Strain Gage
Load Cell
Pressure Sensor
Acceleration Sensor
Torque Sensor
Displacement Sensor
Component Force Sensor
Automotive Sensor
Civil Engineering Sensor

SFA-E-SA40/30A/318A

CE NEW

Steering Torque/Angle Transducer



Implement new features and reduce weight.

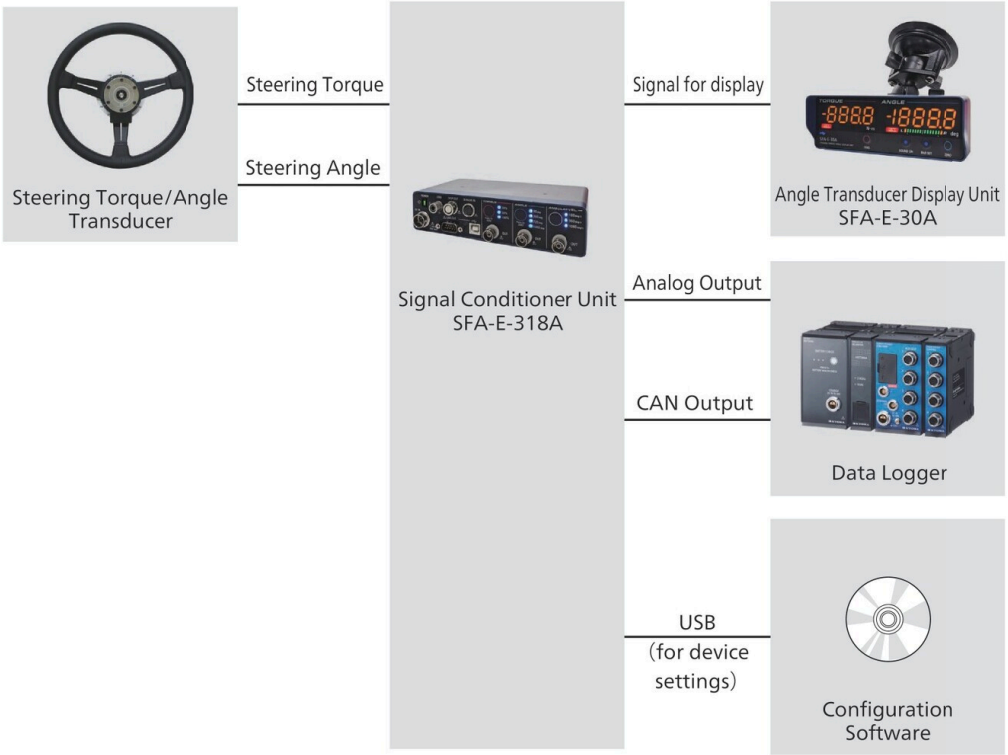
- Rated capacity (Steering torque): ±10 to 200 N·m
- Compact and lightweight
- Supports CAN output
- Display designed for visibility
- Windshield suction cup installation (SFA-E-30A)

Steering torque/angle transducer measure steering torque and steering angle.
The display enables real-time monitoring of measurement values from the driver's seat.
Approx. 60% smaller and 50% lighter than the previous model.

Models

Model			Steering Torque	Safe Moment	Allowable Axial Direction Load
Steering Torque/Angle Transducer	Display Unit	Signal Conditioner Unit	Rated Capacity		
SFA-E-10NMSA40-CE	SFA-E-30A	SFA-E-318A	±10 N·m	8 N·m	100 N
SFA-E-20NMSA40-CE			±20 N·m	16 N·m	250 N
SFA-E-30NMSA40-CE			±30 N·m	25 N·m	300 N
SFA-E-50NMSA40-CE			±50 N·m	36 N·m	500 N
SFA-E-100NMSA40-CE			±100 N·m	54 N·m	1000 N
SFA-E-150NMSA40-CE			±150 N·m		
SFA-E-200NMSA40-CE			±200 N·m	90 N·m	1600 N

System Content



SFA-E-SA40 Specifications

Performance	
Steering Torque	
Rated Capacity	See table on 1-213.
Rated Output	±2 V ±0.02 V
Nonlinearity	Within ±0.3% RO
	(±0.5% RO for rated capacity ±150 N·m or more)
Hysteresis	Within ±0.3% RO
	(±0.5% RO for rated capacity ±150 N·m or more)
Steering Angle	
Detector	Rotary encoder
Output Phase	Phase A, phase B
Output Format	Square wave
Output Pulses	18000 pulses/360°
Excitation Voltage	5 VDC
Environmental Characteristics	
Safe Temperature	0 to 60°C (no freezing [condensation])
Compensated Temperature	0 to 50°C (no freezing [condensation])
Electrical Characteristics	
Safe Excitation	±7 VDC
Recommended Excitation	±5 VDC
Zero Balance	Within ±0.05 V
Zero Balance in Idle Revolution	
	Within ±0.2% RO
Slip Ring Noise	Within ±0.2% RO (Constant rotary speed)
Supplied Cables	4-conductor (0.08 mm²), vinyl shielded cable, ϕ4.2 mm 5 m
	(Torque side),
	6-conductor (0.08 mm²) vinyl shielded cable, ϕ4.6 mm 5 m
	(Angle side), connector plugs on both ends
	Sensor side: HR10A-10P-10S,
	Measuring instrument side: PRC03-12A10-7M (Torque side),
	FGG.1B/307 (Angle side) × 1
Mechanical Properties	
Safe Overloads	120%
Safe Moment	See table on 1-213.
Allowable Axial Direction Load	
	See table on 1-213.
Weight	Approx. 2.5 kg (Excluding cable)
Degree of Protection	IP20 (JIS C 0920/IEC 60529)
Compliance	RoHS Directive 2011/65/EU, (EU)2015/863 (10 substances)
	EMC Directive 2014/30/EU (EMC)

*Specifications and design are subject to change without notice.
*Please contact us for information on product warranties.

■**Standard Accessories** T-type socket wrench

■**Optional Accessories** Display unit
Adapter
Lock arms bracket
Storage trunk

SFA-E-30A Specifications

Main Unit Specifications	
Display Target	Steering Torque/Angle Transducer: SFA-E
	Connected to Signal Conditioner Unit to display steering
	torque and steering angle. The rated capacity of the
	transducer is selected by the Configuration Software
	included with Signal Conditioner Unit.
Operating Temperature	0 to 50°C
Operating Humidity	20 to 85% (Non-condensing)
Vibration Resistant	29.4 m/s² (3 G), 5 to 200 Hz
Power Supply	Power supplied from Signal Conditioner Unit.
Weight	Approx. 380 g (When the Suction Cup Mount is installed)
	Approx. 850 g (When Signal Conditioner Unit is
	connected and the Suction Cup Mount is installed)
Dimensions	Approx. 129.5 W × 47.5 H × 39 D mm
	(Excluding protrusions and the Suction Cup Mount)
Compliance	Directive 2014/30/EU (EMC)
	Directive 2011/65/EU, (EU)2015/863 (10 restricted substances) (RoHS)
Display Specifications	
Display Of Steering Torque	
	7-segment LED (Character height 14 mm × 4 digits)
	Display resolution: 0.1 N・m (fixed)
Display Of Steering Angle	
	7-segment LED (Character height 14 mm × 4-1/2 digits)
	Display resolution:
	0.1 deg (fixed) between ±1999.9 deg or less
	1deg (fixed) between -2000 deg or less or +2000 deg or more
Bar Graph Display of Steering Angle	
	Green LED (±6-digit)
	Orange LED on each end (1-digit each)
Range Over Indications	
	Red LED lights up when range over.
	(Lights up when the steering torque or steering
	angle input exceeds the measurement range.)
USB Communication Display	
	Blue LED lights during USB communication.
Steering Angle Bar Graph Function	
	Any entered steering angle can be set to the full scale
	of the bar graph (Green LEDs at both ends).
Buzzer Function	Buzzer sounds when the range over or when
	the switch is operated (ON/OFF switchable)
Zero Adjustment Function	
	Perform zero adjustment of steering torque and steering angle.
Display Update Rate	5 Hz

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SFA-E-318A Specifications

Main Specifications	
Measurement Target	Steering Torque/Angle Transducer: SFA-E
Operating Temperature	0 to 50°C
Operating Humidity	20 to 85% (Non-condensing)
Vibration Resistant	29.4 m/s² (3 G), 5 to 200 Hz
Power Supply	10 to 30 VDC
Power Consumption	10 W or less
Weight	Approx. 420 g
Dimensions	Approx. 172 W × 41 H × 100 D mm (Excluding protrusions)
Compliance	Directive 2014/30/EU (EMC)
	Directive 2011/65/EU, (EU)2015/863 (10 restricted substances) (RoHS)
Steering Torque Specification	
Measuring Channels	1
Input Voltage Range	± 2 V
Measurement Range	20, 50, or 100% of transducer rated capacity
Analog Output	± 5 V (Max. 5.5 V)
Range Accuracy	Within ±0.1% FS
Nonlinearity	Within ±0.05% FS
Zero Adjustment	Zero suppress method
	(Execute zero suppress and set the measured value to zero.)
	Adjustable range: Within.±0.5 V
	Adjustment accuracy: Within.±5 mV
Frequency Response	DC to 300 Hz (Deviation: +1, -3 dB)
DA Conversion	Resolution: 16-bit
	Sampling rate: 10 kHz
Output Impedance	2 Ω or less
Steering Angle Specification	
Measuring Channels	1
Input Pulse	18000 pulse/rev
Measurement Range	90, 360, 720, or 1440 deg
Analog Output	± 5 V (Max. 5.5 V)
Range Accuracy	Within.±0.1% FS
Nonlinearity	Within.±0.05% FS
Zero Adjustment	Auto Zero method
	Adjustment Accuracy: Within.±5 mV
DA Conversion	Resolution: 16-bit
	Sampling rate: 10 kHz
Output Impedance	2 Ω or less

Steering Angular Velocity Specification	
Measuring Channels	1
Measurement Range	180, 360, or 1080 deg/s
Analog Output	± 5 V (Max. 5.5 V)
Range Accuracy	Within ±0.1% FS
Nonlinearity	Within ±0.05% FS
DA Conversion	Resolution: 16-bit
	Sampling rate: 10 kHz
Output Impedance	2 Ω or less
CAN Output Specification	
Number of Ports	1
CAN Protocol	ISO 11898 compliant
Communication Condition Setting	
	Set CAN communication conditions via USB communication from PC
Communication Speed	1000, 500, 250 and 125*1 kbps
Data Output Format	Data Length: 6 Byte
	Steering Torque: 2 Byte (Engineering unit, 0.01 N·m/bit)
	Steering Angle: 2 Byte (Engineering unit, 0.1 deg/bit)
	Steering Angular Velocity:2 Byte
	(Engineering unit, 0.1 deg/s/bit)
	Data Type: Signed
	Byte Order: Intel (Little Endian)
Transmission Time Interval	50, 20, 10, 5, 2, 1, or 0.5*1 ms
Termination Resistor	None

*1 The combination of 125 kbps communication speed and 0.5 ms transmission time interval cannot be set.

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■Standard Accessories Configuration software

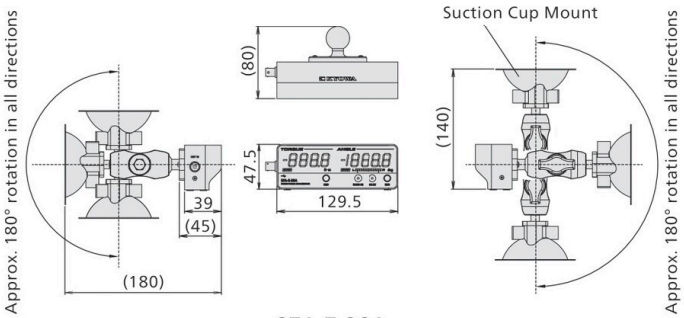
Configuration Software of SFA-E-318A Specifications

Operating Environment	
OS	Windows® 10, 11
Interface	USB2.0

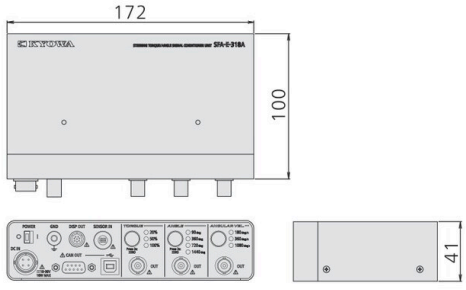
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■Dimensions



SFA-E-30A



SFA-E-318A