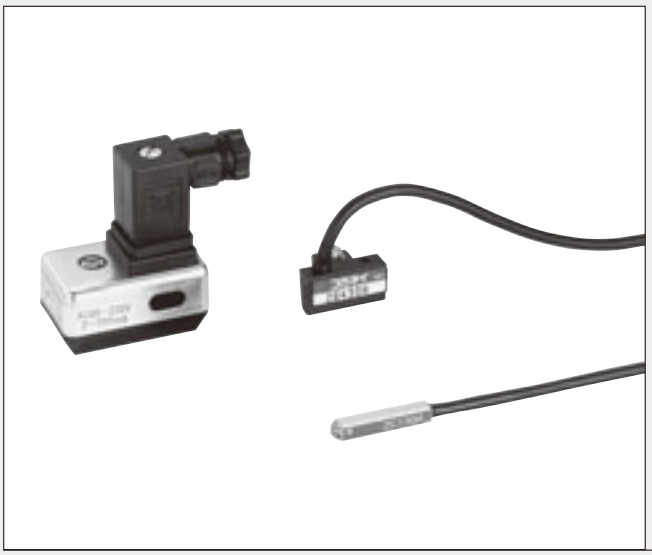


KOGANEI

ACTUATORS GENERAL CATALOG

SENSOR SWITCHES

CONTENTS

⚠ **Caution** **Before use, be sure to read the "Safety Precautions" on p. 57.**

CS5T□, CS11T□

Products compliant with the EMC Directive

Reed Switch Type Sensor Switch

Applicable cylinders

●Knock cylinders double acting type ●Multi mount cylinders ●DYNA cylinders ●SD cylinders ●TDA ϕ 6[0.236in.] ●AMT ●ARTB ●ACY (For the intermediate stopper) **●ORK ϕ 16[0.630in.] ●RAP ●RAN ●Swing cylinders**

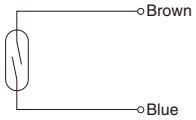
Specifications

Item \ Model	CS5T□	CS11T□
Wiring type	2-lead wire	
Load voltage	DC5～28V, AC85～115V (r.m.s.)	DC10～28V
Load current	DC0.1～40mA, AC2～25mA	DC5～40mA
Internal voltage drop Note 1	0.1V MAX. (At 40mA load current)	2.1V MAX. (At 40mA load current)
Leakage current	0mA	
Response time	1ms MAX.	
Insulation resistance	100MΩ MIN. (At DC500V Megger, between case and lead wire end)	
Dielectric strength	AC1500V (50/60Hz) in 1 minute (Between case and lead wire end)	AC1000V (50/60Hz) in 1 minute (Between case and lead wire end)
Shock resistance Note 2	294.2m/s^2 [30G] (Non-repeated shock)	
Vibration resistance Note 2	88.3m/s^2 [9G] (Total amplitude 1.5mm [0.06in.], 10～55Hz), Resonance frequency 2750±250Hz	
Environmental protection	IP67 (IEC standard), JIS C0920 (Water-proof type)	
Operation indicator	—	When ON: Red LED indicator lights up
Lead wire Note 3	PVC 0.2SQ×2-lead×ℓ	
Ambient temperature	0～60°C [32～140°F]	
Storage temperature range	−10～70°C [14～158°F]	
Contact protection	Required (See contact protection on p.1566.)	
Mass	20g [0.71oz.] (For lead wire length A: 1000mm)	

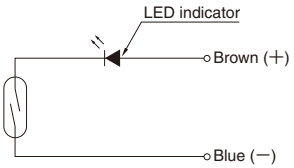
Notes: 1. The internal voltage drop depends on load current.
2. Measured by Koganei test standard.
3. Lead wire length ℓ: A; 1000mm [39in.], B; 3000mm [118in.]

Internal Circuit

CS5T□

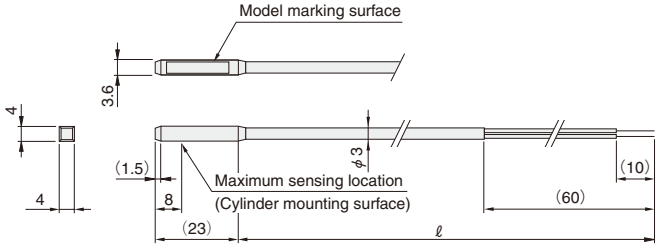


CS11T□

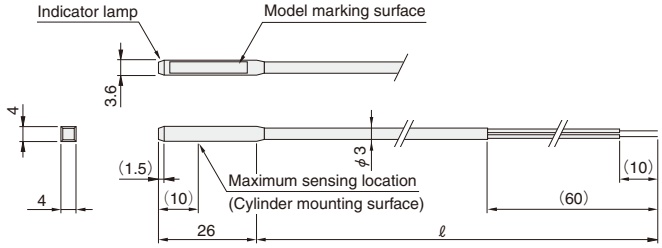


Dimensions (mm)

CS5T□



CS11T□



ZC201□, ZC205□

Products compliant with the EMC Directive

Reed Switch Type Sensor Switch

Applicable cylinders

●**Pen cylinders**

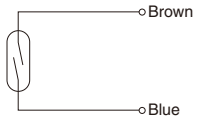
Specifications

Item \ Model	ZC201□	ZC205□
Wiring type	2-lead wire	
Load voltage	DC5～28V, AC85～115V (r.m.s.)	DC10～28V
Load current	DC0.1～40mA, AC2～25mA	DC5～40mA
Internal voltage drop[Note 1]	0.1V MAX. (At 40mA load current)	2.1V MAX. (At 40mA load current)[Note1]
Leakage current	0mA	
Response time	1ms MAX.	
Insulation resistance	100MΩ MIN. (At DC500V Megger, between case and lead wire end)	
Dielectric strength	AC1500V (50/60Hz) in 1 minute (Between case and lead wire end)	AC1000V (50/60Hz) in 1 minute (Between case and lead wire end)
Shock resistance[Note 2]	294.2m/s^2 [30G] (Non-repeated shock)	
Vibration resistance[Note 2]	88.3m/s^2 [9G] (Total amplitude 1.5mm [0.06in.], 10～55Hz), Resonance frequency 2750±250Hz	
Environmental protection	IP67 (IEC standard), JIS C0920 (Water-proof type)	
Operation indicator	—	When ON: Red LED indicator lights up
Lead wire[Note 3]	PCCV 0.2SQ×2-lead×ℓ	
Ambient temperature	0～60°C [32～140°F]	
Storage temperature range	−10～70°C [14～158°F]	
Contact protection	Required (See contact protection on p.1566.)	
Mass	20g [0.71oz.] (For lead wire length A: 1000mm)	

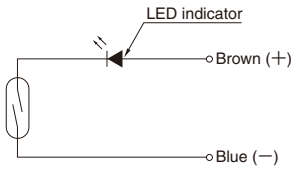
Notes: 1. The internal voltage drop depends on load current.
2. Measured by Koganei test standard.
3. Lead wire length ℓ: A; 1000mm [39in.], B; 3000mm [118in.]

Internal Circuit

ZC201□

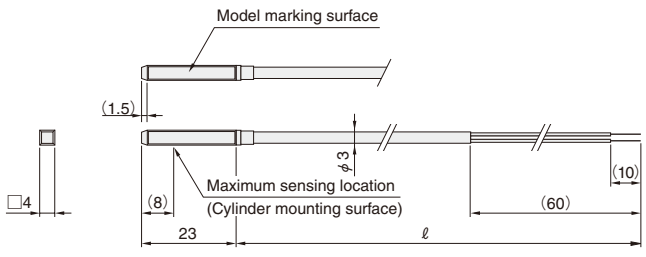


ZC205□

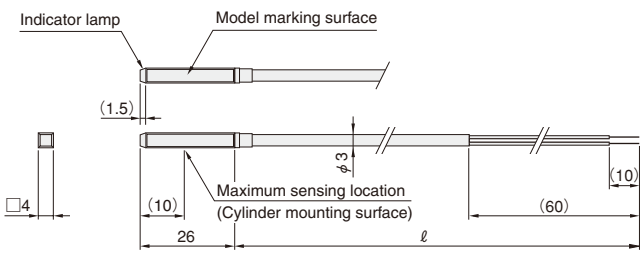


Dimensions (mm)

ZC201□



ZC205□



CS3M□, 4M□, 5M□

Reed Switch Type Sensor Switch

Products compliant with the EMC Directive

Applicable cylinders

● Slim cylinders ● Twinport cylinders ● GA ● ORC ● ORCA ● ORGA ● ORK Note
● MRG ● RAK ● Swing cylinders ● Twist cylinders

Note: Excluding ϕ 16 [0.630in.].

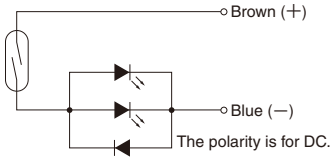
Specifications

Item \ Model	CS3M□		CS4M□		CS5M□	
Wiring type	2-lead wire					
Load voltage	DC10～30V	AC85～230V (r.m.s.)	DC10～30V	AC85～115V (r.m.s.)	DC3～30V	AC85～115V (r.m.s.)
Load current	10～50mA Note 1	10～50mA(AC85～115V) Note 1 5～15mA(AC115～230V) Note 1	5～25mA Note 1	5～20mA Note 1	0.1～60mA	2～25mA
Internal voltage drop Note 2	2.5V MAX. (At 50mA load current)		2.2V MAX. (At 25mA load current)		0.2V MAX. (At 60mA load current)	
Leakage current	0mA					
Response time	1ms MAX.					
Insulation resistance	100MΩ MIN. (At DC500V Megger, between case and lead wire end)					
Dielectric strength	AC2200V (50/60Hz) in 1 minute (Between case and lead wire end)		AC1500V (50/60Hz) in 1 minute (Between case and lead wire end)			
Shock resistance Note 3	294.2m/s^2 [30G] (Non-repeated shock)					
Vibration resistance Note 3	88.3m/s^2 [9G] (Total amplitude 1.5mm [0.06in.], 10～55Hz), Resonance frequency 5000±400Hz					
Operation indicator	When ON: Red LED indicator lights up				—	
Lead wire Note4	PVC 0.2SQ×2-lead×ℓ					
Ambient temperature	0～60°C [32～140°F]					
Storage temperature range	−10～70°C [14～158°F]					
Contact protection	Required (See contact protection on p.1566.)					
Mass	20g [0.71oz.] (For lead wire length A: 1000mm)					

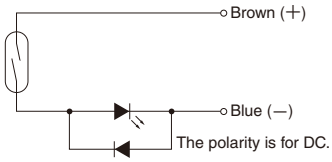
Notes: 1. Ta=37°C [98.6°F]
2. The internal voltage drop depends on load current.
3. Measured by Koganei test standard.
4. Lead wire length ℓ: A; 1000mm [39in.], B; 3000mm [118in.]

Internal Circuit

CS3M□



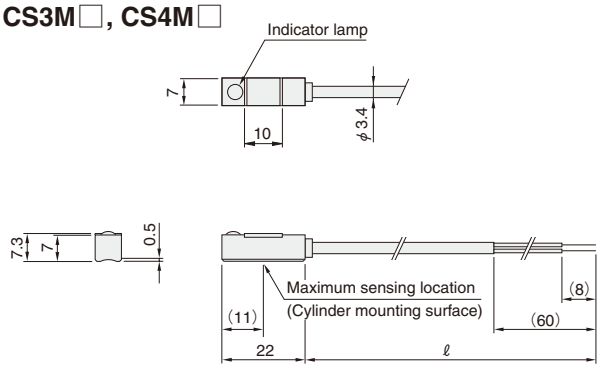
CS4M□



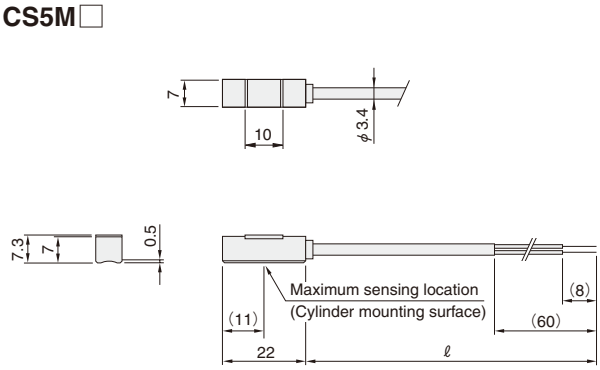
CS5M□

Dimensions (mm)

CS3M□, CS4M□



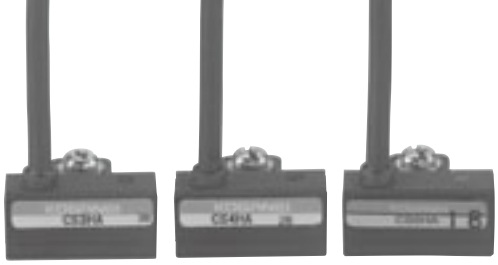
CS5M□



CS3H□, 4H□, 5H□

Reed Switch Type Sensor Switch

Products compliant with the EMC Directive



Applicable cylinders

● Jig cylinders J series ● TDA ϕ 10[0.394in.]～ ϕ 32[1.260in.] (previous type) ● Slide Units

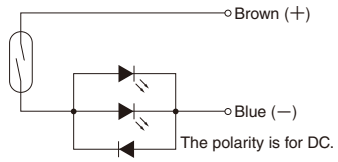
Specifications

Item \ Model	CS3H□		CS4H□		CS5H□	
Wiring type	2-lead wire					
Load voltage	DC10～30V	AC85～115V (r.m.s.)	DC10～30V	AC85～115V (r.m.s.)	DC3～30V	AC85～115V (r.m.s.)
Load current	10～50mA Note 1	10～50mA Note 1	5～25mA Note 1	5～20mA Note 1	0.1～60mA	2～25mA
Internal voltage drop Note 2	2.5V MAX. (At 50mA load current)		2.2V MAX. (At 25mA load current)		0.2V MAX. (At 60mA load current)	
Leakage current	0mA					
Response time	1ms MAX.					
Insulation resistance	100MΩ MIN. (At DC500V Megger, between case and lead wire end)					
Dielectric strength	AC1500V (50/60Hz) in 1 minute (Between case and lead wire end)					
Shock resistance Note 3	294.2m/s² [30G] (Non-repeated shock)					
Vibration resistance Note 3	88.3m/s² [9G] (Total amplitude 1.5mm [0.06in.], 10～55Hz)					
Environmental protection	—					
Operation indicator	When ON: Red LED indicator lights up				—	
Lead wire Note 3	PCCV 0.2SQ×2-lead×ℓ					
Ambient temperature	0～60°C [32～140°F]					
Storage temperature range	−10～70°C [14～158°F]					
Contact protection	Required (See contact protection on p.1566.)					
Mass	30g [1.06oz.] (For lead wire length A: 1000mm)					

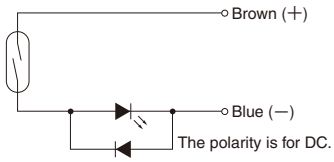
Notes: 1. Ta＝37°C [98.6°F]
2. The internal voltage drop depends on load current.
3. Measured by Koganei test standard.
4. Lead wire length ℓ: A; 1000mm [39in.], B; 3000mm [118in.]

Internal Circuit

CS3H□



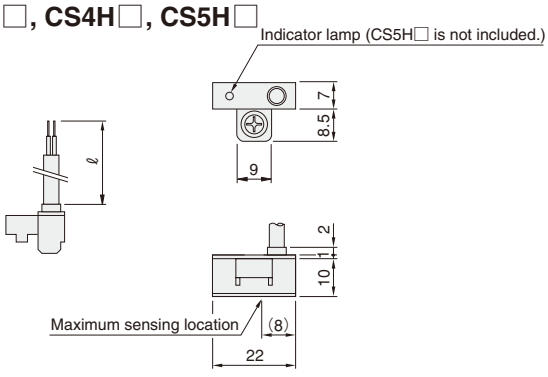
CS4H□



CS5H□

Dimensions (mm)

CS3H□, CS4H□, CS5H□



ZC301□, ZC305□

Products compliant with the EMC Directive

Reed Switch Type Sensor Switch

Applicable cylinders

●AGTB ●AGTC ●ORCJ ●MRC

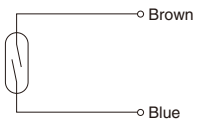
Specifications

Item \ Model	ZC301□		ZC305□
Wiring type	2-lead wire		
Load voltage	DC5～28V	AC85～115V (r.m.s.)	DC10～28V
Load current	0.1～40mA	2～25mA	5～40mA
Internal voltage drop Note 1	0.1V MAX. (At 40mA load current)		2.1V MAX. (At 40mA load current)
Leakage current	0mA		
Response time	1ms MAX.		
Insulation resistance	100MΩ MIN. (At DC500V Megger, between case and lead wire end)		
Dielectric strength	AC1500V (50/60Hz) in 1 minute (Between case and lead wire end)		AC1000V (50/60Hz) in 1 minute (Between case and lead wire end)
Shock resistance Note 2	294.2m/s^2 [30G] (Non-repeated shock)		
Vibration resistance Note 2	88.3m/s^2 [9G] (Total amplitude 1.5mm [0.06in.], 10～55Hz), Resonance frequency 2750±250Hz		
Environmental protection	IP67 (IEC standard), JIS C0920 (Water-proof type)		
Operation indicator	—		When ON: Red LED indicator lights up
Lead wire Note 3	PCCV 0.2SQ×2-lead×ℓ		
Ambient temperature	0～60°C [32～140°F]		
Storage temperature range	−10～70°C [14～158°F]		
Contact protection	Required (See contact protection on p.1566.)		
Mass	20g [0.71oz.] (For lead wire length A: 1000mm)		

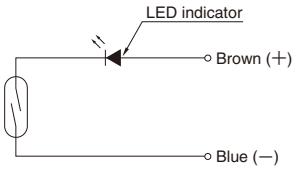
Notes: 1. The internal voltage drop depends on load current.
2. Measured by Koganei test standard.
3. Lead wire length ℓ: A; 1000mm [39in.], B; 3000mm [118in.]

Internal Circuit

ZC301□

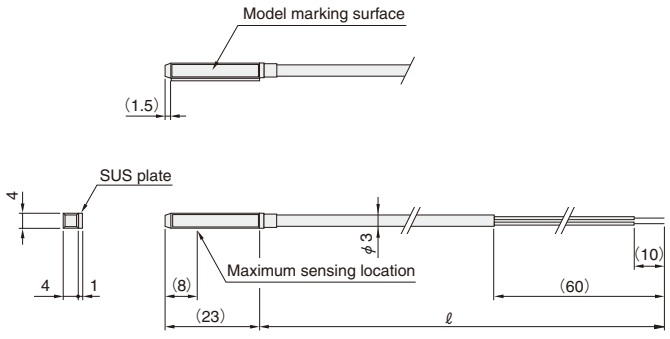


ZC305□

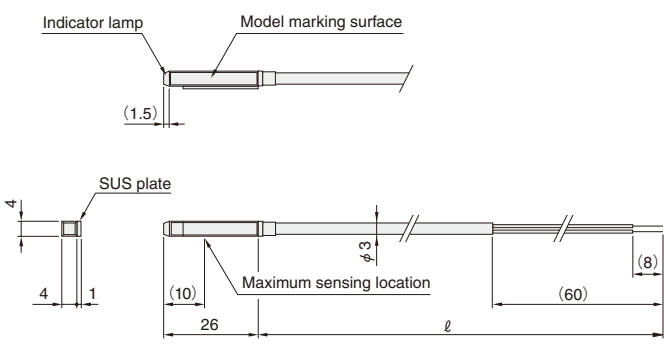


Dimensions (mm)

ZC301□



ZC305□



ZC601□, ZC605□

Products compliant with the EMC Directive

Reed Switch Type Sensor Switch

Applicable cylinders

●**Axis cylinders**

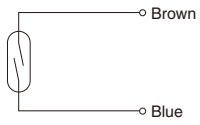
Specifications

Item \ Model	ZC601□		ZC605□
Wiring type	2-lead wire		
Load voltage	DC5～28V	AC85～115V (r.m.s.)	DC10～28V
Load current	DC0.1～40mA	AC2～25mA	DC5～40mA
Internal voltage drop Note 1	0.1V MAX. (At 40mA load current)		2.1V MAX. (At 40mA load current)
Leakage current	0mA		
Response time	1ms MAX.		
Insulation resistance	100MΩ MIN.(At DC500V Megger, between case and lead wire end)		
Dielectric strength	AC1500V (50/60Hz) in 1 minute (Between case and lead wire end)		AC1000V (50/60Hz) in 1 minute (Between case and lead wire end)
Shock resistance Note 2	294.2m/s^2 [30G] (Non-repeated shock)		
Vibration resistance Note 2	88.3m/s^2 [9G] (Total amplitude 1.5mm [0.06in.], 10～55Hz), Resonance frequency 2750±250Hz		
Environmental protection	IP67 (IEC standard), JIS C0920 (Water-proof type)		
Operation indicator	—		When ON: Red LED indicator lights up
Lead wire Note 3	PCCV 0.2SQ×2-lead×ℓ		
Ambient temperature	0～60°C [32～140°F]		
Storage temperature range	−10～70°C [14～158°F]		
Contact protection	Required (See contact protection on p.1566.)		
Mass	20g [0.71oz.] (For lead wire length A: 1000mm)		

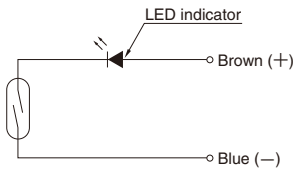
Notes: 1. The internal voltage drop depends on load current.
2. Measured by Koganei test standard.
3. Lead wire length ℓ : A; 1000mm [39in.], B; 3000mm [118in.]

Internal Circuit

ZC601□

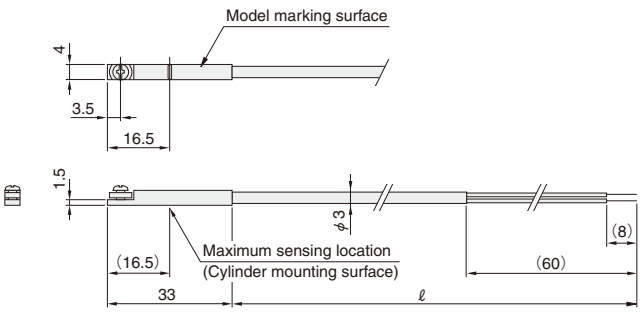


ZC605□

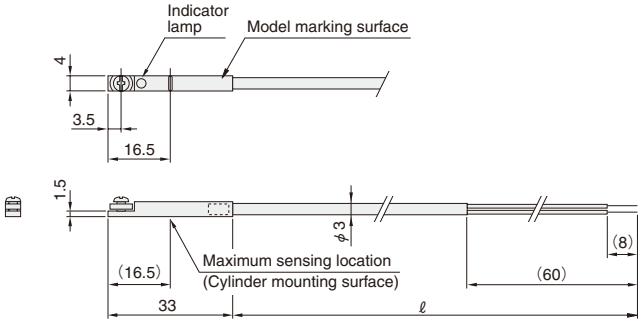


Dimensions (mm)

ZC601□



ZC605□



ZE101□, 102□, 201□, 202□

Products compliant with the EMC Directive

Reed Switch Type Sensor Switch

Applicable cylinders

●Jig cylinders C series ●Jig cylinders JC series ●Mini guide sliders ●Jig cylinders with guides ●Twin rod cylinders B series ●Rod sliders ●Multi sliders ●WT ●ACY Note **●ACZ** Note **●WS ●Flat rodless cylinders ●ORV** Note **●ORS** Note **●MRS** Note **●ORW, MRW ●RAG ●RAT ●DJ cylinders**

Note: Only the horizontal lead wire type is available.

Specifications

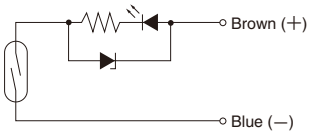
Item \ Model	ZE101□	ZE102□	ZE201□	ZE202□
Wiring type	2-lead wire			
Lead wire direction	Horizontal		Vertical	
Load voltage	DC5～28V, AC85～115V	DC10～28V, AC85～115V	DC5～28V, AC85～115V	DC10～28V, AC85～115V
Load current	DC40mA MAX., AC20mA MAX.	DC5～40mA, AC5～20mA	DC40mA MAX., AC20mA MAX.	DC5～40mA, AC5～20mA
Internal voltage drop Note 1	0.1V MAX. (At DC40mA load current)	3.0V MAX.	0.1V MAX. (At DC40mA load current)	3.0V MAX.
Leakage current	0mA			
Response time	1ms MAX.			
Insulation resistance	100MΩ MIN. (At DC500V Megger, between case and lead wire end)			
Dielectric strength	AC1500V (50/60Hz) in 1 minute (Between case and lead wire end)			
Shock resistance Note 2	294m/s^2 [30G] (Non-repeated shock)			
Vibration resistance Note 2	88.3m/s^2 [9G] (Total amplitude 1.5mm [0.06in.], 10～55Hz), Resonance frequency 2750±250Hz			
Environmental protection	IP67 (IEC standard), JIS C0920 (Water-proof type)			
Operation indicator	None	When ON: Red LED indicator lights up	None	When ON: Red LED indicator lights up
Lead wire Note 3	PCCV 0.2SQ×2-lead (Brown and blue)×ℓ			
Ambient temperature	0～60°C [32～140°F]			
Storage temperature range	−10～70°C [14～158°F]			
Contact protection	Required (See contact protection on p.1566.)			
Mass	15g [0.53oz.] (For lead wire length A: 1000mm), 35g [1.23oz.] (For lead wire length B: 3000mm)			

Notes: 1. The internal voltage drop depends on load current.
2. Measured by Koganei test standard.
3. Lead wire length ℓ: A; 1000mm [39in.], B; 3000mm [118in.]

Internal Circuit

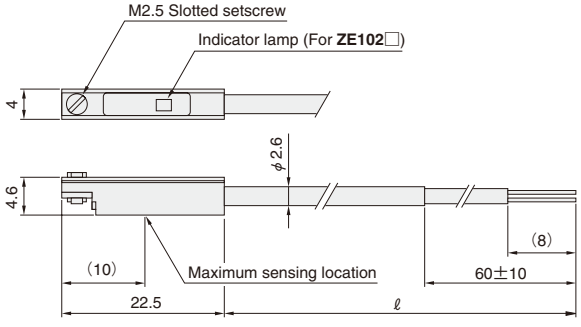
ZE101□, ZE201□

ZE102□, ZE202□

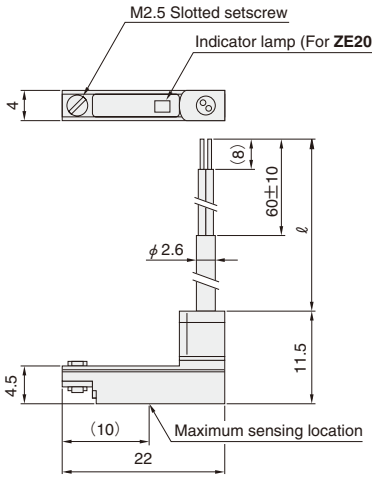


Dimensions (mm)

●Horizontal lead wire ZE101□, ZE102□



●Vertical lead wire ZE201□, ZE202□



CS2F, 3F, 4F, 5F

Reed Switch Type Sensor Switch

Applicable cylinders

● **Slim cylinders** Note ● **DYNA cylinders** ● **GA** ● **Swing cylinders**

Note: Excluding Slim block cylinder ϕ 16 [0.630in.]

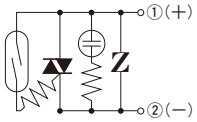
Specifications

Item \ Model	CS2F	CS3F	CS4F	CS5F
Wiring type	2-lead wire			
Load voltage	AC85～230V (r.m.s)	DC5～30V	DC5～30V	DC3～30V
Load current	2～200mA	10～46mA Note 1	5～25mA Note 1	0.1～80mA
Internal voltage drop	0.1V MAX. (At 200mA load current)	3V MAX. (At 46mA load current) Note 2	2.8V MAX. (At 25mA load current) Note 2	0.1V MAX. (At 80mA load current)
Leakage current	1mA MAX. (AC100V) 2mA MAX. (AC200V)	0mA		
Response time	2ms MAX.	1.2ms MAX.		
Insulation resistance	100MΩ MIN. (At DC500V Megger, between case and lead wire end)			
Dielectric strength	AC500V (50/60Hz) in 1 minute (Between case and lead wire end)			
Shock resistance Note 3	294.2m/s^2 [30G] (Non-repeated shock)			
Vibration resistance Note 3	88.3m/s^2 [9G] (Total amplitude 1.5mm [0.06in.], 10～55Hz), Resonance frequency 5000±400Hz			
Environmental protection	—			
Operation indicator	When ON: Red neon lamp turns off	When ON: Red LED indicator lights up		—
Method of wiring	With DIN connector (Cabtyre outer diameter ϕ 6.5 [0.256in.] MAX.,Wire ϕ 1.25SQ MAX.)			
Ambient temperature	0～60°C [32～140°F]			
Storage temperature range	−10～70°C [14～158°F]			
Contact protection	Not required	Required (See contact protection on p.1566.)		
Mass	40g [1.41oz.]			

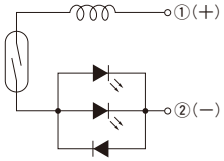
Notes: 1. Ta＝37°C [98.6°F]
2. The internal voltage drop depends on load current.
3. Measured by Koganei test standard.

Internal Circuit

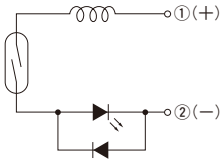
CS2F



CS3F



CS4F

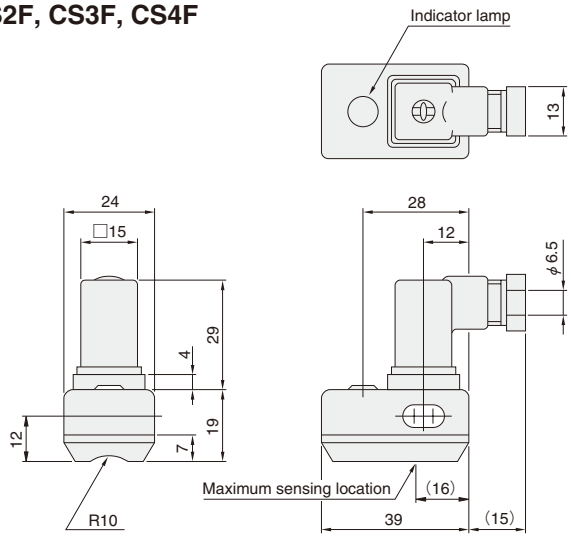


CS5F

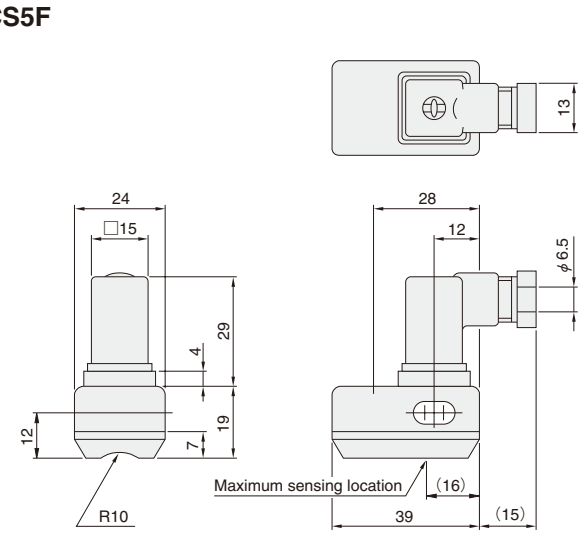
The numbers in circle show the terminal numbers of the F type connector.

Dimensions (mm)

CS2F, CS3F, CS4F



CS5F



CS2B, 3B, 4B, 5B

Reed Switch Type Sensor Switch

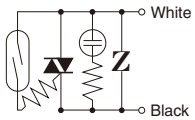
Specifications

Item \ Model	CS2B	CS3B	CS4B	CS5B
Wiring type	2-lead wire			
Load voltage	AC85～230V (r.m.s)	DC5～30V	DC5～30V	DC3～30V
Load current	2～200mA	10～46mA Note 1	5～25mA Note 1	0.1～80mA
Internal voltage drop	0.1V MAX. (At 200mA load current)	3V MAX. (At 46mA load current) Note 2	2.8V MAX. (At 25mA load current) Note 2	0.1V MAX. (At 80mA load current)
Leakage current	1mA MAX. (AC100V) 2mA MAX. (AC200V)	0mA		
Response time	2ms MAX.	1.2ms MAX.		
Insulation resistance	100MΩ MIN. (At DC500V Megger, between case and lead wire end)			
Dielectric strength	AC500V (50/60Hz) in 1 minute (Between case and lead wire end)			
Shock resistance Note 3	294.2m/s² [30G] (Non-repeated shock)			
Vibration resistance Note 3	88.3m/s² [9G] (Total amplitude 1.5mm [0.06in.], 10～55Hz), Resonance frequency 2200±300Hz			
Environmental protection	—			
Operation indicator	When ON: Red neon lamp turns off	When ON: Red LED indicator lights up		—
Lead wire	VCT 0.3SQ×2-lead×1500mm [59in.]			
Ambient temperature	0～60°C [32～140°F]			
Storage temperature range	−10～70°C [14～158°F]			
Contact protection	Not required	Required (See contact protection on p.1566.)		
Mass	60g [2.12oz.]			

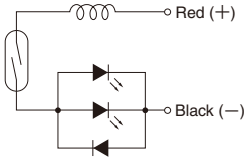
Notes: 1. Ta=37°C [98.6°F]
2. The internal voltage drop depends on load current.
3. Measured by Koganei test standard.

Internal Circuit

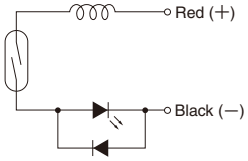
CS2B



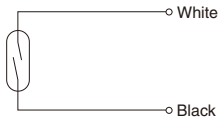
CS3B



CS4B

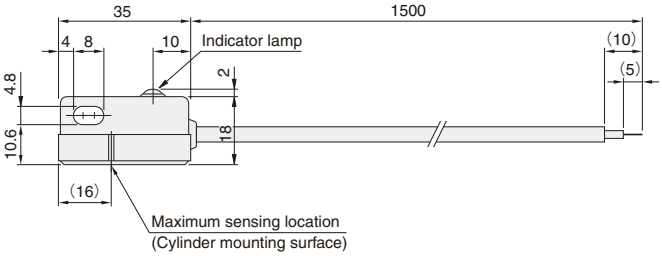


CS5B

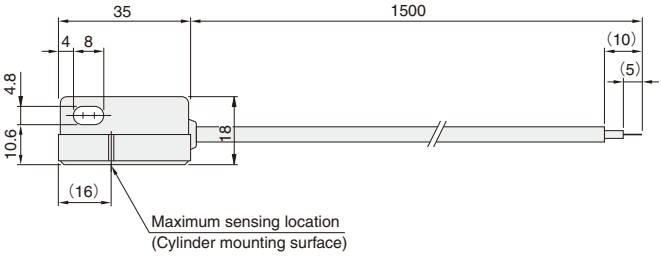


Dimensions (mm)

CS2B, CS3B, CS4B



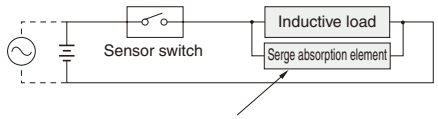
CS5B



Contact Protection for Reed Switch Type Sensor Switches

In order to use the reed switch type sensor switches in a stable condition, take the following contact protection measures.

● When you connect inductive load (electromagnetic relay, etc.).



For DC··· Diode, CR, etc.
For AC··· CR, etc.
Diode: Forward current should be more than the circuit current.
Reverse voltage should be peak inverse voltage that is 10 times or more of the circuit voltage.
CR: C=0.01～0.1μF
R=1～4kΩ

● When capacity serge is generated.

(When lead wire length exceeds 10m.)