

Instrucciones de Instalación y de Servicio

(Traducción de las instrucciones de instalación y de servicio originales)

BTS

Dispositivo de conmutación térmico sin contacto

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Contacto

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3626-011500 es

Este documento describe el estado técnico del producto en el momento del cierre de la redacción el 2021-06-15.

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1 Posibilidades de aplicación, características del BTS

El dispositivo de conmutación térmico sin contacto (**BTS**) es un sistema de vigilancia para turboacopladores Voith.

- El BTS permite vigilar de manera sencilla la temperatura de los turboacopladores.
- **Si se produce una sobretemperatura, el equipo puede (dependiendo de la aplicación) realizar las siguientes operaciones:**
 - Advertir al usuario
 - Hacer que se desconecte el motor de accionamiento
 - Reducir la carga absorbida por la máquina de trabajo
- Detectando a tiempo las sobretemperaturas, se puede evitar que el fluido contenido en el acoplador se escape por los tornillos fusibles. Los tiempos de inactividad se reducen.
- Una vez que el turboacoplador se ha enfriado, el BTS vuelve a estar listo para funcionar.
- El BTS puede utilizarse con turboacopladores Voith a partir del **tamaño 206**.



ADVERTENCIA

Peligro de explosión

Existe peligro de explosión si no se utiliza un amplificador conmutador de separación.

- ¡Puesto que el circuito de mando del aparato analizador **no** es un circuito con seguridad intrínseca, entre el aparato y el iniciador se debe conectar un amplificador conmutador de separación apropiado!
- ¡El BTS no se debe utilizar en atmósferas potencialmente explosivas como dispositivo de seguridad para limitar la temperatura superficial máxima permitida del turboacoplador!



2 Funcionamiento del BTS

El dispositivo de conmutación térmico sin contacto (BTS) está formado por tres componentes:

- **Elemento de conmutación**
- **Iniciador** con brida de fijación
- **Aparato analizador**

Opcional en caso de que sea preciso un circuito de mando intrínsecamente seguro:

- **Amplificador conmutador de separación**, de 2 canales para un máximo de 2 iniciadores

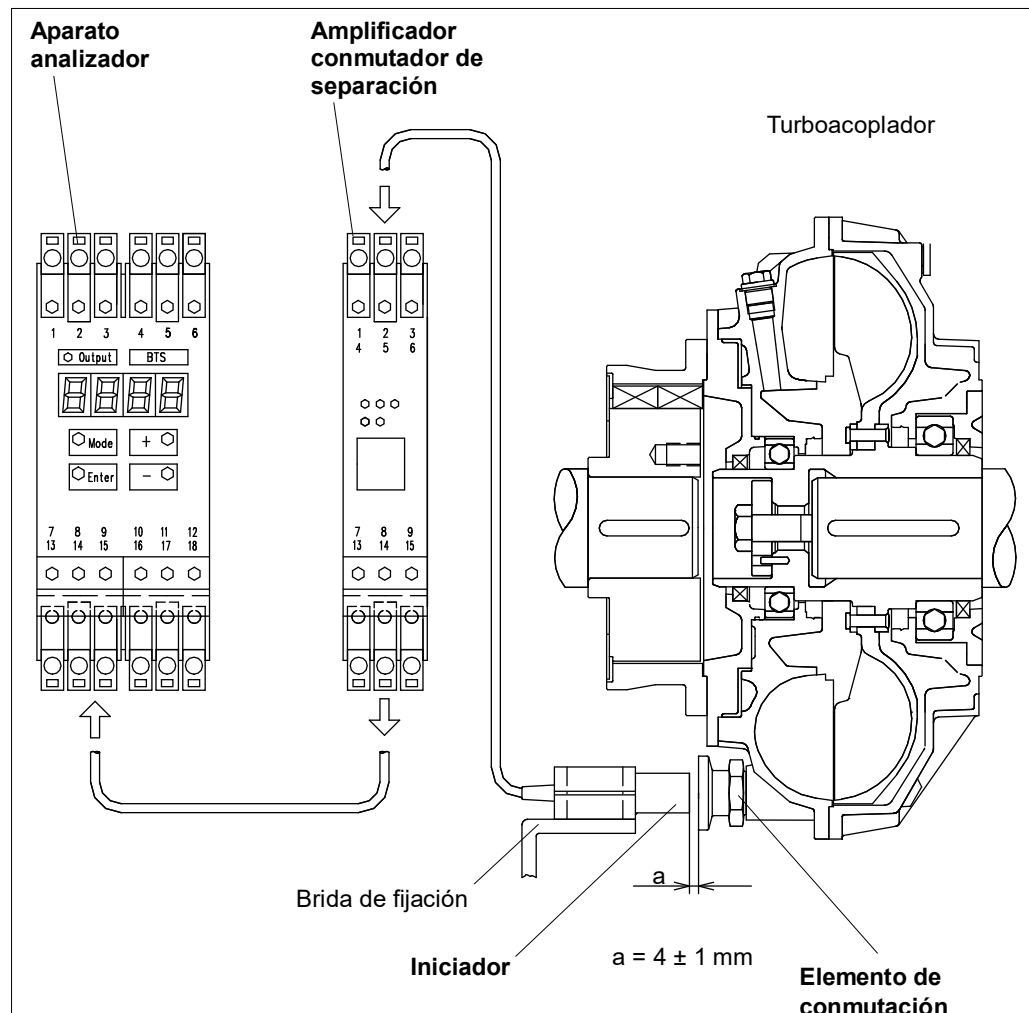


Figura 1

2.1 Elemento de conmutación

El elemento de conmutación es un componente pasivo (material eléctrico simple). Se enrosca en la rueda exterior o en la envoltura del turboacoplador. Así se produce un contacto térmico entre el elemento de conmutación y el turboacoplador con el líquido de servicio.

El elemento de conmutación lleva incorporada una bobina y un termostato. El punto de conmutación del termostato coincide con la temperatura de reacción del elemento de conmutación.

Mientras la temperatura está por debajo del valor nominal de reacción, el termostato está cerrado y puentea la bobina. Cuando la temperatura supera el valor nominal de reacción, el termostato se abre e interrumpe el circuito eléctrico. Cuando la temperatura baja, el termostato vuelve a cerrar el circuito eléctrico. El BTS vuelve a estar listo para funcionar.

Temperatura nominal de reacción
→ capítulo 3.1

2.2 Iniciador

El iniciador es un sensor de dos hilos polarizado. Funciona según el principio de sensor inductivo.

En el iniciador se encuentra integrado un oscilador eléctrico que genera una oscilación de alta frecuencia. El oscilador tiene un circuito oscilante que determina la frecuencia y está compuesto por una bobina y un condensador.

La bobina del circuito oscilante está alojada en el cabezal del sensor. A través de esta bobina sale del cabezal del sensor un campo electromagnético alterno.

2.3 Aparato analizador

El aparato analizador es una unidad electrónica que registra impulsos eléctricos y analiza el tiempo que transcurre entre ellos.

El análisis comienza cuando se conecta la tensión de alimentación o cuando se inicia una señal de activación externa.

Después de comenzar el análisis, la vigilancia de los impulsos se debe interrumpir durante un intervalo de tiempo ajustable (tiempo de puenteo de arranque).

Si el número de impulsos por unidad de tiempo disminuye por debajo de un determinado valor, se abre un relé con contacto inversor.

2.4 Amplificador conmutador de separación

El amplificador conmutador de separación transmite señales digitales desde la atmósfera potencialmente explosiva.

Los transmisores de señales pueden ser sensores o contactos mecánicos.

Las entradas intrínsecamente seguras están desconectadas de manera segura de la salida y de la red.

2.5 Interacción de los componentes del BTS

Montaje, posición → capítulo 2

El elemento de conmutación se atornilla en el lugar que ocupa un tornillo ciego en el turboacoplador. El iniciador se monta con la brida de fijación paralelo al eje del turboacoplador y se conecta al aparato analizador.

Si el elemento de conmutación está situado delante del cabezal del iniciador, la bobina del elemento de conmutación se acopla inductivamente con la bobina del iniciador. Cuando el termostato está cerrado, se transmite energía del iniciador al elemento de conmutación. El oscilador se atenúa y consume menos corriente.

Si la temperatura del acoplador sobrepasa la temperatura de reacción del elemento de conmutación, el termostato interrumpe el circuito eléctrico que hay en el elemento de conmutación. El elemento de conmutación ya no puede atenuar el oscilador en el iniciador.

El aparato analizador detecta la atenuación del iniciador debido al consumo de corriente de este.

Cuando gira el turboacoplador al que está atornillado el elemento de conmutación, este se mueve y pasa constantemente por el iniciador. De ese modo, se generan constantemente impulsos de atenuación. En el aparato analizador, el relé de salida está excitado.

Frecuencia límite → capítulo 3.3.1

Si se produce una sobretemperatura, estos impulsos de atenuación no se generan, es decir, la frecuencia límite disminuye por debajo del valor ajustado en el aparato analizador. El aparato analizador detecta esta falta de impulsos y el relé de salida se abre.

Cuando el turboacoplador arranca, en el aparato analizador se ajusta un tiempo de puenteo de arranque. Mientras el puenteo de arranque esté activo, el relé de salida permanece excitado.

Después de este tiempo ajustado, las revoluciones del turboacoplador con el elemento de conmutación deben haber sobrepasado la frecuencia límite ajustada.

Máxima temperatura permitida → instrucciones de servicio del turboacoplador



ADVERTENCIA

Peligro de daños personales y materiales

Tras la desconexión, el control se debe bloquear de modo que no pueda producirse un re arranque automático.

- Desconecte la instalación en la que está montado el turboacoplador y asegure el interruptor para que no se vuelva a conectar.
- Para realizar cualquier trabajo en el turboacoplador y en el BTS, compruebe que tanto el motor de accionamiento como la máquina de trabajo están parados y bajo ninguna circunstancia se pueden poner en marcha.
- El turboacoplador se podrá poner de nuevo en marcha cuando su temperatura esté por debajo de la temperatura máxima permitida para poder encender el motor.

3 Datos técnicos

3.1 Elemento de conmutación

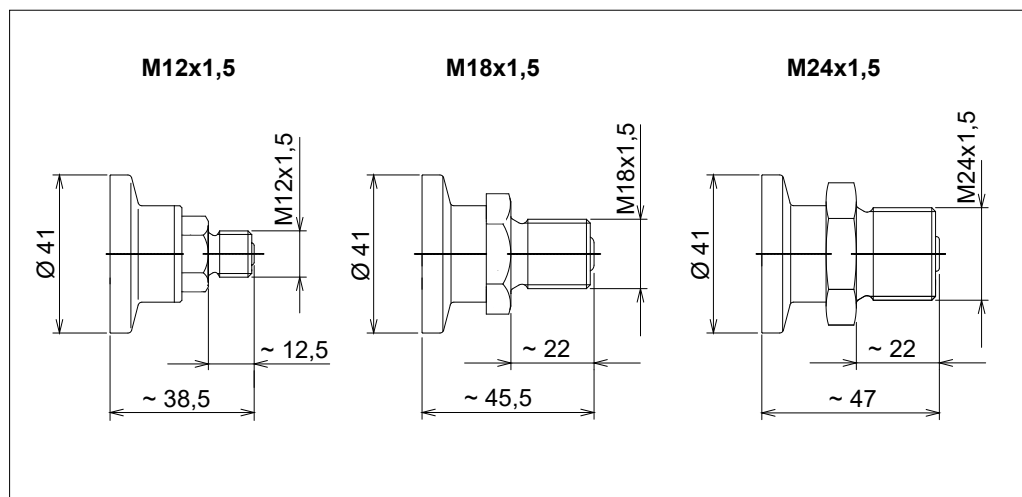


Figura 2

Para los diversos tamaños de turboacoplador existen los siguientes elementos de conmutación:




Tamaño de rosca	M12x1,5	M18x1,5	M24x1,5
Temperatura nominal de reacción	125 °C	85 / 90 / 100 / 110 / 125 / 140 / 160 / 180 °C	85 / 125 / 140 / 160 / 180 °C
Adecuado para un tamaño del acoplador	206 – 274	366 – 650	750 – 1330
Tolerancia de reacción	± 5 °C		
Temperatura de desconexión	aprox. 40 K por debajo de la temperatura de reacción		
Entrecaras	17	27	32
Par de apriete	22 Nm	60 Nm	144 Nm
La clasificación es  II 2GD	Ui = 10 V	Ii = 50 mA	Pi = 50 mW
Temperatura de uso en la zona de la bobina	-40 °C a +120 °C		
Temperatura de uso en la zona del termostato	hasta 90 °C (T5), hasta 125 °C (T4), hasta 190 °C (T3)		

Tabla 1

INDICACIÓN DE SEGURIDAD

- El tipo de elemento de conmutación aparece marcado en la carcasa junto con los siguientes datos:
 - Voith
 - Temperatura nominal de reacción
 - Marcado Ex  II Ex i X
 - Número de serie (ejemplo: Voith 140 °C  II Ex i X 1234 5678)
- La temperatura nominal de reacción del elemento de conmutación se establece al diseñar el acoplador.



3.2 Iniciador, brida de fijación

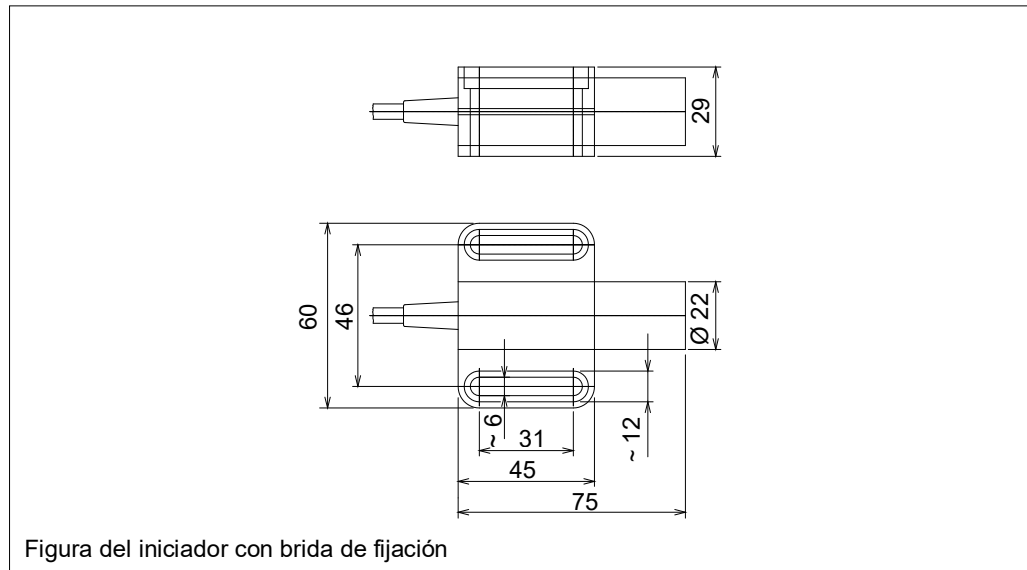


Figura 3

- anexo Tipo: NJ 10-22-N-E93-Y245590 (2 m)
NJ 10-22-N-E93-Y246868 (5 m)
NJ 10-22-N-E93-Y246869 (10 m)
NJ 10-22-N-E93-Y245590 (2 m, nuevo marcado Dust-Ex)
NJ 10-22-N-E93-Y246868 (5 m, nuevo marcado Dust-Ex)
NJ 10-22-N-E93-Y246869 (10 m, nuevo marcado Dust-Ex)

3.3 Aparato analizador y amplificador conmutador de separación

3.3.1 Aparato analizador

- anexo Tipo: KFU8-DW-1.D-Y209869

3.3.2 Amplificador conmutador de separación de 230 V AC

- anexo Tipo: KFA6-SOT2-Ex2

3.3.3 Amplificador conmutador de separación de 20...30 V DC

- anexo Tipo: KFD2-SOT2-Ex2

4 Indicación para el usuario

Estas instrucciones le ayudarán a utilizar el dispositivo de conmutación térmico sin contacto (**BTS**) de manera segura, adecuada y rentable.

Si tiene en cuenta estas instrucciones:

- Aumentará la fiabilidad y la vida útil de la instalación
- Evitará peligros
- Reducirá las reparaciones y los tiempos de inactividad

Estas instrucciones deben:

- Estar siempre disponibles en el lugar de uso del BTS
- Ser leídas y aplicadas por toda persona que trabaje en la instalación o la ponga en funcionamiento

En el anexo de estas instrucciones de servicio encontrará otros documentos que se deben tener obligatoriamente en cuenta.

El dispositivo de conmutación térmico sin contacto incorpora los últimos adelantos técnicos y cumple las normas técnicas de seguridad reconocidas. A pesar de ello, si se maneja inadecuadamente o no se emplea para el uso previsto, puede poner en peligro la integridad física y la vida del usuario o terceras personas, además de causar daños en la instalación u otros bienes materiales.

Piezas de recambio:

Las piezas de recambio deben cumplir los requisitos técnicos fijados por Voith. Este cumplimiento estará garantizado siempre y cuando se utilicen piezas de recambio originales.

El montaje y/o uso de piezas de recambio no originales puede afectar negativamente a las características preestablecidas del **BTS** y, por consiguiente, a su seguridad.

Voith no asumirá ninguna responsabilidad por daños debidos al uso de piezas de recambio no originales.

Para realizar trabajos de entretenimiento, utilice el equipamiento de taller adecuado. Sólo el fabricante o un taller especializado y autorizado pueden garantizar una reparación profesional.

Estas instrucciones han sido redactadas con el mayor esmero. No obstante, si desea más información, póngase en contacto con:

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La empresa Voith se reserva el derecho a realizar modificaciones.

5 Seguridad

5.1 Indicaciones de seguridad

En las instrucciones de servicio se utilizan indicaciones de seguridad cuyos nombres y símbolos se describen a continuación.

5.1.1 Estructura de las indicaciones de seguridad

 PALABRA DE PELIGRO
Consecuencia del peligro Fuente de peligro <ul style="list-style-type: none"> Prevenición del peligro

Palabra de peligro

La palabra de peligro clasifica la gravedad del peligro en varios niveles:




Palabra de peligro	Gravedad del peligro
 PELIGRO	Muerte o lesión extremadamente grave (daños personales irreversibles)
 ADVERTENCIA	Posibilidad de muerte o de lesión extremadamente grave
 PRECAUCIÓN	Posibilidad de lesión leve o de poca consideración
AVISO	Posibilidad de daños materiales - en el producto - en su entorno
INDICACIÓN DE SEGURIDAD	Indicaciones generales de aplicación, información útil, procedimiento de trabajo seguro y medidas de seguridad correctas

Tabla 2

Consecuencia del peligro

La consecuencia del peligro indica el tipo de amenaza.

Fuente de peligro

La fuente de peligro indica la causa de la amenaza.

Prevenición del peligro

La prevenición del peligro describe las medidas necesarias para prevenir la amenaza.

5.1.2 Definición de las señales de seguridad


Símbolo	Definición
	<p>Peligro de explosión El símbolo Ex indica posibles peligros que es obligatorio tener en cuenta para el uso en atmósferas potencialmente explosivas.</p>

Tabla 3

5.2 Uso previsto

- El dispositivo de conmutación térmico sin contacto (**BTS**) sirve para vigilar sin contacto la temperatura de los turboacopladores Voith y ha sido concebido para uso industrial. Cualquier uso que no coincida con esta finalidad o la sobrepase, por ejemplo el uso en condiciones de servicio o de aplicación no acordadas, es un uso no previsto.
- El uso previsto incluye, además, el cumplimiento de estas instrucciones de instalación y servicio.
- El fabricante **no** se responsabilizará de ningún daño causado por un uso no previsto. El riesgo lo asumirá, exclusivamente, el usuario.

5.3 Uso no previsto


- Cualquier uso que no respete la gama de aplicaciones previstas.
- Cualquier uso que no coincida con esta finalidad o la sobrepase (por ejemplo, el uso para potencias más altas, a revoluciones más altas o en condiciones de funcionamiento no acordadas) es un uso no previsto.
- Tampoco se deben utilizar BTS o piezas de recambio de otros proveedores.

Gama de aplicaciones previstas
→ instrucciones de servicio turboacoplador

5.4 Indicaciones de peligro generales

¡Para realizar cualquier trabajo en el dispositivo de conmutación térmico sin contacto, tenga en cuenta la normativa local sobre prevención de accidentes y las normas sobre instalaciones eléctricas!





ADVERTENCIA

Peligro de explosión

Si se incumplen las normas o se realizan cambios no permitidos, puede producirse una explosión.

- ¡Si utiliza el dispositivo de conmutación térmico sin contacto dentro de una atmósfera potencialmente explosiva, respete la normativa local sobre materiales eléctricos para uso en atmósferas potencialmente explosivas! No se permite realizar cambios en materiales de servicio eléctricos para atmósferas potencialmente explosivas ni en las líneas de conexión.

Peligros durante el trabajo en el dispositivo de conmutación térmico sin contacto:**PELIGRO****Accidente eléctrico**

Si los componentes eléctricos están mal montados o embornados, o las conexiones eléctricas están sueltas, pueden producir un accidente eléctrico de consecuencias graves o incluso mortales.

Si los componentes eléctricos están mal montados o embornados, o las conexiones eléctricas están sueltas, pueden causar daños en la máquina.

- La conexión a la red eléctrica debe realizarla un electricista de manera correcta y teniendo en cuenta la tensión de alimentación y el consumo de corriente máximo.
- La tensión de alimentación debe coincidir con la tensión de alimentación que figura en la placa de características eléctricas.
- La red debe contar con el fusible eléctrico adecuado.

Accidente eléctrico:**PELIGRO****Fenómenos electrostáticos**

La carga estática puede causar accidentes eléctricos.

- La instalación eléctrica del sistema en el que esté montado el turboacoplador debe llevarla a cabo un electricista.
- La máquina y la instalación eléctrica tienen conexiones a tierra.

Trabajos en el turboacoplador:



ADVERTENCIA

Peligro de lesiones

Durante el trabajo en el turboacoplador, existe peligro de lesiones por corte, aplastamiento, quemadura y (a temperaturas por debajo de cero) quemadura por frío.

- ¡Observe las Instrucciones de Instalación y de Servicio del turboacoplador!
- Nunca toque el turboacoplador sin guantes protectores.
- Antes de comenzar los trabajos, espere a que el turboacoplador se enfríe.
- Para trabajar en el turboacoplador, asegúrese de tener suficiente luz, un área de trabajo lo bastante amplia y una buena ventilación.
- Desconecte la instalación en la que está montado el turboacoplador y asegure el interruptor para que no se vuelva a conectar.
- Para realizar cualquier trabajo en el turboacoplador, compruebe que tanto el motor de accionamiento como la máquina de trabajo están parados y bajo ninguna circunstancia se pueden poner en marcha.

Ruido:

Nivel de intensidad
acústica
→ portada de las
instrucciones de
servicio del
turboacoplador



ADVERTENCIA

Pérdida auditiva, lesiones permanentes en los oídos

El turboacoplador hace ruido al funcionar. Si el nivel de intensidad acústica ponderada A $L_{PA, 1m}$ es superior a 80 dB(A), el personal puede sufrir lesiones en los oídos.

- Proteja sus oídos.

Salpicaduras y fugas de líquido de servicio:**ADVERTENCIA****Peligro de pérdida de la visión por salpicaduras de líquido de servicio, peligro de quemaduras**

Si se produce una sobrecarga térmica en el turboacoplador, los tornillos fusibles reaccionan. Cuando eso sucede, los tornillos fusibles dejan salir el líquido de servicio.

Esto solamente ocurre cuando el uso no se ajusta a lo previsto.

- Las personas que se sitúen cerca del turboacoplador deben usar gafas protectoras.
- Asegúrese de que el líquido de servicio no pueda salpicar a nadie.
- Si los tornillos fusibles reaccionan, desconecte de inmediato el conjunto de accionamiento.
- Los equipos eléctricos situados junto al turboacoplador deben estar protegidos de las salpicaduras.

Uso no previsto
→ capítulo 5.3

**ADVERTENCIA****Peligro de incendio**

Si los tornillos fusibles reaccionan, el aceite expulsado puede entrar en contacto con superficies calientes, inflamarse y provocar un incendio, además de liberar gases y vapores tóxicos.

- Asegúrese de que ninguna salpicadura de líquido de servicio pueda entrar en contacto con piezas de maquinaria calientes, equipos calefactores, chispas o llamas descubiertas.
- Si los tornillos fusibles reaccionan, desconecte de inmediato la máquina de accionamiento.
- ¡Tenga en cuenta las indicaciones que aparecen en las hojas de datos de seguridad!

**ATENCIÓN****Peligro de resbalar**

Peligro de resbalar sobre las salpicaduras de material de soldadura procedente de los tornillos fusibles o sobre el líquido de servicio expulsado.

- Utilice una cuba colectora lo suficientemente grande.
- Limpie de inmediato el material de soldadura de los tornillos fusibles y el líquido de servicio expulsado.
- ¡Tenga en cuenta las indicaciones que aparecen en las hojas de datos de seguridad!

5.5 Peligros residuales



ADVERTENCIA

Peligro de daños personales y materiales

Los usos indebidos y los errores de manejo pueden provocar lesiones mortales, graves o leves, así como daños materiales y medioambientales.

- Solamente el personal suficientemente cualificado, instruido y autorizado debe trabajar en/con el turboacoplador y el dispositivo de conmutación térmico sin contacto.
- Tenga en cuenta las advertencias e indicaciones de seguridad.

5.6 Comportamiento en caso de accidente

INDICACIÓN DE SEGURIDAD

- En caso de accidente, respete la normativa local, así como las instrucciones de servicio y las medidas de seguridad de la empresa explotadora.

5.7 Indicaciones sobre el funcionamiento

INDICACIÓN DE SEGURIDAD

- Si observa cualquier irregularidad durante el funcionamiento, desconecte de inmediato el grupo de accionamiento.

Dispositivos de vigilancia:

AVISO

Daños materiales

El turboacoplador puede sufrir daños si los dispositivos de vigilancia no están operativos.

- Compruebe que los dispositivos de vigilancia disponibles están operativos.
- Repare de inmediato cualquier dispositivo de vigilancia que esté averiado.
- Nunca puentee un dispositivo de seguridad.

5.8 Cualificación del personal

Todos los trabajos (transporte, almacenaje, montaje, conexión eléctrica, puesta en servicio, servicio, mantenimiento, entretenimiento, reparación, etc.) deben ser realizados exclusivamente por personal técnico cualificado y autorizado.

Cuando estas instrucciones de servicio hablan de 'personal técnico cualificado' hacen referencia a aquellas personas que están familiarizadas con los trabajos de transporte, almacenaje, montaje, conexión eléctrica, puesta en servicio, mantenimiento, entretenimiento y reparación, y poseen la cualificación necesaria para desempeñar su tarea. La cualificación se debe haber obtenido mediante formación e instrucción.

Este personal debe haber sido formado, instruido y autorizado para realizar las siguientes tareas:

- Utilizar y mantener instalaciones de forma correcta y conforme con las normas técnicas de seguridad
- Utilizar profesionalmente equipos de elevación, eslingas y puntos de enganche
- Desechar profesionalmente fluidos y sus componentes (p. ej. grasas lubricantes)
- Cuidar y utilizar equipos de seguridad conforme a las normas técnicas de seguridad
- Prevenir accidentes y prestar primeros auxilios

Para trabajar en el turboacoplador y en el dispositivo de conmutación térmico sin contacto, el personal que esté en periodo de formación debe contar con la supervisión de un trabajador cualificado y autorizado.

El personal que trabaje en el dispositivo de conmutación térmico sin contacto debe:

- Ser responsable y de confianza
- Tener la edad mínima fijada por la ley
- Haber sido formado, instruido y autorizado para realizar los trabajos previstos
- Tener en cuenta las normas **EN 1127-1 Anexo A** y **EN 1127-1 Apartado 7** si el equipo se usa en una atmósfera potencialmente explosiva. Utilice solamente herramientas que estén homologadas para el uso en atmósferas potencialmente explosivas. Evite la formación de chispas.



5.9 Observación del producto

Estamos obligados por la ley a observar nuestros productos una vez entregados. Así pues, rogamos que nos comunique cualquier información que nos pueda interesar. Por ejemplo:

- Datos de funcionamiento que hayan cambiado
- Experiencias con la instalación
- Anomalías recurrentes
- Dificultades con estas instrucciones de instalación y servicio

Nuestra dirección
→ página 2

6 Instalación



ADVERTENCIA

Peligro de lesiones

¡Para trabajar en el dispositivo de conmutación térmico sin contacto, tenga especialmente en cuenta el → capítulo 5 (Seguridad)!

- Antes de comenzar la instalación, compruebe que todos los componentes están libres de potencial.
- Los tornillos fusibles protegen el turboacoplador de posibles daños por sobrecarga térmica.
¡Tampoco al usar el BTS está permitido sustituir los tornillos fusibles por tornillos ciegos o por tornillos fusibles con otras temperaturas nominales de reacción!
- ¡Nunca ponga en funcionamiento el turboacoplador sin tornillos fusibles!

6.1 Estado en el que se entrega el producto

- El elemento de conmutación con anillo obturador
- El iniciador con brida de fijación y
- El aparato analizador

se suelen entregar como piezas sueltas junto con el turboacoplador.

6.2 Suministro

¡Póngase en contacto con Voith si desea instalar posteriormente el BTS en los tamaños de turboacoplador 206 y 274!

Combinaciones estándar de elementos de conmutación y tornillos fusibles:

Temperaturas nominales de reacción		
Elemento de conmutación	Tornillos fusibles	Marca de color
160 °C	180 °C	azul
140 °C	160 °C	verde
125 °C	160 °C	verde
110 °C	140 °C	rojo

Tabla 4

La correspondencia entre elemento de conmutación y tornillo fusible puede variar dependiendo del diseño del proyecto. El elemento de conmutación también se puede adquirir con una temperatura nominal de reacción distinta (85 °C, 90 °C, 100 °C, 110 °C, 125 °C, 140 °C, 160 °C o 180 °C) (→ capítulo 13).

Ponerse en contacto con VOITH
→ documentación del pedido

6.3 Montaje: elemento de conmutación e iniciador



ADVERTENCIA

Peligro de explosión

Incumplimiento de las normas de montaje.

- Para evitar daños, el elemento de conmutación y el iniciador se deben montar después de instalar el turboacoplador y antes de llenarlo.
- El dispositivo de conmutación y las líneas de conexión no deben sufrir ningún daño. Todas las líneas se deben tender de modo que estén protegidas de las influencias mecánicas.
- No se debe realizar ningún cambio en los materiales de servicio que funcionen en atmósferas potencialmente explosivas. En estos materiales de servicio no es posible realizar reparaciones.
- El iniciador no debe sufrir impactos. Los trabajos en la máquina deben realizarse dentro de una atmósfera que no sea potencialmente explosiva.
- Para evitar una carga electrostática, los cables de conexión se deben instalar de acuerdo con la norma EN 60079-14 y no deben sufrir ningún tipo de abrasión o rozamiento durante el servicio.



- Atornille el elemento de conmutación con el anillo obturador en lugar de un tornillo ciego en la rueda exterior (pos. 0300) o en la envoltura (pos. 0190)¹⁾ del turboacoplador.

Colocación del elemento de conmutación en el lado de la rueda exterior²⁾:

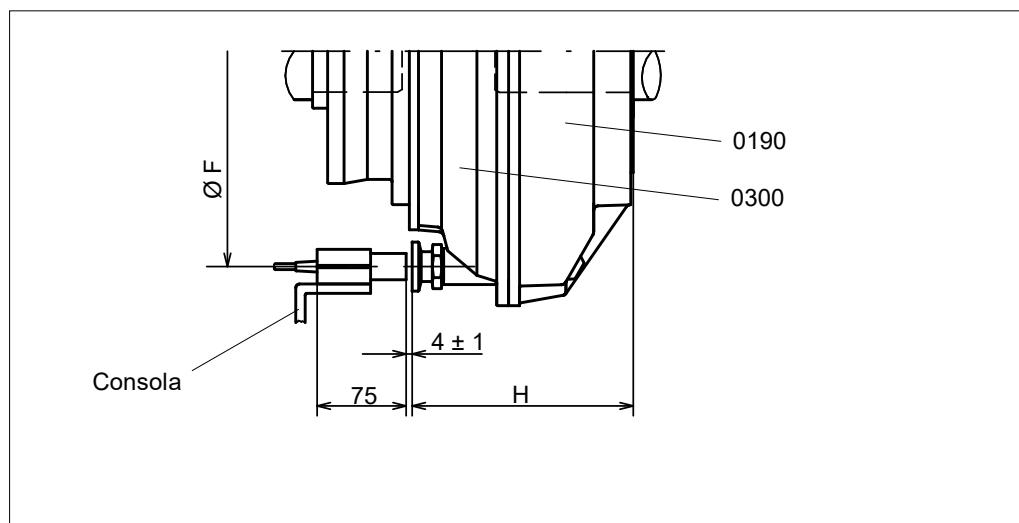


Figura 4

- 1) No en los turboacopladores del tipo DT.
- 2) En los turboacopladores del tipo DT, el montaje también se puede efectuar en el lado opuesto de la rueda exterior.

Dimensiones de instalación del elemento de conmutación y el iniciador:

Tipo de turboacoplador	Lado de la rueda exterior	
	Diámetro primitivo Ø F [mm]	Distancia ~ H [mm]
206 T	196 ± 1	111,5
206 DT	196 ± 1	151,5
274 T	268 ± 1	152
274 DT	268 ± 1	190
366 T	350 ± 1	193
422 T	396 ± 1	206
487 T	470 ± 1	228
562 T	548 ± 1	248
650 T	630 ± 1	289
750 T	729 ± 1	318
866 T	840 ± 1	356
866 DT	840 ± 1	600
1000 T	972 ± 1	369
1000 DT	972 ± 1	672
1150 T	1128 ± 1	458
1150 DT	1128 ± 1	783
1330 DT	1302 ± 1	912

Tabla 5

Si la colocación se realiza en un lugar distinto, las medidas de montaje se deben consultar en el plano de montaje del turboacoplador.

Colocación del elemento de conmutación en el lado de la envoltura (no en turboacopladores del tipo DT o T...S):

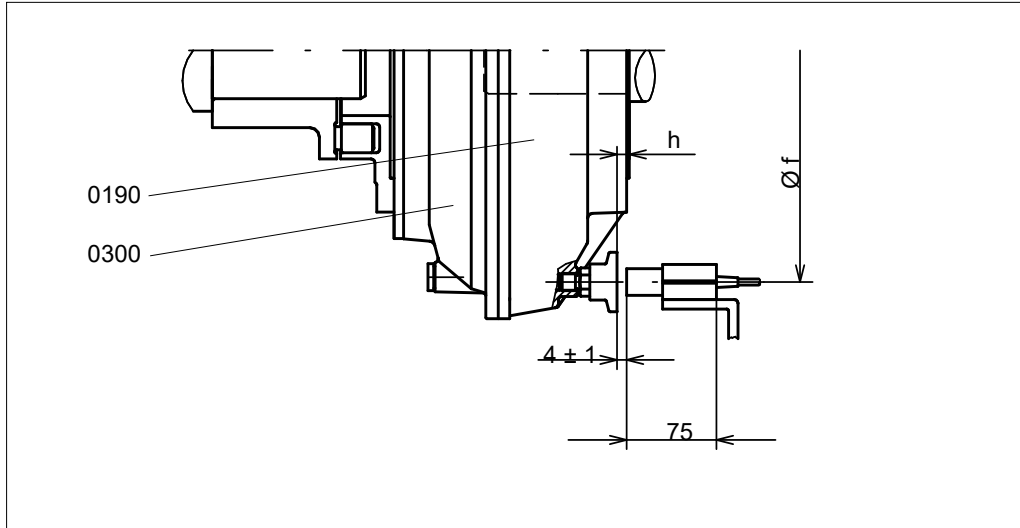


Figura 5

Colocación del elemento de conmutación en el lado de la envoltura (no en turboacopladores del tipo T...S):

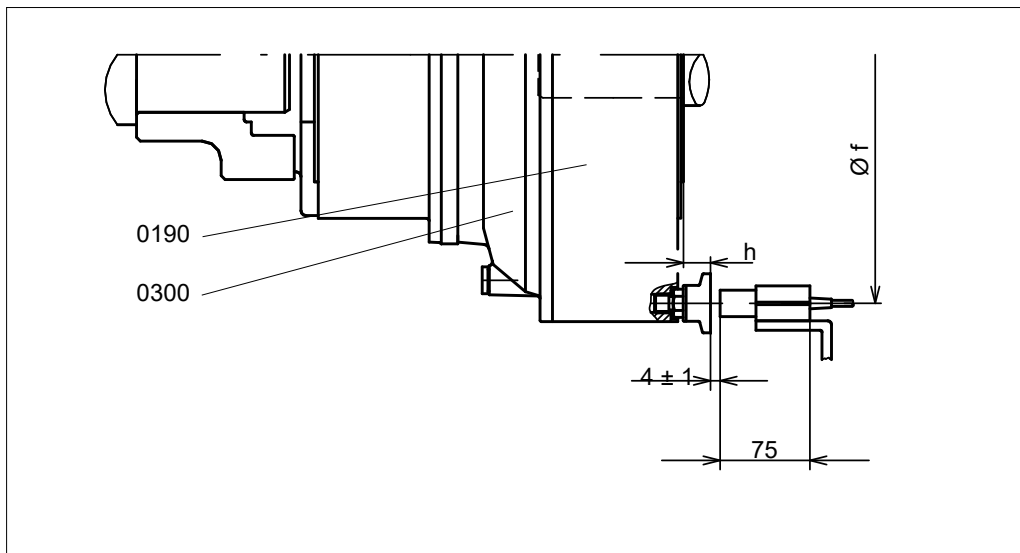


Figura 6

Dimensiones de instalación del elemento de conmutación y el iniciador:

Tipo de turboacoplador	Lado de la envoltura			
	No en turboacopladores del tipo DT o T...S:		Solamente en turboacopladores del tipo T...S:	
	Diámetro primitivo Ø f [mm]	Distancia ~ h [mm]	Diámetro primitivo Ø f [mm]	Distancia ~ h [mm]
206 T	200 ± 1	-16	–	–
274 T	264 ± 1	2,5	–	–
366 T	355 ± 1	16	–	–
422 T	398 ± 1	9	–	–
487 T	480 ± 1	29	–	–
562 T	556 ± 1	28,5	–	–
650 T	649 ± 1	51,5	–	–
750 T	742 ± 1	52,5	815 ± 1	25
866 T	862 ± 1	65	954 ± 1	25
1000 T	990 ± 1	54	1092 ± 1	25
1150 T	1140 ± 1	86	1250 ± 1	25

Tabla 6

Si la colocación se realiza en un lugar distinto, las medidas de montaje se deben consultar en el plano de montaje del turboacoplador.

AVISO**Daños materiales**

Incumplimiento de las normas de montaje.

- ¡La consola debe ser lo suficientemente estable (no está incluida en el suministro de Voith)!
- ¡Se debe evitar todo tipo de vibraciones, de lo contrario pueden surgir señales erróneas!
- ¡Respete la zona exenta de metal (15 mm) alrededor del cabezal del iniciador (→ diagrama esquemático que aparece más abajo)!

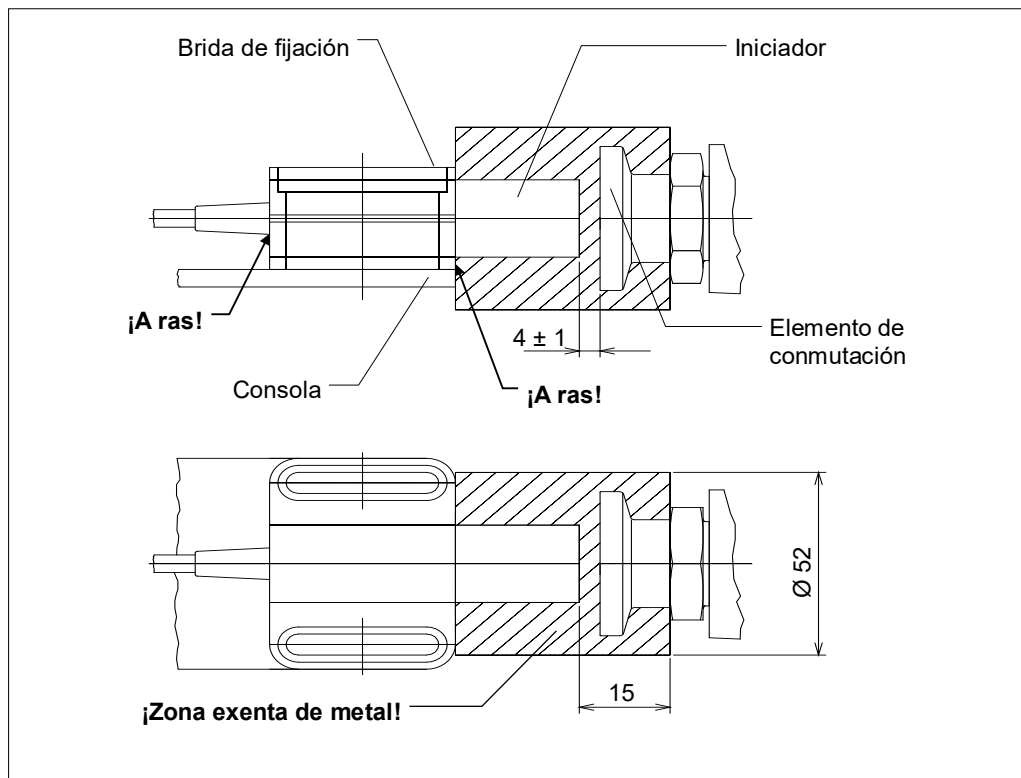


Figura 7

- Monte el iniciador con brida de fijación sobre el diámetro primitivo del elemento de conmutación y sobre una consola en posición paralela al eje del turboacoplador.
- Monte detrás el iniciador a ras de la brida de fijación. Monte delante la brida de fijación a ras de la consola.
- ¡Ajuste a 4 ± 1 mm la distancia entre el cabezal del iniciador y el elemento de conmutación!

6.4 Montaje, conexión: aparato analizador, amplificador conmutador de separación

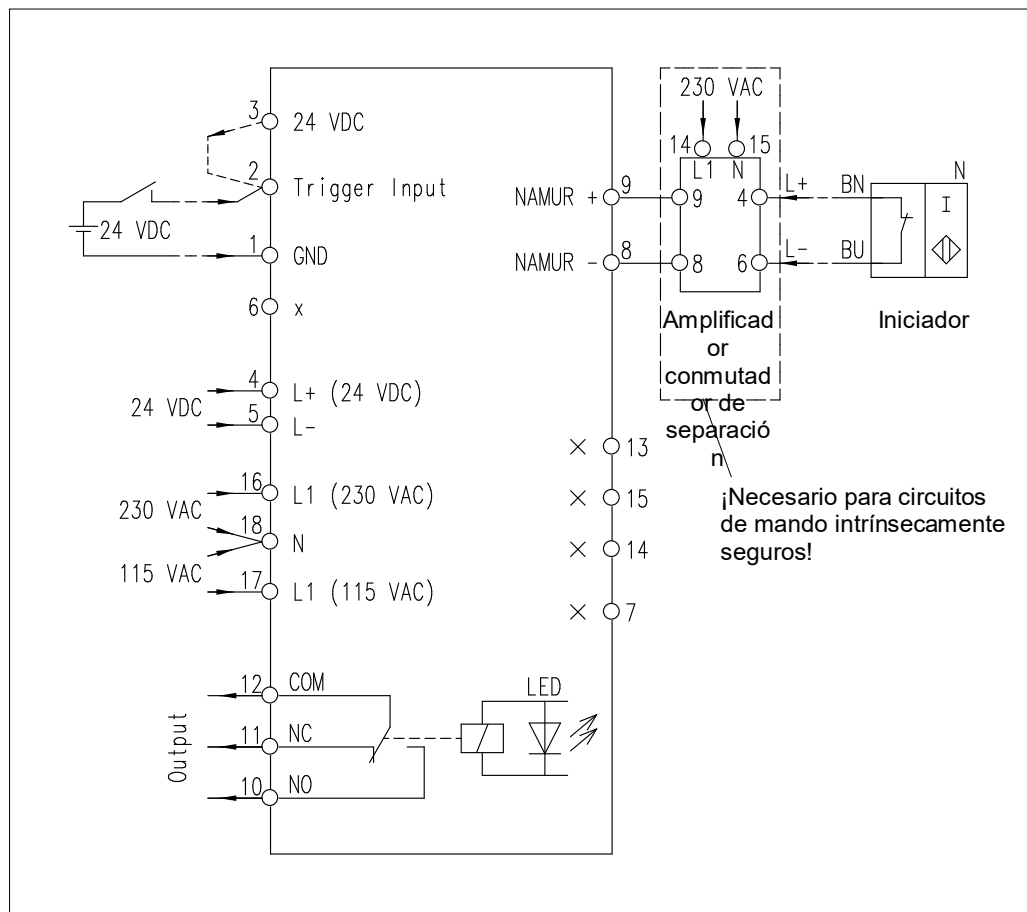
AVISO

Daños materiales

Daños en la instalación por conexión inadecuada de los componentes eléctricos o incumplimiento de las normas de montaje.

- El cableado del BTS no forma parte del suministro de Voith.
 - Si la distancia entre el iniciador y el aparato analizador es grande, recomendamos utilizar un cable apantallado como extensión.
 - La resistencia total de la línea de extensión instalada entre el iniciador y el aparato analizador no debe superar los 100 Ω.
- Monte el aparato analizador (y, en su caso, el amplificador conmutador de separación) en un armario de distribución adecuado y conéctelo de acuerdo con el plano de conexión.

Plano de conexión:



Aparato analizador
 KFU8-DW-1.D-
 Y209869
 → capítulo 15.4

Figura 8

Asignación de bornes: Aparato analizador

Núm. de borne	Descripción
1	GND para entrada de activación
2	Entrada de activación para puenteo de arranque +24 V DC
3	Alimentación eléctrica para entrada de activación. Si la activación tiene lugar mediante la conexión de la tensión de alimentación, coloque un puente entre los bornes 3 y 2 (¡estado en el que se entrega el producto!).
4	Tensión de alimentación, +24 V DC
5	Tensión de alimentación, GND
6	¡No conectar!
7	¡No conectar!
8	Entrada NAMUR, L-
9	Entrada NAMUR, L+
10	Relé de salida, contacto de cierre, NO
11	Relé de salida, contacto de reposo, NC
12	Relé de salida, raíz, COM
13	¡No conectar!
14	¡No conectar!
15	¡No conectar!
16	Tensión de alimentación, 230 V AC, L1
17	Tensión de alimentación, 115 V AC, L1
18	Tensión de alimentación, N

Tabla 7



ADVERTENCIA

Peligro de explosión

Si no se cumplen las condiciones de protección contra explosión puede producirse una explosión.

- ¡El circuito de mando del aparato analizador no es intrínsecamente seguro!
- ¡Si es preciso utilizar un circuito de mando intrínsecamente seguro, entre el aparato analizador y el iniciador se debe conectar un amplificador conmutador de separación adecuado!

Asignación de bornes: amplificador conmutador de separación

Núm. de borne	Descripción
1+	Entrada NAMUR 1, L+
2+	¡No conectar!
3-	Entrada NAMUR 1, L-
4+	Entrada NAMUR 2, L+
5+	¡No conectar!
6-	Entrada NAMUR 2, L-
7	Salida 1 +
8	Salida 1/2 -
9	Salida 2 +
14+	Tensión de alimentación, 230 V AC, L1
15-	Tensión de alimentación, N

Tabla 8

7 Indicadores y ajuste del aparato analizador

7.1 Indicadores: aparato analizador

Modo de funcionamiento:

	<ul style="list-style-type: none"> - <u>Temperatura correcta</u> - Estado de funcionamiento normal
	<ul style="list-style-type: none"> - <u>Sobretemperatura</u> - Revoluciones del elemento de conmutación < 60 min⁻¹
	<ul style="list-style-type: none"> - Punteo de arranque activo - ¡Sin vigilancia de temperatura!

Figura 9

Modo de ajuste:

	- Ajuste del tiempo de punteo de arranque
	- Número de versión de software

Figura 10

7.2 Ajuste: aparato analizador

- ¡Si necesario, ajuste el tiempo de puenteo de arranque, ajuste de fábrica: **10 s**!
El ajuste se realiza mediante las teclas frontales conforme al diagrama esquemático que aparece más abajo.

⚠ ADVERTENCIA

Peligro de daños personales y materiales

¡Si durante el tiempo de puenteo de arranque se produce una sobretensión, esta **no** se detectará!

- Solamente el personal suficientemente cualificado, instruido y autorizado debe trabajar en/con el turboacoplador.
- Tenga en cuenta las advertencias e indicaciones de seguridad.

INDICACIÓN DE SEGURIDAD

- El tiempo de puenteo de arranque comienza con la activación del puenteo de arranque.
- ¡Una vez transcurrido el tiempo de puenteo de arranque, las revoluciones del turboacoplador con el elemento de conmutación deben estar claramente por encima de **60 min⁻¹**!
- Ajuste de fábrica del tiempo de puenteo de arranque: **10 s**.

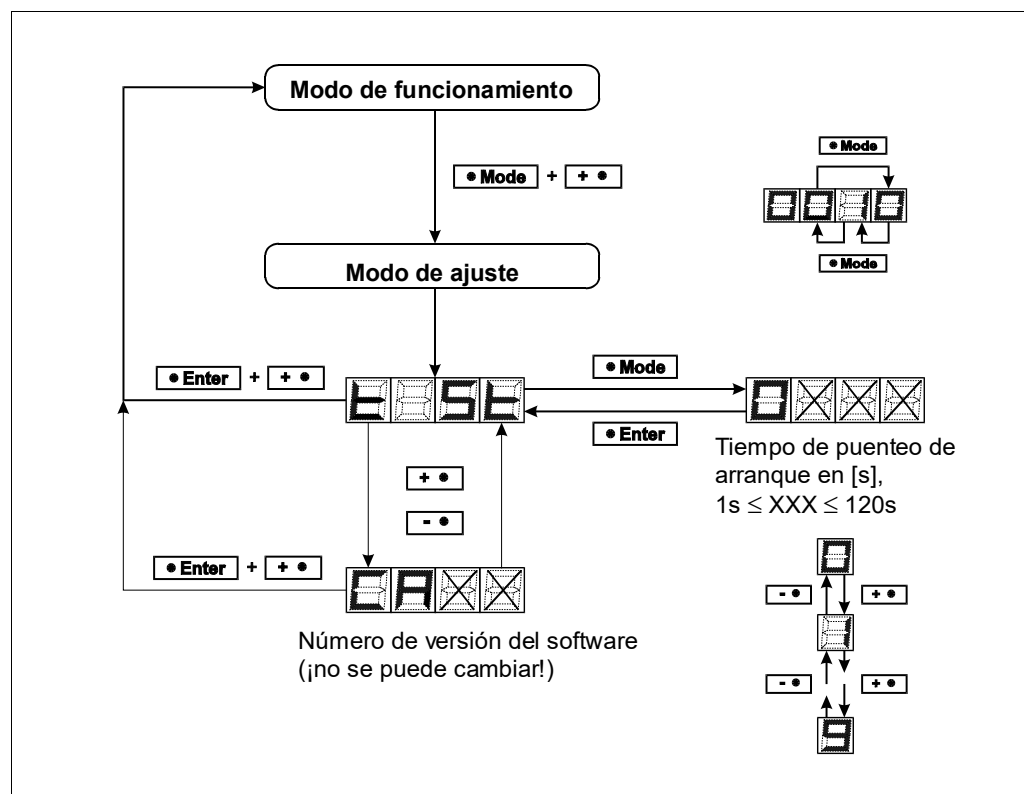


Figura 11

8 Puesta en servicio




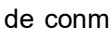


ADVERTENCIA

Peligro de lesiones

¡Para trabajar en el dispositivo de conmutación térmico sin contacto, tenga especialmente en cuenta el → capítulo 5 (Seguridad)!

- ¡La puesta en servicio puede causar daños personales, materiales o medioambientales si no se realiza correctamente!
- ¡La puesta en servicio (especialmente el primer arranque del turboacoplador) debe ser realizada por especialistas!
- ¡Asegure la instalación para que no se conecte de forma accidental!

- Compruebe el cableado de acuerdo con el **plano de conexión** (→ capítulo 6.4).
¡Compruebe sobre todo que la tensión de alimentación está bien cableada!
- Aplique tensión de alimentación al aparato analizador, primero sin arrancar el turboacoplador. Mientras el puenteo de arranque está activo, el aparato indica .
El relé de salida está excitado y el LED frontal está iluminado.
- Una vez transcurrido el tiempo de puenteo de arranque, el aparato indica .
El relé de salida se abre y el LED frontal se apaga.
- Si es necesario, ajuste el tiempo de puenteo de arranque según el → capítulo 7.2.
- Si la activación es de origen externo, en el aparato analizador retire el puente colocado en fábrica entre los bornes 2 y 3.
- Arranque normalmente el BTS con turboacoplador. Una vez transcurrido el tiempo de puenteo de arranque, las revoluciones del turboacoplador con el elemento de conmutación deben estar claramente por encima de **60 min⁻¹**. El aparato analizador indica  si no hay una temperatura excesiva. El relé de salida permanece excitado y el LED frontal se ilumina.
- Desconecte el conjunto de accionamiento junto con el turboacoplador, deje el BTS listo para funcionar. Si las revoluciones del turboacoplador con el elemento de conmutación son inferiores a **60 min⁻¹**, el aparato analizador indica .
El relé de salida se abre y el LED frontal se apaga.
- El funcionamiento normal puede comenzar. En caso de fallos, → capítulo 10.

9 Mantenimiento, entretenimiento

Definición de los trabajos de mantenimiento indicados a continuación (según la norma IEC 60079):

Mantenimiento y entretenimiento: conjunto de todas las tareas realizadas para mantener un objeto en un estado (o para devolverlo a un estado) que cumple los requisitos de la especificación correspondiente y garantiza la ejecución de las funciones requeridas.

Inspección: tarea que consiste en examinar a fondo un objeto con el fin de conocer fiablemente el estado del mismo y que se realiza sin desmontarlo (o, si es necesario, desmontándolo parcialmente) y se completa con otras medidas (por ejemplo mediciones).

Comprobación visual: comprobación en la que se detectan deficiencias visibles (por ejemplo tornillos ausentes) sin utilizar dispositivos de acceso ni herramientas.

Comprobación cercana: comprobación en la que, además de los aspectos propios de la comprobación visual, se detectan deficiencias (por ejemplo tornillos flojos) que sólo es posible encontrar mediante dispositivos adicionales, por ejemplo escalones (si corresponde) y herramientas. Para realizar una comprobación cercana, no suele ser necesario abrir la caja ni desconectar la tensión del equipo.

Comprobación detallada: comprobación en la que, además de los aspectos de la comprobación cercana, se detectan deficiencias (por ejemplo conexiones sueltas) que sólo es posible encontrar abriendo cajas y/o, en su caso, empleando herramientas y dispositivos de comprobación.



ADVERTENCIA

Peligro de lesiones

¡Para trabajar en el dispositivo de conmutación térmico sin contacto, tenga especialmente en cuenta el → capítulo 5 (Seguridad)!

- ¡Mantenga siempre despejadas las vías de acceso al turboacoplador!

Cualificación
→ capítulo 5.8

- ¡Los trabajos de entretenimiento y mantenimiento deben ser realizados solamente por especialistas cualificados y autorizados! La cualificación se garantiza mediante la formación y la instrucción correspondientes impartidas en el turboacoplador.
- Si el entretenimiento y el mantenimiento no se realizan correctamente, pueden producirse lesiones mortales, graves o leves, así como daños materiales o medioambientales.

- Desconecte la instalación en la que está montado el turboacoplador y asegure el interruptor para que no se vuelva a conectar.
- ¡Para realizar cualquier trabajo en el turboacoplador, compruebe que tanto el motor de accionamiento como la máquina de trabajo están parados y bajo ninguna circunstancia se pueden poner en marcha!
- Los componentes solo se deben sustituir por piezas de recambio originales.

Inmediatamente después de acabar los trabajos de entretenimiento y mantenimiento, vuelva a montar en su posición original todos los revestimientos protectores y dispositivos de seguridad. ¡Compruebe que funcionan perfectamente!

Plan de mantenimiento:

Momento	Trabajos de mantenimiento
Cada 1000 horas de servicio o, como muy tarde, cada 6 meses	Observe si hay irregularidades en la instalación (comprobación visual, acumulación de polvo)
Como muy tarde 6 meses después de la puesta en servicio y luego cada 2 años	Verifique la integridad de la instalación eléctrica (comprobación detallada).
Si hay suciedad	Limpieza (→ capítulo 9.1).

Tabla 9

- Los trabajos de mantenimiento y las comprobaciones con la instalación en marcha se deben realizar conforme a un protocolo.
- Registre los trabajos de mantenimiento en un protocolo.

**Modelos de protocolo
 → instrucciones de servicio del turboacoplador**



En los turboacopladores protegidos contra explosión se deben realizar, además, los siguientes trabajos de mantenimiento:

Intervalos de mantenimiento	Trabajo de mantenimiento
<p>Si se ha acumulado suciedad o polvo: Los equipos situados en atmósferas potencialmente explosivas se deben limpiar periódicamente. Los intervalos debe fijarlos in situ el explotador según el impacto medioambiental (por ejemplo cuando la capa de polvo depositado tenga un grosor de aprox. 0,2...0,5 mm o más grande).</p>	<p>Limpeza (→ capítulo 9.1).</p>

Tabla 10

ADVERTENCIA

Peligro de explosión

Si no se cumplen los trabajos de mantenimiento, puede producirse una explosión.

Para garantizar el correcto funcionamiento en atmósferas potencialmente explosivas, es obligatorio realizar los trabajos con la frecuencia que establece el plan de mantenimiento.

- Se debe eliminar de inmediato el polvo inflamable acumulado sobre los equipos.

9.1 Limpieza exterior

AVISO

Daños materiales

Daños en el BTS si la limpieza exterior no se realiza de forma adecuada y correcta.

- ¡Compruebe que el producto de limpieza es compatible con la carcasa de plástico del BTS y con la junta de goma de la conexión de cable!
- ¡No utilice ningún equipo de limpieza a alta presión!
- Manipule las juntas con precaución. Evite los chorros de agua o aire comprimido.

- Si es necesario, limpie el BTS con un producto desengrasante.

10 Eliminación de residuos

Eliminación del embalaje

Deseche el material de embalaje de acuerdo con la normativa local.

Eliminación de líquidos de servicio

A la hora de desechar residuos, tenga en cuenta las leyes vigentes y las indicaciones del fabricante y/o el proveedor.

Eliminación del BTS

Deseche el BTS de acuerdo con la normativa local.

Consulte en la siguiente tabla las indicaciones especiales sobre cómo desechar las sustancias y materiales utilizados:

Material/sustancia	Tipo de eliminación		
	Reciclaje	Residuos no reciclables	Residuos especiales
Metales	x	-	-
Cables	x	-	-
Juntas	-	x	-
Plásticos	x ¹⁾	(x)	-
Materiales de servicio	-	-	x ^{1), 2)}
Embalaje	x	-	-

Tabla 11

- 1) si es posible
- 2) desechar conforme a la hoja de datos de seguridad o a las indicaciones del fabricante

11 Problemas: solución, localización de averías



ADVERTENCIA

Peligro de lesiones

¡Para trabajar en el dispositivo de conmutación térmico sin contacto, tenga especialmente en cuenta el → capítulo 5 (Seguridad)!



ADVERTENCIA




Peligro de explosión

No se deben realizar cambios en los equipos que funcionan en atmósferas potencialmente explosivas.

- No está permitido realizar reparaciones. Se debe efectuar un cambio de piezas.

Ante un problema de funcionamiento, la siguiente tabla le ayudará a averiguar rápidamente la causa y, en su caso, la solución.

Problema	Posible(s) causa(s)	Solución	Véase
El aparato analizador no muestra ninguna indicación.	En el aparato analizador no hay tensión de alimentación.	Conecte la tensión de alimentación.	Capítulo 6.4
	El aparato analizador está averiado.	Cambie el aparato analizador.	
No se puede activar el puenteo de arranque aplicando la tensión de alimentación.	Se ha retirado el puento entre los bornes 3 y 2 del aparato analizador.	Coloque el puento.	Capítulo 6.4
No se puede activar el puento de arranque mediante señal externa.	No se ha retirado el puento entre los bornes 3 y 2 del aparato analizador.	Retire el puento.	Capítulo 6.4
	La señal de activación externa dura demasiado poco.	Aplique la señal de activación como mínimo lo que dure el tiempo de puento de arranque.	

Problema	Posible(s) causa(s)	Solución	Véase
<p>Indicación en el aparato analizador:</p>  <p>La indicación aparece después de desconectar y volver a conectar.</p>	<p>Fallo electrónico.</p> <p>Equipo analizador averiado.</p>	<p>Desconecte y vuelva a conectar la tensión de alimentación.</p> <p>Cambie el aparato analizador.</p>	
<p>Cuando transcurre el tiempo de puenteo de arranque, siempre se indica sobretemperatura () aunque no exista ninguna sobretemperatura.</p>	<p>Se ha seleccionado un tiempo de puenteo de arranque demasiado corto.</p>	<p>Una vez transcurrido el tiempo de puenteo de arranque, las revoluciones del turboacoplador con el elemento de conmutación deben estar claramente por encima de 60 min-1. Prolongue el tiempo de puenteo de arranque según corresponda.</p>	
	<p>La polarización del iniciador está invertida.</p>	<p>Compruebe la conexión del iniciador.</p>	<p>Capítulo 6.4</p>
	<p>Hay demasiada distancia entre el cabezal del iniciador y el elemento de conmutación.</p>	<p>Ajuste una distancia de 4 ± 1 mm.</p>	<p>Capítulo 6.4</p>
	<p>El iniciador está averiado.</p>	<p>Compruebe el iniciador y, si es necesario, cámbielo.</p>	
	<p>El elemento de conmutación está averiado.</p>	<p>Compruebe el elemento de conmutación y, si es necesario, cámbielo.</p>	
<p>Cuando transcurre el tiempo de puenteo de arranque, a veces se indica sobretemperatura () aunque no exista ninguna sobretemperatura.</p>	<p>Hay demasiada distancia entre el cabezal del iniciador y el elemento de conmutación.</p>	<p>Ajuste una distancia de 4 ± 1 mm.</p>	<p>Capítulo 6.4</p>
	<p>La consola del iniciador no es lo suficientemente estable. Las vibraciones pueden dar lugar a señales erróneas.</p>	<p>La consola debe ser suficientemente estable.</p>	<p>Capítulo 6.4</p>
<p>Mientras el puenteo de arranque está activo, se pierde líquido de servicio por los tornillos fusibles.</p>	<p>Se ha seleccionado un tiempo de puenteo de arranque demasiado largo.</p>	<p>Ajuste un tiempo de puenteo de arranque más corto. No obstante, al transcurrir el tiempo de puenteo de arranque las revoluciones del turboacoplador con el elemento de conmutación deben estar claramente por encima de 60 min-1.</p>	

Problema	Posible(s) causa(s)	Solución	Véase
Al transcurrir el tiempo de puenteo de arranque, se pierde líquido de servicio por los tornillos fusibles; el BTS no indica sobretemperatura.	Las temperaturas nominales de reacción del elemento de conmutación y de los tornillos fusibles no están ajustadas entre sí.	Consulte con Voith.	Capítulo 12
	El elemento de conmutación está averiado.	Compruebe el elemento de conmutación y, si es necesario, cámbielo.	

Consulte a Voith (→ capítulo 12) si surge algún problema de funcionamiento no descrito en esta tabla.

Tabla 12

Para determinar la causa exacta de una avería, se pueden efectuar las siguientes mediciones en el orden que corresponda:

Medición	Resultado	Probable causa de la avería
Aplique tensión de alimentación en el aparato analizador. Mida la tensión sin carga y la corriente de cortocircuito en la entrada NAMUR (bornes 9 y 8).	Diferencia clara respecto a los valores teóricos: - Tensión sin carga 8,2 V DC - Corriente de cortocircuito 6,5 mA	Equipo analizador averiado.
Conecte el iniciador al aparato analizador. Mida el consumo de corriente del iniciador sin atenuación.	Consumo de corriente > 6,0 mA o < 2,1 mA	Iniciador averiado.
Conecte el iniciador al aparato analizador. Mida el consumo de corriente del iniciador con atenuación. Indicación: El iniciador se puede atenuar, por ejemplo, sosteniendo una placa metálica justo delante de su cabezal.	Consumo de corriente > 1,2 mA o < 0,1 mA	Iniciador averiado.
Atenúe el iniciador correctamente instalado con el elemento de conmutación cuando el turboacoplador no esté sobrecalentado.	Consumo de corriente > 1,2 mA y < 6,0 mA	Elemento de conmutación averiado.

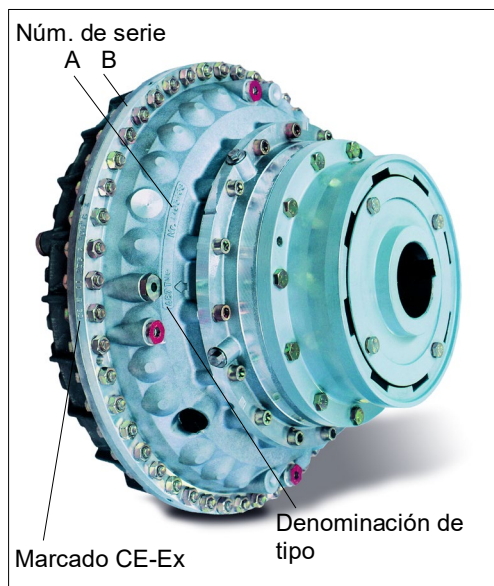
Tabla 13

12 Consultas, solicitud de un montador y pedido de piezas de recambio

Para

- Consultas
- Solicitud de un montador
- Pedido de piezas de recambio
- Puestas en servicio

necesitamos:



El **núm. de serie** y la **denominación de tipo** del turboacoplador en el que se utiliza el BTS.

- El **núm. de serie** y la **denominación de tipo** figuran en la rueda exterior/envoltura del acoplador (A) o en el perímetro (B) del turboacoplador.
- El **núm. de serie** está marcado con un punzón.
- Cuando un turboacoplador es apto para el uso en atmósferas potencialmente explosivas, el marcado CE-Ex figura en el perímetro del turboacoplador.

Figura 12

Para proporcionar un **montador**, llevar a cabo una **puesta en servicio** o prestar un **servicio posventa** necesitamos además la siguiente información:

- El lugar de emplazamiento del turboacoplador
- El nombre y la dirección de una persona de contacto
- Una descripción del problema

Para atender un **pedido de piezas de recambio** necesitamos además:

- La dirección de envío de las piezas de recambio

Contacto
→ página 2

13 Información sobre piezas de recambio

AVISO

¡No realice ningún cambio o reequipamiento por su propia cuenta!
¡No realice ningún reequipamiento con equipos o materiales de servicio de otros fabricantes!

¡Si se realizan cambios o reequipamientos sin permiso escrito de la empresa Voith, la garantía perderá su validez! ¡No caben las reclamaciones generales!

- ¡Sólo el fabricante puede garantizar una reparación profesional!

13.1 Elementos de conmutación

Elementos de conmutación BTS					Anillo obturador
Uso para el tamaño del turboacoplador	Tamaño de rosca	Temperatura nominal de reacción	Tipo de elemento de conmutación	Núm. de material	Núm. de material
206 - 274	M12x1,5	125 °C	Voith 125 °C	TCR.10498440	TCR.03658012
366 - 650	M18x1,5	85 °C	Voith 85 °C	TCR.10672470	TCR.03658018
		90 °C	Voith 90 °C	TCR.10642650	
		110 °C	Voith 110 °C	TCR.10642630	
		125 °C	Voith 125 °C	TCR.10499540	
		140 °C	Voith 140 °C	TCR.10499550	
		160 °C	Voith 160 °C	TCR.10499560	
750 - 1330	M24x1,5	180 °C	Voith 180 °C	TCR.10499570	TCR.03658024
		85 °C	Voith 85 °C	TCR.11973940	
		125 °C	Voith 125 °C	TCR.10488230	
		140 °C	Voith 140 °C	TCR.10653470	
		160 °C	Voith 160 °C	TCR.10633550	
		180 °C	Voith 180 °C	TCR.10488220	

Tabla 14

13.2 Iniciador, brida de fijación

Tipo de iniciador	Núm. de material
NJ 10-22-N-E93-Y245590 (2 m)	201.02171810
NJ 10-22-N-E93-Y246868 (5 m)	201.02171910
NJ 10-22-N-E93-Y246869 (10 m)	201.02172010
NJ 10-22-N-E93-Y245590 (2 m, noevo marcado Dust-Ex)	201.04312710
NJ 10-22-N-E93-Y246868 (5 m, noevo marcado Dust-Ex)	201.04312810
NJ 10-22-N-E93-Y246869 (10 m, noevo marcado Dust-Ex)	201.04312910
Brida de fijación BF22	TCR.03668170

Tabla 15

13.3 Aparato analizador

Tipo de aparato analizador	Núm. de material
KFU8-DW-1.D-Y209869	201.01630810

Tabla 16

13.4 Amplificador conmutador de separación

Tipo de amplificador de conmutación	Núm. de material
KFA6 – SOT2 / Ex2	TCR.11952640
KFD2 – SOT2 / Ex2	TCR.11975630

Tabla 17

14 Anexo



14.1 Iniciador NJ 10-22-N-E93-Y245590 (2 m)

Voith Núm. de material: 201.02171810

Instrucciones de servicio	Pepperl+Fuchs
Datos técnicos	Pepperl+Fuchs
Declaración de conformidad	Pepperl+Fuchs

Instruction Manual

1. Marking

Inductive sensor NJ10-22-N-E93-Y245590
Equipment protection level: Gb ATEX certificate: PTB 00 ATEX 2048 X ATEX marking:  II 2G Ex ia IIC T6...T1 Gb IECEX certificate: IECEX PTB 11.0037X IECEX marking: Ex ib IIC T6
Equipment protection level: Da ATEX certificate: PTB 00 ATEX 2048 X ATEX marking:  II 1D Ex ia IIIC T135°C Da
Equipment protection level: Mb IECEX certificate: IECEX PTB 11.0037X IECEX marking: Ex ia I
Pepperl+Fuchs GmbH Lilienthalstraße 200, 68307 Mannheim, Germany

2. Validity

Specific processes and instructions in this instruction manual require special provisions to guarantee the safety of the operating personnel.

3. Target Group, Personnel

Responsibility for planning, assembly, commissioning, operation, maintenance, and dismantling lies with the plant operator.

The personnel must be appropriately trained and qualified in order to carry out mounting, installation, commissioning, operation, maintenance, and dismantling of the device. The trained and qualified personnel must have read and understood the instruction manual.

4. Reference to Further Documentation

Observe laws, standards, and directives applicable to the intended use and the operating location. Observe Directive 1999/92/EC in relation to hazardous areas.

The corresponding datasheets, manuals, declarations of conformity, EU-type examination certificates, certificates, and control drawings if applicable (see datasheet) are an integral part of this document. You can find this information under www.pepperl-fuchs.com.

Due to constant revisions, documentation is subject to permanent change. Please refer only to the most up-to-date version, which can be found under www.pepperl-fuchs.com.

5. Intended Use

The device is only approved for appropriate and intended use. Ignoring these instructions will void any warranty and absolve the manufacturer from any liability.

Technical data provided in the datasheet may be partly restrained by the information given in this instruction manual.

Use the device only within the specified ambient and operating conditions. The device is an electrical apparatus for hazardous areas.

The device can be used in hazardous areas containing gas, vapor, and mist.

The device can be used in hazardous areas containing combustible dust.

The device can be used in underground parts of mines as well as those parts of surface installations of such mines containing firedamp and/or combustible dust.

The certificate applies only to the use of apparatus under atmospheric conditions.

If you use the device outside atmospheric conditions, consider that the permissible safety parameters should be reduced.

5.1. Requirements for Equipment Protection Level Gb

Refer to the relevant certificate to see the relationship between the connected circuit type, the maximum permitted ambient temperature, the effective inner reactances, and if applicable the surface temperature or the temperature class.

The suitability for use of the device at ambient temperatures > 60 °C in conjunction with hot surfaces has been checked by the notified body.

5.2. Requirements for Equipment Protection Level Da

Refer to the relevant certificate to see the relationship between the connected circuit type, the maximum permitted ambient temperature, the effective inner reactances, and if applicable the surface temperature or the temperature class.

The suitability for use of the device at ambient temperatures > 60 °C in conjunction with hot surfaces has been checked by the notified body.

5.3. Requirements for Equipment Protection Level Mb

Refer to the relevant certificate to see the relationship between the connected circuit type, the maximum permitted ambient temperature, the effective inner reactances, and if applicable the surface temperature or the temperature class.

The suitability for use of the device at ambient temperatures > 60 °C in conjunction with hot surfaces has been checked by the notified body.

6. Improper Use

Protection of the personnel and the plant is not ensured if the device is not used according to its intended use.

7. Mounting and Installation

Observe the installation instructions according to IEC/EN 60079-14.

Safety-relevant markings are found on the nameplate of the device or the nameplate supplied.

Attach the nameplate supplied in the immediate vicinity of the device. Attach the nameplate so that it is legible and indelible. Take the ambient conditions into account.

Do not mount a damaged or polluted device.

Mount the device so that it complies with the specified degree of protection according to IEC/EN 60529.

If you use the device in environments subject to adverse conditions, you must protect the device accordingly.

Do not remove the warning markings.

7.1. Requirements for Usage as Intrinsically Safe Apparatus

When connecting intrinsically safe devices with intrinsically safe circuits of associated apparatus, observe the maximum peak values with regard to explosion protection (verification of intrinsic safety). Observe the standards IEC/EN 60079-14 or IEC/EN 60079-25.

The type of protection is determined by the connected intrinsically safe circuit.

Mount the device with at least a degree of protection of IP20 according to IEC/EN 60529.

7.2. Special Conditions

Mount the device so that it complies with the specified degree of protection according to IEC/EN 60529.

7.2.1. Requirements in Relation to Electrostatics

Information on electrostatic hazards can be found in the technical specification IEC/TS 60079-32-1.

7.2.1.1. Requirements for Equipment Protection Level Da

Avoid electrostatic charges which could result in electrostatic discharges while installing or operating the device.

Do not mount the supplied nameplate in areas that can be electrostatically charged.

7.2.2. Requirements to Mechanics

7.2.2.1. Requirements for Usage as Intrinsically Safe Apparatus

Protect the device from impact effects by mounting in a surrounding enclosure if it is used in the temperature range between the minimum permissible ambient temperature and -20 °C.

Mount the device with at least a degree of protection of IP20 according to IEC/EN 60529.

8. Operation, Maintenance, Repair

Observe the special conditions.

Safety-relevant markings are found on the nameplate of the device or the nameplate supplied.

Do not use a damaged or polluted device.

Do not repair, modify, or manipulate the device.

Modifications are permitted only if approved in this instruction manual.

If there is a defect, always replace the device with an original device.

Do not remove the warning markings.

8.1. Requirements for Usage as Intrinsically Safe Apparatus

Only operate the device with intrinsically safe circuits according to IEC/EN 60079-11.

The type of protection is determined by the connected intrinsically safe circuit.

8.2. Requirements for Equipment Protection Level Gb

Observe the temperature table for the corresponding equipment protection level in the certificate.

Also observe the maximum permissible ambient temperature stated in the technical data. Keep to the lower of the two values.

8.3. Requirements for Equipment Protection Level Da

Observe the temperature table for the corresponding equipment protection level in the certificate.

Also observe the maximum permissible ambient temperature stated in the technical data. Keep to the lower of the two values.

8.4. Requirements for Equipment Protection Level Mb

Observe the temperature table for the corresponding equipment protection level in the certificate.

Also observe the maximum permissible ambient temperature stated in the technical data. Keep to the lower of the two values.

9. Delivery, Transport, Disposal

Check the packaging and contents for damage.

Check if you have received every item and if the items received are the ones you ordered.

Keep the original packaging. Always store and transport the device in the original packaging.

Store the device in a clean and dry environment. The permitted ambient conditions must be considered, see datasheet.

Disposing of device, packaging, and possibly contained batteries must be in compliance with the applicable laws and guidelines of the respective country.



Model Number

NJ10-22-N-E93-Y245590

Features

- Comfort series
- 10 mm non-flush

Technical Data

General specifications

Rated operating distance	s_n	10 mm
Installation		non-flush
Output polarity		NAMUR
Assured operating distance	s_a	0 ... 10 mm
Output type		2-wire

Nominal ratings

Nominal voltage	U_o	8 V
Switching frequency	f	0 ... 1000 Hz
Hysteresis	H	typ. 5 %
Current consumption		
Measuring plate not detected		≥ 3 mA
Measuring plate detected		≤ 1 mA

Ambient conditions

Ambient temperature	-40 ... 100 °C (-40 ... 212 °F)
	Also observe the maximum permissible ambient temperature stated in the data for application in connection with hazardous areas.
	Keep to the lower of the two values.

Mechanical specifications

Connection type	cable silicone , 2 m
Core cross-section	0.75 mm ²
Housing material	PBT
Sensing face	PBT
Degree of protection	IP68
Cable	
Bending radius	> 10 x cable diameter

General information

Use in the hazardous area	see instruction manuals
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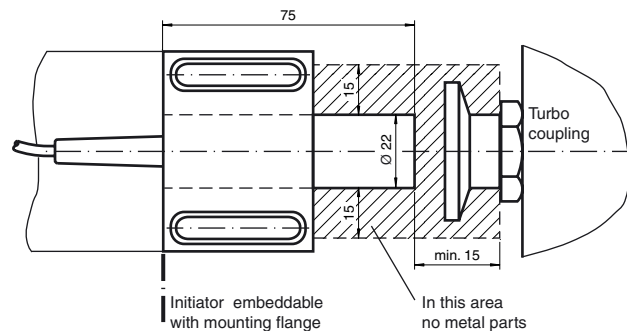
Compliance with standards and directives

Standard conformity	
NAMUR	EN 60947-5-6:2000 IEC 60947-5-6:1999
Standards	EN 60947-5-2:2007 EN 60947-5-2/A1:2012 IEC 60947-5-2:2007 IEC 60947-5-2 AMD 1:2012

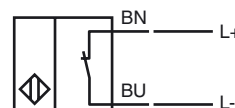
Approvals and certificates

EAC conformity	TR CU 012/2011
UL approval	cULus Listed, General Purpose

Dimensions



Electrical Connection



Data for application in connection with hazardous areas

Equipment protection level	Gb , Da , Mb	
Equipment protection level Gb		
Type of protection	intrinsic safety	
CE marking	CE 0102	
Certificates		
Appropriate type	NJ 10-22-N...	
ATEX certificate	PTB 00 ATEX 2048 X	
ATEX marking	Ex II 2G Ex ia IIC T6...T1 Gb	
Standards	EN 60079-0:2012+A11:2013 , EN 60079-11:2012	
IECEX certificate	IECEX PTB 11.0037X	
IECEX marking	Ex ib IIC T6	
Standards	IEC 60079-0:2004 , IEC 60079-11:2006	
Effective internal inductivity	C_i	$\leq 130 \text{ nF}$ A cable length of 10 m is considered.
Effective internal inductance	L_i	$\leq 100 \text{ }\mu\text{H}$ A cable length of 10 m is considered.
Maximum permissible ambient temperature T_{amb}	Also observe the maximum permissible ambient temperature stated in the general technical data. Keep to the lower of the two values. at $U_i = 16 \text{ V}$, $I_i = 25 \text{ mA}$, $P_i = 34 \text{ mW}$, T6 : 73 °C (163.4 °F) T5 : 88 °C (190.4 °F) T4 : 100 °C (212 °F) T3 : 100 °C (212 °F) T2 : 100 °C (212 °F) T1 : 100 °C (212 °F) at $U_i = 16 \text{ V}$, $I_i = 25 \text{ mA}$, $P_i = 64 \text{ mW}$, T6 : 69 °C (156.2 °F) T5 : 84 °C (183.2 °F) T4 : 100 °C (212 °F) T3 : 100 °C (212 °F) T2 : 100 °C (212 °F) T1 : 100 °C (212 °F) at $U_i = 16 \text{ V}$, $I_i = 52 \text{ mA}$, $P_i = 169 \text{ mW}$, T6 : 51 °C (123.8 °F) T5 : 66 °C (150.8 °F) T4 : 80 °C (176 °F) T3 : 80 °C (176 °F) T2 : 80 °C (176 °F) T1 : 80 °C (176 °F) at $U_i = 16 \text{ V}$, $I_i = 76 \text{ mA}$, $P_i = 242 \text{ mW}$, T6 : 39 °C (102.2 °F) T5 : 54 °C (129.2 °F) T4 : 61 °C (141.8 °F) T3 : 61 °C (141.8 °F) T2 : 61 °C (141.8 °F) T1 : 61 °C (141.8 °F)	

Equipment protection level Da

Type of protection	intrinsic safety	
CE marking	CE 0102	
Certificates		
Appropriate type	NJ 10-22-N...	
ATEX certificate	PTB 00 ATEX 2048 X	
ATEX marking	Ex II 1D Ex ia IIIC T135°C Da	
Standards	EN 60079-0:2012+A11:2013 , EN 60079-11:2012	
Effective internal inductivity	C_i	$\leq 130 \text{ nF}$ A cable length of 10 m is considered.
Effective internal inductance	L_i	$\leq 100 \text{ }\mu\text{H}$ A cable length of 10 m is considered.
Maximum permissible ambient temperature T_{amb}	Also observe the maximum permissible ambient temperature stated in the general technical data. Keep to the lower of the two values. at $U_i = 16 \text{ V}$, $I_i = 25 \text{ mA}$, $P_i = 34 \text{ mW}$: 100 °C (212 °F) at $U_i = 16 \text{ V}$, $I_i = 25 \text{ mA}$, $P_i = 64 \text{ mW}$: 100 °C (212 °F) at $U_i = 16 \text{ V}$, $I_i = 52 \text{ mA}$, $P_i = 169 \text{ mW}$: 80 °C (176 °F) at $U_i = 16 \text{ V}$, $I_i = 76 \text{ mA}$, $P_i = 242 \text{ mW}$: 61 °C (141.8 °F)	

Equipment protection level Mb

Type of protection	intrinsic safety	
Certificates		
Appropriate type	NJ 10-22-N...	
IECEX certificate	IECEX PTB 11.0037X	
IECEX marking	Ex ia I	
Standards	IEC 60079-0:2004 , IEC 60079-11:2006	
Effective internal inductivity	C_i	$\leq 130 \text{ nF}$ A cable length of 10 m is considered.
Effective internal inductance	L_i	$\leq 100 \text{ }\mu\text{H}$ A cable length of 10 m is considered.

Release date: 2017-12-13 09:46 Date of issue: 2017-12-13 245590_eng.xml

Maximum permissible ambient temperature T_{amb}

Also observe the maximum permissible ambient temperature stated in the general technical data. Keep to the lower of the two values.

at $U_i = 16\text{ V}$, $I_i = 25\text{ mA}$, $P_i = 34\text{ mW}$: 100 °C (212 °F)

at $U_i = 16\text{ V}$, $I_i = 25\text{ mA}$, $P_i = 64\text{ mW}$: 100 °C (212 °F)

at $U_i = 16\text{ V}$, $I_i = 52\text{ mA}$, $P_i = 169\text{ mW}$: 80 °C (176 °F)

at $U_i = 16\text{ V}$, $I_i = 76\text{ mA}$, $P_i = 242\text{ mW}$: 61 °C (141.8 °F)

Release date: 2017-12-13 09:46 Date of issue: 2017-12-13 245590_eng.xml

Refer to "General Notes Relating to Pepperl+Fuchs Product Information".

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EU-Declaration of conformity

en/de

EU-Konformitätserklärung

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68307 Mannheim
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No. / Nr.: DOC-3331
Date / Datum: 2017-01-26

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www.pepperl-fuchs.com



ANNEX ATEX

Notified Body QM-System / Notifizierte Stelle des QM-Systems
Physikalisch Technische Bundesanstalt (0102)
Bundesallee 100
38116 Braunschweig
Germany

Marking and Certificates / Kennzeichnung und Zertifikate

Marking Kennzeichnung	Certificate Zertifikat	Issuer ID Aussteller ID
 	PTB 00 ATEX 2048 X	0102

Key for Issuer ID / Schlüssel zur Aussteller ID

ID	Issuer / Aussteller
0102	Physikalisch Technische Bundesanstalt Bundesallee 100 38116 Braunschweig Germany

Declaration of conformity / Konformitätserklärung

We, Pepperl+Fuchs GmbH declare under our sole responsibility that the **products** listed below are in conformity with the listed **European Directives** and **standards**.

Die Pepperl+Fuchs GmbH erklärt hiermit in alleiniger Verantwortung, dass die unten gelisteten **Produkte** den genannten **Europäischen Richtlinien** und **Normen** entsprechen.

Products / Produkte

Product / Produkt	Item number	Description / Beschreibung
NJ10-22-N-E93-Y245590	245590	Inductive sensor

Directives and Standards / Richtlinien und Normen

EU-Directive EU-Richtlinie	Standards Normen
ATEX 2014/34/EU (L96/309-356)	EN 60079-0/A11:2013-11 EN 60079-0:2012-08 EN 60079-11:2012-01
EMC 2014/30/EU (L96/79-106)	EN 60947-5-2/A1:2012-11 EN 60947-5-2:2007-12 EN 60947-5-6:2000-01

Affixed CE Marking / Angebrachte CE-Kennzeichnung



Signatures / Unterschriften

Mannheim, 2017-01-26

ppa. Wolfgang Helm
Director Business Unit Sensors

i.V. Tobias Dittmer
Global Product Manager



14.2 Iniciador NJ 10-22-N-E93-Y246868 (5 m)

Voith Núm. de material: 201.02171910

Instrucciones de servicio	Pepperl+Fuchs
Datos técnicos	Pepperl+Fuchs
Declaración de conformidad	Pepperl+Fuchs

Instruction Manual

1. Marking

Inductive sensor NJ10-22-N-E93-Y246868
Equipment protection level: Gb ATEX certificate: PTB 00 ATEX 2048 X ATEX marking:  II 2G Ex ia IIC T6...T1 Gb IECEX certificate: IECEX PTB 11.0037X IECEX marking: Ex ib IIC T6
Equipment protection level: Da ATEX certificate: PTB 00 ATEX 2048 X ATEX marking:  II 1D Ex ia IIIC T135°C Da
Equipment protection level: Mb IECEX certificate: IECEX PTB 11.0037X IECEX marking: Ex ia I
Pepperl+Fuchs GmbH Lilienthalstraße 200, 68307 Mannheim, Germany

2. Validity

Specific processes and instructions in this instruction manual require special provisions to guarantee the safety of the operating personnel.

3. Target Group, Personnel

Responsibility for planning, assembly, commissioning, operation, maintenance, and dismantling lies with the plant operator.

The personnel must be appropriately trained and qualified in order to carry out mounting, installation, commissioning, operation, maintenance, and dismantling of the device. The trained and qualified personnel must have read and understood the instruction manual.

4. Reference to Further Documentation

Observe laws, standards, and directives applicable to the intended use and the operating location. Observe Directive 1999/92/EC in relation to hazardous areas.

The corresponding datasheets, manuals, declarations of conformity, EU-type examination certificates, certificates, and control drawings if applicable (see datasheet) are an integral part of this document. You can find this information under www.pepperl-fuchs.com.

Due to constant revisions, documentation is subject to permanent change. Please refer only to the most up-to-date version, which can be found under www.pepperl-fuchs.com.

5. Intended Use

The device is only approved for appropriate and intended use. Ignoring these instructions will void any warranty and absolve the manufacturer from any liability.

Technical data provided in the datasheet may be partly restrained by the information given in this instruction manual.

Use the device only within the specified ambient and operating conditions. The device is an electrical apparatus for hazardous areas.

The device can be used in hazardous areas containing gas, vapor, and mist.

The device can be used in hazardous areas containing combustible dust.

The device can be used in underground parts of mines as well as those parts of surface installations of such mines containing firedamp and/or combustible dust.

The certificate applies only to the use of apparatus under atmospheric conditions.

If you use the device outside atmospheric conditions, consider that the permissible safety parameters should be reduced.

5.1. Requirements for Equipment Protection Level Gb

Refer to the relevant certificate to see the relationship between the connected circuit type, the maximum permitted ambient temperature, the effective inner reactances, and if applicable the surface temperature or the temperature class.

The suitability for use of the device at ambient temperatures > 60 °C in conjunction with hot surfaces has been checked by the notified body.

5.2. Requirements for Equipment Protection Level Da

Refer to the relevant certificate to see the relationship between the connected circuit type, the maximum permitted ambient temperature, the effective inner reactances, and if applicable the surface temperature or the temperature class.

The suitability for use of the device at ambient temperatures > 60 °C in conjunction with hot surfaces has been checked by the notified body.

5.3. Requirements for Equipment Protection Level Mb

Refer to the relevant certificate to see the relationship between the connected circuit type, the maximum permitted ambient temperature, the effective inner reactances, and if applicable the surface temperature or the temperature class.

The suitability for use of the device at ambient temperatures > 60 °C in conjunction with hot surfaces has been checked by the notified body.

6. Improper Use

Protection of the personnel and the plant is not ensured if the device is not used according to its intended use.

7. Mounting and Installation

Observe the installation instructions according to IEC/EN 60079-14.

Safety-relevant markings are found on the nameplate of the device or the nameplate supplied.

Attach the nameplate supplied in the immediate vicinity of the device. Attach the nameplate so that it is legible and indelible. Take the ambient conditions into account.

Do not mount a damaged or polluted device.

Mount the device so that it complies with the specified degree of protection according to IEC/EN 60529.

If you use the device in environments subject to adverse conditions, you must protect the device accordingly.

Do not remove the warning markings.

7.1. Requirements for Usage as Intrinsically Safe Apparatus

When connecting intrinsically safe devices with intrinsically safe circuits of associated apparatus, observe the maximum peak values with regard to explosion protection (verification of intrinsic safety). Observe the standards IEC/EN 60079-14 or IEC/EN 60079-25.

The type of protection is determined by the connected intrinsically safe circuit.

Mount the device with at least a degree of protection of IP20 according to IEC/EN 60529.

7.2. Special Conditions

Mount the device so that it complies with the specified degree of protection according to IEC/EN 60529.

7.2.1. Requirements in Relation to Electrostatics

Information on electrostatic hazards can be found in the technical specification IEC/TS 60079-32-1.

7.2.1.1. Requirements for Equipment Protection Level Da

Avoid electrostatic charges which could result in electrostatic discharges while installing or operating the device.

Do not mount the supplied nameplate in areas that can be electrostatically charged.

7.2.2. Requirements to Mechanics

7.2.2.1. Requirements for Usage as Intrinsically Safe Apparatus

Protect the device from impact effects by mounting in a surrounding enclosure if it is used in the temperature range between the minimum permissible ambient temperature and -20 °C.

Mount the device with at least a degree of protection of IP20 according to IEC/EN 60529.

8. Operation, Maintenance, Repair

Observe the special conditions.

Safety-relevant markings are found on the nameplate of the device or the nameplate supplied.

Do not use a damaged or polluted device.

Do not repair, modify, or manipulate the device.

Modifications are permitted only if approved in this instruction manual.

If there is a defect, always replace the device with an original device.

Do not remove the warning markings.

8.1. Requirements for Usage as Intrinsically Safe Apparatus

Only operate the device with intrinsically safe circuits according to IEC/EN 60079-11.

The type of protection is determined by the connected intrinsically safe circuit.

8.2. Requirements for Equipment Protection Level Gb

Observe the temperature table for the corresponding equipment protection level in the certificate.

Also observe the maximum permissible ambient temperature stated in the technical data. Keep to the lower of the two values.

8.3. Requirements for Equipment Protection Level Da

Observe the temperature table for the corresponding equipment protection level in the certificate.

Also observe the maximum permissible ambient temperature stated in the technical data. Keep to the lower of the two values.

8.4. Requirements for Equipment Protection Level Mb

Observe the temperature table for the corresponding equipment protection level in the certificate.

Also observe the maximum permissible ambient temperature stated in the technical data. Keep to the lower of the two values.

9. Delivery, Transport, Disposal

Check the packaging and contents for damage.

Check if you have received every item and if the items received are the ones you ordered.

Keep the original packaging. Always store and transport the device in the original packaging.

Store the device in a clean and dry environment. The permitted ambient conditions must be considered, see datasheet.

Disposing of device, packaging, and possibly contained batteries must be in compliance with the applicable laws and guidelines of the respective country.



Model Number

NJ10-22-N-E93-Y246868

Features

- Comfort series
- 10 mm non-flush

Technical Data

General specifications

Rated operating distance	s_n	10 mm
Installation		non-flush
Output polarity		NAMUR
Assured operating distance	s_a	0 ... 10 mm
Output type		2-wire

Nominal ratings

Nominal voltage	U_o	8 V
Switching frequency	f	0 ... 1000 Hz
Hysteresis	H	typ. 5 %
Current consumption		
Measuring plate not detected		≥ 3 mA
Measuring plate detected		≤ 1 mA

Ambient conditions

Ambient temperature	-40 ... 100 °C (-40 ... 212 °F)
	Also observe the maximum permissible ambient temperature stated in the data for application in connection with hazardous areas.
	Keep to the lower of the two values.

Mechanical specifications

Connection type	cable silicone , 5 m
Core cross-section	0.75 mm ²
Housing material	PBT
Sensing face	PBT
Degree of protection	IP68
Cable	
Bending radius	> 10 x cable diameter

General information

Use in the hazardous area	see instruction manuals
---------------------------	-------------------------

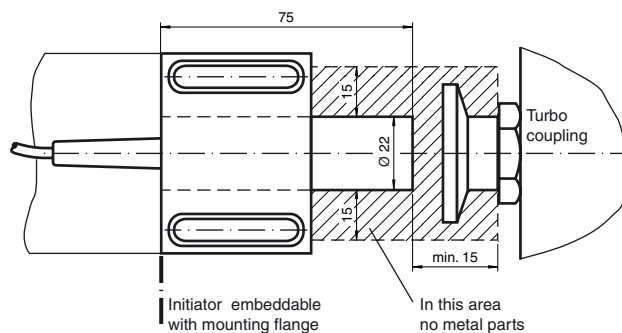
Compliance with standards and directives

Standard conformity	
NAMUR	EN 60947-5-6:2000 IEC 60947-5-6:1999
Standards	EN 60947-5-2:2007 EN 60947-5-2/A1:2012 IEC 60947-5-2:2007 IEC 60947-5-2 AMD 1:2012

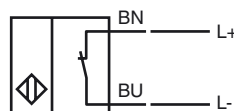
Approvals and certificates

EAC conformity	TR CU 012/2011
UL approval	cULus Listed, General Purpose

Dimensions



Electrical Connection



Data for application in connection with hazardous areas

Equipment protection level Gb , Da , Mb

Equipment protection level GbType of protection intrinsic safety
CE marking **CE**0102**Certificates**

Appropriate type NJ 10-22-N...
 ATEX certificate PTB 00 ATEX 2048 X
 ATEX marking **Ex** II 2G Ex ia IIC T6...T1 Gb
 Standards EN 60079-0:2012+A11:2013 , EN 60079-11:2012
 IECEx certificate IECEx PTB 11.0037X
 IECEx marking Ex ib IIC T6
 Standards IEC 60079-0:2004 , IEC 60079-11:2006

Effective internal inductivity C_i ≤ 130 nF
A cable length of 10 m is considered.Effective internal inductance L_i ≤ 100 μ H
A cable length of 10 m is considered.Maximum permissible ambient temperature T_{amb} Also observe the maximum permissible ambient temperature stated in the general technical data.Keep to the lower of the two values.
at $U_i = 16$ V , $I_i = 25$ mA , $P_i = 34$ mW ,

T6 : 73 °C (163.4 °F)

T5 : 88 °C (190.4 °F)

T4 : 100 °C (212 °F)

T3 : 100 °C (212 °F)

T2 : 100 °C (212 °F)

T1 : 100 °C (212 °F)

at $U_i = 16$ V , $I_i = 25$ mA , $P_i = 64$ mW ,

T6 : 69 °C (156.2 °F)

T5 : 84 °C (183.2 °F)

T4 : 100 °C (212 °F)

T3 : 100 °C (212 °F)

T2 : 100 °C (212 °F)

T1 : 100 °C (212 °F)

at $U_i = 16$ V , $I_i = 52$ mA , $P_i = 169$ mW ,

T6 : 51 °C (123.8 °F)

T5 : 66 °C (150.8 °F)

T4 : 80 °C (176 °F)

T3 : 80 °C (176 °F)

T2 : 80 °C (176 °F)

T1 : 80 °C (176 °F)

at $U_i = 16$ V , $I_i = 76$ mA , $P_i = 242$ mW ,

T6 : 39 °C (102.2 °F)

T5 : 54 °C (129.2 °F)

T4 : 61 °C (141.8 °F)

T3 : 61 °C (141.8 °F)

T2 : 61 °C (141.8 °F)

T1 : 61 °C (141.8 °F)

Equipment protection level DaType of protection intrinsic safety
CE marking **CE**0102**Certificates**

Appropriate type NJ 10-22-N...
 ATEX certificate PTB 00 ATEX 2048 X
 ATEX marking **Ex** II 1D Ex ia IIIC T135°C Da
 Standards EN 60079-0:2012+A11:2013 , EN 60079-11:2012

Effective internal inductivity C_i ≤ 130 nF
A cable length of 10 m is considered.Effective internal inductance L_i ≤ 100 μ H
A cable length of 10 m is considered.Maximum permissible ambient temperature T_{amb} Also observe the maximum permissible ambient temperature stated in the general technical data.

Keep to the lower of the two values.

at $U_i = 16$ V , $I_i = 25$ mA , $P_i = 34$ mW : 100 °C (212 °F)at $U_i = 16$ V , $I_i = 25$ mA , $P_i = 64$ mW : 100 °C (212 °F)at $U_i = 16$ V , $I_i = 52$ mA , $P_i = 169$ mW : 80 °C (176 °F)at $U_i = 16$ V , $I_i = 76$ mA , $P_i = 242$ mW : 61 °C (141.8 °F)**Equipment protection level Mb**

Type of protection intrinsic safety

Certificates

Appropriate type NJ 10-22-N...
 IECEx certificate IECEx PTB 11.0037X
 IECEx marking Ex ia I
 Standards IEC 60079-0:2004 , IEC 60079-11:2006

Effective internal inductivity C_i ≤ 130 nF
A cable length of 10 m is considered.Effective internal inductance L_i ≤ 100 μ H
A cable length of 10 m is considered.

Maximum permissible ambient temperature T_{amb}

Also observe the maximum permissible ambient temperature stated in the general technical data. Keep to the lower of the two values.

at $U_i = 16\text{ V}$, $I_i = 25\text{ mA}$, $P_i = 34\text{ mW}$: 100 °C (212 °F)

at $U_i = 16\text{ V}$, $I_i = 25\text{ mA}$, $P_i = 64\text{ mW}$: 100 °C (212 °F)

at $U_i = 16\text{ V}$, $I_i = 52\text{ mA}$, $P_i = 169\text{ mW}$: 80 °C (176 °F)

at $U_i = 16\text{ V}$, $I_i = 76\text{ mA}$, $P_i = 242\text{ mW}$: 61 °C (141.8 °F)

EU-Declaration of conformity

en/de

EU-Konformitätserklärung

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No. / Nr.: DOC-3336
Date / Datum: 2017-01-26

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ANNEX ATEX

Notified Body QM-System / Notifizierte Stelle des QM-Systems
Physikalisch Technische Bundesanstalt (0102)
Bundesallee 100
38116 Braunschweig
Germany

Marking and Certificates / Kennzeichnung und Zertifikate

Marking Kennzeichnung	Certificate Zertifikat	Issuer ID Aussteller ID
 	PTB 00 ATEX 2048 X	0102

Key for Issuer ID / Schlüssel zur Aussteller ID

ID	Issuer / Aussteller
0102	Physikalisch Technische Bundesanstalt Bundesallee 100 38116 Braunschweig Germany

Declaration of conformity / Konformitätserklärung

We, Pepperl+Fuchs GmbH declare under our sole responsibility that the products listed below are in conformity with the listed European Directives and standards.

Die Pepperl+Fuchs GmbH erklärt hiermit in alleiniger Verantwortung, dass die unten gelisteten Produkte den genannten Europäischen Richtlinien und Normen entsprechen.

Products / Produkte

Product / Produkt	Item number	Description / Beschreibung
NJ10-22-N-E93-Y246868	246868	Inductive sensor

Directives and Standards / Richtlinien und Normen

EU-Directive EU-Richtlinie	Standards Normen
ATEX 2014/34/EU (L96/309-356)	EN 60079-0/A11:2013-11 EN 60079-0:2012-08 EN 60079-11:2012-01
EMC 2014/30/EU (L96/79-106)	EN 60947-5-2/A1:2012-11 EN 60947-5-2:2007-12 EN 60947-5-6:2000-01

Affixed CE Marking / Angebrachte CE-Kennzeichnung



Signatures / Unterschriften

Mannheim, 2017-01-26

ppa. Wolfgang Helm
Director Business Unit Sensors

i.V. Tobias Dittmer
Global Product Manager



14.3 Iniciador NJ 10-22-N-E93-Y246869 (10 m)

Voith Núm. de material: 201.02172010

Instrucciones de servicio	Pepperl+Fuchs
Datos técnicos	Pepperl+Fuchs
Declaración de conformidad	Pepperl+Fuchs

Instruction Manual

1. Marking

Inductive sensor NJ10-22-N-E93-Y246869
Equipment protection level: Gb ATEX certificate: PTB 00 ATEX 2048 X ATEX marking:  II 2G Ex ia IIC T6...T1 Gb IECEX certificate: IECEX PTB 11.0037X IECEX marking: Ex ib IIC T6
Equipment protection level: Da ATEX certificate: PTB 00 ATEX 2048 X ATEX marking:  II 1D Ex ia IIIC T135°C Da
Equipment protection level: Mb IECEX certificate: IECEX PTB 11.0037X IECEX marking: Ex ia I
Pepperl+Fuchs GmbH Lilienthalstraße 200, 68307 Mannheim, Germany

2. Validity

Specific processes and instructions in this instruction manual require special provisions to guarantee the safety of the operating personnel.

3. Target Group, Personnel

Responsibility for planning, assembly, commissioning, operation, maintenance, and dismantling lies with the plant operator.

The personnel must be appropriately trained and qualified in order to carry out mounting, installation, commissioning, operation, maintenance, and dismantling of the device. The trained and qualified personnel must have read and understood the instruction manual.

4. Reference to Further Documentation

Observe laws, standards, and directives applicable to the intended use and the operating location. Observe Directive 1999/92/EC in relation to hazardous areas.

The corresponding datasheets, manuals, declarations of conformity, EU-type examination certificates, certificates, and control drawings if applicable (see datasheet) are an integral part of this document. You can find this information under www.pepperl-fuchs.com.

Due to constant revisions, documentation is subject to permanent change. Please refer only to the most up-to-date version, which can be found under www.pepperl-fuchs.com.

5. Intended Use

The device is only approved for appropriate and intended use. Ignoring these instructions will void any warranty and absolve the manufacturer from any liability.

Technical data provided in the datasheet may be partly restrained by the information given in this instruction manual.

Use the device only within the specified ambient and operating conditions. The device is an electrical apparatus for hazardous areas.

The device can be used in hazardous areas containing gas, vapor, and mist.

The device can be used in hazardous areas containing combustible dust.

The device can be used in underground parts of mines as well as those parts of surface installations of such mines containing firedamp and/or combustible dust.

The certificate applies only to the use of apparatus under atmospheric conditions.

If you use the device outside atmospheric conditions, consider that the permissible safety parameters should be reduced.

5.1. Requirements for Equipment Protection Level Gb

Refer to the relevant certificate to see the relationship between the connected circuit type, the maximum permitted ambient temperature, the effective inner reactances, and if applicable the surface temperature or the temperature class.

The suitability for use of the device at ambient temperatures > 60 °C in conjunction with hot surfaces has been checked by the notified body.

5.2. Requirements for Equipment Protection Level Da

Refer to the relevant certificate to see the relationship between the connected circuit type, the maximum permitted ambient temperature, the effective inner reactances, and if applicable the surface temperature or the temperature class.

The suitability for use of the device at ambient temperatures > 60 °C in conjunction with hot surfaces has been checked by the notified body.

5.3. Requirements for Equipment Protection Level Mb

Refer to the relevant certificate to see the relationship between the connected circuit type, the maximum permitted ambient temperature, the effective inner reactances, and if applicable the surface temperature or the temperature class.

The suitability for use of the device at ambient temperatures > 60 °C in conjunction with hot surfaces has been checked by the notified body.

6. Improper Use

Protection of the personnel and the plant is not ensured if the device is not used according to its intended use.

7. Mounting and Installation

Observe the installation instructions according to IEC/EN 60079-14.

Safety-relevant markings are found on the nameplate of the device or the nameplate supplied.

Attach the nameplate supplied in the immediate vicinity of the device. Attach the nameplate so that it is legible and indelible. Take the ambient conditions into account.

Do not mount a damaged or polluted device.

Mount the device so that it complies with the specified degree of protection according to IEC/EN 60529.

If you use the device in environments subject to adverse conditions, you must protect the device accordingly.

Do not remove the warning markings.

7.1. Requirements for Usage as Intrinsically Safe Apparatus

When connecting intrinsically safe devices with intrinsically safe circuits of associated apparatus, observe the maximum peak values with regard to explosion protection (verification of intrinsic safety). Observe the standards IEC/EN 60079-14 or IEC/EN 60079-25.

The type of protection is determined by the connected intrinsically safe circuit.

Mount the device with at least a degree of protection of IP20 according to IEC/EN 60529.

7.2. Special Conditions

Mount the device so that it complies with the specified degree of protection according to IEC/EN 60529.

7.2.1. Requirements in Relation to Electrostatics

Information on electrostatic hazards can be found in the technical specification IEC/TS 60079-32-1.

7.2.1.1. Requirements for Equipment Protection Level Da

Avoid electrostatic charges which could result in electrostatic discharges while installing or operating the device.

Do not mount the supplied nameplate in areas that can be electrostatically charged.

7.2.2. Requirements to Mechanics

7.2.2.1. Requirements for Usage as Intrinsically Safe Apparatus

Protect the device from impact effects by mounting in a surrounding enclosure if it is used in the temperature range between the minimum permissible ambient temperature and -20 °C.

Mount the device with at least a degree of protection of IP20 according to IEC/EN 60529.

8. Operation, Maintenance, Repair

Observe the special conditions.

Safety-relevant markings are found on the nameplate of the device or the nameplate supplied.

Do not use a damaged or polluted device.

Do not repair, modify, or manipulate the device.

Modifications are permitted only if approved in this instruction manual.

If there is a defect, always replace the device with an original device.

Do not remove the warning markings.

8.1. Requirements for Usage as Intrinsically Safe Apparatus

Only operate the device with intrinsically safe circuits according to IEC/EN 60079-11.

The type of protection is determined by the connected intrinsically safe circuit.

8.2. Requirements for Equipment Protection Level Gb

Observe the temperature table for the corresponding equipment protection level in the certificate.

Also observe the maximum permissible ambient temperature stated in the technical data. Keep to the lower of the two values.

8.3. Requirements for Equipment Protection Level Da

Observe the temperature table for the corresponding equipment protection level in the certificate.

Also observe the maximum permissible ambient temperature stated in the technical data. Keep to the lower of the two values.

8.4. Requirements for Equipment Protection Level Mb

Observe the temperature table for the corresponding equipment protection level in the certificate.

Also observe the maximum permissible ambient temperature stated in the technical data. Keep to the lower of the two values.

9. Delivery, Transport, Disposal

Check the packaging and contents for damage.

Check if you have received every item and if the items received are the ones you ordered.

Keep the original packaging. Always store and transport the device in the original packaging.

Store the device in a clean and dry environment. The permitted ambient conditions must be considered, see datasheet.

Disposing of device, packaging, and possibly contained batteries must be in compliance with the applicable laws and guidelines of the respective country.



Model Number

NJ10-22-N-E93-Y246869

Features

- Comfort series
- 10 mm non-flush

Technical Data

General specifications

Rated operating distance	s_n	10 mm
Installation		non-flush
Output polarity		NAMUR
Assured operating distance	s_a	0 ... 10 mm
Output type		2-wire

Nominal ratings

Nominal voltage	U_o	8 V
Switching frequency	f	0 ... 1000 Hz
Hysteresis	H	typ. 5 %
Current consumption		
Measuring plate not detected		≥ 3 mA
Measuring plate detected		≤ 1 mA

Ambient conditions

Ambient temperature	-40 ... 100 °C (-40 ... 212 °F)
	Also observe the maximum permissible ambient temperature stated in the data for application in connection with hazardous areas.
	Keep to the lower of the two values.

Mechanical specifications

Connection type	cable silicone , 10 m
Core cross-section	0.75 mm ²
Housing material	PBT
Sensing face	PBT
Degree of protection	IP68
Cable	
Bending radius	> 10 x cable diameter

General information

Use in the hazardous area	see instruction manuals
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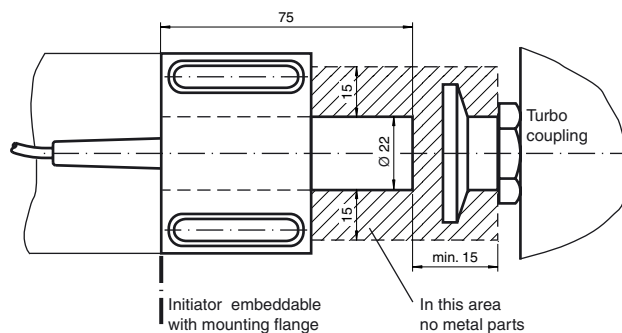
Compliance with standards and directives

Standard conformity	
NAMUR	EN 60947-5-6:2000 IEC 60947-5-6:1999
Standards	EN 60947-5-2:2007 EN 60947-5-2/A1:2012 IEC 60947-5-2:2007 IEC 60947-5-2 AMD 1:2012

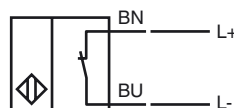
Approvals and certificates

EAC conformity	TR CU 012/2011
UL approval	cULus Listed, General Purpose

Dimensions



Electrical Connection



Data for application in connection with hazardous areas

Equipment protection level	Gb , Da , Mb	
Equipment protection level Gb		
Type of protection	intrinsic safety	
CE marking	CE 0102	
Certificates		
Appropriate type	NJ 10-22-N...	
ATEX certificate	PTB 00 ATEX 2048 X	
ATEX marking	Ex II 2G Ex ia IIC T6...T1 Gb	
Standards	EN 60079-0:2012+A11:2013 , EN 60079-11:2012	
IECEX certificate	IECEX PTB 11.0037X	
IECEX marking	Ex ib IIC T6	
Standards	IEC 60079-0:2004 , IEC 60079-11:2006	
Effective internal inductivity	C_i	$\leq 130 \text{ nF}$ A cable length of 10 m is considered.
Effective internal inductance	L_i	$\leq 100 \text{ }\mu\text{H}$ A cable length of 10 m is considered.
Maximum permissible ambient temperature T_{amb}	Also observe the maximum permissible ambient temperature stated in the general technical data. Keep to the lower of the two values. at $U_i = 16 \text{ V}$, $I_i = 25 \text{ mA}$, $P_i = 34 \text{ mW}$, T6 : 73 °C (163.4 °F) T5 : 88 °C (190.4 °F) T4 : 100 °C (212 °F) T3 : 100 °C (212 °F) T2 : 100 °C (212 °F) T1 : 100 °C (212 °F) at $U_i = 16 \text{ V}$, $I_i = 25 \text{ mA}$, $P_i = 64 \text{ mW}$, T6 : 69 °C (156.2 °F) T5 : 84 °C (183.2 °F) T4 : 100 °C (212 °F) T3 : 100 °C (212 °F) T2 : 100 °C (212 °F) T1 : 100 °C (212 °F) at $U_i = 16 \text{ V}$, $I_i = 52 \text{ mA}$, $P_i = 169 \text{ mW}$, T6 : 51 °C (123.8 °F) T5 : 66 °C (150.8 °F) T4 : 80 °C (176 °F) T3 : 80 °C (176 °F) T2 : 80 °C (176 °F) T1 : 80 °C (176 °F) at $U_i = 16 \text{ V}$, $I_i = 76 \text{ mA}$, $P_i = 242 \text{ mW}$, T6 : 39 °C (102.2 °F) T5 : 54 °C (129.2 °F) T4 : 61 °C (141.8 °F) T3 : 61 °C (141.8 °F) T2 : 61 °C (141.8 °F) T1 : 61 °C (141.8 °F)	

Equipment protection level Da

Type of protection	intrinsic safety	
CE marking	CE 0102	
Certificates		
Appropriate type	NJ 10-22-N...	
ATEX certificate	PTB 00 ATEX 2048 X	
ATEX marking	Ex II 1D Ex ia IIIc T135°C Da	
Standards	EN 60079-0:2012+A11:2013 , EN 60079-11:2012	
Effective internal inductivity	C_i	$\leq 130 \text{ nF}$ A cable length of 10 m is considered.
Effective internal inductance	L_i	$\leq 100 \text{ }\mu\text{H}$ A cable length of 10 m is considered.
Maximum permissible ambient temperature T_{amb}	Also observe the maximum permissible ambient temperature stated in the general technical data. Keep to the lower of the two values. at $U_i = 16 \text{ V}$, $I_i = 25 \text{ mA}$, $P_i = 34 \text{ mW}$: 100 °C (212 °F) at $U_i = 16 \text{ V}$, $I_i = 25 \text{ mA}$, $P_i = 64 \text{ mW}$: 100 °C (212 °F) at $U_i = 16 \text{ V}$, $I_i = 52 \text{ mA}$, $P_i = 169 \text{ mW}$: 80 °C (176 °F) at $U_i = 16 \text{ V}$, $I_i = 76 \text{ mA}$, $P_i = 242 \text{ mW}$: 61 °C (141.8 °F)	

Equipment protection level Mb

Type of protection	intrinsic safety	
Certificates		
Appropriate type	NJ 10-22-N...	
IECEX certificate	IECEX PTB 11.0037X	
IECEX marking	Ex ia I	
Standards	IEC 60079-0:2004 , IEC 60079-11:2006	
Effective internal inductivity	C_i	$\leq 130 \text{ nF}$ A cable length of 10 m is considered.
Effective internal inductance	L_i	$\leq 100 \text{ }\mu\text{H}$ A cable length of 10 m is considered.

Release date: 2017-12-13 09:46 Date of issue: 2017-12-13 246869_eng.xml

Maximum permissible ambient temperature T_{amb}

Also observe the maximum permissible ambient temperature stated in the general technical data. Keep to the lower of the two values.

at $U_i = 16\text{ V}$, $I_i = 25\text{ mA}$, $P_i = 34\text{ mW}$: 100 °C (212 °F)

at $U_i = 16\text{ V}$, $I_i = 25\text{ mA}$, $P_i = 64\text{ mW}$: 100 °C (212 °F)

at $U_i = 16\text{ V}$, $I_i = 52\text{ mA}$, $P_i = 169\text{ mW}$: 80 °C (176 °F)

at $U_i = 16\text{ V}$, $I_i = 76\text{ mA}$, $P_i = 242\text{ mW}$: 61 °C (141.8 °F)

Release date: 2017-12-13 09:46 Date of issue: 2017-12-13 246869_eng.xml

Refer to "General Notes Relating to Pepperl+Fuchs Product Information".

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EU-Declaration of conformity

en/de

EU-Konformitätserklärung

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No. / Nr.: DOC-3335
Date / Datum: 2017-01-26

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ANNEX ATEX

Notified Body QM-System / Notifizierte Stelle des QM-Systems
Physikalisch Technische Bundesanstalt (0102)
Bundesallee 100
38116 Braunschweig
Germany

Marking and Certificates / Kennzeichnung und Zertifikate

Marking Kennzeichnung	Certificate Zertifikat	Issuer ID Aussteller ID
 	PTB 00 ATEX 2048 X	0102

Key for Issuer ID / Schlüssel zur Aussteller ID

ID	Issuer / Aussteller
0102	Physikalisch Technische Bundesanstalt Bundesallee 100 38116 Braunschweig Germany

Declaration of conformity / Konformitätserklärung

We, Pepperl+Fuchs GmbH declare under our sole responsibility that the **products** listed below are in conformity with the listed **European Directives** and **standards**.

Die Pepperl+Fuchs GmbH erklärt hiermit in alleiniger Verantwortung, dass die unten gelisteten **Produkte** den genannten **Europäischen Richtlinien** und **Normen** entsprechen.

Products / Produkte

Product / Produkt	Item number	Description / Beschreibung
NJ10-22-N-E93-Y246869	246869	Inductive sensor

Directives and Standards / Richtlinien und Normen

EU-Directive EU-Richtlinie	Standards Normen
ATEX 2014/34/EU (L96/309-356)	EN 60079-0/A11:2013-11 EN 60079-0:2012-08 EN 60079-11:2012-01
EMC 2014/30/EU (L96/79-106)	EN 60947-5-2/A1:2012-11 EN 60947-5-2:2007-12 EN 60947-5-6:2000-01

Affixed CE Marking / Angebrachte CE-Kennzeichnung



Signatures / Unterschriften

Mannheim, 2017-01-26

ppa. Wolfgang Helm
Director Business Unit Sensors

i.V. Tobias Dittmer
Global Product Manager

14.4 Iniciador NJ 10-22-N-E93-Y245590 (2 m, noevo marcado Dust-Ex)

Voith Núm. de material: 201.04312710

Instrucciones de servicio	Pepperl+Fuchs
Datos técnicos	Pepperl+Fuchs
Declaración de conformidad	Pepperl+Fuchs

Instruction Manual

1. Marking

Inductive sensor NJ10-22-N-E93-Y245590
ATEX marking Ⓜ II 2G Ex ia IIC T6...T1 Gb Ⓜ II 1D Ex ia IIIC T ₂₀₀ 135°C Da
IECEX marking Ex ia IIC T6...T1 Gb Ex ia IIIC T ₂₀₀ 135°C Da Ex ia I Mb
Pepperl+Fuchs Group Lilienthalstraße 200, 68307 Mannheim, Germany
Internet: www.pepperl-fuchs.com

2. Validity

Specific processes and instructions in this instruction manual require special provisions to guarantee the safety of the operating personnel.

3. Target Group, Personnel

Responsibility for planning, assembly, commissioning, operation, maintenance, and dismantling lies with the plant operator.

The personnel must be appropriately trained and qualified in order to carry out mounting, installation, commissioning, operation, maintenance, and dismantling of the device. The trained and qualified personnel must have read and understood the instruction manual.

4. Reference to Further Documentation

Observe laws, standards, and directives applicable to the intended use and the operating location. Observe Directive 1999/92/EC in relation to hazardous areas.

The corresponding datasheets, manuals, declarations of conformity, EU-type examination certificates, certificates, and control drawings if applicable (see datasheet) are an integral part of this document. You can find this information under www.pepperl-fuchs.com.

For specific device information, scan the QR code on the device or enter the serial number in the serial number search at www.pepperl-fuchs.com. Due to constant revisions, documentation is subject to permanent change. Please refer only to the most up-to-date version, which can be found under www.pepperl-fuchs.com.

5. Intended Use

The device is only approved for appropriate and intended use. Ignoring these instructions will void any warranty and absolve the manufacturer from any liability.

Technical data provided in the datasheet may be partly restrained by the information given in this instruction manual.

Use the device only within the specified ambient and operating conditions.

The device is an electrical apparatus for hazardous areas.

The certificate applies only to the use of apparatus under atmospheric conditions.

If you use the device outside atmospheric conditions, consider that the permissible safety parameters should be reduced.

The device can be used in hazardous areas containing gas, vapor, and mist.

The device can be used in hazardous areas containing combustible dust.

The device can be used in underground parts of mines as well as those parts of surface installations of such mines containing firedamp and/or combustible dust.

5.1. Requirements for Equipment Protection Level Gb

Refer to the relevant certificate to see the relationship between the connected circuit type, the maximum permitted ambient temperature, the effective inner reactances, and if applicable the surface temperature or the temperature class.

The suitability for use of the device at ambient temperatures >60 °C in conjunction with hot surfaces has been checked by the notified body.

5.2. Requirements for Equipment Protection Level Da

Refer to the relevant certificate to see the relationship between the connected circuit type, the maximum permitted ambient temperature, the effective inner reactances, and if applicable the surface temperature or the temperature class.

The suitability for use of the device at ambient temperatures >60 °C in conjunction with hot surfaces has been checked by the notified body.

5.3. Requirements for Equipment Protection Level Mb

Refer to the relevant certificate to see the relationship between the connected circuit type, the maximum permitted ambient temperature, the effective inner reactances, and if applicable the surface temperature or the temperature class.

The suitability for use of the device at ambient temperatures >60 °C in conjunction with hot surfaces has been checked by the notified body.

6. Improper Use

Protection of the personnel and the plant is not ensured if the device is not used according to its intended use.

7. Mounting and Installation

Observe the installation instructions according to IEC/EN 60079-14.

Safety-relevant markings are found on the nameplate of the device or the nameplate supplied.

Attach the nameplate supplied in the immediate vicinity of the device. Attach the nameplate so that it is legible and indelible. Take the ambient conditions into account.

Do not mount a damaged or polluted device.

Mount the device so that it complies with the specified degree of protection according to IEC/EN 60529.

If you use the device in environments subject to adverse conditions, you must protect the device accordingly.

Do not remove the warning markings.

7.1. Requirements for Usage as Intrinsically Safe Apparatus

When connecting intrinsically safe devices with intrinsically safe circuits of associated apparatus, observe the maximum peak values with regard to explosion protection (verification of intrinsic safety). Observe the standards IEC/EN 60079-14 or IEC/EN 60079-25.

The type of protection is determined by the connected intrinsically safe circuit.

7.2. Specific Conditions of Use

Mount the device so that it complies with the specified degree of protection according to IEC/EN 60529.

7.2.1. Requirements in Relation to Electrostatics

Information on electrostatic hazards can be found in the technical specification IEC/TS 60079-32-1.

Do not mount the supplied nameplate in areas that can be electrostatically charged.

You can reduce the electrostatic hazards by minimizing the generation of static electricity. For example, you have the following options to minimize the generation of static electricity:

- Control the environmental humidity.
- Protect the device from direct airflow.
- Ensure a continuous drain off of the electrostatic charges.

7.2.1.1. Requirements for Equipment Protection Level Da

Avoid electrostatic charges which could result in electrostatic discharges while installing, operating, or maintaining the device.

7.2.2. Requirements to Mechanics

7.2.2.1. Requirements for Usage as Intrinsically Safe Apparatus

Protect the device from impact effects by mounting in a surrounding enclosure if it is used in the temperature range between the minimum permissible ambient temperature and -20 °C.

Mount the device with at least a degree of protection of IP20 according to IEC/EN 60529.

8. Operation, Maintenance, Repair

Observe the specific conditions of use.

Safety-relevant markings are found on the nameplate of the device or the nameplate supplied.

Do not use a damaged or polluted device.

Do not repair, modify, or manipulate the device.

Modifications are permitted only if approved in this instruction manual and in the device-related documentation.

If there is a defect, always replace the device with an original device.

Do not remove the warning markings.

8.1. Requirements for Usage as Intrinsically Safe Apparatus

Only operate the device with intrinsically safe circuits according to IEC/EN 60079-11.

The type of protection is determined by the connected intrinsically safe circuit.

8.2. Requirements for Equipment Protection Level Gb

Observe the temperature table for the corresponding equipment protection level in the certificate.

Also observe the maximum permissible ambient temperature stated in the technical data. Keep to the lower of the two values.

8.3. Requirements for Equipment Protection Level Da

Observe the temperature table for the corresponding equipment protection level in the certificate.

Also observe the maximum permissible ambient temperature stated in the technical data. Keep to the lower of the two values.

8.4. Requirements for Equipment Protection Level Mb

Observe the temperature table for the corresponding equipment protection level in the certificate.

Also observe the maximum permissible ambient temperature stated in the technical data. Keep to the lower of the two values.

9. Delivery, Transport, Disposal

Check the packaging and contents for damage.

Check if you have received every item and if the items received are the ones you ordered.

Keep the original packaging. Always store and transport the device in the original packaging.

Store the device in a clean and dry environment. The permitted ambient conditions must be considered, see datasheet.

The device, built-in components, packaging, and any batteries contained within must be disposed in compliance with the applicable laws and guidelines of the respective country.

10. National Ex approvals

EAC-EX:	TC RU C-DE.AA87.B.00394
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11. Safety-Relevant Technical Data

11.1. Equipment protection level Gb

Type of protection	Intrinsic safety
CE marking	CE-0102
Certificates	
Appropriate type	NJ10-22-N...
ATEX certificate	PTB 00 ATEX 2048 X
ATEX marking	Ⓜ II 2G Ex ia IIC T6...T1 Gb
ATEX standards	EN IEC 60079-0:2018-07, EN 60079-11:2012-01
IECEX certificate	IECEX PTB 11.0037X
IECEX marking	Ex ia IIC T6...T1 Gb
IECEX standards	IEC 60079-0:2017-12, IEC 60079-11:2011-06
Effective internal capacitance C_i	max. 130 nF A cable length of 10 m is considered.
Effective internal inductance L_i	max. 100 μH A cable length of 10 m is considered.

Maximum permissible ambient temperature in °C	Also observe the maximum permissible ambient temperature stated in the general technical data. Keep to the lower of the two values. $U_i = 16 \text{ V}$, $I_i = 25 \text{ mA}$, $P_i = 34 \text{ mW}$ T6: 73 °C T5: 88 °C T4: 100 °C T3: 100 °C T2: 100 °C T1: 100 °C $U_i = 16 \text{ V}$, $I_i = 25 \text{ mA}$, $P_i = 64 \text{ mW}$ T6: 69 °C T5: 84 °C T4: 100 °C T3: 100 °C T2: 100 °C T1: 100 °C $U_i = 16 \text{ V}$, $I_i = 52 \text{ mA}$, $P_i = 169 \text{ mW}$ T6: 51 °C T5: 66 °C T4: 80 °C T3: 80 °C T2: 80 °C T1: 80 °C $U_i = 16 \text{ V}$, $I_i = 76 \text{ mA}$, $P_i = 242 \text{ mW}$ T6: 39 °C T5: 54 °C T4: 61 °C T3: 61 °C T2: 61 °C T1: 61 °C
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11.2. Equipment protection level Da

Type of protection	Intrinsic safety
CE marking	CE-0102
Certificates	
Appropriate type	NJ10-22-N...
ATEX certificate	PTB 00 ATEX 2048 X
ATEX marking	Ⓜ II 1D Ex ia IIIC T ₂₀₀ 135°C Da
ATEX standards	EN IEC 60079-0:2018-07, EN 60079-11:2012-01
IECEX certificate	IECEX PTB 11.0037X
IECEX marking	Ex ia IIIC T ₂₀₀ 135°C Da
IECEX standards	IEC 60079-0:2017-12, IEC 60079-11:2011-06
Effective internal capacitance C_i	max. 130 nF A cable length of 10 m is considered.
Effective internal inductance L_i	max. 100 μH A cable length of 10 m is considered.
Maximum permissible ambient temperature in °C	Also observe the maximum permissible ambient temperature stated in the general technical data. Keep to the lower of the two values. $U_i = 16 \text{ V}$, $I_i = 25 \text{ mA}$, $P_i = 34 \text{ mW}$ 100 °C $U_i = 16 \text{ V}$, $I_i = 25 \text{ mA}$, $P_i = 64 \text{ mW}$ 100 °C $U_i = 16 \text{ V}$, $I_i = 52 \text{ mA}$, $P_i = 169 \text{ mW}$ 62 °C

11.3. Equipment protection level Mb

Type of protection	Intrinsic safety
Certificates	
Appropriate type	NJ10-22-N...
IECEX certificate	IECEX PTB 11.0037X
IECEX marking	Ex ia I Mb

IECEX standards	IEC 60079-0:2017-12, IEC 60079-11:2011-06
Effective internal capacitance C_i	max. 130 nF A cable length of 10 m is considered.
Effective internal inductance L_i	max. 100 μ H A cable length of 10 m is considered.
Maximum permissible ambient temperature in $^{\circ}$ C	Also observe the maximum permissible ambient temperature stated in the general technical data. Keep to the lower of the two values. $U_i = 16$ V, $I_i = 25$ mA, $P_i = 34$ mW 100 $^{\circ}$ C $U_i = 16$ V, $I_i = 25$ mA, $P_i = 64$ mW 100 $^{\circ}$ C $U_i = 16$ V, $I_i = 52$ mA, $P_i = 169$ mW 80 $^{\circ}$ C $U_i = 16$ V, $I_i = 76$ mA, $P_i = 242$ mW 61 $^{\circ}$ C

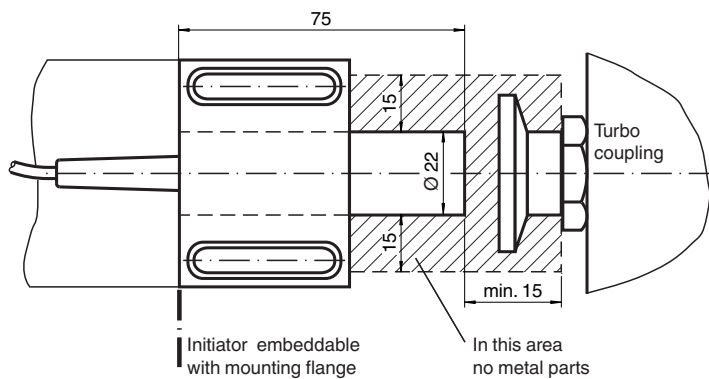
Inductive sensor

NJ10-22-N-E93-Y245590

■ Comfort series



Dimensions



Technical Data

General specifications		
Switching function		Normally closed (NC)
Output type		NAMUR
Rated operating distance	s_n	10 mm
Installation		non-flush
Assured operating distance	s_a	0 ... 10 mm
Output type		2-wire
Nominal ratings		
Nominal voltage	U_o	8.2 V (R_i approx. 1 k Ω)
Switching frequency	f	0 ... 1000 Hz
Hysteresis	H	typ. 5 %
Current consumption		
Measuring plate not detected		min. 3 mA
Measuring plate detected		≤ 1 mA
Functional safety related parameters		
MTTF _d		3602 a
Mission Time (T_M)		20 a
Diagnostic Coverage (DC)		0 %
Compliance with standards and directives		
Standard conformity		
NAMUR		EN 60947-5-6:2000 IEC 60947-5-6:1999

Release date: 2021-06-21 Date of issue: 2021-06-21 Filename: 70133281_eng.pdf

Refer to "General Notes Relating to Pepperl+Fuchs Product Information".

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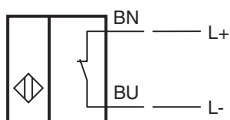
Singapore: +65 6779 9091
fa-info@sg.pepperl-fuchs.com

PF PEPPERL+FUCHS

Technical Data

Standards	EN 60947-5-2:2007 EN 60947-5-2/A1:2012 IEC 60947-5-2:2007 IEC 60947-5-2 AMD 1:2012	
Approvals and certificates		
IECEX approval		
Equipment protection level Gb		IECEX PTB 11.0037X
Equipment protection level Da		IECEX PTB 11.0037X
Equipment protection level Mb		IECEX PTB 11.0037X
ATEX approval		
Equipment protection level Gb		PTB 00 ATEX 2048 X
Equipment protection level Da		PTB 00 ATEX 2048 X
EAC conformity		TR CU 012/2011
UL approval		cULus Listed, General Purpose
Ambient conditions		
Ambient temperature	-40 ... 100 °C (-40 ... 212 °F) Also observe the maximum permissible ambient temperature stated in the data for application in connection with hazardous areas. Keep to the lower of the two values.	
Mechanical specifications		
Connection type	cable	
Housing material	PBT	
Sensing face	PBT	
Degree of protection	IP68	
Cable		
Cable diameter	6 mm ± 0.2 mm	
Bending radius	> 10 x cable diameter	
Material	silicone	
Core cross-section	0.75 mm ²	
Length	L	2 m
General information		
Use in the hazardous area	see instruction manuals	

Connection



Release date: 2021-06-21 Date of issue: 2021-06-21 Filename: 70133281_eng.pdf

Refer to "General Notes Relating to Pepperl+Fuchs Product Information".

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No. / Nr.: DOC-5073
Date / Datum: 2021-07-21

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www.pepperl-fuchs.com



Declaration of conformity / Konformitätserklärung

We, Pepperl+Fuchs SE declare under our sole responsibility that the **products** listed below are in conformity with the listed **European Directives** and **standards**.

Die Pepperl+Fuchs SE erklärt hiermit in alleiniger Verantwortung, dass die unten gelisteten **Produkte** den genannten **Europäischen Richtlinien** und **Normen** entsprechen.

Products / Produkte

Product / Produkt	Item number	Description / Beschreibung
NJ2-12GK-N-Y40110	70133235	Inductive sensor
NJ2-12GK-N-10M-Y89552	70133232	Inductive sensor
NJ2-12GK-N-25M	70133233	Inductive sensor
NJ2-12GK-N-5M	70133234	Inductive sensor
NJ2-12GM-N-Y08766	70133239	Inductive sensor
NJ2-12GM-N-Y10638	70133240	Inductive sensor
NJ2-14GM-N-C50	70133255	Inductive sensor
NJ2-14GM-N-V1-Y19784	70133256	Inductive sensor
NJ2,5-14GM-N-V1-Y21146	70133054	Inductive sensor
NJ25-50-N	70133327	Inductive sensor
NJ10-30GK-N-5M	70133311	Inductive sensor
NJ25-50-N-15M	70133328	Inductive sensor
NJ15-30GKK-N	70133073	Inductive sensor
NJ25-50-N-5M	70133329	Inductive sensor
NJ15-30GK-N	70133317	Inductive sensor
NJ15-30GK-N-Y08943	70133320	Inductive sensor
NJ15-30GK-N-10M	70133074	Inductive sensor
NJ15-30GK-N-20M	70133318	Inductive sensor
NJ15-30GK-N-30M	70133319	Inductive sensor
NJ20-40-N	70133323	Inductive sensor
NJ2-11-N-G-Y102883	70133198	Inductive sensor
NJ2-11-N-G-910	70133196	Inductive sensor
NJ10-22-N	70133280	Inductive sensor
NJ10-22-N-E93-Y245590	70133281	Inductive sensor
NJ10-22-N-E93-Y246868	70133282	Inductive sensor
NJ10-22-N-E93-Y246869	70133283	Inductive sensor
NJ10-22-N-G	70133284	Inductive sensor

Product / Produkt	Item number	Description / Beschreibung
NJ10-22-N-G-5M	70133285	Inductive sensor
NJ10-30GKK-N	70133308	Inductive sensor
NJ10-30GK-N	70133309	Inductive sensor
NJ10-30GK-N-15M	70133310	Inductive sensor
NJ2-11-N-Y14235	70133202	Inductive sensor
NJ2-12GK-N	70133049	Inductive sensor

Directives and Standards / Richtlinien und Normen

EU-Directive EU-Richtlinie	Standards Normen
ATEX 2014/34/EU (L96/309-356)	EN 60079-11:2012-01 EN IEC 60079-0:2018-07
EMC 2014/30/EU (L96/79-106)	EN 60947-5-2/A1:2012-11 EN 60947-5-2:2007-12 EN 60947-5-6:2000-01 EN IEC 60947-5-2:2020-03
RoHS 2011/65/EU (L174/88-110)	EN IEC 63000:2018-12

Affixed CE Marking / Angebrachte CE-Kennzeichnung



Signatures / Unterschriften

Mannheim, 2021-07-21

i.V. Ulrich Ehrenfried

Head of Innovation Unit Electromagnetic
Sensors

i.V. Tobias Dittmer

Global Product Manager

ANNEX ATEX

Notified Body QM-System / Notifizierte Stelle des QM-Systems
Physikalisch Technische Bundesanstalt (0102)
Bundesallee 100
38116 Braunschweig
Germany

Marking and Certificates / Kennzeichnung und Zertifikate

Marking Kennzeichnung	Certificate Zertifikat	Issuer ID Aussteller ID
 	PTB 00 ATEX 2048 X	0102

Key for Issuer ID / Schlüssel zur Aussteller ID

ID	Issuer / Aussteller
0102	Physikalisch Technische Bundesanstalt Bundesallee 100 38116 Braunschweig Germany

14.5 Iniciador NJ 10-22-N-E93-Y246868 (5 m, noevo marcado Dust-Ex)

Voith Núm. de material: 201.04312810

Instrucciones de servicio	Pepperl+Fuchs
Datos técnicos	Pepperl+Fuchs
Declaración de conformidad	Pepperl+Fuchs

Instruction Manual

1. Marking

Inductive sensor NJ10-22-N-E93-Y246868
ATEX marking Ⓜ II 2G Ex ia IIC T6...T1 Gb Ⓜ II 1D Ex ia IIIC T ₂₀₀ 135°C Da
IECEX marking Ex ia IIC T6...T1 Gb Ex ia IIIC T ₂₀₀ 135°C Da Ex ia I Mb
Pepperl+Fuchs Group Lilienthalstraße 200, 68307 Mannheim, Germany
Internet: www.pepperl-fuchs.com

2. Validity

Specific processes and instructions in this instruction manual require special provisions to guarantee the safety of the operating personnel.

3. Target Group, Personnel

Responsibility for planning, assembly, commissioning, operation, maintenance, and dismantling lies with the plant operator. The personnel must be appropriately trained and qualified in order to carry out mounting, installation, commissioning, operation, maintenance, and dismantling of the device. The trained and qualified personnel must have read and understood the instruction manual.

4. Reference to Further Documentation

Observe laws, standards, and directives applicable to the intended use and the operating location. Observe Directive 1999/92/EC in relation to hazardous areas.

The corresponding datasheets, manuals, declarations of conformity, EU-type examination certificates, certificates, and control drawings if applicable (see datasheet) are an integral part of this document. You can find this information under www.pepperl-fuchs.com.

For specific device information, scan the QR code on the device or enter the serial number in the serial number search at www.pepperl-fuchs.com. Due to constant revisions, documentation is subject to permanent change. Please refer only to the most up-to-date version, which can be found under www.pepperl-fuchs.com.

5. Intended Use

The device is only approved for appropriate and intended use. Ignoring these instructions will void any warranty and absolve the manufacturer from any liability.

Technical data provided in the datasheet may be partly restrained by the information given in this instruction manual.

Use the device only within the specified ambient and operating conditions.

The device is an electrical apparatus for hazardous areas.

The certificate applies only to the use of apparatus under atmospheric conditions.

If you use the device outside atmospheric conditions, consider that the permissible safety parameters should be reduced.

The device can be used in hazardous areas containing gas, vapor, and mist.

The device can be used in hazardous areas containing combustible dust.

The device can be used in underground parts of mines as well as those parts of surface installations of such mines containing firedamp and/or combustible dust.

5.1. Requirements for Equipment Protection Level Gb

Refer to the relevant certificate to see the relationship between the connected circuit type, the maximum permitted ambient temperature, the effective inner reactances, and if applicable the surface temperature or the temperature class.

The suitability for use of the device at ambient temperatures >60 °C in conjunction with hot surfaces has been checked by the notified body.

5.2. Requirements for Equipment Protection Level Da

Refer to the relevant certificate to see the relationship between the connected circuit type, the maximum permitted ambient temperature, the effective inner reactances, and if applicable the surface temperature or the temperature class.

The suitability for use of the device at ambient temperatures >60 °C in conjunction with hot surfaces has been checked by the notified body.

5.3. Requirements for Equipment Protection Level Mb

Refer to the relevant certificate to see the relationship between the connected circuit type, the maximum permitted ambient temperature, the effective inner reactances, and if applicable the surface temperature or the temperature class.

The suitability for use of the device at ambient temperatures >60 °C in conjunction with hot surfaces has been checked by the notified body.

6. Improper Use

Protection of the personnel and the plant is not ensured if the device is not used according to its intended use.

7. Mounting and Installation

Observe the installation instructions according to IEC/EN 60079-14.

Safety-relevant markings are found on the nameplate of the device or the nameplate supplied.

Attach the nameplate supplied in the immediate vicinity of the device. Attach the nameplate so that it is legible and indelible. Take the ambient conditions into account.

Do not mount a damaged or polluted device.

Mount the device so that it complies with the specified degree of protection according to IEC/EN 60529.

If you use the device in environments subject to adverse conditions, you must protect the device accordingly.

Do not remove the warning markings.

7.1. Requirements for Usage as Intrinsically Safe Apparatus

When connecting intrinsically safe devices with intrinsically safe circuits of associated apparatus, observe the maximum peak values with regard to explosion protection (verification of intrinsic safety). Observe the standards IEC/EN 60079-14 or IEC/EN 60079-25.

The type of protection is determined by the connected intrinsically safe circuit.

7.2. Specific Conditions of Use

Mount the device so that it complies with the specified degree of protection according to IEC/EN 60529.

7.2.1. Requirements in Relation to Electrostatics

Information on electrostatic hazards can be found in the technical specification IEC/TS 60079-32-1.

Do not mount the supplied nameplate in areas that can be electrostatically charged.

You can reduce the electrostatic hazards by minimizing the generation of static electricity. For example, you have the following options to minimize the generation of static electricity:

- Control the environmental humidity.
- Protect the device from direct airflow.
- Ensure a continuous drain off of the electrostatic charges.

7.2.1.1. Requirements for Equipment Protection Level Da

Avoid electrostatic charges which could result in electrostatic discharges while installing, operating, or maintaining the device.

7.2.2. Requirements to Mechanics

7.2.2.1. Requirements for Usage as Intrinsically Safe Apparatus

Protect the device from impact effects by mounting in a surrounding enclosure if it is used in the temperature range between the minimum permissible ambient temperature and -20 °C.

Mount the device with at least a degree of protection of IP20 according to IEC/EN 60529.

8. Operation, Maintenance, Repair

Observe the specific conditions of use.

Safety-relevant markings are found on the nameplate of the device or the nameplate supplied.

Do not use a damaged or polluted device.

Do not repair, modify, or manipulate the device.

Modifications are permitted only if approved in this instruction manual and in the device-related documentation.

If there is a defect, always replace the device with an original device.

Do not remove the warning markings.

8.1. Requirements for Usage as Intrinsically Safe Apparatus

Only operate the device with intrinsically safe circuits according to IEC/EN 60079-11.

The type of protection is determined by the connected intrinsically safe circuit.

8.2. Requirements for Equipment Protection Level Gb

Observe the temperature table for the corresponding equipment protection level in the certificate.

Also observe the maximum permissible ambient temperature stated in the technical data. Keep to the lower of the two values.

8.3. Requirements for Equipment Protection Level Da

Observe the temperature table for the corresponding equipment protection level in the certificate.

Also observe the maximum permissible ambient temperature stated in the technical data. Keep to the lower of the two values.

8.4. Requirements for Equipment Protection Level Mb

Observe the temperature table for the corresponding equipment protection level in the certificate.

Also observe the maximum permissible ambient temperature stated in the technical data. Keep to the lower of the two values.

9. Delivery, Transport, Disposal

Check the packaging and contents for damage.

Check if you have received every item and if the items received are the ones you ordered.

Keep the original packaging. Always store and transport the device in the original packaging.

Store the device in a clean and dry environment. The permitted ambient conditions must be considered, see datasheet.

The device, built-in components, packaging, and any batteries contained within must be disposed in compliance with the applicable laws and guidelines of the respective country.

10. National Ex approvals

EAC-EX:	TC RU C-DE.AA87.B.00394
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11. Safety-Relevant Technical Data

11.1. Equipment protection level Gb

Type of protection	Intrinsic safety
CE marking	CE-0102
Certificates	
Appropriate type	NJ10-22-N...
ATEX certificate	PTB 00 ATEX 2048 X
ATEX marking	Ⓜ II 2G Ex ia IIC T6...T1 Gb
ATEX standards	EN IEC 60079-0:2018-07, EN 60079-11:2012-01
IECEX certificate	IECEX PTB 11.0037X
IECEX marking	Ex ia IIC T6...T1 Gb
IECEX standards	IEC 60079-0:2017-12, IEC 60079-11:2011-06
Effective internal capacitance C_i	max. 130 nF A cable length of 10 m is considered.
Effective internal inductance L_i	max. 100 μH A cable length of 10 m is considered.

Maximum permissible ambient temperature in °C	Also observe the maximum permissible ambient temperature stated in the general technical data. Keep to the lower of the two values. $U_i = 16 \text{ V}$, $I_i = 25 \text{ mA}$, $P_i = 34 \text{ mW}$ T6: 73 °C T5: 88 °C T4: 100 °C T3: 100 °C T2: 100 °C T1: 100 °C $U_i = 16 \text{ V}$, $I_i = 25 \text{ mA}$, $P_i = 64 \text{ mW}$ T6: 69 °C T5: 84 °C T4: 100 °C T3: 100 °C T2: 100 °C T1: 100 °C $U_i = 16 \text{ V}$, $I_i = 52 \text{ mA}$, $P_i = 169 \text{ mW}$ T6: 51 °C T5: 66 °C T4: 80 °C T3: 80 °C T2: 80 °C T1: 80 °C $U_i = 16 \text{ V}$, $I_i = 76 \text{ mA}$, $P_i = 242 \text{ mW}$ T6: 39 °C T5: 54 °C T4: 61 °C T3: 61 °C T2: 61 °C T1: 61 °C
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11.2. Equipment protection level Da

Type of protection	Intrinsic safety
CE marking	CE-0102
Certificates	
Appropriate type	NJ10-22-N...
ATEX certificate	PTB 00 ATEX 2048 X
ATEX marking	Ⓜ II 1D Ex ia IIIC T ₂₀₀ 135°C Da
ATEX standards	EN IEC 60079-0:2018-07, EN 60079-11:2012-01
IECEX certificate	IECEX PTB 11.0037X
IECEX marking	Ex ia IIIC T ₂₀₀ 135°C Da
IECEX standards	IEC 60079-0:2017-12, IEC 60079-11:2011-06
Effective internal capacitance C_i	max. 130 nF A cable length of 10 m is considered.
Effective internal inductance L_i	max. 100 μH A cable length of 10 m is considered.
Maximum permissible ambient temperature in °C	Also observe the maximum permissible ambient temperature stated in the general technical data. Keep to the lower of the two values. $U_i = 16 \text{ V}$, $I_i = 25 \text{ mA}$, $P_i = 34 \text{ mW}$ 100 °C $U_i = 16 \text{ V}$, $I_i = 25 \text{ mA}$, $P_i = 64 \text{ mW}$ 100 °C $U_i = 16 \text{ V}$, $I_i = 52 \text{ mA}$, $P_i = 169 \text{ mW}$ 62 °C

11.3. Equipment protection level Mb

Type of protection	Intrinsic safety
Certificates	
Appropriate type	NJ10-22-N...
IECEX certificate	IECEX PTB 11.0037X
IECEX marking	Ex ia I Mb

IECEX standards	IEC 60079-0:2017-12, IEC 60079-11:2011-06
Effective internal capacitance C_i	max. 130 nF A cable length of 10 m is considered.
Effective internal inductance L_i	max. 100 μ H A cable length of 10 m is considered.
Maximum permissible ambient temperature in $^{\circ}$ C	Also observe the maximum permissible ambient temperature stated in the general technical data. Keep to the lower of the two values. $U_i = 16$ V, $I_i = 25$ mA, $P_i = 34$ mW 100 $^{\circ}$ C $U_i = 16$ V, $I_i = 25$ mA, $P_i = 64$ mW 100 $^{\circ}$ C $U_i = 16$ V, $I_i = 52$ mA, $P_i = 169$ mW 80 $^{\circ}$ C $U_i = 16$ V, $I_i = 76$ mA, $P_i = 242$ mW 61 $^{\circ}$ C

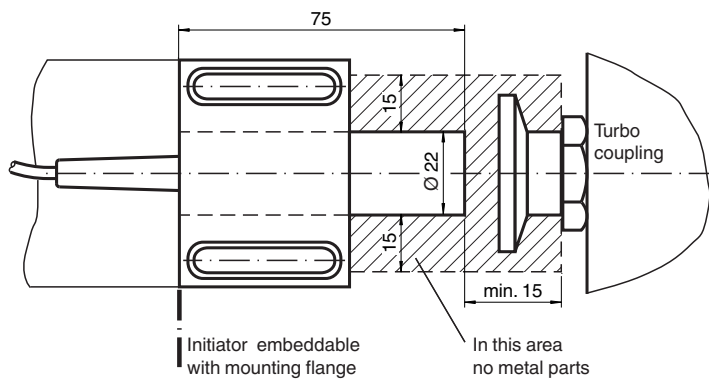
Inductive sensor

NJ10-22-N-E93-Y246868

■ Comfort series



Dimensions



Technical Data

General specifications		
Switching function		Normally closed (NC)
Output type		NAMUR
Rated operating distance	s_n	10 mm
Installation		non-flush
Assured operating distance	s_a	0 ... 10 mm
Output type		2-wire
Nominal ratings		
Nominal voltage	U_o	8.2 V (R_i approx. 1 k Ω)
Switching frequency	f	0 ... 1000 Hz
Hysteresis	H	typ. 5 %
Current consumption		
Measuring plate not detected		min. 3 mA
Measuring plate detected		≤ 1 mA
Functional safety related parameters		
MTTF _d		3602 a
Mission Time (T_M)		20 a
Diagnostic Coverage (DC)		0 %
Compliance with standards and directives		
Standard conformity		
NAMUR		EN 60947-5-6:2000 IEC 60947-5-6:1999

Release date: 2021-06-21 Date of issue: 2021-06-21 Filename: 70133282_eng.pdf

Refer to "General Notes Relating to Pepperl+Fuchs Product Information".

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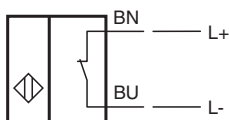
Singapore: +65 6779 9091
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PEPPERL+FUCHS

Technical Data

Standards	EN 60947-5-2:2007 EN 60947-5-2/A1:2012 IEC 60947-5-2:2007 IEC 60947-5-2 AMD 1:2012	
Approvals and certificates		
IECEX approval		
Equipment protection level Gb		IECEX PTB 11.0037X
Equipment protection level Da		IECEX PTB 11.0037X
Equipment protection level Mb		IECEX PTB 11.0037X
ATEX approval		
Equipment protection level Gb		PTB 00 ATEX 2048 X
Equipment protection level Da		PTB 00 ATEX 2048 X
EAC conformity		TR CU 012/2011
UL approval		cULus Listed, General Purpose
Ambient conditions		
Ambient temperature	-40 ... 100 °C (-40 ... 212 °F) Also observe the maximum permissible ambient temperature stated in the data for application in connection with hazardous areas. Keep to the lower of the two values.	
Mechanical specifications		
Connection type	cable	
Housing material	PBT	
Sensing face	PBT	
Degree of protection	IP68	
Cable		
Cable diameter	6 mm ± 0.2 mm	
Bending radius	> 10 x cable diameter	
Material	silicone	
Core cross-section	0.75 mm ²	
Length	L	5 m
General information		
Use in the hazardous area	see instruction manuals	

Connection



Release date: 2021-06-21 Date of issue: 2021-06-21 Filename: 70133282_eng.pdf

Refer to "General Notes Relating to Pepperl+Fuchs Product Information".

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No. / Nr.: DOC-5073
Date / Datum: 2021-07-21

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Declaration of conformity / Konformitätserklärung

We, Pepperl+Fuchs SE declare under our sole responsibility that the **products** listed below are in conformity with the listed **European Directives** and **standards**.

Die Pepperl+Fuchs SE erklärt hiermit in alleiniger Verantwortung, dass die unten gelisteten **Produkte** den genannten **Europäischen Richtlinien** und **Normen** entsprechen.

Products / Produkte

Product / Produkt	Item number	Description / Beschreibung
NJ2-12GK-N-Y40110	70133235	Inductive sensor
NJ2-12GK-N-10M-Y89552	70133232	Inductive sensor
NJ2-12GK-N-25M	70133233	Inductive sensor
NJ2-12GK-N-5M	70133234	Inductive sensor
NJ2-12GM-N-Y08766	70133239	Inductive sensor
NJ2-12GM-N-Y10638	70133240	Inductive sensor
NJ2-14GM-N-C50	70133255	Inductive sensor
NJ2-14GM-N-V1-Y19784	70133256	Inductive sensor
NJ2,5-14GM-N-V1-Y21146	70133054	Inductive sensor
NJ25-50-N	70133327	Inductive sensor
NJ10-30GK-N-5M	70133311	Inductive sensor
NJ25-50-N-15M	70133328	Inductive sensor
NJ15-30GKK-N	70133073	Inductive sensor
NJ25-50-N-5M	70133329	Inductive sensor
NJ15-30GK-N	70133317	Inductive sensor
NJ15-30GK-N-Y08943	70133320	Inductive sensor
NJ15-30GK-N-10M	70133074	Inductive sensor
NJ15-30GK-N-20M	70133318	Inductive sensor
NJ15-30GK-N-30M	70133319	Inductive sensor
NJ20-40-N	70133323	Inductive sensor
NJ2-11-N-G-Y102883	70133198	Inductive sensor
NJ2-11-N-G-910	70133196	Inductive sensor
NJ10-22-N	70133280	Inductive sensor
NJ10-22-N-E93-Y245590	70133281	Inductive sensor
NJ10-22-N-E93-Y246868	70133282	Inductive sensor
NJ10-22-N-E93-Y246869	70133283	Inductive sensor
NJ10-22-N-G	70133284	Inductive sensor

Product / Produkt	Item number	Description / Beschreibung
NJ10-22-N-G-5M	70133285	Inductive sensor
NJ10-30GKK-N	70133308	Inductive sensor
NJ10-30GK-N	70133309	Inductive sensor
NJ10-30GK-N-15M	70133310	Inductive sensor
NJ2-11-N-Y14235	70133202	Inductive sensor
NJ2-12GK-N	70133049	Inductive sensor

Directives and Standards / Richtlinien und Normen

EU-Directive EU-Richtlinie	Standards Normen
ATEX 2014/34/EU (L96/309-356)	EN 60079-11:2012-01 EN IEC 60079-0:2018-07
EMC 2014/30/EU (L96/79-106)	EN 60947-5-2/A1:2012-11 EN 60947-5-2:2007-12 EN 60947-5-6:2000-01 EN IEC 60947-5-2:2020-03
RoHS 2011/65/EU (L174/88-110)	EN IEC 63000:2018-12

Affixed CE Marking / Angebrachte CE-Kennzeichnung



Signatures / Unterschriften

Mannheim, 2021-07-21

i.V. Ulrich Ehrenfried

Head of Innovation Unit Electromagnetic
Sensors

i.V. Tobias Dittmer

Global Product Manager

ANNEX ATEX

Notified Body QM-System / Notifizierte Stelle des QM-Systems
Physikalisch Technische Bundesanstalt (0102)
Bundesallee 100
38116 Braunschweig
Germany

Marking and Certificates / Kennzeichnung und Zertifikate

Marking Kennzeichnung	Certificate Zertifikat	Issuer ID Aussteller ID
 	PTB 00 ATEX 2048 X	0102

Key for Issuer ID / Schlüssel zur Aussteller ID

ID	Issuer / Aussteller
0102	Physikalisch Technische Bundesanstalt Bundesallee 100 38116 Braunschweig Germany

14.6 Iniciador NJ 10-22-N-E93-Y246869 (10 m, noevo marcado Dust-Ex)

Voith Núm. de material: 201.04312910

Instrucciones de servicio	Pepperl+Fuchs
Datos técnicos	Pepperl+Fuchs
Declaración de conformidad	Pepperl+Fuchs

Instruction Manual

1. Marking

Inductive sensor NJ10-22-N-E93-Y246869
ATEX marking Ⓜ II 2G Ex ia IIC T6...T1 Gb Ⓜ II 1D Ex ia IIIC T ₂₀₀ 135°C Da
IECEX marking Ex ia IIC T6...T1 Gb Ex ia IIIC T ₂₀₀ 135°C Da Ex ia I Mb
Pepperl+Fuchs Group Lilienthalstraße 200, 68307 Mannheim, Germany
Internet: www.pepperl-fuchs.com

2. Validity

Specific processes and instructions in this instruction manual require special provisions to guarantee the safety of the operating personnel.

3. Target Group, Personnel

Responsibility for planning, assembly, commissioning, operation, maintenance, and dismantling lies with the plant operator.

The personnel must be appropriately trained and qualified in order to carry out mounting, installation, commissioning, operation, maintenance, and dismantling of the device. The trained and qualified personnel must have read and understood the instruction manual.

4. Reference to Further Documentation

Observe laws, standards, and directives applicable to the intended use and the operating location. Observe Directive 1999/92/EC in relation to hazardous areas.

The corresponding datasheets, manuals, declarations of conformity, EU-type examination certificates, certificates, and control drawings if applicable (see datasheet) are an integral part of this document. You can find this information under www.pepperl-fuchs.com.

For specific device information, scan the QR code on the device or enter the serial number in the serial number search at www.pepperl-fuchs.com. Due to constant revisions, documentation is subject to permanent change. Please refer only to the most up-to-date version, which can be found under www.pepperl-fuchs.com.

5. Intended Use

The device is only approved for appropriate and intended use. Ignoring these instructions will void any warranty and absolve the manufacturer from any liability.

Technical data provided in the datasheet may be partly restrained by the information given in this instruction manual.

Use the device only within the specified ambient and operating conditions.

The device is an electrical apparatus for hazardous areas.

The certificate applies only to the use of apparatus under atmospheric conditions.

If you use the device outside atmospheric conditions, consider that the permissible safety parameters should be reduced.

The device can be used in hazardous areas containing gas, vapor, and mist.

The device can be used in hazardous areas containing combustible dust.

The device can be used in underground parts of mines as well as those parts of surface installations of such mines containing firedamp and/or combustible dust.

5.1. Requirements for Equipment Protection Level Gb

Refer to the relevant certificate to see the relationship between the connected circuit type, the maximum permitted ambient temperature, the effective inner reactances, and if applicable the surface temperature or the temperature class.

The suitability for use of the device at ambient temperatures >60 °C in conjunction with hot surfaces has been checked by the notified body.

5.2. Requirements for Equipment Protection Level Da

Refer to the relevant certificate to see the relationship between the connected circuit type, the maximum permitted ambient temperature, the effective inner reactances, and if applicable the surface temperature or the temperature class.

The suitability for use of the device at ambient temperatures >60 °C in conjunction with hot surfaces has been checked by the notified body.

5.3. Requirements for Equipment Protection Level Mb

Refer to the relevant certificate to see the relationship between the connected circuit type, the maximum permitted ambient temperature, the effective inner reactances, and if applicable the surface temperature or the temperature class.

The suitability for use of the device at ambient temperatures >60 °C in conjunction with hot surfaces has been checked by the notified body.

6. Improper Use

Protection of the personnel and the plant is not ensured if the device is not used according to its intended use.

7. Mounting and Installation

Observe the installation instructions according to IEC/EN 60079-14.

Safety-relevant markings are found on the nameplate of the device or the nameplate supplied.

Attach the nameplate supplied in the immediate vicinity of the device. Attach the nameplate so that it is legible and indelible. Take the ambient conditions into account.

Do not mount a damaged or polluted device.

Mount the device so that it complies with the specified degree of protection according to IEC/EN 60529.

If you use the device in environments subject to adverse conditions, you must protect the device accordingly.

Do not remove the warning markings.

7.1. Requirements for Usage as Intrinsically Safe Apparatus

When connecting intrinsically safe devices with intrinsically safe circuits of associated apparatus, observe the maximum peak values with regard to explosion protection (verification of intrinsic safety). Observe the standards IEC/EN 60079-14 or IEC/EN 60079-25.

The type of protection is determined by the connected intrinsically safe circuit.

7.2. Specific Conditions of Use

Mount the device so that it complies with the specified degree of protection according to IEC/EN 60529.

7.2.1. Requirements in Relation to Electrostatics

Information on electrostatic hazards can be found in the technical specification IEC/TS 60079-32-1.

Do not mount the supplied nameplate in areas that can be electrostatically charged.

You can reduce the electrostatic hazards by minimizing the generation of static electricity. For example, you have the following options to minimize the generation of static electricity:

- Control the environmental humidity.
- Protect the device from direct airflow.
- Ensure a continuous drain off of the electrostatic charges.

7.2.1.1. Requirements for Equipment Protection Level Da

Avoid electrostatic charges which could result in electrostatic discharges while installing, operating, or maintaining the device.

7.2.2. Requirements to Mechanics

7.2.2.1. Requirements for Usage as Intrinsically Safe Apparatus

Protect the device from impact effects by mounting in a surrounding enclosure if it is used in the temperature range between the minimum permissible ambient temperature and -20 °C.

Mount the device with at least a degree of protection of IP20 according to IEC/EN 60529.

8. Operation, Maintenance, Repair

Observe the specific conditions of use.

Safety-relevant markings are found on the nameplate of the device or the nameplate supplied.

Do not use a damaged or polluted device.

Do not repair, modify, or manipulate the device.

Modifications are permitted only if approved in this instruction manual and in the device-related documentation.

If there is a defect, always replace the device with an original device.

Do not remove the warning markings.

8.1. Requirements for Usage as Intrinsically Safe Apparatus

Only operate the device with intrinsically safe circuits according to IEC/EN 60079-11.

The type of protection is determined by the connected intrinsically safe circuit.

8.2. Requirements for Equipment Protection Level Gb

Observe the temperature table for the corresponding equipment protection level in the certificate.

Also observe the maximum permissible ambient temperature stated in the technical data. Keep to the lower of the two values.

8.3. Requirements for Equipment Protection Level Da

Observe the temperature table for the corresponding equipment protection level in the certificate.

Also observe the maximum permissible ambient temperature stated in the technical data. Keep to the lower of the two values.

8.4. Requirements for Equipment Protection Level Mb

Observe the temperature table for the corresponding equipment protection level in the certificate.

Also observe the maximum permissible ambient temperature stated in the technical data. Keep to the lower of the two values.

9. Delivery, Transport, Disposal

Check the packaging and contents for damage.

Check if you have received every item and if the items received are the ones you ordered.

Keep the original packaging. Always store and transport the device in the original packaging.

Store the device in a clean and dry environment. The permitted ambient conditions must be considered, see datasheet.

The device, built-in components, packaging, and any batteries contained within must be disposed in compliance with the applicable laws and guidelines of the respective country.

10. National Ex approvals

EAC-EX:	TC RU C-DE.AA87.B.00394
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11. Safety-Relevant Technical Data

11.1. Equipment protection level Gb

Type of protection	Intrinsic safety
CE marking	CE-0102
Certificates	
Appropriate type	NJ10-22-N...
ATEX certificate	PTB 00 ATEX 2048 X
ATEX marking	Ⓜ II 2G Ex ia IIC T6...T1 Gb
ATEX standards	EN IEC 60079-0:2018-07, EN 60079-11:2012-01
IECEX certificate	IECEX PTB 11.0037X
IECEX marking	Ex ia IIC T6...T1 Gb
IECEX standards	IEC 60079-0:2017-12, IEC 60079-11:2011-06
Effective internal capacitance C_i	max. 130 nF A cable length of 10 m is considered.
Effective internal inductance L_i	max. 100 μ H A cable length of 10 m is considered.

Maximum permissible ambient temperature in °C	Also observe the maximum permissible ambient temperature stated in the general technical data. Keep to the lower of the two values. $U_i = 16$ V, $I_i = 25$ mA, $P_i = 34$ mW T6: 73 °C T5: 88 °C T4: 100 °C T3: 100 °C T2: 100 °C T1: 100 °C $U_i = 16$ V, $I_i = 25$ mA, $P_i = 64$ mW T6: 69 °C T5: 84 °C T4: 100 °C T3: 100 °C T2: 100 °C T1: 100 °C $U_i = 16$ V, $I_i = 52$ mA, $P_i = 169$ mW T6: 51 °C T5: 66 °C T4: 80 °C T3: 80 °C T2: 80 °C T1: 80 °C $U_i = 16$ V, $I_i = 76$ mA, $P_i = 242$ mW T6: 39 °C T5: 54 °C T4: 61 °C T3: 61 °C T2: 61 °C T1: 61 °C
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11.2. Equipment protection level Da

Type of protection	Intrinsic safety
CE marking	CE-0102
Certificates	
Appropriate type	NJ10-22-N...
ATEX certificate	PTB 00 ATEX 2048 X
ATEX marking	Ⓜ II 1D Ex ia IIIC T ₂₀₀ 135°C Da
ATEX standards	EN IEC 60079-0:2018-07, EN 60079-11:2012-01
IECEX certificate	IECEX PTB 11.0037X
IECEX marking	Ex ia IIIC T ₂₀₀ 135°C Da
IECEX standards	IEC 60079-0:2017-12, IEC 60079-11:2011-06
Effective internal capacitance C_i	max. 130 nF A cable length of 10 m is considered.
Effective internal inductance L_i	max. 100 μ H A cable length of 10 m is considered.
Maximum permissible ambient temperature in °C	Also observe the maximum permissible ambient temperature stated in the general technical data. Keep to the lower of the two values. $U_i = 16$ V, $I_i = 25$ mA, $P_i = 34$ mW 100 °C $U_i = 16$ V, $I_i = 25$ mA, $P_i = 64$ mW 100 °C $U_i = 16$ V, $I_i = 52$ mA, $P_i = 169$ mW 62 °C

11.3. Equipment protection level Mb

Type of protection	Intrinsic safety
Certificates	
Appropriate type	NJ10-22-N...
IECEX certificate	IECEX PTB 11.0037X
IECEX marking	Ex ia I Mb

IECEX standards	IEC 60079-0:2017-12, IEC 60079-11:2011-06
Effective internal capacitance C_i	max. 130 nF A cable length of 10 m is considered.
Effective internal inductance L_i	max. 100 μ H A cable length of 10 m is considered.
Maximum permissible ambient temperature in $^{\circ}$ C	Also observe the maximum permissible ambient temperature stated in the general technical data. Keep to the lower of the two values. $U_i = 16$ V, $I_i = 25$ mA, $P_i = 34$ mW 100 $^{\circ}$ C $U_i = 16$ V, $I_i = 25$ mA, $P_i = 64$ mW 100 $^{\circ}$ C $U_i = 16$ V, $I_i = 52$ mA, $P_i = 169$ mW 80 $^{\circ}$ C $U_i = 16$ V, $I_i = 76$ mA, $P_i = 242$ mW 61 $^{\circ}$ C

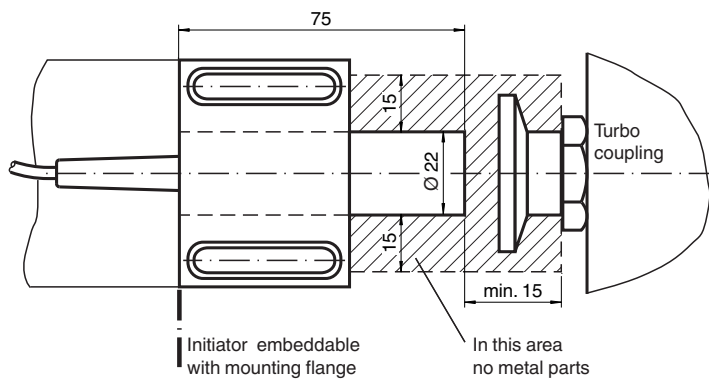
Inductive sensor

NJ10-22-N-E93-Y246869

■ Comfort series



Dimensions



Technical Data

General specifications		
Switching function		Normally closed (NC)
Output type		NAMUR
Rated operating distance	s_n	10 mm
Installation		non-flush
Assured operating distance	s_a	0 ... 10 mm
Output type		2-wire
Nominal ratings		
Nominal voltage	U_o	8.2 V (R_i approx. 1 k Ω)
Switching frequency	f	0 ... 1000 Hz
Hysteresis	H	typ. 5 %
Current consumption		
Measuring plate not detected		min. 3 mA
Measuring plate detected		≤ 1 mA
Functional safety related parameters		
MTTF _d		3602 a
Mission Time (T_M)		20 a
Diagnostic Coverage (DC)		0 %
Compliance with standards and directives		
Standard conformity		
NAMUR		EN 60947-5-6:2000 IEC 60947-5-6:1999

Release date: 2021-06-21 Date of issue: 2021-06-21 Filename: 70133283_eng.pdf

Refer to "General Notes Relating to Pepperl+Fuchs Product Information".

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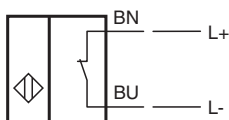
Singapore: +65 6779 9091
fa-info@sg.pepperl-fuchs.com

PF PEPPERL+FUCHS

Technical Data

Standards	EN 60947-5-2:2007 EN 60947-5-2/A1:2012 IEC 60947-5-2:2007 IEC 60947-5-2 AMD 1:2012	
Approvals and certificates		
IECEX approval		
Equipment protection level Gb		IECEX PTB 11.0037X
Equipment protection level Da		IECEX PTB 11.0037X
Equipment protection level Mb		IECEX PTB 11.0037X
ATEX approval		
Equipment protection level Gb		PTB 00 ATEX 2048 X
Equipment protection level Da		PTB 00 ATEX 2048 X
EAC conformity		TR CU 012/2011
UL approval		cULus Listed, General Purpose
Ambient conditions		
Ambient temperature	-40 ... 100 °C (-40 ... 212 °F) Also observe the maximum permissible ambient temperature stated in the data for application in connection with hazardous areas. Keep to the lower of the two values.	
Mechanical specifications		
Connection type	cable	
Housing material	PBT	
Sensing face	PBT	
Degree of protection	IP68	
Cable		
Cable diameter	6 mm ± 0.2 mm	
Bending radius	> 10 x cable diameter	
Material	silicone	
Core cross-section	0.75 mm ²	
Length	L	10 m
General information		
Use in the hazardous area	see instruction manuals	

Connection



Release date: 2021-06-21 Date of issue: 2021-06-21 Filename: 70133283_eng.pdf

Refer to "General Notes Relating to Pepperl+Fuchs Product Information".

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No. / Nr.: DOC-5073
Date / Datum: 2021-07-21

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Die Pepperl+Fuchs SE erklärt hiermit in alleiniger Verantwortung, dass die unten gelisteten **Produkte** den genannten **Europäischen Richtlinien** und **Normen** entsprechen.

Products / Produkte

Product / Produkt	Item number	Description / Beschreibung
NJ2-12GK-N-Y40110	70133235	Inductive sensor
NJ2-12GK-N-10M-Y89552	70133232	Inductive sensor
NJ2-12GK-N-25M	70133233	Inductive sensor
NJ2-12GK-N-5M	70133234	Inductive sensor
NJ2-12GM-N-Y08766	70133239	Inductive sensor
NJ2-12GM-N-Y10638	70133240	Inductive sensor
NJ2-14GM-N-C50	70133255	Inductive sensor
NJ2-14GM-N-V1-Y19784	70133256	Inductive sensor
NJ2,5-14GM-N-V1-Y21146	70133054	Inductive sensor
NJ25-50-N	70133327	Inductive sensor
NJ10-30GK-N-5M	70133311	Inductive sensor
NJ25-50-N-15M	70133328	Inductive sensor
NJ15-30GK-N	70133073	Inductive sensor
NJ25-50-N-5M	70133329	Inductive sensor
NJ15-30GK-N	70133317	Inductive sensor
NJ15-30GK-N-Y08943	70133320	Inductive sensor
NJ15-30GK-N-10M	70133074	Inductive sensor
NJ15-30GK-N-20M	70133318	Inductive sensor
NJ15-30GK-N-30M	70133319	Inductive sensor
NJ20-40-N	70133323	Inductive sensor
NJ2-11-N-G-Y102883	70133198	Inductive sensor
NJ2-11-N-G-910	70133196	Inductive sensor
NJ10-22-N	70133280	Inductive sensor
NJ10-22-N-E93-Y245590	70133281	Inductive sensor
NJ10-22-N-E93-Y246868	70133282	Inductive sensor
NJ10-22-N-E93-Y246869	70133283	Inductive sensor
NJ10-22-N-G	70133284	Inductive sensor

Product / Produkt	Item number	Description / Beschreibung
NJ10-22-N-G-5M	70133285	Inductive sensor
NJ10-30GK-N	70133308	Inductive sensor
NJ10-30GK-N	70133309	Inductive sensor
NJ10-30GK-N-15M	70133310	Inductive sensor
NJ2-11-N-Y14235	70133202	Inductive sensor
NJ2-12GK-N	70133049	Inductive sensor

Directives and Standards / Richtlinien und Normen

EU-Directive EU-Richtlinie	Standards Normen
ATEX 2014/34/EU (L96/309-356)	EN 60079-11:2012-01 EN IEC 60079-0:2018-07
EMC 2014/30/EU (L96/79-106)	EN 60947-5-2/A1:2012-11 EN 60947-5-2:2007-12 EN 60947-5-6:2000-01 EN IEC 60947-5-2:2020-03
RoHS 2011/65/EU (L174/88-110)	EN IEC 63000:2018-12

Affixed CE Marking / Angebrachte CE-Kennzeichnung



Signatures / Unterschriften

Mannheim, 2021-07-21

i.V. Ulrich Ehrenfried

Head of Innovation Unit Electromagnetic
Sensors

i.V. Tobias Dittmer

Global Product Manager

ANNEX ATEX

Notified Body QM-System / Notifizierte Stelle des QM-Systems
Physikalisch Technische Bundesanstalt (0102)
Bundesallee 100
38116 Braunschweig
Germany

Marking and Certificates / Kennzeichnung und Zertifikate

Marking Kennzeichnung	Certificate Zertifikat	Issuer ID Aussteller ID
II 1 D II 2 G	PTB 00 ATEX 2048 X	0102

Key for Issuer ID / Schlüssel zur Aussteller ID

ID	Issuer / Aussteller
0102	Physikalisch Technische Bundesanstalt Bundesallee 100 38116 Braunschweig Germany

14.7 Aparato analizador KFU8-DW-1.D-Y209869

Datos técnicos

Pepperl+Fuchs

Declaración de conformidad

Pepperl+Fuchs



Model Number

KFU8-DW-1.D-Y209869

Evaluation unit

Features

- Rotational speed monitoring up to 10 kHz
- 1 pre-select value with relay output and LED indicator
- Multi-range power pack
- NAMUR sensors connectable
- Adjustable start-up override
- Menu driven operation via 4 front keys
- Period measurement

Technical data

General specifications

Pre-selection single

Functional safety related parameters

MTTF_d 100 a

Supply

Rated voltage U_r 200 ... 230 V AC ; 100 ... 130 V AC; 50 Hz
20 VDC ... 30 VDC

Fusing external fusing 4 A

Power consumption AC: < 5 VA
DC: < 5 W

Indicators/operating means

Type 7-segment LED display, red

Number of digits 4

Display value digit height 7 mm, in Hz or 1/min

LED yellow switching state

Accuracy ± 1 digit

Input

Control input NAMUR: $1,2 \text{ mA} \leq x \leq 2,1 \text{ mA}$ (terminal 8, 9), max. 8.2 V and 6.5 mA, impedance 1.2 kOhm

Trigger input 12 V (terminal 2), max. 30 V, impedance 2.8 kOhm

Pulse duration 20 μ s

Input 1

Switching point 1.2 ... 2.1 mA Switching hysteresis approx. 0.2 mA

Input frequency 0.002 ... 10000 Hz, pulse length/duration: $\geq 20 \mu$ s

Impedance 1.2 k Ω

Input 3

Start-up override Triggering by external signal 16 ... 30 V or Place jumper between terminals 2/3 or by switching on supply voltage (terminal 2 and terminal 3 permanently bridged)

Jumpering time 1 ... 9999 s (External trigger signal)

Output

Relay 1 changeover contact

Sensor supply 24 V DC $\pm 10 \%$, 30 mA, short-circuit protected

Contact loading 250 V AC/2 A/ $\cos \phi \geq 0.7$
40 V DC/2 A

Delay times

Time delay before availability ≤ 400 ms

Start-up override 1 ... 9999 s

Relay ≤ 20 ms

Transfer characteristics

Measuring error 0 ... 10 kHz: $\leq \pm 0.1\%$
Display: ± 1 digit

Standard conformity

Electromagnetic compatibility acc. to EN 50081-2 / EN 50082-2

Ambient conditions

Ambient temperature -25 ... 40 °C (-13 ... 104 °F)

Storage temperature -40 ... 85 °C (-40 ... 185 °F)

Relative humidity max. 80 %, not condensing

Altitude 0 ... 2000 m

Operating conditions The device has only to be used in an indoor area.

Mechanical specifications

Connection assembly **Caution:** Please be aware that the device may only be connected to a switchable power supply. The switch or circuit breaker must be easy to reach and identified as the separator for the device.

Degree of protection IP20

Connection coded, removable terminals, max. core cross-section 0.34 ... 2.5 mm²

Construction type modular terminal housing in Makrolon, System KF
For use in the switch cabinet/switch cabinet module

Mounting snap-on to 35 mm standard rail or screw fixing

Life span 30×10^6 switching cycles

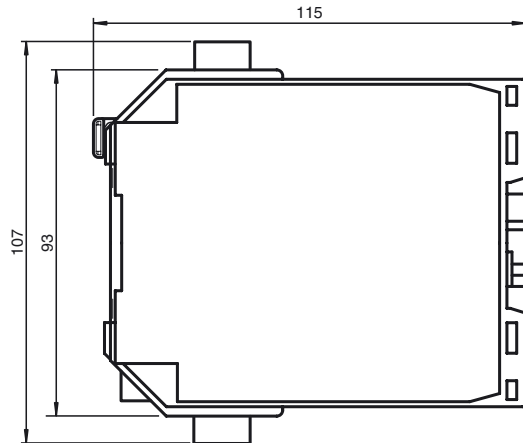
Function

The KFU8-DW-1.D Speed Monitor is a device used to indicate and monitor periodic signals (frequencies and rotational speeds) which occur in almost all areas of automation and process engineering.

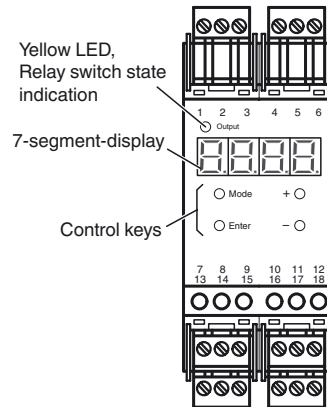
The input signals are evaluated in accordance with the cycle method. That is, by measuring the duration of a period and then converting it with a very fast micro controller to a frequency or rotational speed.

The Speed Monitor can be supplied with 115 V AC, 230 V AC or by a 24 V DC supply and when connected to an alternating voltage it provides a 24 V DC source to supply the signal sensor.

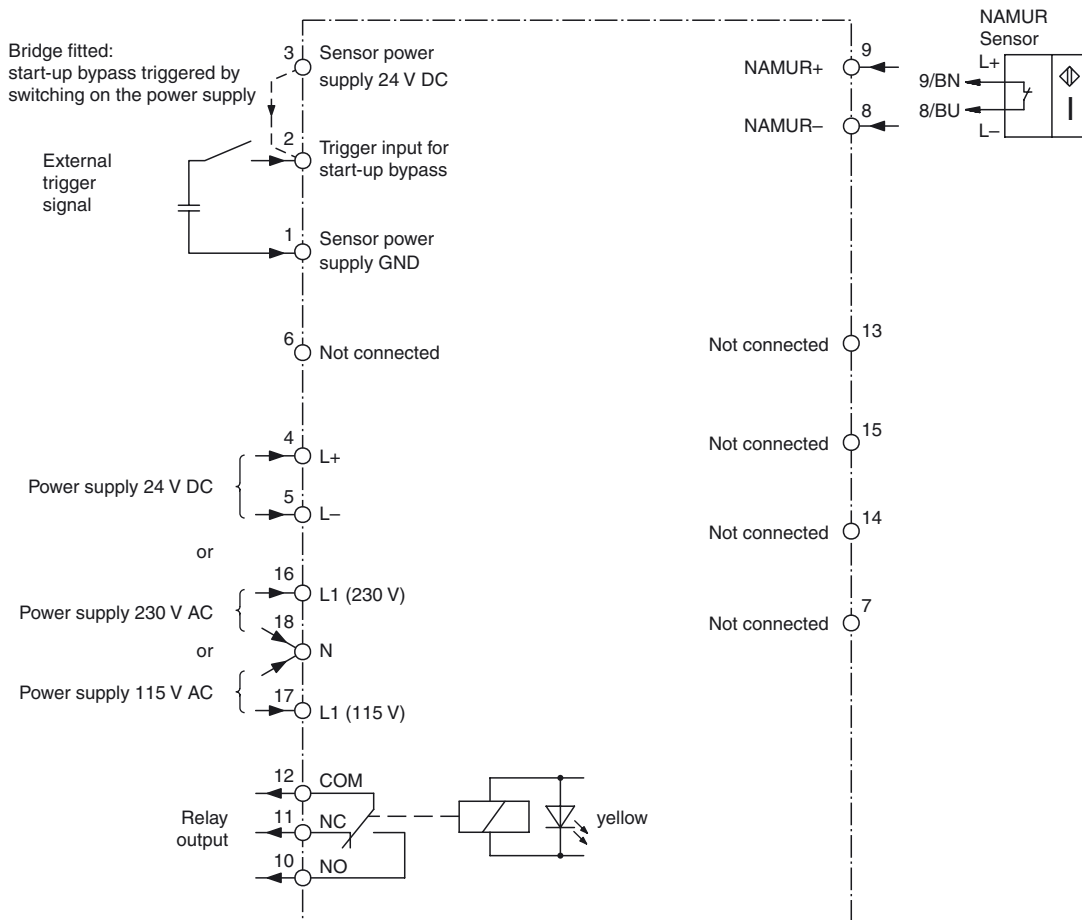
Dimensions



Indicators/operating means



Electrical connection



Release date: 2016-11-25 08:28 Date of issue: 2016-12-05 209869_eng.xml

Refer to "General Notes Relating to Pepperl+Fuchs Product Information".

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■ Products / Produkte

Product / Produkt	Item number	Description / Beschreibung
KFU8-FSSP-1.D	181191	Frequency voltage current converter
KFU8-FSSP-1.D-Y180599	180599	Frequency voltage current converter
KFU8-DW-1.D	190149	Overspeed/underspeed Monitor
KFU8-DW-1.D-Y209869	209869	Overspeed/underspeed Monitor

■ Directives and Standards / Richtlinien und Normen

EU-Directive EU-Richtlinie	Standards Normen
2014/30/EU (EMC) (L96/79-106)	EN 61326-1:2013
2014/35/EU (LV) (L96/357-374)	EN 61010-1:2010

■ Affixed CE Marking / Angebrachte CE-Kennzeichnung



■ Signatures / Unterschriften

Mannheim, 2016-12-01

ppa. Thomas Sebastiany

ppa. Dr. Thomas Sebastiany
Director Business Unit SYSTEMS

i.V. Erwin Schmidt

i.V. Erwin Schmidt
Product Manager

14.8 Amplificador conmutador de separación KFD2-SOT2-Ex2

Instrucciones de servicio	Pepperl+Fuchs
Datos técnicos	Pepperl+Fuchs
Declaración de conformidad	Pepperl+Fuchs

Instruction Manual

Marking

K-System, Isolated barriers for Zone 2
Device identification
Model number
ATEX approval
Group, category, type of protection, temperature classification

table 1

The exact designation of the device can be found on the name plate on the device side.

Pepperl+Fuchs GmbH Lilienthalstrasse 200, 68307 Mannheim, Germany

table 2

Target Group, Personnel

Responsibility for planning, assembly, commissioning, operation, maintenance, and dismantling lies with the plant operator. Mounting, installation, commissioning, operation, maintenance and dismantling of the device may only be carried out by appropriate trained and qualified personnel. The instruction manual must be read and understood.

Prior to using the device you should make yourself familiar with the device and carefully read the instruction manual.

Reference to Further Documentation

Observe laws, standards, and directives applicable to the intended use and the operating location.

The corresponding datasheets, declarations of conformity, EC-type-examination certificates, certificates and control drawings if applicable supplement this document. You can find this information under www.pepperl-fuchs.com.

Intended Use

The device is only approved for appropriate and intended use. Ignoring these instructions will void any warranty and absolve the manufacturer from any liability.

The device is used in control and instrumentation technology (C&I technology) for the galvanic isolation of signals such as 20 mA and 10 V standard signals or alternatively for adapting or standardizing signals. The device has intrinsically safe circuits that are used for operating intrinsically safe field devices in hazardous areas.

Use the device only within the specified ambient conditions. The device is designed for mounting on a 35 mm DIN mounting rail according to EN 60715.

Only use the device stationary.

The device is an associated apparatus according to IEC/EN 60079-11.

The device is an electrical apparatus for hazardous areas of Zone 2.

Improper Use

Protection of the personnel and the plant is not ensured if the device is not being used according to its intended use.

The device is not suitable for isolating signals in power installations unless this is noted separately in the corresponding datasheet.

Mounting and Installation

Do not mount a damaged or polluted device.

Mount the device in a way that the device is protected against mechanical hazard. Mount the device in a surrounding enclosure for example.

Do not mount the device in the dust hazardous area.

The device fulfills a degree of protection IP20 according to IEC/EN 60529.

The device must be installed and operated only in an environment that ensures a pollution degree 2 (or better) according to IEC/EN 60664-1.

If used in areas with higher pollution degree, the device needs to be protected accordingly.

All circuits connected to the device must comply with the overvoltage category II (or better) according to IEC/EN 60664-1.

Only use power supplies that provide protection against electric shock (e. g. SELV or PELV) for the connection to power feed modules.

Observe the installation instructions according to IEC/EN 60079-14.

Requirements for Cables and Connection Lines

Observe the following points when installing cables and connection lines:

Observe the permissible core cross-section of the conductor.

If you use stranded conductors, crimp wire end ferrules on the conductor ends.

Use only one conductor per terminal.

When installing the conductors the insulation must reach up to the terminal.

Observe the tightening torque of the terminal screws.

If the rated voltage is greater than 50 V AC, proceed as follows:

1. Switch off the voltage.

2. Connect the terminal blocks or disconnect the terminal blocks.

Requirements for Usage as Associated Apparatus

If circuits with type of protection Ex i are operated with non-intrinsically safe circuits, they must no longer be used as circuits with type of protection Ex i.

Intrinsically safe circuits of associated apparatus can be led into hazardous areas. Observe the compliance of the separation distances to all non-intrinsically safe circuits according to IEC/EN 60079-14.

Observe the compliance of the separation distances between two adjacent intrinsically safe circuits according to IEC/EN 60079-14.

Observe the maximum values of the device, when connecting the device to intrinsically safe apparatus.

When connecting intrinsically safe devices with intrinsically safe circuits of associated apparatus, observe the maximum peak values with regard to explosion protection (verification of intrinsic safety). Observe the standards IEC/EN 60079-14 or IEC/EN 60079-25.

If no L_o and C_o values are specified for the simultaneous appearance of lumped inductances and capacitances, the following rule applies.

- The specified value for L_o and C_o is used if one of the following conditions applies:
 - The circuit has distributed inductances and capacitances only, e. g., in cables and connection lines.
 - The total value of L_i (excluding cable) of the circuit is $< 1\%$ of the specified L_o value.
 - The total value of C_i (excluding cable) of the circuit is $< 1\%$ of the specified C_o value.
- A maximum of 50 % of the specified value for L_o and C_o is used if the following condition applies:
 - The total value of L_i (excluding cable) of the circuit is $\geq 1\%$ of the specified L_o value.
 - The total value of C_i (excluding cable) of the circuit is $\geq 1\%$ of the specified C_o value.
 - The reduced capacitance for gas groups I, IIA and IIB must not exceed the value of 1 μF (including cable).
 - The reduced capacitance for gas group IIC must not exceed the value of 600 nF (including cable).

If more channels of one device are connected in parallel, ensure the parallel connection is made directly at the terminals of the device. When verifying the intrinsic safety, observe the maximum values for the parallel connection.

Requirements for Equipment Protection Level Gc

The device must be installed and operated only in surrounding enclosures that

- comply with the requirements for surrounding enclosures according to IEC/EN 60079-0,
- are rated with the degree of protection IP54 according to IEC/EN 60529.

Connection or disconnection of energized non-intrinsically safe circuits is only permitted in the absence of a potentially explosive atmosphere.

Provide a transient protection. Ensure that the peak value of the transient protection does not exceed 140 % of the rated voltage.

Place warning label "Warning – Do not remove or replace fuse when energized!" visibly on the housing.

Operation, Maintenance, Repair

The devices must not be repaired, changed or manipulated. If there is a defect, the product must always be replaced with an original device.

If the rated voltage is greater than 50 V AC, proceed as follows:

1. Switch off the voltage.
2. Connect the terminal blocks or disconnect the terminal blocks.

Requirements for Equipment Protection Level Gc

Connection or disconnection of energized non-intrinsically safe circuits is only permitted in the absence of a potentially explosive atmosphere.

Only use operating elements in the absence of a potentially explosive atmosphere.

Only use the programming socket in the absence of a potentially explosive atmosphere.

Only change the replaceable fuse, when the device is de-energized.

Delivery, Transport, Disposal

Check the packaging and contents for damage.

Check if you have received every item and if the items received are the ones you ordered.

Always store and transport the device in the original packaging.

Store the device in a clean and dry environment. The permitted ambient conditions (see datasheet) must be considered.

Disposing of device, packaging, and possibly contained batteries must be in compliance with the applicable laws and guidelines of the respective country.

Features

- 2-channel isolated barrier
- 24 V DC supply (Power Rail)
- Dry contact or NAMUR inputs
- Passive transistor output, non-polarized
- Line fault detection (LFD)
- Reversible mode of operation
- Up to SIL 2 acc. to IEC 61508

Function

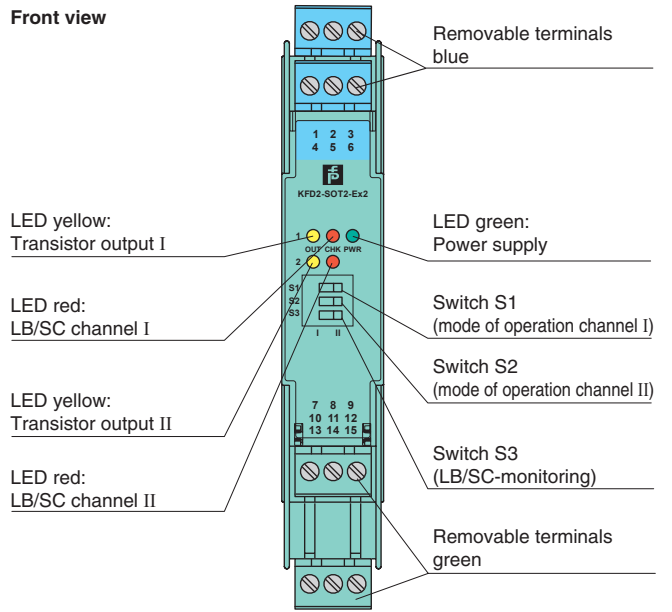
This isolated barrier is used for intrinsic safety applications. It transfers digital signals (NAMUR sensors/mechanical contacts) from a hazardous area to a safe area.

Each proximity sensor or switch controls a passive transistor output for the safe area load. The normal output state can be reversed using switch S1 for channel I and switch S2 for channel II. Switch S3 enables or disables line fault detection of the field circuit.

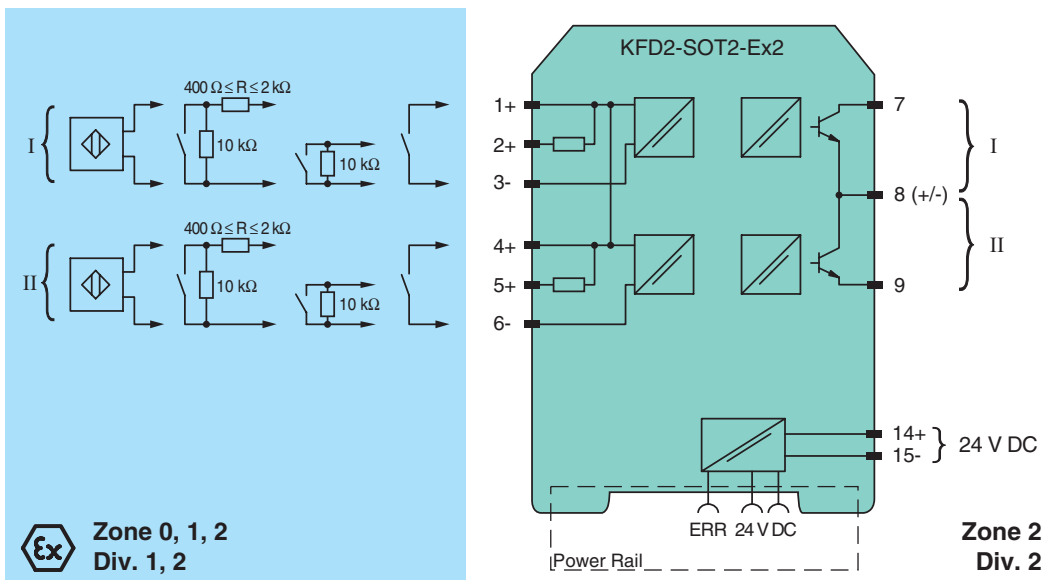
During an error condition, the transistors revert to their de-energized state and LEDs indicate the fault according to NAMUR NE44.

A unique collective error messaging feature is available when used with the Power Rail system.

Assembly



Connection



Release date 2016-05-15 23:28 Date of issue 2016-05-16 18:005_eng.xml

Refer to "General Notes Relating to Pepperl+Fuchs Product Information".

General specifications		
Signal type		Digital Input
Supply		
Connection		Power Rail or terminals 14+, 15-
Rated voltage	U_n	20 ... 30 V DC
Ripple		≤ 10 %
Rated current	I_n	≤ 50 mA
Input		
Connection		terminals 1+, 2+, 3-; 4+, 5+, 6-
Rated values		acc. to EN 60947-5-6 (NAMUR), see system description for electrical data
Open circuit voltage/short-circuit current		approx. 8 V DC / approx. 8 mA
Switching point/switching hysteresis		1.2 ... 2.1 mA / approx. 0.2 mA
Line fault detection		breakage $I \leq 0.1$ mA , short-circuit $I > 6$ mA
Output		
Connection		output I: terminals 7, 8 ; output II: terminals 8, 9
Switching voltage		≤ 30 V
Switching current		≤ 100 mA , short-circuit protected
Signal level		1-signal: switching voltage - 2.5 V max. at 10 mA switching current or 3 V max. at 100 mA switching current 0-signal: switched off (off-state current ≤ 10 μA)
Output I, II		signal ; electronic output, passive
Collective error message		Power Rail
Transfer characteristics		
Switching frequency		≤ 5 kHz
Electrical isolation		
Input/Output		reinforced insulation acc. to IEC 62103, rated insulation voltage 300 V_{rms}
Input/power supply		reinforced insulation acc. to IEC 62103, rated insulation voltage 300 V_{rms}
Output/power supply		basic insulation according to IEC 62103, rated insulation voltage 50 V_{eff}
Input/input		not available
Output/Output		not available
Directive conformity		
Electromagnetic compatibility		
Directive 2014/30/EU		EN 61326-1:2013 (industrial locations)
Conformity		
Electrical isolation		IEC 62103:2003
Electromagnetic compatibility		NE 21:2004
Degree of protection		IEC 60529:2001
Input		EN 60947-5-6:2000
Ambient conditions		
Ambient temperature		-20 ... 60 °C (-4 ... 140 °F)
Mechanical specifications		
Degree of protection		IP20
Mass		approx. 150 g
Dimensions		20 x 119 x 115 mm (0.8 x 4.7 x 4.5 in) , housing type B2
Mounting		on 35 mm DIN mounting rail acc. to EN 60715:2001
Data for application in connection with Ex-areas		
EC-Type Examination Certificate		PTB 00 ATEX 2035
Group, category, type of protection		Ex II (1) G [Ex ia] IIC Ex II (1) D [Ex ia] IIIC
Input		Ex ia IIC, Ex ia IIIC
Voltage	U_o	10.5 V
Current	I_o	13 mA
Power	P_o	34 mW (linear characteristic)
Supply		
Maximum safe voltage	U_m	40 V DC (Attention! The rated voltage can be lower.)
Output		
Maximum safe voltage	U_m	40 V DC (Attention! The rated voltage can be lower.)
EC-Type Examination Certificate		DMT 01 ATEX E 133
Group, category, type of protection		Ex I (M1) [Ex ia] I
Statement of conformity		TÜV 99 ATEX 1499 X
Group, category, type of protection, temperature class		Ex II 3G Ex nA II T4
Electrical isolation		
Input/Output		safe electrical isolation acc. to IEC/EN 60079-11, voltage peak value 375 V
Input/power supply		safe electrical isolation acc. to IEC/EN 60079-11, voltage peak value 375 V

Release date 2016-05-15 23:28 Date of issue 2016-05-16 18:005_eng.xml

Refer to "General Notes Relating to Pepperl+Fuchs Product Information".

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Directive conformity	
Directive 2014/34/EU	EN 60079-0:2012+A11:2013 , EN 60079-11:2012 , EN 60079-15:2010 , EN 50303:2000
International approvals	
FM approval	
Control drawing	116-0035
CSA approval	
Control drawing	116-0047
IECEx approval	
Approved for	[Ex ia] IIC , [Ex ia] I , [Ex ia] IIIC
General information	
Supplementary information	EC-Type Examination Certificate, Statement of Conformity, Declaration of Conformity, Attestation of Conformity and instructions have to be observed where applicable. For information see www.pepperl-fuchs.com .

Release date 2016-05-15 23:28 Date of issue 2016-05-16 181005_eng.xml

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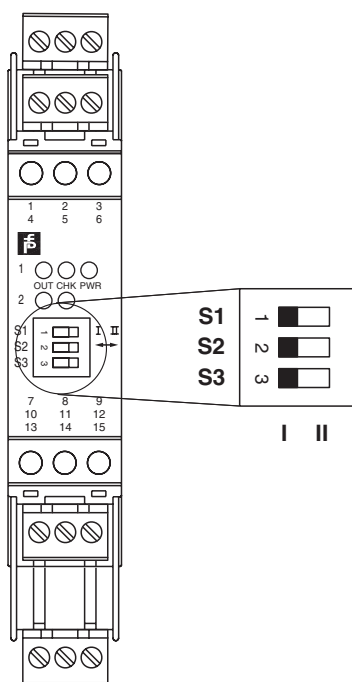
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Configuration



Switch position

S	Function		Position
1	Mode of operation Output I active	with high input current	I
		with low input current	II
2	Mode of operation Output II active	with high input current	I
		with low input current	II
3	Line fault detection	ON	I
		OFF	II

Operating status

Control circuit	Input signal
Initiator high impedance/ contact opened	low input current
Initiator low impedance/ contact closed	high input current
Lead breakage, lead short-circuit	Line fault

Factory settings: switch 1, 2 and 3 in position I

Accessories

Power feed module KFD2-EB2

The power feed module is used to supply the devices with 24 V DC via the Power Rail. The fuse-protected power feed module can supply up to 150 individual devices depending on the power consumption of the devices. Collective error messages received from the Power Rail activate a galvanically-isolated mechanical contact.

Power Rail UPR-03

The Power Rail UPR-03 is a complete unit consisting of the electrical insert and an aluminium profile rail 35 mm x 15 mm. To make electrical contact, the devices are simply engaged.

Profile Rail K-DUCT with Power Rail

The profile rail K-DUCT is an aluminum profile rail with Power Rail insert and two integral cable ducts for system and field cables. Due to this assembly no additional cable guides are necessary.



Power Rail and Profile Rail must not be fed via the device terminals of the individual devices!

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No. / Nr.: DOC-0030B
Date / Datum: 2016-04-06

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Products / Produkte

Product / Produkt	Item number	Description / Beschreibung
KFD2-SOT2-Ex1.LB	181002	Switch Amplifier
KFD2-SOT2-Ex1.LB.IO	181004	Switch Amplifier
KFD2-SOT2-Ex1.N	195092	Switch Amplifier
KFD2-SOT2-Ex1.R1	238071	Switch Amplifier
KFD2-SOT2-Ex2	181005	Switch Amplifier
KFD2-SOT2-Ex2.IO	181007	Switch Amplifier
KFD2-SOT2-Ex2.IO-Y181008	181008	Switch Amplifier
KFD2-ST2-Ex1.LB	180997	Switch Amplifier
KFD2-ST2-Ex2	181000	Switch Amplifier

Directives and Standards / Richtlinien und Normen

EU-Directive EU-Richtlinie	Standards Normen
2004/108/EC (EMC) valid until 2016-04-19 (L390/24-37) 2014/30/EU (EMC) valid from 2016-04-20 (L96/79-106)	EN 61326-1:2013 (industrial locations)
94/9/EC (ATEX) valid until 2016-04-19 (L100/1-29) 2014/34/EU (ATEX) valid from 2016-04-20 (L96/309-356)	EN 60079-0:2012+A11:2013 EN 60079-11:2012 EN 60079-15:2010 EN 50303:2000

Affixed CE Marking / Angebrachte CE-Kennzeichnung



Signatures / Unterschriften

Mannheim, 2016-04-06

ppa Michael Kessler
Vice President Business Unit
Components and Technology

i.V. Friedrich Fuß
Product Portfolio Manager
Product Group Interface

ANNEX ATEX

Notified Body QM-System / Notifizierte Stelle des QM-Systems:

Physikalisch Technische Bundesanstalt (0102)
Bundesallee 100
38116 Braunschweig
Germany

We, Pepperl+Fuchs GmbH declare that the products are only affected by minor or formal changes in respect to the new edition of the standards. These changes are not relevant for compliance with the EHSRs and consequently the products still comply with the ATEX Directive.

Die Pepperl+Fuchs GmbH erklärt hiermit, dass die Produkte nur von kleineren oder formalen Änderungen in Bezug auf die neue Ausgabe der Normen betroffen sind. Diese Änderungen sind nicht relevant für die Konformität mit den EHSRs, weshalb die Produkte nach wie vor die ATEX-Richtlinie erfüllen.

The EC-Type-Examination Certificate PTB 00 ATEX 2035 was performed in accordance with the following standards:

Die EG-Baumusterprüfbescheinigung PTB 00 ATEX 2035 wurde nach den folgenden Normen durchgeführt:

EN 60079-0:2009
EN 60079-11:2007
EN 61241-11:2006

The EC-Type-Examination Certificate DMT 01 ATEX E 133 was performed in accordance with the following standards:

Die EG-Baumusterprüfbescheinigung DMT 01 ATEX E 133 wurde nach den folgenden Normen durchgeführt:

EN 60079-0:2009
EN 60079-11:2007
EN 50303:2000

The Type-Examination TÜV 99 ATEX 1499 X and the marking as category 3 G equipment was performed in accordance with the following standards:

Die Baumusterprüfung TÜV 99 ATEX 1499 X und die Kennzeichnung als Kategorie 3 G Betriebsmittel wurden nach den folgenden Normen durchgeführt:

EN 60079-0:2006
EN 60079-15:2005

Marking and Certificates / Kennzeichnung und Zertifikate

Products / Produkte	Certificate Zertifikat		Issuer ID Aussteller ID
KFD2-SOT2-Ex1.LB KFD2-SOT2-Ex1.LB.IO KFD2-SOT2-Ex2 KFD2-SOT2-Ex2.IO KFD2-SOT2-Ex2.IO-Y181008	PTB 00 ATEX 2035		0102
Marking Kennzeichnung	DMT 01 ATEX E 133		0158
Ⓔ II (1) G Ⓔ II (1) D	TÜV 99 ATEX 1499 X		TÜV

Products / Produkte	KFD2-SOT2-Ex1.N KFD2-SOT2-Ex1.R1	
Marking Kennzeichnung	Certificate Zertifikat	Issuer ID Aussteller ID
⊕ II (1) G ⊕ II (1) D	PTB 00 ATEX 2035	0102
⊕ I (M1)	DMT 01 ATEX E 133	0158
⊕ II 3 G	PF11CERT1046X	PF

Products / Produkte	KFD2-ST2-Ex1.LB KFD2-ST2-Ex2	
Marking Kennzeichnung	Certificate Zertifikat	Issuer ID Aussteller ID
⊕ II (1) G ⊕ II (1) D	PTB 00 ATEX 2035	0102
⊕ II 3 G	TÜV 99 ATEX 1499 X	TÜV

Key for Issuer ID / Schlüssel zur Aussteller ID

ID	Issuer / Aussteller
0102	Physikalisch Technische Bundesanstalt Bundesallee 100 38116 Braunschweig Germany
0158	DEKRA EXAM GmbH Dinnendahlstrasse 9 44809 Bochum Germany
TÜV	TÜV NORD CERT GmbH Langemarckstraße 20 45141 Essen Germany
PF	Pepperl + Fuchs GmbH Lilienthalstraße 200 68307 Mannheim Germany

14.9 Amplificador conmutador de separación KFA6-SOT2-Ex2

Instrucciones de servicio	Pepperl+Fuchs
Datos técnicos	Pepperl+Fuchs
Declaración de conformidad	Pepperl+Fuchs

Instruction Manual

Marking

K-System, Isolated barriers
Device identification
Model number
ATEX approval
Group, category, type of protection, temperature classification

table 1

The exact designation of the device can be found on the name plate on the device side.

Pepperl+Fuchs GmbH Lilienthalstrasse 200, 68307 Mannheim, Germany

table 2

Target Group, Personnel

Responsibility for planning, assembly, commissioning, operation, maintenance, and dismantling lies with the plant operator. Mounting, installation, commissioning, operation, maintenance and dismantling of the device may only be carried out by appropriate trained and qualified personnel. The instruction manual must be read and understood.

Prior to using the device you should make yourself familiar with the device and carefully read the instruction manual.

Reference to Further Documentation

Observe laws, standards, and directives applicable to the intended use and the operating location.

The corresponding datasheets, declarations of conformity, EC-type-examination certificates, certificates and control drawings if applicable supplement this document. You can find this information under www.pepperl-fuchs.com.

Intended Use

The device is only approved for appropriate and intended use. Ignoring these instructions will void any warranty and absolve the manufacturer from any liability.

The device is used in control and instrumentation technology (C&I technology) for the galvanic isolation of signals such as 20 mA and 10 V standard signals or alternatively for adapting or standardizing signals. The device has intrinsically safe circuits that are used for operating intrinsically safe field devices in hazardous areas.

Use the device only within the specified ambient conditions.

The device is designed for mounting on a 35 mm DIN mounting rail according to EN 60715.

Only use the device stationary.

The device is an associated apparatus according to IEC/EN 60079-11.

Improper Use

Protection of the personnel and the plant is not ensured if the device is not being used according to its intended use.

The device is not suitable for isolating signals in power installations unless this is noted separately in the corresponding datasheet.

Mounting and Installation

Do not mount a damaged or polluted device.

Mount the device in a way that the device is protected against mechanical hazard. Mount the device in a surrounding enclosure for example.

The device must be installed outside of the hazardous area.

The device fulfills a degree of protection IP20 according to IEC/EN 60529.

The device must be installed and operated only in an environment that ensures a pollution degree 2 (or better) according to IEC/EN 60664-1.

If used in areas with higher pollution degree, the device needs to be protected accordingly.

All circuits connected to the device must comply with the overvoltage category II (or better) according to IEC/EN 60664-1.

Only use power supplies that provide protection against electric shock (e. g. SELV or PELV) for the connection to power feed modules.

Observe the installation instructions according to IEC/EN 60079-14.

Requirements for Cables and Connection Lines

Observe the following points when installing cables and connection lines: Observe the permissible core cross-section of the conductor.

If you use stranded conductors, crimp wire end ferrules on the conductor ends.

Use only one conductor per terminal.

When installing the conductors the insulation must reach up to the terminal.

Observe the tightening torque of the terminal screws.

If the rated voltage is greater than 50 V AC, proceed as follows:

1. Switch off the voltage.
2. Connect the terminal blocks or disconnect the terminal blocks.

Requirements for Usage as Associated Apparatus

If circuits with type of protection Ex i are operated with non-intrinsically safe circuits, they must no longer be used as circuits with type of protection Ex i.

Intrinsically safe circuits of associated apparatus can be led into hazardous areas. Observe the compliance of the separation distances to all non-intrinsically safe circuits according to IEC/EN 60079-14.

Observe the compliance of the separation distances between two adjacent intrinsically safe circuits according to IEC/EN 60079-14.

Observe the maximum values of the device, when connecting the device to intrinsically safe apparatus.

When connecting intrinsically safe devices with intrinsically safe circuits of associated apparatus, observe the maximum peak values with regard to

explosion protection (verification of intrinsic safety). Observe the standards IEC/EN 60079-14 or IEC/EN 60079-25.

If no L_o and C_o values are specified for the simultaneous appearance of lumped inductances and capacitances, the following rule applies.

- The specified value for L_o and C_o is used if one of the following conditions applies:
 - The circuit has distributed inductances and capacitances only, e. g., in cables and connection lines.
 - The total value of L_i (excluding cable) of the circuit is $< 1\%$ of the specified L_o value.
 - The total value of C_i (excluding cable) of the circuit is $< 1\%$ of the specified C_o value.
- A maximum of 50 % of the specified value for L_o and C_o is used if the following condition applies:
 - The total value of L_i (excluding cable) of the circuit is $\geq 1\%$ of the specified L_o value.
 - The total value of C_i (excluding cable) of the circuit is $\geq 1\%$ of the specified C_o value.
 - The reduced capacitance for gas groups I, IIA and IIB must not exceed the value of 1 μF (including cable).
 - The reduced capacitance for gas group IIC must not exceed the value of 600 nF (including cable).

If more channels of one device are connected in parallel, ensure the parallel connection is made directly at the terminals of the device. When verifying the intrinsic safety, observe the maximum values for the parallel connection.

Operation, Maintenance, Repair

The devices must not be repaired, changed or manipulated. If there is a defect, the product must always be replaced with an original device.

If the rated voltage is greater than 50 V AC, proceed as follows:

1. Switch off the voltage.
2. Connect the terminal blocks or disconnect the terminal blocks.

Delivery, Transport, Disposal

Check the packaging and contents for damage.

Check if you have received every item and if the items received are the ones you ordered.

Always store and transport the device in the original packaging.

Store the device in a clean and dry environment. The permitted ambient conditions (see datasheet) must be considered.

Disposing of device, packaging, and possibly contained batteries must be in compliance with the applicable laws and guidelines of the respective country.

Features

- 2-channel isolated barrier
- 230 V AC supply
- Dry contact or NAMUR inputs
- Passive transistor output, non-polarized
- Line fault detection (LFD)
- Reversible mode of operation
- Up to SIL 2 acc. to IEC 61508

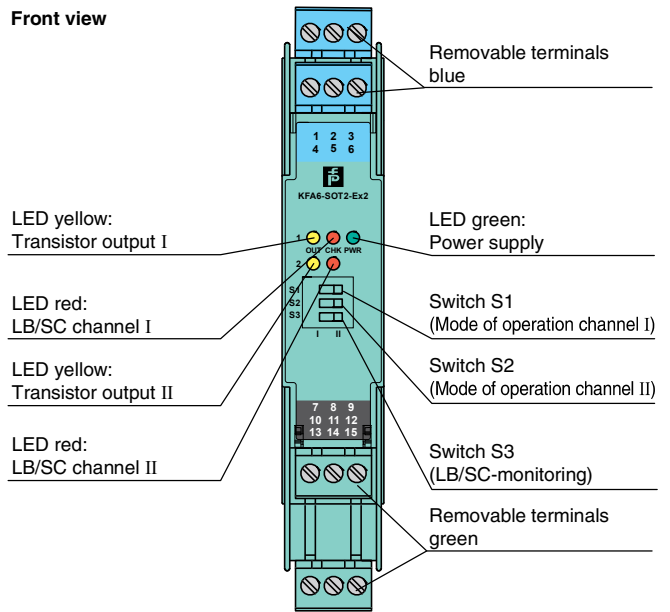
Function

This isolated barrier is used for intrinsic safety applications. It transfers digital signals (NAMUR sensors/mechanical contacts) from a hazardous area to a safe area.

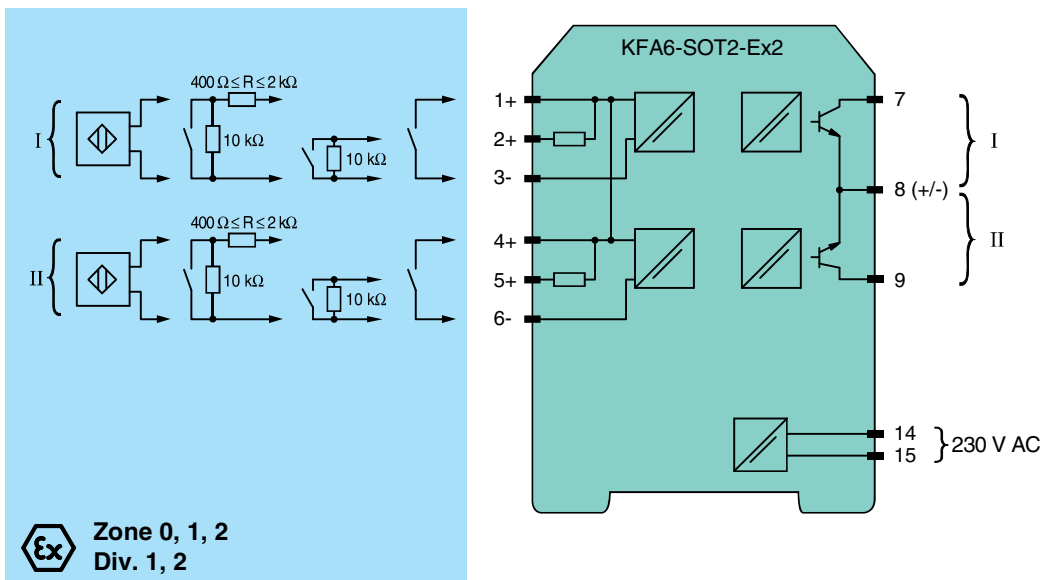
Each proximity sensor or switch controls a passive transistor output for the safe area load. The normal output state can be reversed using switch S1 for channel I and switch S2 for channel II. Switch S3 enables or disables line fault detection of the field circuit.

During an error condition, the transistors revert to their de-energized state and LEDs indicate the fault according to NAMUR NE44.

Assembly



Connection



Release date 2016-11-07 17:03 Date of issue 2016-11-07 233753_eng.xml

Refer to "General Notes Relating to Pepperl+Fuchs Product Information".

General specifications		
Signal type		Digital Input
Supply		
Connection		terminals 14, 15
Rated voltage	U_r	207 ... 253 V AC
Power dissipation		1 W
Power consumption		≤ 1.5 W
Input		
Connection		terminals 1+, 2+, 3-; 4+, 5+, 6-
Rated values		acc. to EN 60947-5-6 (NAMUR), see system description for electrical data
Open circuit voltage/short-circuit current		approx. 8 V DC / approx. 8 mA
Switching point/switching hysteresis		1.2 ... 2.1 mA / approx. 0.2 mA
Line fault detection		breakage $I \leq 0.1$ mA , short-circuit $I > 6$ mA
Output		
Connection		output I: terminals 7, 8 ; output II: terminals 8, 9
Switching voltage		≤ 40 V
Switching current		≤ 100 mA , short-circuit protected
Signal level		1-signal: switching voltage - 2.5 V max. at 10 mA switching current or 3 V max. at 100 mA switching current 0-signal: switched off (off-state current ≤ 10 μA)
Output I, II		signal ; electronic output, passive
Transfer characteristics		
Switching frequency		≤ 5 kHz
Galvanic isolation		
Output/power supply		reinforced insulation acc. to EN 50178, rated insulation voltage 300 V _{eff}
Output/Output		not available
Directive conformity		
Electromagnetic compatibility		
Directive 2014/30/EU		EN 61326-1:2013 (industrial locations)
Low voltage		
Directive 2014/35/EU		EN 61010-1:2010
Conformity		
Electromagnetic compatibility		NE 21
Degree of protection		IEC 60529
Protection against electrical shock		IEC 61140
Ambient conditions		
Ambient temperature		-20 ... 60 °C (-4 ... 140 °F)
Mechanical specifications		
Degree of protection		IP20
Mass		approx. 150 g
Dimensions		20 x 119 x 115 mm (0.8 x 4.7 x 4.5 inch) , housing type B2
Mounting		on 35 mm DIN mounting rail acc. to EN 60715:2001
Data for application in connection with hazardous areas		
EC-Type Examination Certificate		PTB 98 ATEX 2164
Group, category, type of protection		II (1) G [Ex ia] IIC II (1) D [Ex ia] IIIC
Input		Ex ia IIC, Ex ia IIIC
Voltage	U_o	10.5 V
Current	I_o	13 mA
Power	P_o	34 mW (linear characteristic)
Supply		
Maximum safe voltage	U_m	253 V AC (Attention! U_m is no rated voltage.)
Output		
Maximum safe voltage	U_m	253 V AC (Attention! The rated voltage can be lower.)
Galvanic isolation		
Input/input		not available
Input/Output		safe electrical isolation acc. to IEC/EN 60079-11, voltage peak value 375 V
Input/power supply		safe electrical isolation acc. to IEC/EN 60079-11, voltage peak value 375 V
Directive conformity		
Directive 2014/34/EU		EN 60079-0:2012+A11:2013 , EN 60079-11:2012
International approvals		
UL approval		
Control drawing		116-0145
CSA approval		
Control drawing		116-0047

Release date 2016-11-07 17:03 Date of issue 2016-11-07 233753_eng.xml

Refer to "General Notes Relating to Pepperl+Fuchs Product Information".

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General information	
Supplementary information	EC-Type Examination Certificate, Statement of Conformity, Declaration of Conformity, Attestation of Conformity and instructions have to be observed where applicable. For information see www.pepperl-fuchs.com .

Release date 2016-11-07 17:03 Date of issue 2016-11-07 233753_eng.xml

Refer to "General Notes Relating to Pepperl+Fuchs Product Information".

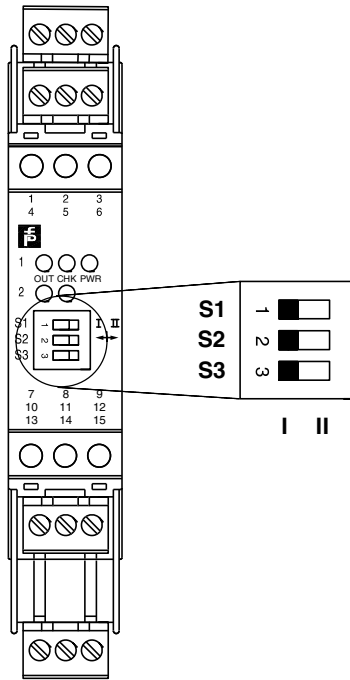
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Configuration



Switch position

S	Function		Position
1	Mode of operation Output I active	with high input current	I
		with low input current	II
2	Mode of operation Output II active	with high input current	I
		with low input current	II
3	Line fault detection	ON	I
		OFF	II

Operating status

Control circuit	Input signal
Initiator high impedance/ contact opened	low input current
Initiator low impedance/ contact closed	high input current
Lead breakage, lead short-circuit	Line fault

Factory settings: switch 1, 2 and 3 in position I

EU-Konformitätserklärung

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No. / Nr.: DOC-0974
Date / Datum: 2016-10-24

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www.pepperl-fuchs.com



Declaration of conformity / Konformitätserklärung

We, Pepperl+Fuchs GmbH declare under our sole responsibility that the **products** listed below are in conformity with the listed **European Directives** and **standards**.

Die Pepperl+Fuchs GmbH erklärt hiermit in alleiniger Verantwortung, dass die unten gelisteten **Produkte** den genannten **Europäischen Richtlinien** und **Normen** entsprechen.

Products / Produkte

Product / Produkt	Item number	Description / Beschreibung
KFA5-SOT2-EX2	233751	Switch amplifier
KFA6-SOT2-EX2	233753	Switch amplifier

Directives and Standards / Richtlinien und Normen

EU-Directive EU-Richtlinie	Standards Normen
ATEX 2014/34/EU (L96/309-356)	EN 60079-0/A11:2013-11 EN 60079-0:2012-08 EN 60079-11:2012-01
EMC 2014/30/EU (L96/79-106)	EN 61326-1:2013-01 (industrial locations)
LVD 2014/35/EU (L96/357-374)	EN 61010-1:2010-10

Affixed CE Marking / Angebrachte CE-Kennzeichnung



Signatures / Unterschriften

Mannheim, 2016-10-24

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Product Portfolio Manager Interface Technology

ANNEX ATEX

Notified Body QM-System / Notifizierte Stelle des QM-Systems
Physikalisch Technische Bundesanstalt (0102)
Bundesallee 100
38116 Braunschweig
Germany

Marking and Certificates / Kennzeichnung und Zertifikate

Marking Kennzeichnung	Certificate Zertifikat	Issuer ID Aussteller ID
Ex II (1) G	PTB 98 ATEX 2164	0102

Key for Issuer ID / Schlüssel zur Aussteller ID

ID	Issuer / Aussteller
0102	Physikalisch Technische Bundesanstalt Bundesallee 100 38116 Braunschweig Germany

Pepperl+Fuchs GmbH declares that the products are only affected by minor or formal changes with respect to the new edition of the standards. These changes are not relevant for compliance with the essential health and safety requirements. The products still comply with the ATEX Directive. This declaration is also valid if the marking and the certificates of the listed devices correspond to previous editions of standards.

Die Pepperl+Fuchs GmbH erklärt hiermit, dass die Produkte nur von kleineren oder formalen Änderungen in Bezug auf die neue Ausgabe der Normen betroffen sind. Diese Änderungen sind nicht relevant für die Konformität mit den wesentlichen Gesundheits- und Sicherheitsanforderungen. Die Produkte erfüllen nach wie vor die ATEX-Richtlinie. Diese Erklärung gilt auch, wenn die Kennzeichnung und die Zertifikate der aufgeführten Geräte vorangegangenen Normenständen entsprechen.

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