Isolating Barrier
for our sensors A5S1… in hazardous areas
Series D461R1

D461R1 Front View

KEY FEATURES

- ATEX/IECEx certified
- Protection grade Ex ia IIC
- Establishes a highly efficient system to detect speed (and direction) in a hazardous area, in conjunction with one of our sensors series A5S1…
- Provides intrinsic safety for the sensor and its cabling
- Comprehends sensor supply and signal connection
- Sensor supply monitoring
- Free-floating, therefore maximum immunity versus EMI
- Push/pull signal output to subsequent monitors

BENEFITS

- Maintenance-free during Lifetime, therefore minimized TCO
- No EMI influence compared to zener barriers
- No signal degradation compared to zener barriers
- Powerful signal output to signal evaluation

Safety first – for intrinsically safe (Ex ia) implementations

The BRAUN Isolating Barrier units D461R1 are ATEX/IECEx certified to meet the particular requirements of explosion protection areas (zone 0 or 1).
The Isolating Barrier establishes a highly efficient system to detect speed and/or direction in a hazardous area, in conjunction with one of our sensors series A5S1…, to supply high-level output signals to the periphery.
The barrier provides an intrinsic safety circuit for the sensor and its cabling and does not require Ex d measures.

The signal input is isolated from the signal output. Both are isolated versus the power supply. The signal output of the unit repeats the input pulse signals with push/pull characteristics.
The signal input matches the specifications of the speed sensor series A5S1…, which are approved as intrinsic safety devices, to be installed in hazardous area zone 0 or 1.
The sensor supply circuit is monitored, and a fault is signalized.

The barrier unit D461R1 must be installed in a safe (non-hazardous) area or within an explosion-proof (Ex d) enclosure.

Specifications of D461R1

Conformity to Standards	**Directives**	**Standards**
	2014/34/EU (ATEX Product Directive)	EN IEC 60079-0, EN IEC 60079-11
	2014/30/EU (Electromagnetic Compatibility Directive)	EN IEC 61000-6-2, EN IEC 61000-6-4
	2014/35/EU (Low Voltage Directive)	EN IEC 61010-1
	2011/65/EU (RoHS Directive)	EN 50581:2012

System Configuration

The barrier D461R1 must be installed in the safe (non-hazardous) area, whereas the sensor A5S1 may be placed wherever it is required within the hazardous area, connected via a standard (screened) cable.
The D461R1 output may be transmitted without restriction to any signal evaluating unit.

Sensor Input

Response level (low < 1.8 V, high > 3.5 V
Input impedance 47k
Input capacitance Ci and inductivity Li are negligible
Sensor supply: 8 V (nominal value)
Approved and certified maximum values
Uo = 8.7 V
Io = 64 mA
Po = 384 mW
Lo = 7.9 mH (IIC)
= 38 mH (IIB)
Co = 5.9 µF (IIC)
= 50 µF (IIB)

Signal Output

Active pulses by push/pull amplifier output.
Min. high level: 18 V
Max. low level: 2 V
Sensor supply failure signal indicated by relay output (NO).

Protection grade provided to the Ex-area

Ex ia IIC, Ta = -20 °C to +50 °C

Installation

The barrier must be installed in a safe (non-hazardeous) area or within an explosion-proof (Ex d) enclosure.

Enclosure

Plastic snap-on-track enclosure for 35 mm rail
Protection grade IP20 (NEMA 1)
Dimensions 22.5 x 99 x 114.5 mm
Weight approx. 0.4 kg

Power Supply

D461R1.xxU1: 18…40 Vuc, power requirements approx. 5 W
D461R1.xxU2: 85…250 Vac, power requirements approx. 5 W

Connectors (Wiring)

Screw mounting, terminal blocks, accepting 0.2…2.5 mm^2 cross section

Operating Conditions

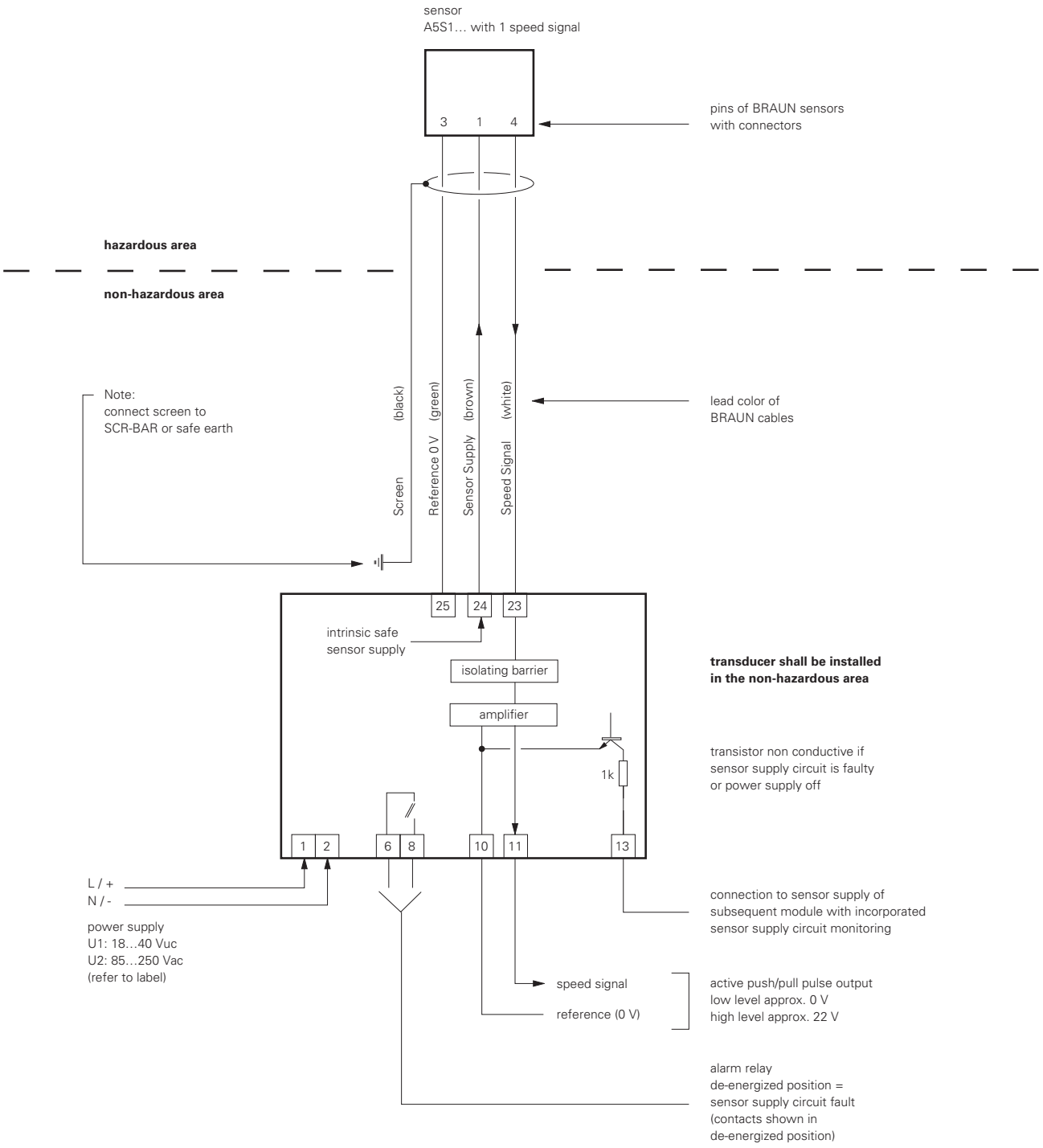
Ambient temperature: -20…50 °C (-4…122 °F)
Relative humidity max. 95%, non-condensing

Available Models

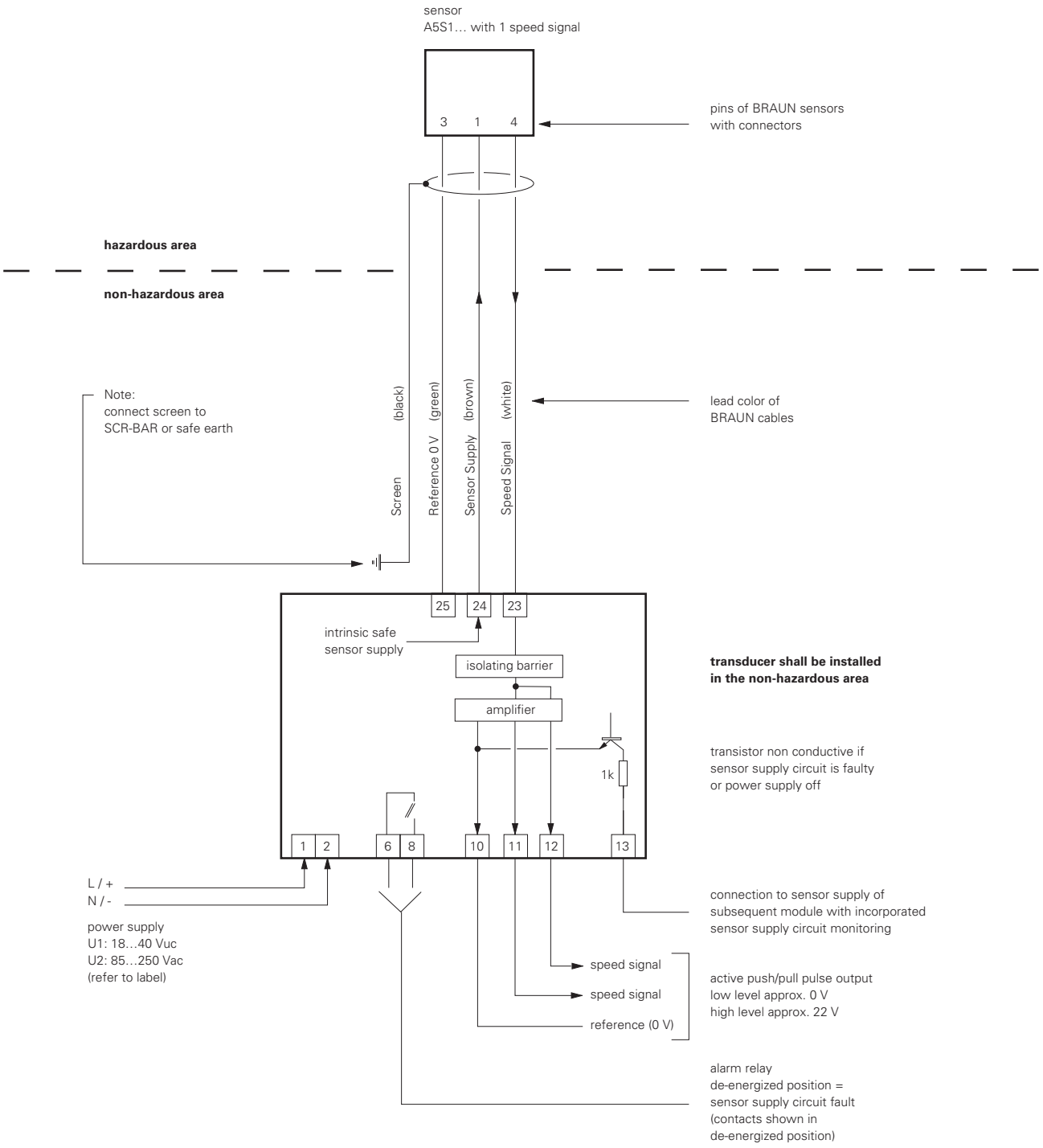
with identical dimensions and input / output specifications

	Power Supply	In	Out	Application
D461R1.11U1 D461R1.11U2	18...40 Vuc 85...250 Vac	1	1	one speed signal
D461R1.12U1 D461R1.12U2	18...40 Vuc 85...250 Vac	1	2	one speed signal with two outputs
D461R1.21U1 D461R1.21U2	18...40 Vuc 85...250 Vac	2	2	one speed and one direction signal or two speed signals

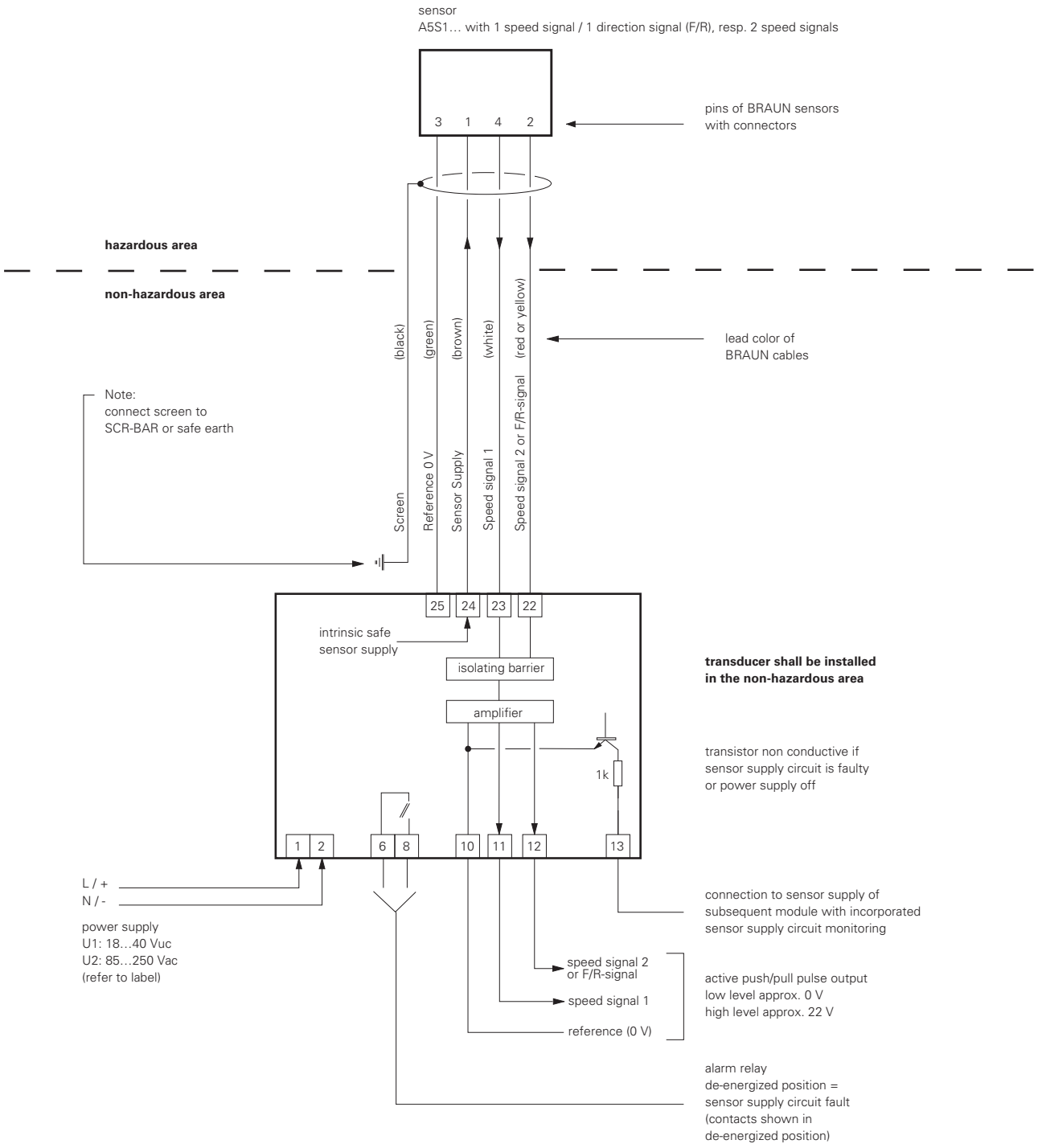
Function Diagram and Terminal Nos of D461R1.11



Function Diagram and Terminal Nos of D461R1.12



Function Diagram and Terminal Nos of D461R1.21



Ordering Key D461R1

D461R1. a b

Channels incorporated
a = 11 : 1x signal input into 1x isolated signal output
a = 12 : 1x signal input into 2x isolated signal output
a = 21 : 2x signal input into 2x isolated signal output

Supply voltage
b = U1 : 18…40 Vuc
b = U2 : 85…250 Vac

Examples:

D461R1.11U2:
with 1 input signal into 1 isolated signal output signal for 85...250 Vac

D461R1.11U1:
with 1 input signal into 1 isolated signal output signal for 18...40 Vuc

D461R1.12U1:
with 1 input signal into 2 isolated signal output signals for 18...40 Vuc

D461R1.21U2:
with 2 input signals into 1 each isolated signal output signal for 85...250 Vac

BRAUN – Speed Monitoring and Protection Systems for Rotating Equipment

BRAUN Industrial Electronics develops, produces and sells an array of "Rotating Equipment" protection systems for use in industrial applications worldwide with the focus on overspeed protection. These systems comply with the highest standards of safety and availability.

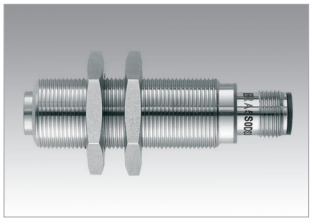
As a globally leading technology provider with over 50 years of experience, BRAUN has been continually meeting and mastering the challenges associated with protecting the facilities of companies within the power generation, oil, gas, and chemical industries. Our protection systems are installed in more than 100 countries around the world and are mainly used in safety-critical applications with rotating parts.

For our OEM customers, BRAUN is both a solution oriented systems provider and a reliable partner.

Our solutions comprise a variety of products for the detection and monitoring of speed and related parameters.

Always matching the requirement. Always the perfect solution for safety and availability.

PROTECTION SYSTEMS



SPEED SENSORS

TACHOMETERS

PORTABLE TACHOMETERS

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BRAUN Speed and Frequency

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