

# **Confocal Fiber Displacement Sensor Sensor Head ZW-SQ Series**

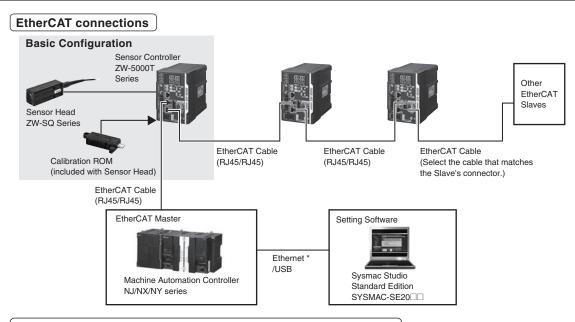
# **Ultra-compact and Ultra-lightweight Stable Measurements for Any Material**

- The slim design measures only 24 × 24 mm. It weighs only 105 g.
- Measuring shiny objects with an inclination of ±8°
- The sensor head has no electronic parts to eliminate problems of electronic and magnetic noise.
- Sampling rate as fast as 80 μs

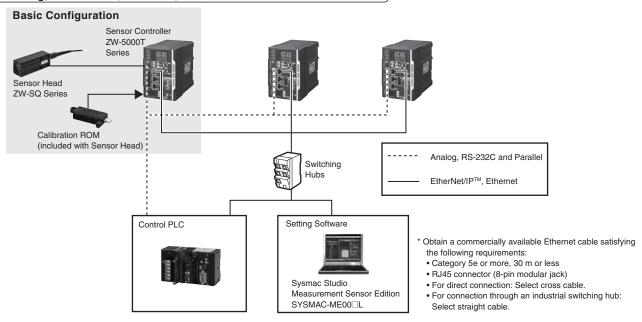
**Note:** Angle characteristic and sampling rate differ among models. Please ask OMRON sales representative for details.



### System Configuration



#### Analog, EtherNet/IP, Ethernet, RS-232C and Parallel connections



#### **ZW-SQ Series**

#### **Order Information**

#### Sensor Head

#### Square straight type

Appearance	Measuring range	Spot diameter	Static resolution *	Model	
	←Measuring range 7±0.3 mm	18 μm dia.	0.25 μm	ZW-SQ5007 2M	
	7.3 mm 7 mm 0 mm 6.7 mm	n 10 μm tila. 0.23 μm			
	Measuring range 20±1 mm 40 μm dia. 0.25 μm			ZW-SQ5020 2M	
	0 mm 21 mm 20 mm 19 mm	40 μm dia.	0.23 μπ	ZW-SQ5020 0.3M	
0	Measuring range 30±3 mm 0 mm 27 mm  Measuring range  60 μm dia.	60 um dia	0.25 μm	ZW-SQ5030 2M	
		ου μπ dia.	0.25 μπ	ZW-SQ5030 0.3M	
				ZW-SQ5040 2M	
	40±6 mm 46 mm 0 mm 40 mm 34 mm	0 mm 40 mm		ZW-SQ5040 0.3M	

<sup>\*</sup> Values when the sensor controller ZW-5000T is used.

#### **Square Right-angle type**

Appearance	Measuring range	Spot diameter	Static resolution *	Model
	Measuring range 7±0.3 mm  7.3 mm	40 "	0.25 μm	ZW-SQR5007 2M
	6.7 mm	18 μm dia.	υ.23 μπ	ZW-SQR5007 0.3M
	Measuring range 20±1 mm  0 mm 20 mm	40 μm dia.	0.25 μm	ZW-SQR5020 2M
	0 mm 20 mm 19 mm	40 μm dia.		ZW-SQR5020 0.3M
	→ Measuring range 40±6 mm	00 "	0.25 um	ZW-SQR5040 2M
	46 mm 40 mm 34 mm	80 μm dia.	0.25 μm	ZW-SQR5040 0.3M

<sup>\*</sup> Values when the sensor controller ZW-5000T is used.

#### Sensor Controller with EtherCAT

Appearance	Power supply	Output type	Model
	24VDC	NPN/PNP	ZW-5000T

#### **●**Cable

Appearance	Item	Cable length	Model
		2 m	ZW-XF5002R
	Extension Fiber Cable (from Sensor Head to	5 m	ZW-XF5005R
	Sensor Controller), (Fiber Adapter ZW-XFC2	10 m	ZW-XF5010R
	is included)	20 m	ZW-XF5020R
No.		30 m	ZW-XF5030R
61	Fiber Adapter (used between Sensor Head pre-wired cable and Extension Fiber Cable)	ı	ZW-XFC2

Note: Extension Fiber Cable ZW-XF50□□R can be used with the firmware version 2.100 or later. If you have an old version sensor controller, register as a Sysmac member and download the latest firmware and tools to update your sensor controller. Refer to the Sysmac member registration sheet that is enclosed with the sensor controller for details on member registration and firmware download.

#### Common cables

Appearance	Item	Cable length	Model
	Parallel caable for ZW-5000T 32-pole (included with Sensor Controller ZW-5000T)	2 m	ZW-XCP2E
19	RS-232C Cable for personal computer	2 m	ZW-XRS2
	RS-232C Cable for PLC/programmable terminal	2 m	ZW-XPT2

#### Recommended EtherCAT Communications Cables

Use Straight STP (shielded twisted-pair) cable of category 5 or higher with double shielding (braiding and aluminum foil tape) for EtherCAT.

#### **●Cable with Connectors**

Item	Appearance	Recommended manufacturer	Cable length (m) *1	Model
Standard type			0.3	XS6W-6LSZH8SS30CM-Y
Cable with Connectors on Both Ends			0.5	XS6W-6LSZH8SS50CM-Y
(RJ45/RJ45)		OMBON	1	XS6W-6LSZH8SS100CM-Y
Wire Gauge and Number of Pairs:  AWG26, 4-pair Cable		OMRON	2	XS6W-6LSZH8SS200CM-Y
Cable Sheath material: LSZH *2	₽°		3	XS6W-6LSZH8SS300CM-Y
Cable color: Yellow *3			5	XS6W-6LSZH8SS500CM-Y
			0.3	XS5W-T421-AMD-K
Rugged type	-		0.5	XS5W-T421-BMD-K
Cable with Connectors on Both Ends	Mar	OMBON	1	XS5W-T421-CMD-K
(RJ45/RJ45) Wire Gauge and Number of Pairs:	*0	OMRON	2	XS5W-T421-DMD-K
AWG22, 2-pair Cable			5	XS5W-T421-GMD-K
			10	XS5W-T421-JMD-K
		OMRON	0.3	XS5W-T421-AMC-K
Rugged type			0.5	XS5W-T421-BMC-K
Cable with Connectors on Both Ends	00		1	XS5W-T421-CMC-K
M12 Straight/RJ45) Wire Gauge and Number of Pairs:			2	XS5W-T421-DMC-K
AWG22, 2-pair Cable			5	XS5W-T421-GMC-K
			10	XS5W-T421-JMC-K
			0.3	XS5W-T422-AMC-K
Rugged type			0.5	XS5W-T422-BMC-K
Cable with Connectors on Both Ends		OMBON	1	XS5W-T422-CMC-K
M12 Right-angle/RJ45) Wire Gauge and Number of Pairs:	<b>97</b> )	OMRON	2	XS5W-T422-DMC-K
AWG22, 2-pair Cable			5	XS5W-T422-GMC-K
			10	XS5W-T422-JMC-K

Note: For details, refer to Cat.No.G019.

\*1. Standard type cables length 0.2, 0.3, 0.5, 1, 1.5, 2, 3, 5, 7.5, 10, 15 and 20m are available.
Rugged type cables length 0.3, 0.5, 1, 2, 3, 5, 10 and 15m are available.

\*2. The lineup features Low Smoke Zero Halogen cables for in-cabinet use and PUR cables for out-of-cabinet use.

\*3. Cables colors are available in blue, yellow, or Green

#### ● Cables / Connectors

#### Wire Gauge and Number of Pairs: AWG24, 4-pair Cable

Item	Appearance	Recommended manufacturer	Model
Cables	_	Hitachi Metals, Ltd.	NETSTAR-C5E SAB 0.5 × 4P CP *
Cables	_	Kuramo Electric Co.	KETH-SB *
RJ45 Connectors	_	Panduit Corporation	MPS588-C *

<sup>\*</sup> We recommend to use above cable and connector together.

#### Wire Gauge and Number of Pairs: AWG22, 2-pair Cable

Item	Appearance	Recommended manufacturer	Model	
Cables	_	Kuramo Electric Co.	KETH-PSB-OMR *	
Cables	_	JMACS Japan Co.,Ltd.	PNET/B *	
RJ45 Assembly Connector		OMRON	XS6G-T421-1 *	

Note: Connect both ends of cable shielded wires to the connector hoods.

We recommend to use above cable and connector together.

#### •Industrial switching hubs for Ethernet

Appearance	Number of ports	Current consumption	Model
	5	0.07A	W4S1-05D

Note: Industrial switching hubs are cannot be used for EtherCAT.

#### EtherCAT junction slaves

Appearance	Number of ports	Power supply voltage	Current consumption	Model
	3	20.4 to 28.8 VDC	0.08A	GX-JC03
	6	(24 VDC 15 to 20%)	0.17A	GX-JC06

Note: 1. Please do not connect EtherCAT junction slave with OMRON position control unit, Model CJ1W-NC□81/□82.
 EtherCAT junction slaves cannot be used for EtherNet/IP<sup>TM</sup> and Ethernet.

#### Automation Software Sysmac Studio

Please purchase a DVD and required number of licenses the first time you purchase the Sysmac Studio. DVDs and licenses are available individually. Each model of licenses does not include DVD.

Item	Specifications			Model	Standards
iteiii	Specifications	Number of licenses	Media	Wodei	Stanuarus
Sysmac Studio	Sysmac Studio runs on the following OS. Windows 7 (32-bit/64-bit version)/Windows 8 (32-bit/64-bit version)/	(Media only)	Sysmac Studio (32bit) DVD	SYSMAC-SE200D	_
Standard Edition Ver.1 1 *3		(Media only)	Sysmac Studio (64bit) DVD	SYSMAC-SE200D-64	_
	This software provides functions of the Measurement Sensor Edition. Refer to your OMRON website for details.		_	SYSMAC-SE201L	_
Sysmac Studio Measurement	Sysmac Studio Measurement Sensor Edition is a limited license that provides selected functions required for ZW-series	1 license	_	SYSMAC-ME001L	_
Sensor Edition Ver.1.□□	Sensor Edition Displacement Sensor settings.  Because this product is a license only you need the Sysmac Standard Edition	3 license	_	SYSMAC-ME003L	_

#### Fiber Cleaner

Item	Recommended manufacturer	Model	Applicable Model ZW-5000	Contacts
Fiber Connector Cleaner *1	OMRON	ZW-XCL	Yes	OMRON
OPTIPOP R1	NTT Advanced Technology Corporation	ATC-RE-01	Yes (Sensor Head only)	*2

<sup>\*1.</sup> Place orders in units of boxes (contacting 10 units).
\*2. Contacts

[Request for an Estimate]
http://www.ntt-at.com/product/optical\_cleaner/Distributors.html

[Request for Information]
NTT Advanced Technology Corporation
Muza Kawasaki Central Tower, 1310 Omiya-cho Saiwai-ku, Kawasaki-shi, Kanagawa, 212-0014, Japan TEL: +81 44 589 5894

http://www.ntt-at.com/product/optical\_cleaner/

<sup>\*1.</sup> Model "SYSMAC-SE200D-64" runs on Windows 10 (64bit) or higher.
\*2. Multiple licenses are available for the Sysmac Studio (3, 10, 30, or 50 licenses).
\*3. ZW-5000T is supported by Sysmac Studio version 1.18 or higher.

## **Specifications**

#### Sensor Head

Item		ZW-SQ5007	ZW-SQ5020	ZW-SQ5030	ZW-SQ5040	ZW-SQR5007	ZW-SQR5020	ZW-SQR5040	
Sensor Controller		ZW-5000□							
Sensor Head		Square straight t	уре		Square Right-angle type				
Measuring center	distance	7 mm	20 mm	30 mm	40 mm	7 mm	20 mm	40 mm	
Measuring range		±0.3 mm	±1 mm	±3 mm	±6 mm	±0.3 mm	±1 mm	±6 mm	
Static resolution **	1	0.25 μm							
Linearity *2		±0.8 μm	±1.2 μm	±4.5 μm	±7.0 μm	±1.1 μm	±1.6 μm	±9.3 μm	
	Near	20 μm dia.	45 μm dia.	70 μm dia.	90 μm dia.	20 μm dia.	45 μm dia.	90 μm dia.	
Spot diameter *3	Center	18 μm dia.	40 μm dia.	60 μm dia.	80 μm dia	18 μm dia.	40 μm dia.	80 μm dia	
	Far	20 μm dia.	45 μm dia.	70 μm dia.	90 μm dia	20 μm dia.	45 μm dia.	90 μm dia	
Measuring cycle *4	ı	80 μs to 1600 μs							
Operating ambient	illumination	Illumination on ol	oject surface 10,00	00 lx or less: incan	descent light				
Ambient temperature range		Operating: 0 to 5	0°C, Storage: -15	to 60°C (with no ic	ing or condensation	on)			
Ambient humidity range		Operating and storage: 35% to 85%RH (with no condensation)							
Degree of protection	on	IP40 (IEC60529)							
Vibration resistance (destructive)		10 to 150 Hz, 0.35 mm single amplitude, 80 min each in X, Y, and Z directions							
Shock resistance	(destructive)	150 m/s² 3 times each in six directions (up/down, left/right, forward/backward)							
Temperature characteristic *5		0.6 μm/ °C	1.5 μm/ °C	2.8 μm/ °C	4.8 μm/ °C	0.6 μm/ °C	1.5 μm/ °C	4.8 μm/ °C	
LED Safety		Risk Group 1 (IEC62471)							
Materials		Case: aluminum die-cast Fiber cable sheat: PVC Calibration ROM: PC							
Fiber cable length		0.3 m, 2 m (Flex-resistant cable)							
Fiber cable minimum bending radius		20 mm							
Insulation resistance (Calibration ROM)		Between case and all terminals: 20 MΩ (by 250 V megger)							
Dielectric strength ROM)	(Calibration	Between case and all terminals: 1,000 VAC, 50/60 Hz, 1 min							
Weight		Fiber cable length 0.3 m Approx. 100g Fiber cable length 0.3 m Approx. 125g Fiber cable length 2 m Approx. 130g Fiber cable length 2 m Approx. 130g							
Accessories included with sensor head		Calibration ROM fixing screws (M2 × 5mm) ×1, Fiber protection cap × 1, Strap × 1, Instruction Manual, Precautions							

<sup>\*1.</sup> Capacity value when OMRON standard mirror surface target is measured at the measurement center distance as the average of 16,384 times
The value when the sensor controller ZW-5000T is connected

\*2. Material setting for the OMRON standard mirror surface target: Error from an ideal straight line when measuring on mirror surface

\*3. Capacity value defined by 1/e2 (13.5%) of the peak optical intensity of the measurement wavelength.

\*4. When an extension fiber cable of 5 m or longer is connected, the setting rage of the measurement cycle (exposure time) changes. For details, refer to Setting
Measurement Cycle in the ZW-800/7000/5000 User's Manual (Cat. No. Z362).

\*5. Capacity value of temperature characteristic at the measurement center distance when fastened with an aluminum jig between the Sensor Head and the target
and the Sensor Head and the Sensor Controller are set in the same temperature environment.

#### Sensor Controller

Insulvational type  Insulv	Item			Model	ZW-5000T		
Number of connected sensor heads   1		vne		wodei			
Season's best compatibility  Experient Main display  Bink Group I (ECC&247)  Bink Group I (ECC&247)  Bink Group I (ECC&247)  11-segment white display, 6 digits  Status indicators  EtherCAT indicator  EtherC	Number of connected sensor heads				11		
Main display			icaus		7W-SQ50\\\\\SQB50\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\		
Main display   11-segment white display, 8 digits		раша,					
Sub-display		Main display			, , ,		
External UF	Display	Sub-display					
Ethercal Tindicator  Ethercal	Dianley	Status indicators					
EtherCAT exclusive protocol 1009ASE.TY   Analog output   Analog voltage output (OUT M)   10 V to +10 V, output impedance: 100 Ω	ыѕріау	EtherCAT indicator			ECAT RUN (green), L/A IN (Link/Activity IN) (green), L/A OUT (Link/Activity OUT) (green ECAT ERR (red)		
RE-232C Analog output (analog output (but V) Indigener output (but V) Analog current output value (but V) Analog current output value (but V) Analog current output (but V) Analog current output value (but V) Analog current output value (but V) Analog value v							
Analog uptital Manalog unitage output (OUT V) -10 V o-10 V, output impedance: 100 D   Heminal block					•		
Leminal block   Analog current output (OUT A)   Am to 20 mA, max. load resistance: 300 \( \Omega) \)   Alarm output (ALARM)   Buy output (BUSY)   Alarm output (ALARM)   Trinsistor output system   Output voltage: 21 to 30 VDC   Load current: 50 mA or less   Consideration   Construction   C					7 1		
Judgment output (BUSY) Rain output (BUSY) Airm output (ALARM) Enable output (ENABLE) Sync flag output (EVRLG) Trigger busy output (TRIGBUSY) Logging state output (LOGSTAT) Logging state output (COSTAT) Logging state				• • •			
External UF  Exter		terminal block	Judgment	output	4 mA to 20 mA, max. load resistance: 300 t2		
External UF    Alarm output (ALARM)   Final cutput (EARBLE)   Sync flag output (SYNFLG)   Chigar busy output (TRIGBUSY)   Chigar busy output (TRIGBUSY)   Logging error output (LOGSTAT)   Logging error output (LOGSTAT)   Logging error output (LOGSTAT)   LOGging error output (LOGSTAT)   LOGGING   Trigger busy output (LOGSTAT)   LOGGING   Trigger busy output (LOGSTAT)   LOGHT OFF)   Task state output (LOGSTAT)   LOGHT OFF)   Task state output (LOGSTAT)   LOGHT OFF)   Task state output (LOGSTAT)   LOGHT OFF)   Tring input (TIMING)   Tringer inp			•	•			
External I/F  Ex							
Sync flag output (SYNPELO)   Trigger busy output (TRIGBUSY)   Logging error output (TRIGBUSY)   Logging error output (LOGERAT)   Logging error output (LOGERAT)							
External VF    Cogging state output (LOGETAT)   Logging state output (LOGETAT)			Sync flag	output (SYNFLG)			
External VF    Cogning error output (LOGERR)			Trigger bu	usy output (TRIGBUSY)			
External I/F   Stability output (STABILITY)   Task state output (TASKSTAT)   LIGHT OFF input (LIGHT OFF)   Zero reset input (ZERO)   Timing input (TIMIMO)   Dirigity system   Input voitage: 24 VDC ± 10% (21.6 to 26.4 VDC)   Input current: 7 mA Type. (24 VDC)   ON voitage/ON current: 19 Vis mA or less   ON voitage/ON current: 19 Vis mA or less   ON voitage/ON current: 5 Vi mA or less   ON voitage/ON current: 6 Vi mA or less   ON voitage/ON current: 6 Vi mA or less   ON voitage/ON current: 7 Vi mA or less   ON voitage/ON current: 7 Vi mA or less   ON voitage/ON current: 7 Vi mA or less   ON voitage/ON current: 8 Vi mA or more   ON voitage/ON current: 9 Vi mA or more   ON voitage/ON current: 19 Vis mA or more   ON voitage/O				• • •	Leakage voltage when turning OFF: 0.1 mA or less		
Task state output (LASKSTAT)				· \ /			
Comment   Comm			_	<u> </u>			
Accessories   Page	External I/F			• •			
Exposure time   Automatic/Fixed   Measuring cycle   1   Monte (Pipt Monte)   Monte (Pipt M				· · · · · · · · · · · · · · · · · · ·			
Reset input (RESET)   Input current? Yan A Type, (24 VDC)   Sync input (SYNC)   Trigger input (TRIG)   Current sput (TRIG)   Current sput (TRIG)   Current specific bank output (BANK_OUT 1 to 3)   Bank   Bank Selection input (BANK_OUT 1 to 3)   Bank Selection input (BANK_SEL 1 to 3)   Transistor output system   Output voltage; 22 1.6 to 30 VDC   Load current. 50 M or less   DC input system   Output voltage; 24 VDC 1 to 30 VDC   Load current. 50 M or less   DC input system   DC input system   DC input system   Input voltage; 24 VDC 1 to 30 VDC   ON voltage; 24 VDC   ON voltage; 24 VDC 1 to 30 VDC   ON voltage; 24 VDC   ON voltage; 24 VDC   ON voltage; 24 VDC   ON voltage; 25 VDC   ON voltage;							
Sync input (SYNC) Trigger input (TRIG)  Logging input (LOGGING)  Currently selected bank output (BANK, OUT 1 to 3)  Bank  Exposure time  Bank Selection input (BANK, SEL 1 to 3)  Exposure time  Measuring cycle 1  Material setting  Measurement item  Height/Thickness of transparent object/Calculation  Filtering  Output  Scaling/Different holds/Zero reset/Logging for a measured value/ Keep, Clamp  Max. 32 banks (JUDGMENT mode)  Minution resistance  Dielectric strength  Degree of protection  Dielectric strength  Degree of protection  Degree of protecti				<u> </u>			
Trigger input (TRIG)  Logging input (LOGGING)  Bank  Bank  Exposure time  Exposure time  Massuring cycle *1  Material setting  Measurement item  Filtering  Output  Scaling/Different holds/Zero reset/Logging for a measured value/ keep, Clamp  Messured value/Analog output voltage or current value/Judgment resured value/ Independent of seave of protection  Mars Banks Police to Save/Initialization/Light power has been been accordingly to the Save/Initialization/Light power has all lead wires and FG terminal: 20 MΩ (by 250 VDC)  Insulation resistance  Dieptor operations  Power supply voltage  Exposure time  Automatic/Fixed  Messurement item  Automatic/Fixed  Messurement item  Filtering  Median/Average/Differentiation/High pass/Low pass/Band pass  Output  Scaling/Different holds/Zero reset/Logging for a measured value/ Keep, Clamp  Messured value/Threshold value/Analog output voltage or current value/Judgment resured value/Independent resured value/ Threshold value/Analog output voltage or current value/Judgment resured value/Independent va		00111100101		•			
Logging input (LOGGING)   Transistor output system   Output voltage: 21.0 to 30 VDC   Load current: 50 mA or less   Clarently selected bank output (BANK_OUT 1 to 3)   Reading voltage when turning ON: 2 V or less   Leakage voltage when turning ON: 2 V or less   Leakage voltage when turning ON: 2 V or less   Leakage voltage when turning ON: 2 V or less   Leakage voltage when turning ON: 2 V or less   Leakage voltage when turning ON: 2 V or less   Leakage voltage when turning ON: 2 V or less   Leakage voltage when turning ON: 2 V or less   Leakage voltage when turning ON: 2 V or less   Leakage voltage when turning ON: 2 V or less   Leakage voltage when turning ON: 2 V or less   Leakage voltage when turning ON: 2 V or less   Leakage voltage when turning ON: 2 V or less   Leakage voltage when turning ON: 2 V or less   Leakage voltage when turning ON: 2 V or less   Leakage voltage when turning ON: 2 V or less   Leakage voltage when turning ON: 2 V or less   Leakage voltage when turning ON: 2 V or less   Leakage voltage voltage or Leakage voltage voltage or Leakage voltage voltage or Leakage voltage voltage voltage voltage voltage or Leakage voltage voltag			, ,				
Currently selected bank output (BANK_OUT 1 to 3)   Bank				· · · · · · · · · · · · · · · · · · ·	-		
Bank			Logging	ilput (Loudillu)	Transistor output system		
Bank				Currently selected			
Bank   Bank   Bank   Bank   Bank   Bank Selection input (BANK_SEL 1 to 3)   DC input system   Input voltage: 24 VDC ± 10% (21.6 to 26.4 VDC)   Input current: 7 mA Type. (24 VDC)   Voltage/OFF current: 5 V/1 mA or less   OFF voltage/OFF voltage/OFF voltage/OFF voltage/OFF voltage/OFF voltage/OFF voltage/OFF voltage/OFF voltage			Bank				
Bank   Bank   Bank   Bank   Bank   Bank   Selection input   Bank   Selection input   Clank   Selection   Select							
Bank Selection input (BANK_SEL 1 to 3)   Input voltage: 24 VDC ± 10% (21.6 to 26.4 VDC)   Input current: 7 mA Type. 4 VDC)   ON voltage/ON current: 19 V/3 mA or more OFF voltage/OFF current: 5 V/1 mA or less   Automatic/Fixed   Automatic/Fixed   Measuring cycle *1   80 µs to 1600 µs   Standard/Mirror/Rough surfaces   Measurement item   Height/Thickness of transparent object/Calculation   Filtering   Median/Average/Olfferentiation/High pass/Low pass/Band pass   Output   Scaling/Different holds/Zero reser/Logging for a measured value/ Keep, Clamp   Measured value/Threshold value/Analog output voltage or current value/Judgment resu   Resolution/Light power/Internal logging condition/Peak amount of received light   Max. 8 banks (NORMAL mode)   Max. 8 banks (NORMAL mode)   Max. 30 banks (NORMAL mode)   Max.							
Realing   Rea				Pank Calastian innut			
Consideration Current: 19 Vin ma or more OFF voltage/OFF current: 5 V1 ma or less							
Exposure time   Automatic/Fixed   Bo μs to 1600 μs   Bo μs to 1600 μs   Standard/Mirror/Rough surfaces   Measuring cycle*1   Bo μs to 1600 μs   Standard/Mirror/Rough surfaces   Measurement item   Height/Thickness of transparent object/Calculation   Height/Thickness of transparent object/Calculation   Height/Thickness of transparent object/Calculation   Median/Average/Different hold/Pider poss/Band pass   Output   Scaling/Different hold/Pider poss/Band pass   Output   Scaling/Different hold/Pider poss/Band pass   Output   Scaling/Different hold/Pider poss/Band pass   Output   Display   Measured value/Threshold value/Analog output voltage or current value/Judgment resure   Resolution/Light power/Internal logging condition/Peak amount of received light   Max. 8 banks (NDRMAL mode)   Max. 32 banks (JUDGMENT mode)   Max. 32 ba				(,			
Measuring cycle *1		Exposure time					
Material setting   Standard/Mirror/Rough surfaces   Height/Thickness of transparent object/Calculation   Filtering   Measurement item   Height/Thickness of transparent object/Calculation   Median/Average/Differentiation/High pass/Low pass/Band pass   Output   Scaling/Different holds/Zero reset/Logging for a measured value/ Keep, Clamp   Measured value/Threshold value/Analog output voltage or current value/Judgment resurrent value/Judgment resurrent value/Judgment resurrent value/Judgment resurrent value/Threshold value/Analog output voltage or current value/Judgment resurrent value/Judgment		· · · · · · · · · · · · · · · · · · ·					
Measurement item		9 9			·		
Main functions         Output         Scaling/Different holds/Zero reset/Logging for a measured value/ Keep, Clamp           Functions         Display         Measured value/Analog output voltage or current value/Judgment resures Resolution/Light power/Internal logging condition/Peak amount of received light           Number of configurable banks         Max. 8 banks (NORMAL mode)         Max. 8 banks (JUDGMENT mode)           Task process         Multi-task (up to 4 tasks per bank)         Multi-task (up to 4 tasks per bank)           System         Save/Initialization/Display measured information/Communication settings/ Sensor head calibration/Key-lock/Zero reset memory/Timing input           Current consumption         800 mA max.           Current consumption         800 mA max.           Dielectric strength         Between all lead wires and FG terminal: 20 MΩ (by 250 VDC)           Dielectric strength         Between all lead wires and FG terminal: 500 VAC, 50/60 Hz, 1 minute           Degree of protection         IP20 (IEC60529)           Vibration resistance (destructive)         10 to 55 Hz (half amplitude 0.35 mm), 50 mins in each of X/Y/Z directions           Shock resistance (destructive)         150 m/s², 6 direction, 3 times each (up/down, left/right, forward/backward)           Ambient temperature range         Operation/storage: 35 to 85%RH (No condensation)           OP-type grounding (grounding resistance of 100 Ω or less)					· ·		
Display   Measured value/Threshold value/Analog output voltage or current value/Judgment resures					Median/Average/Differentiation/High pass/Low pass/Band pass		
Display   Measured value/Threshold value/Analog output voltage or current value/Judgment resures Resolution/Light power/Internal logging condition/Peak amount of received light	Main	Output					
Number of configurable banks   Max. 8 banks (NORMAL mode)		Display					
Number of configurable banks   Max. 32 banks (JUDGMENT mode)		2.56.27			0.1		
Task process   Multi-task (up to 4 tasks per bank)		Number of co	nfigurable ba	anks			
System   Save/Initialization/Display measured information/Communication settings/ Sensor head calibration/Key-lock/Zero reset memory/Timing input		Task process			· · · · · · · · · · · · · · · · · · ·		
Sensor head calibration/Key-lock/Zero reset memory/Timing input							
Current consumption   800 mA max.		System			1 ,		
Insulation resistance   Across all lead wires and FG terminal: 20 MΩ (by 250 VDC)					, o 11 /		
Insulation resistance   Across all lead wires and FG terminal: 20 MΩ (by 250 VDC)	Rating		•				
Degree of protection   IP20 (IEC60529)	9						
Vibration resistance (destructive)   10 to 55 Hz (half amplitude 0.35 mm), 50 mins in each of X/Y/Z directions							
Shock resistance (destructive)   150 m/s², 6 direction, 3 times each (up/down, left/right, forward/backward)				(uotivo)	,		
Ambient temperature range Ambient humidity range  Operation: 0 to 40°C, Storage: -15 to +60°C (No freezing and condensation)  Operation/storage: 35 to 85%RH (No condensation)  D-type grounding (grounding resistance of 100 Ω or less) Note: For conventional Class D grounding  Material  Chassis: PC  Weight  Approx. 900g (main unit only), Approx. 150 g (Parallel cable)  Parallel cable × 1 (ZW-XCP2E) 10 Fiber cleaners × 1 (ZW-XCL) Fiber adapter cap × 1, Strap × 1					· · · · · · · · · · · · · · · · · · ·		
Ambient humidity range       Operation/storage: 35 to 85%RH (No condensation)         Grounding       D-type grounding (grounding resistance of 100 Ω or less) Note: For conventional Class D grounding         Material       Chassis: PC         Weight       Approx. 900g (main unit only), Approx. 150 g (Parallel cable)         Parallel cable × 1 (ZW-XCP2E)       10 Fiber cleaners × 1 (ZW-XCL)         Fiber adapter cap × 1, Strap × 1	resistance		•	<u>,                                      </u>			
Grounding       D-type grounding (grounding resistance of 100 Ω or less)         Note: For conventional Class D grounding         Waterial       Chassis: PC         Weight       Approx. 900g (main unit only), Approx. 150 g (Parallel cable)         Parallel cable × 1 (ZW-XCP2E)       10 Fiber cleaners × 1 (ZW-XCL)         Fiber adapter cap × 1, Strap × 1							
Note: For conventional Class D grounding  Material  Chassis: PC  Weight  Approx. 900g (main unit only), Approx. 150 g (Parallel cable)  Parallel cable × 1 (ZW-XCP2E)  10 Fiber cleaners × 1 (ZW-XCL)  Fiber adapter cap × 1, Strap × 1	· · ·			, , ,			
Approx. 900g (main unit only), Approx. 150 g (Parallel cable)  Parallel cable × 1 (ZW-XCP2E)  10 Fiber cleaners × 1 (ZW-XCL) Fiber adapter cap × 1, Strap × 1	Grounding						
Parallel cable × 1 (ZW-XCP2E)  10 Fiber cleaners × 1 (ZW-XCL)  Fiber adapter cap × 1, Strap × 1	Material				Chassis: PC		
Accessories  10 Fiber cleaners × 1 (ZW-XCĹ) Fiber adapter cap × 1, Strap × 1	Weight						
Fiber adapter cap × 1, Strap × 1							
	Accessories						

Instruction Manual, Member registration sheet, Precautions

Note: The Export Trade Control Order compatible Sensor Controller (ZW-5000T) is available.

When using this Sensor Controller, the minimum resolution is 0.25 

### regardless of the connected Sensor Head and setting conditions.

\*1. When an extension fiber cable of 5 m or longer is connected, the setting rage of the measurement cycle (exposure time) changes. For details, refer to Setting Measurement Cycle in the ZW-8000/7000/5000 User's Manual (Cat. No. Z362).

#### EtherCAT Communications Specifications

Item	Specification		
Communications standard	IEC61158 Type12		
Physical layer	100BASE-TX(IEEE802.3)		
Connectors	RJ45 × 2 ECAT IN: EtherCAT input ECAT OUT: EtherCAT output		
Communications media	Category 5 or higher (cable with double, aluminum tape and braided shielding) is recommended.		
Communications distance	Distance between nodes: 100 m max.		
Process data	Variable PDO mapping		
Mailbox (CoE)	Emergency messages, SDO requests, SDO responses, and SDO information		
Distributed clock	Synchronization in DC mode.		
LED display	L/A IN (Link/Activity IN) × 1, AL/A OUT (Link/Activity OUT) × 1, AECAT RUN × 1, AECAT ERR × 1		

#### Automation Software Sysmac Studio

Item	Operating environment *3
Operating system (OS) *1	Windows 7 (32-bit/64-bit version)/Windows 8 (32-bit/64-bit version)/Windows 8.1 (32-bit/64-bit version)/Windows 10(32-bit/64-bit version)/Windows 11 (64-bit version)
СРИ	Windows computers with Intel® Celeron® processor 540 (1.8 GHz) or faster CPU. Intel® Core™ i5 M520 processor (2.4 GHz) or equivalent or faster recommended.
Main memory	2 GB min. 4 GB min. recommended
Hard disk	Minimum 4.6 GB of Hard disk space is required to install. *2
Display	XGA 1024 $\times$ 768, 16 million colors. WXGA 1280 $\times$ 800 dots or higher resolution is recommended.
Disk drive	DVD-ROM drive
Communications ports	USB port corresponded to USB 2.0, or Ethernet port *4
Supported languages	Japanese, English, German, French, Italian, Spanish, simplified Chinese, traditional Chinese, Korean

- \*1. Note about Sysmac Studio compatible operating systems: The required system and hard disk capacity differs according to the system environment.

  \*2. Separate logging memory is required to use the file logging function.

  \*3. Describes System Requirements and notes of Sysmac Studio Measurement Sensor Edition.

  For detail of System Requirements and notes of Sysmac Studio Measurement Sensor Edition, refer to Sysmac Studio Version 1 Operation Manual.

  \*4. For information on how to connect a personal computer with the sensor controller or other hardware and information on required cables, refer to manuals for each hardware

#### •Version Information

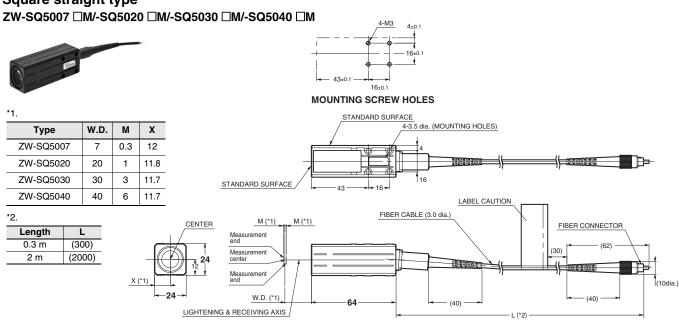
#### Sensor Head/Cable, Sensor Controller, and Sysmac Studio

The applicable version of the Sensor Controller varies depending on the Sensor Head or Cable. The versions are listed below. Use the latest version of Sysmac Studio Standard Edition/Measurement Sensor Edition.

Sensor head/Cable		ZW Series	Version of Sensor Controller	Corresponding version of Sysmac Studio	
Туре	Model	Zw Series	version of Sensor Controller	Standard Edition/Measurement Sensor Edition	
Square straight type	ZW-SQ50□□ □M				
Square Right-angle type	ZW-SQR50□□ □M	ZW-5000T	Version 2.110 or later	Version 1.18 or higher	
Extension Fiber Cable	ZW-XF50□□R		Version 2.100 or later		

Note: Refer to the Firmware Update in the ZW-8000/7000/5000 User's Manual (Cat. No. Z362) for how to update the Sensor Controller.

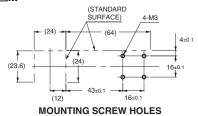
#### Sensor Head Square straight type



#### **Square Right-angle type**

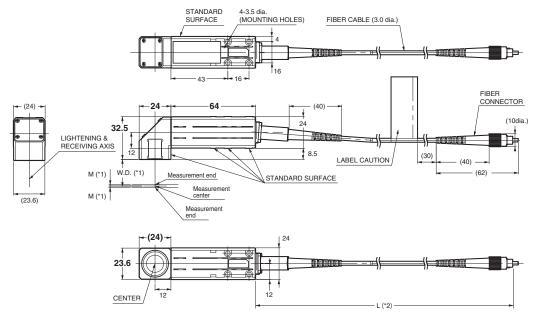






W.D.	M
7	0.3
20	1
40	6
	7 20

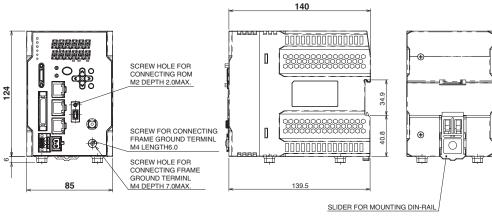


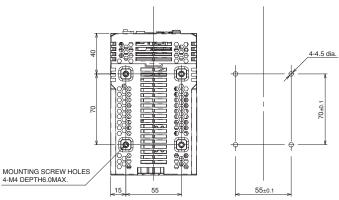


#### **Sensor Controller**

#### ZW-5000T





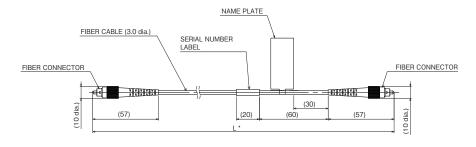


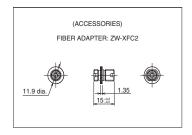
MOUNTING SCREW HOLES

#### **Extension Fiber Cable**

#### ZW-XF5002R/XF5005R/XF5010R/XF5020R/XF5030R







*	The foll	lowing	table	lists	cable	lengths	per	models
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Туре	Specification	L
ZW-XF5002R	2m	2000+200/0
ZW-XF5005R	5m	5000+200/0
ZW-XF5010R	10m	10000+200/0
ZW-XF5020R	20m	20000+500/0
ZW-XF5030R	30m	30000+500/0

#### **Related Manuals**

Man.No.	Model number	Manual
Z362	ZW-800□/700□/500□	Displacement Sensor ZW-8000/7000/5000 User's Manual
Z363	ZW-800□/700□/500□	Displacement Sensor ZW-8000/7000/5000 User's Manual for Communications Settings
W504	SYSMAC-SE2	Sysmac Studio Version 1 Operation Manual

- · Angle characteristic, linearity, sampling period and spot diameter given in the cover differ among models. Please ask Omron sales representative for details.
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- · EtherNet/IP™ is a trademark of ODVA.
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Note: Do not use this document to operate the Unit.

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#### **Authorized Distributor:**

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Cat. No. Q260-E1-06 0522 (0418)