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OKAZAKI
MANUFACTURING COMPANY
UK LIMITED

Explosion/Flame Proof Temperature Sensor

**Compliant with standards of each
country and region
Achieves reliable performance in
severe environments**

This hydrogen atmosphere grade explosion/flame proof temperature sensor is compliant with the explosions-proof standards of Japan, Europe, USA and many countries and regions worldwide, and IECEx. The sensor has acquired Type Approval from various inspection agencies. This sensor is rated IP66 and NEMA4&4X, and can be used reliably in severe environments. As such, the sensor is exempt from safety testing in the importing country, which enhances the flow of sale and distribution.



Conforms to global mutual
recognition system on
explosion-proof electrical
equipment



Basic specification for explosion/flameproof temperature sensors

	Japan (TIIS)	*IECEX/ International ATEX/Europe (Baseefa)	South Korea (KOSHA)	Russia: Kazakhstan: Belarus (TR CU)	India (PESO)	Brazil (INMETRO)	China (NEPSI)	The United States (FM)	Canada (FMC)	Taiwan (OSHA)
Explosion proof rating	Ex d II C T6	Ex db eb IIC T6 & T5 Gb Ex tb IIIC T85°C & T100°C Db	Ex de IIC T5/T6	1Ex de IIC T5/T6 Gb X Ex tb IIIC T95°C / T80°C Db X	Ex II 2G Ex dellC	Ex de IIC T6 & T5 Gb Ex tb IIIC T85°C & T100°C Db	Ex de IIC T5/T6 Gb Ex tD A2I	Class I, Div.1 Gr; A,B,C&D Class II/ III Div.1 Gr,E,F&G	Class I, Div.1 Gr; B,C&D Class II/III Div.1 Gr,E,F&G	Ex de IIC T6 & T5 Gb Ex tb IIIC T85°C & T100°C Db
Enclosure Rating	IP66 IP67	IP66						NEMA4 &4X	Type4 &4X	IP66
Material	A.D.C.12 SCS14	A.D.C. 12/SCS14 (No paint)/CF8M(316SS eq. CAST) (No paint) A.D.C.6 (COPPER FREE:Cu MAX.0.1%)								
Standard Coating (colour)	<ul style="list-style-type: none"> Acrylic-Resin: Silver (standard) Epoxy-Resin 	<ul style="list-style-type: none"> Acrylic-Resin: Silver (standard) Epoxy-Resin Acrylic-Resin: Blue (COPPER FREETYPE ONLY) 						<ul style="list-style-type: none"> Acrylic-Resin: Silver (NEMA4&Type4) Epoxy-Resin: Silver (NEMA4X&Type4X) Acrylic-Resin: Blue (COPPER FREE TYPE ONLY) 		<ul style="list-style-type: none"> Acrylic-Resin: Silver (standard) Epoxy-Resin
Connection Thread	Output	G1/2, G3/4, PF1/2, PF3/4	G1/2,G3/4, NPT1/2, NPT3/4 M20, M24, M25				NPT1/2 NPT3/4 M20, M24, M25	NPT1/2, NPT3/4		G1/2,G3/4, NPT1/2, NPT3/4 M20, M24, M25
	Sensor	G1/2, G3/4, PF1/2, PF3/4	G1/2,G3/4, NPT1/2, NPT3/4 BSP1/2,BSP3/4				G1/2,G3/4, NPT1/2, NPT3/4		G1/2,G3/4, NPT1/2, NPT3/4 BSP1/2,BSP3/4	
Material of Terminal Board	Steatite/Epoxy Glass (for Multipoint)									
Wiring Method	Output	M4 recessed head and slotted screws								
	Sensor	M3 recessed head and slotted screws								
Structure of Spring	Fitted on base plate of terminal block. Moveable together with sheath part Spring range 10mm (Not applicable to Multipoint)									
Structure of Boundary with sensor	Flame path gap by machined sleeve (O-ring sealing)(Not applicable to Multipoint in Japan)									
Cable Gland	Applied goods (ex. Shimada Electric or Lead engineering)	Exd cable gland suitably certified for use in the location of site					Conduit pipes(NPT) (sealing fitting)			Exd cable gland suitably certified for use in the location of site
Mass	Approx.750g (A.D.C) Approx.2100g (SCS14)									
Model Name	GE(1 entry),GED(2 entries),GES (1 entry),GESD(2 entries)									
Model number to be set with sensor	T99,T409 (Mineral Insulated Thermocouple:AEROPAK)... 1 ~6points max(2P ~12P) R99, R409 (Mineral Insulated Resistance Thermometer Sensor: RESIOPAK)... 1 ~4points max(3P ~12P)									

• Thread size in brackets are available from our standard stock

*IECEX scheme is adopted by the following five countries (As of End of January, 2011)
Australia, New Zealand, India, Singapore and South Korea



AEROPAK® (Mineral Insulated Thermocouples)

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 1 2 3 4 5 6 7 8 9 10 11 / 12 13

1	Model (*1)	T99 T99N/U T99S T99M T409N/U T409S	Basic model With nipple/union With support pipe Multipoint with support pipe Spring loaded type with nipple/union Spring loaded type with support pipe
2	Authorisation Classification	Space -EX -EC -FM -NP -PS -FC -KS -TR -IN -TS	Unnecessary to fill out, for authorisation in Japan Authorised by IECEx Authorised by ATEX(Baseefa) Authorised by FM Authorised by NEPSI Authorised by PESO Authorised by FMC Not applicable to T99M Authorised by KOSHA Authorised by TR CU Authorised by INMETRO Authorised by OSHA
3	Shape (*2)	-1 -2 -3 -4 Space	N=100(94) not welded Support pipe in case of T99S N=150(144) not welded N=100(94) welded N=150(144) welded Unnecessary to fill out, for T99, T99M
4	Terminal Head	GE GE-CFT GED GED-CFT GES GESD	Made of ADC Made of ADC(COPPER FREE) Made of ADC with dual entries Made of ADC(COPPER FREE)with dual entries Made of SCS Made of SCS with dual entries
5	Total Length	L	unnecessary to fill out, for T99M
6	Sheath O.D.	B,CN D,DN E,EN F,FN G	φ1.6, φ2.0(out of application, for T409N/U) φ3.2, φ3.0 φ4.8, φ4.5 φ6.4, φ6.0 φ8.0
7	No. of Element	2 4	Single Double
8	Type of Element	N K E J T	Ni-Cr-Si/ Ni-Si Ni-Cr / Ni-Al Ni-Cr / Cu-Ni Fe / Cu-Ni Cu / Cu-Ni
9	Measuring Junction	5 8 9	(#5) Ungrounded separate type G (#8) Grounded type(Not allowed in Japan) U (#9) Ungrounded type
10	Sheath Material	C D B	316SS 310S SS NCF600eq
11	Class	01 02 03 04 05 06 07 08	1 (JIS) 2 (JIS) 3 (JIS) STD (ASTM) SP (ASTM) 1 (IEC) 2 (IEC) 3 (IEC)
12	Optional Parts		Please contact your nearest sales office. (Flange, Adaptor, Ped etc.)
13	Insertion Length	ℓ	T99, T99N/U, T409N/U unnecessary to fill out For T99M, please specify ℓ1 ~ ℓ6(6 points max / single element)

(*1) The models approved in EX, EC, KS, NP, TR, PS, TS and IN are named OFF on the approval certificates.

(*2) Dimensions in brackets are for products for overseas use.



RESIOPAK® (Mineral Insulated Resistance Thermometer)

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 1 2 3 4 5 6 7 8 9 10 / 11 12

1	Model (*1)	R99 R99N/U R99S R99M R409N/U R409S	Basic model With nipple/union With support pipe Multipoint with support pipe Spring loaded type with nipple/union Spring loaded type with support pipe
2	Authorisation Classification	Space -EX -EC -FM -NP -PS -FC -KS -TR -IN -TS	Unnecessary to fill out, for authorisation in Japan Authorised by IECEx Authorised by ATEX(Baseefa) Authorised by FM Authorised by NEPSI Authorised by PESO Authorised by FMC Not applicable to R99M Authorised by KOSHA Authorised by TR CU Authorised by INMETRO Authorised by OSHA
3	Shape (*2)	-1 -2 -3 -4 Space	N=100(94) not welded Support pipe in case of R99S N=150(144) not welded N=100(94) welded N=150(144) welded Unnecessary to fill out, for R99, R99M
4	Terminal Head	GE GE-CFT GED GED-CFT GES GESD	Made of ADC Made of ADC(COPPER FREE) Made of ADC with dual entries Made of ADC(COPPER FREE)with dual entries Made of SCS Made of SCS with dual entries
5	Total Length	L	unnecessary to fill out, for R99M
6	Sheath O.D.	D,DN E,EN F,FN G	φ3.2, φ3.0 φ4.8, φ4.5 φ6.4, φ6.0 φ8.0
7	No. of Wire	3,4 6	Single Double
8	Temperature Range	L N M H	-196°C ~ 100°C -30°C ~ 200°C 0 ~ 350°C 0 ~ 500°C
9	Resistance Value	100	Pt100 Ω or JPt100 Ω
10	Class	-AAJ -AJ -BJ -CJ -A -B -AAI -AI -BI -CI	Pt 100 Ω class AA (JIS-2013) Pt 100 Ω class A (JIS-2013) Pt 100 Ω class B (JIS-2013) Pt 100 Ω class C (JIS-2013) Pt 100 Ω class A (JIS-1997) Pt 100 Ω class B (JIS-1997) Pt 100 Ω class AA (IEC) Pt 100 Ω class A (IEC) Pt 100 Ω class B (IEC) Pt 100 Ω class C (IEC)
11	Optional Parts		Please contact your nearest sales office. (Flange, Adaptor, Ped etc.)
12	Insertion Length	ℓ	R99, R99N/U, R409N/U unnecessary to fill out For R99M, please specify ℓ1 ~ ℓ4(4 points max / single element 3-wire type)

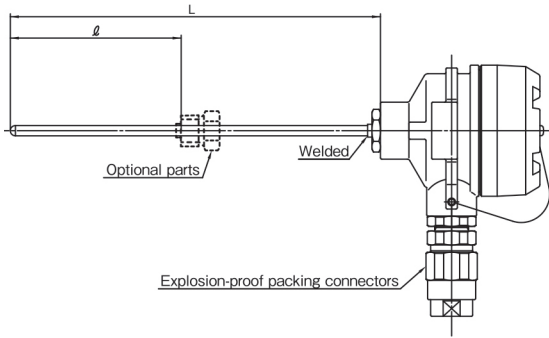
(*1) The models approved in EX,EC,KS,NP,TR,PS,TS and IN are named OFF on the approval certificates.

(*2) Dimensions in brackets are for products for overseas use.

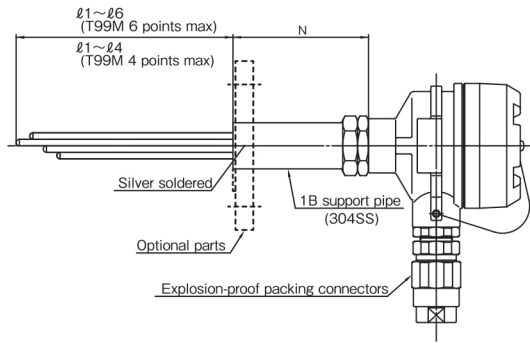


Figures of Basic Models **AEROPAK® T99/T409** **RESIOPAK® R99/R409**

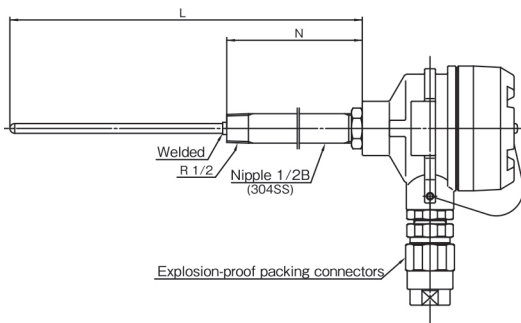
□ 99



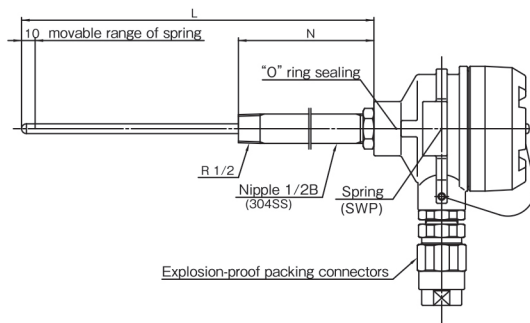
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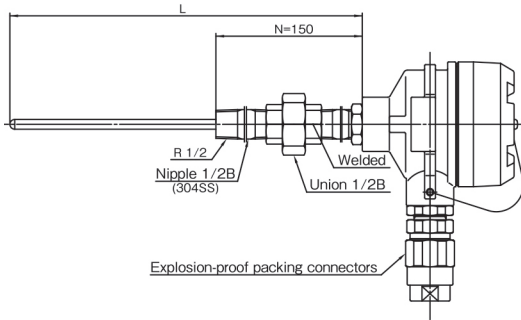
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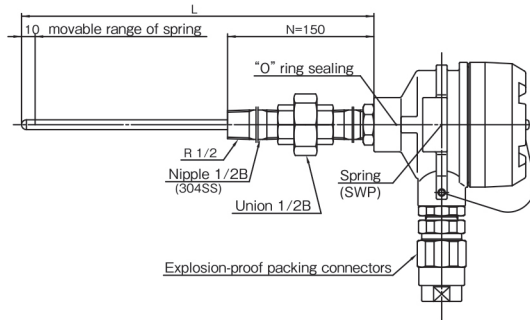
□ 409N



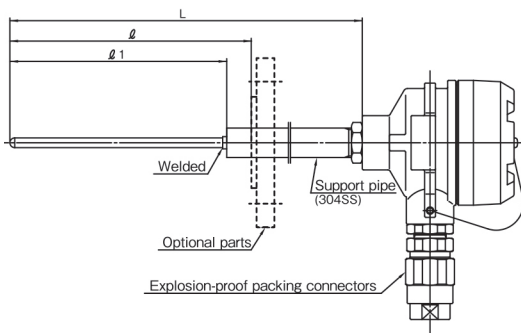
□ 99U



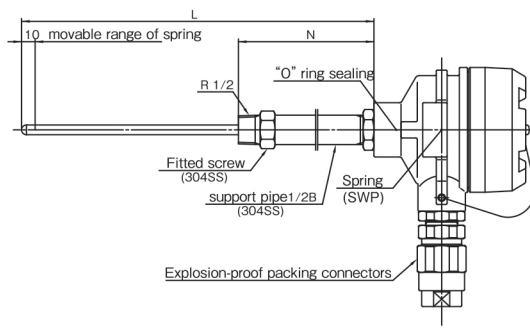
□ 409U



□ 99S



□ 409S



Above figures are on the model of sensors approved in Japan (with explosion Proof Packing Connector).
Explosion Proof Packing Connector or lock nut below terminal head does not come as standard for overseas use.

Critical Points which require caution when specifying these parts:

- Ambient temperature range can affect these Explosion-proof Temperature Sensors. Please confirm that the ambient temperature in which the terminal head is installed is within the following temperature range.

Japan	-20°C ~ +55°C
IECEX / Europe / China, South Korea, Russia, Kazakhstan, Belarus, India, Taiwan, Brazil	-50°C ~ +60°C (T6), -50°C ~ +75°C (T5)
The United States and Canada	-50°C ~ +75°C

- IP66 approved by Baseefa
- In Japan, Explosion-proof temperature sensors need to be fitted with explosion-proof packing connectors. Details on the material of the adaptor and the outer diameter of sheath is required.
Applicable cable diameter: G1/2($\phi 5 \sim \phi 12$), G3/4($\phi 5 \sim \phi 16$)
- For items approved in Europe, Russia, Kazakhstan, Belarus, China, South Korea, India, Taiwan and Brazil, be sure to use cable glands that conform to explosion-proof standards.
If using conversion screws, it is necessary to use similar certified adaptors.
- In some cases, it may be required to apply for confirmation of exemption from certification process etc in IECEX joined countries.
- Sensors approved in the U.S. and Canada require a sealing fitting to a conduit pipe, when the length is less than 457mm for wiring.
Please note if any other method is applied, we cannot guarantee the explosion-proof performance.
- After installing the temperature sensor, please fully tighten the cover of the terminal head. Do not open the cover of the terminal head in operation.
- Explosion-proof temperature sensors are certified as a finished unit. Therefore, any modification by the user is strictly prohibited. Please refrain from disassembling or modifying the product.

