setting is enable to be changed by PC with wireless connection.

Fit for POKAYOKE system too.
We have system solutions to introduce. Please contact.

SANYO MACHINE WORKS, LTD.

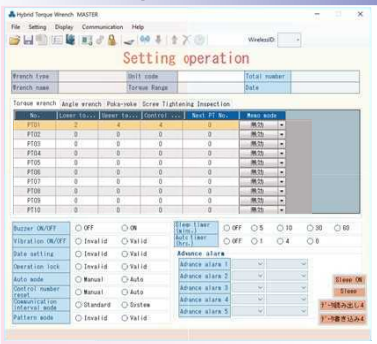
Smart Digital Torque Wrench

(Torque Wrench with data communicating function)

DPW Series

Traceability control software (standard accessory) For Windows

Setting of torque wrench *For Japanese and English



●Setting screen

You can set the setting of DPW by PC tool easily. You also change the setting by USB connecting or wireless-communicating.

The example of setting items
- tighten torque
- tightening times

● Tightening support function

● Setting of Twice-tightening prevention function

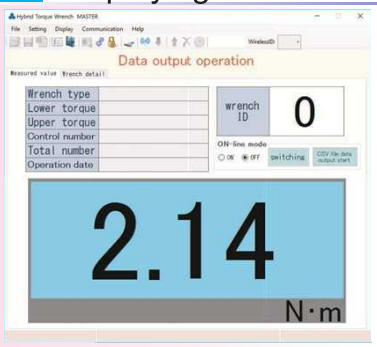
Realtime monitor *Japanese only

Vertical axis: torque[Nm] Horizontal axis: time[Sec], Angle[°](Angle option)

● Realtime measurement

It's possible to analyze between the tighten torque and the time or the angle in realtime.
It Show the relation between torque and time or angle in a graph.

Display tighten data *For Japanese and English



● Result Torque data

It shows the tightening data of DPW on PC display in real-time.Also, it takes-out the tightening data and saves.
It has the auto data saving function.

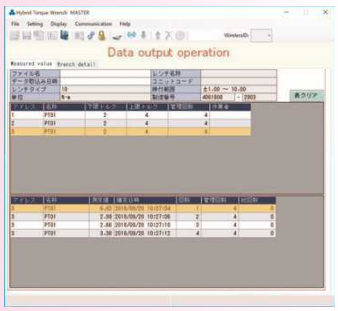
The example of a display item
- A tightening torque
- Target torque range of tightening
- The number of times of tightening
- The date of tightening

Excel conversion *For Japanese and English

● Excel conversion output function

You can conversion the result data of tightening to Excel file and CSV format.

History output *For Japanese and English



● Display operation history

It shows history of DPW tighten operation and save the history data.

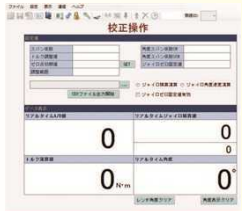
Display item:
- Wrench type, Serial number, Torque range
- Wireless ID, Address, Wrench name
- Tighten torque
- Setting torque range
- Setting for tightening times
- Operation date

Maintenance

●This function is used by manager to setting the wireless setting, counting setting, and wrench detailed setting.

Calibration

●This function is used by calibrate manager to calibrate the torque wrench with realtime torque data and angle data.



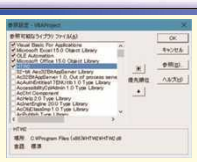
Communication class library (DLL) (non-free) (Office licence) For Windows

This one supports the communication with torque wrench. It can make your own system as developing application environment under "Visual Studio" and "Excel" macro condition.

*Operating environment Windows XP SP3 or lator, Vista, 8.1, 10 .NET Framework3.5 is required.

Application development environment

Enable communication under Excel macro



Available in only reference

Command execution
Various setting

Data receiving
and completion event

Communication class library Type:CETOP-DPW-DLL

★Simplified commands ★Various events ★Cumbersome process of the communication control

It can do to manage troublesome ones by Class-library

SANYO MACHINE WORKS, LTD.

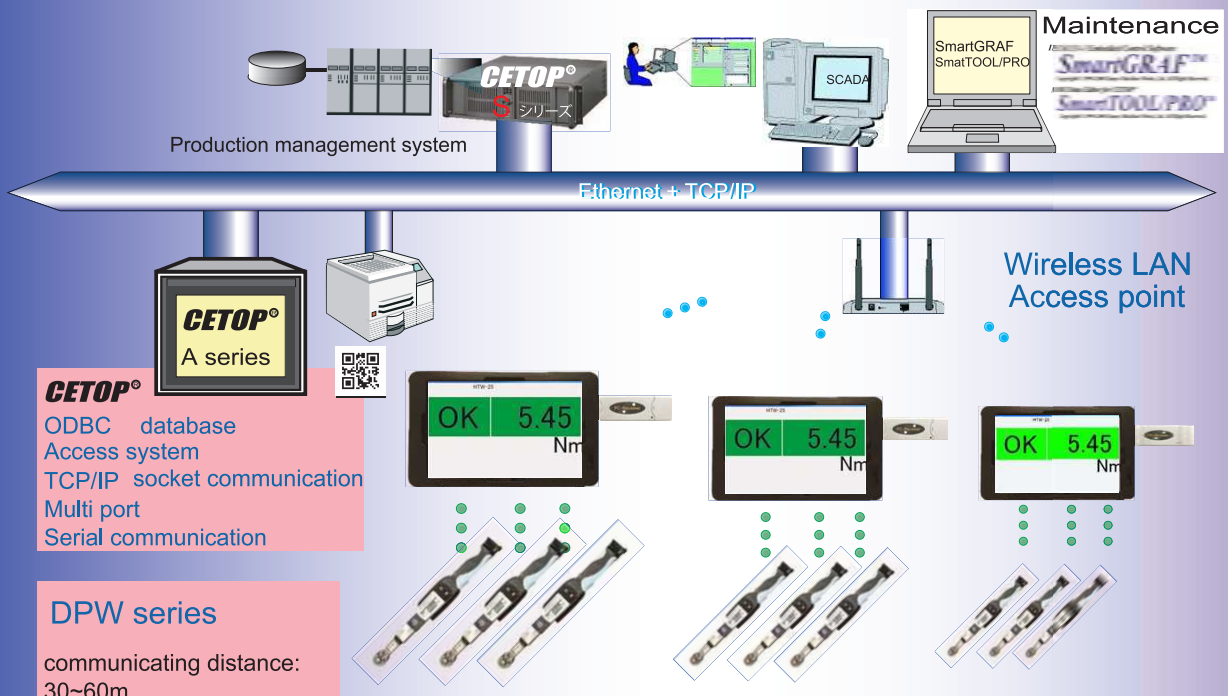
Smart Digital Production Wrench

(Torque Wrench with data communicating function)

DPW Series

SmartAutomation®

Radio real time Traceability system



CETOP

ODBC database
Access system
TCP/IP socket communication
Multi port
Serial communication

DPW series

communicating distance:
30~60m
Record 6000 data
A maximum of 25 / 1ch

Smart Digital Production wrench

DPW series

Attention about safety	Since you use surely safely, please be sure to read an operation manual before use.

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