OPTEX FA

Enables easy connection of displacement sensors and Mitsubishi PLC

Control unit for displacement sensor
UQ1 series

High performance laser displacement sensor
CD5 series

Compact type laser displacement sensor
CD33 series
Digital output type
(with RS422 I/F)

Fast
Max. speed: 100µs
(UQ1-01)

Cost effective

Easy
No setup is needed for communication

Industry first control unit for displacement sensor enables direct connection to Mitsubishi sequencer.

(For CD5 series)
UQ1-01

(For CD33 series)
UQ1-02

NEW

Fast High speed process by 3 NEW feature !

NEW | **Automatic process in the unit**

■ No load on the CPU

The unit gets measured data from the sensor automatically and updates calculation result and control output in 100µs (Max. speed)
These process are done by the unit itself so there is no load on the CPU.

NEW | **I/O terminal on the unit**

■ Up to 100µs (Max. speed)

Response speed: 100µs (Max. speed) independent of scan time of sequencer CPU and it's realized by having I/O terminal (2 for each) on the unit.

Up to 2 sensor heads

CD5 series sensor head
CD33 series sensor head

Communication unit

2ms (Max. speed)

0.1ms

UQ1-01

1/20 !

[ms]

UQ1-01/UQ1-02

FIrST

NEW | **Infrared communication between units**

■ High speed original infrared communication "FIrST"

UQ1 units can communicate through "FIrST" infrared communication which was originally developed for the UQ1 series.
It can calculate using data from the CD5 sensor head connected to another UQ1 units in 100µs (Max. speed).

FIrST (infrared) communication

* Max. speed of UQ1-02 is 500µs

Cost Effective

One third of the cost needed for conventional solution (UQ1-01 + CD5)

■ Comparing with standard controller

One third of standard controller (CD5A) cost.

1/3

UQ1-01 — **39,800 JPY (List price in Japan)**

CD5A — **120,000 JPY (List price in Japan)**
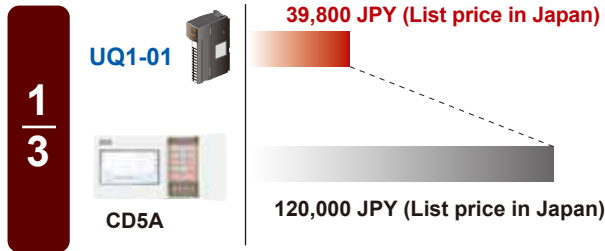
■ Comparing with competitor solution

CD5 sensor head itself is very cost effective so you can save big amount of cost for the solution including sensor head and the controller.

1/3

CD5 head + UQ1-01 — **289,800 JPY (List price in Japan)**

CD5 head + CD5A — **370,000 JPY (List price in Japan)**

Sensor head + controller (company A) — **700,000 ~ 1,000,000 JPY (List price in Japan)**

Sensor head + controller (company B) — **1,000,000 ~ 1,200,000 JPY (List price in Japan)**
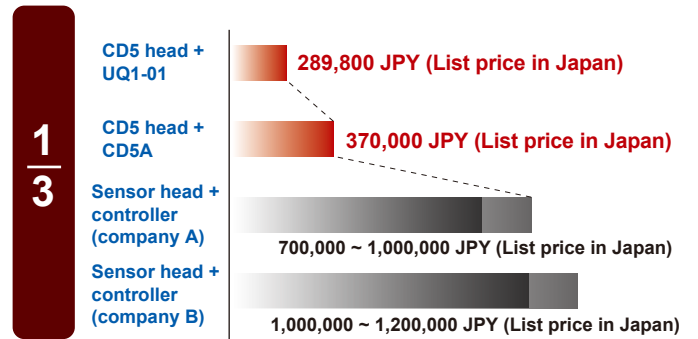
Easy

Easy connection & Easy setup

■ Communication setup is not needed

UQ1 series is recognized simply by installing on the MELSEC-Q series base unit with no communication setup required.
There is also no communication setup needed between CD5 sensor and UQ1 series.

Just install on the base unit
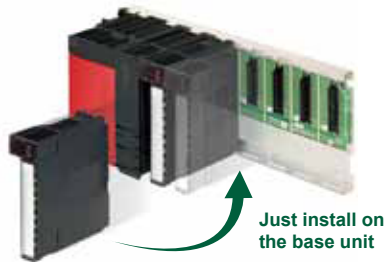
■ Easy reading LED display

You can see following information on the LED display easily.

- Measurement result
  (Q1~Q5)
- Error status
  (sensor head connection etc.)
- I/O status
- Bar graph
  (simple status of distance
  or distribution status)

■ Easy access software

Dedicated software "UQ1 Navigator" is now available.
Easily access the intuitive software, change the setup parameters and check the measurement status without needing knowledge of PLC and ladder programming.
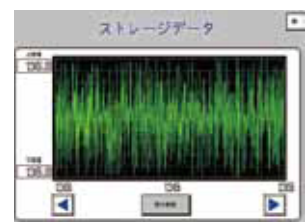
Measurement result

Calculation result

■ Data/Ladder program for GOT are ready

Data/Ladder program (sample) for HMI touch panel GOT are ready.
You can setup just by loading them.
You can also utilize data storage function of UQ1.

Measurement result on the GOT

Storage data on the GOT

Please contact distributor to get software and data

■ UQ1 major specifications

I/O points to occupy		32 points / 1 slot	Trigger input	Logic	ON by connecting to GND (0V)
Sampling period		UQ1-01: 100µs Min., UQ1-02: 500µs Min.		Voltage	ON voltage: 1.0V Max. / OFF voltage: 2.0V Min.
Communication method		Infrared		Input impedance	Approximately 10kΩ
Terminal block	Usable wire	Core: 0.3 ~ 0.75mm² (Outer diameter: Max. 2.8mm)	Function		Setup sensor head, Control output, Calculation, Hold function, Filter function, Bank setup, Storage function
	Usable solde-less terminal	R1.25-3 without sleeve			
Communication I/F (between UQ1 and CD5)	No. of head	2 Heads Max.	High speed logging point		262,144 points Max.
	Protocol	RS-422	EEPROM over writing limit		Max. 1,000,000 times for same memory area
	Baud rate	UQ1-01: 921.6kbps, UQ1-02: 256kbps	DC5V current consumption		0.5A Max.
	Cable	DOL-1212-G05M (5m sensor head cable)*	Noise tolerance		500Vp-p (simulator), Noise width: 1µs Fast transient noise 1kV (IEC 61000-4-4)
	Cable extension	Up to 50m using optional extension cable (unbundled)*			
Control input / output	No. of I/O	2 Input / 2 Output	Insulation resistance		Min. 10MΩ (insulation resistance meter)
	Mode	NPN open collector	Protection category		IP2X
	Output voltage	DC12-24V (±10%)	Operating Temp./Humid.		-10 ~ +55deg.C/ 35 ~ 85%RH (non condensation)
	Output current	80mA (DC12-24V)	Storage Temp./Humid.		-20 ~ +70deg.C/ 35 ~ 85%RH (non condensation)
	Residual voltage	2V Max.	Vibration resistance		10~55Hz, 1.5mm, X-Y-Z each for 2 hours
	Leak current	0.2mA Max.	Dimensions		98(H) * 27.4(W) * 90(D) [mm]
	Protection	Over current protection circuitry	Weight		Approximately 150g

* Only for UQ1-01

<table>
<tr><td>

18 model High performance laser displacement sensor

CD5 series

- Top level repeat accuracy in the class
- Longest stand off 2000mm type in the industry
- Industry first direct connection to PLC
- Utilizing C-MOS linear image sensor
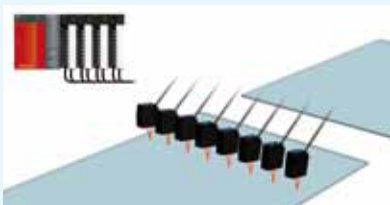- Linearity: +/- 0.05%F.S. ~ +/- 0.1%F.S.

</td><td>

36 model Compact laser displacement sensor

CD33 series
Digital output type with RS-422 I/F specular and diffuse type

- Compact and light weight: good for installing in the machine
- Cost effective
- Utilizing C-MOS linear image sensor
- Linearity: +/- 0.1%F.S. ~ +/- 0.3%F.S.

</td></tr>
</table>

Controlling glass thickness

You can control glass thickness by feedback control utilizing storage function of UQ1.
For example, UQ1-01 and CD5-30 sensor head can store data for 10ms and check the quality of the glass surface then, feedback and control glass thickness.
Conventional system using serial I/F for PLC will take time so it won't work stably.

Height controlling of exposure head
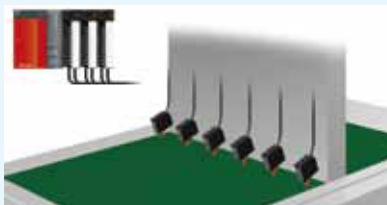
You can control height of the exposure head by specular type displacement sensor CD33-L30. CD33 series is compact and light so you can mount on movable exposure head and it doesn't prevent moving smoothly.
You can also setup the sensor head easily in a short time by using dedicated software.

Height controlling of mask and measurement of glass thickness
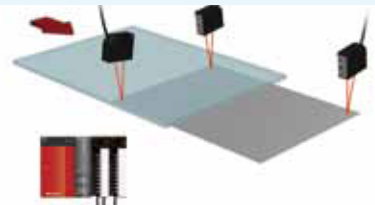
You can control height of the mask and measure the glass thickness at a time.
Single specular type displacement sensor CD33-L30 can measure the thickness of the glass which thickness is more than 0.7mm.
You can also utilize multiple sensor heads for calculation by UQ1 series.