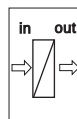
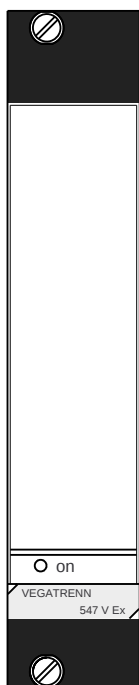


Operating Instruction

VEGATRENN 547 V Ex



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Safety information

The described module must only be installed and operated as described in this operating instruction. Please note that other action can cause damage for which VEGA does not take responsibility.

1 Product description

1.1 Function, configuration and mounting

Function

Ex-separator VEGATRENN 547 V Ex is used for intrinsically safe, galvanically isolated supply of up to two ultrasonic or radar sensors. At the input side it is connected to the two-wire-VBUS-line of the signal conditioning instrument and provides at the output side 2 x 2 ib-circuits. Each sensor is supplied via two ib-circuits so that two sensors can be connected to Ex-separator.

The Ex-separator can be used in conjunction with the following signal conditioning instruments or sensors:

- VEGAMET 514 V and 515 V
- EV-card of VEGALOG 571
- ultrasonic sensors VEGASON series 80
- radar sensors VEGAPULS series 64 and series 80 for intrinsically safe supply "ib".

The intrinsically safe ib-circuits are isolated as well as from the not intrinsically safe circuits.

Configuration

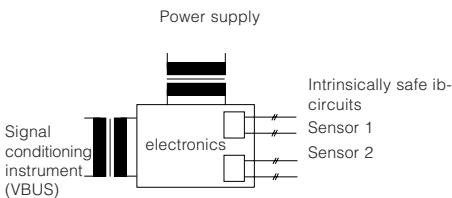


Fig. 1.1: Block diagram of the Ex-separator

Configuration

The Ex-separator VEGATRENN 547 V Ex is designed in 19"-technology with 5 TE (= 25,4 mm). The connection is made via a multiple plug acc. to DIN 41 612.

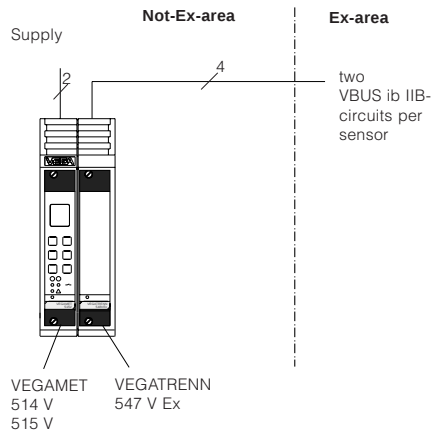
Mounting

There are the following mounting possibilities

- in housing type 506 with VEGAMET
- in carrier BGT 596 Ex with VEGAMET
- carrier BGT LOG 571 *) with VEGALOG

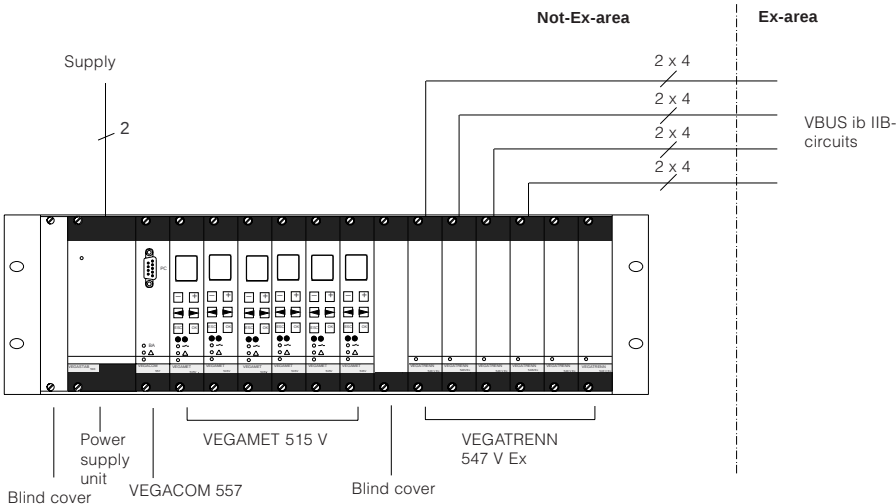
Example 1:

In housing type 506 with VEGAMET

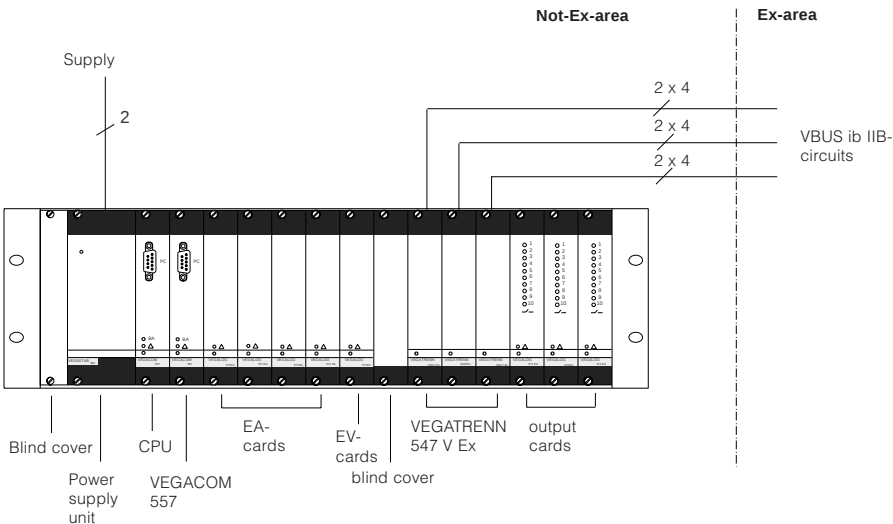


*) If several VEGATRENN 547 V Ex are used, it is recommended to separate them into the cheaper BGT 596 Ex.

Example 2: In BGT 596 Ex M with VEGAMET 515 V



Example 3: In BGT 596 Ex M with VEGALOG



1.2 Technical data

Power supply

Operating voltage	$U_{nom} = 24 \text{ V AC (20 ... 53 V), 50/60 Hz}$ $= 24 \text{ V DC (20 ... 72 V)}$
Power consumption	approx. 13 W, approx. 18 VA
Fuse	1 A, slow-blow

Signal conditioning instrument circuit

For connection to	signal conditioning instrument VEGAMET 514 V, 515 V or EV-card of VEGALOG 571
Input voltage	$U_{nom} = 25 \text{ V DC with VEGAMET}$ $= 24 \text{ V DC with EV-card VEGALOG}$
The signal conditioning instrument circuit must only be connected to instruments with an operating voltage less than 250 V.	

Sensor circuit

Number	2 sensor circuits (both 2 ib-circuits)
Sensors	Ultrasonic sensors VEGASON 83 ... 87 FV/GV Ex or Ex0, radar sensors VEGAPULS 81 F/D Ex or Ex0
Voltage	approx. 17 V DC at 85 mA
Current limitation	electronically at approx. 85 mA, shortcircuit-proof
Connection line per sensor	4-wire (standard line) *)
Resistance per conductor	max. 7,5 Ω
Line length	max. 500 m

Sensor circuits, Ex-technical data



Classification	[EEEx ib] IIB
Max. values (per sensor circuit)	
- voltage	$U_o \leq 20,05 \text{ V}$
- current	$I_o \leq 103 \text{ mA}$
- eff	
iciency	$P_o \leq 2,05 \text{ W}$
Characteristics	linear
Max. permissible outer inductance L_a	0,7 mH
Max. permissible outer capacitance C_a	296 nF
The intrinsically safe sensor current circuits are reliably galvanically isolated from the not intrinsically safe circuits and supply up to a peak value of the nominal voltage of 375 V.	

Indicating elements

LED in front plate	green on: operating voltage on
--------------------	--------------------------------

*) screened cable is recommended for electromagnetic interferences.

Electrical connection

Multiple plug component	acc. to DIN 41 612, series F, 33-pole, 3 rows d, b, z (partly equipped)
In conjunction with	
- carrier	
BGT 596 Ex, BGT LOG 571	connection to appropriate Ex-module
- housing type 506	connection to screw terminals (max. 2,5 mm ²)

Protective measures

Protection	
- not mounted	IP 00
- mounted in BGT 596 Ex or BGT LOG 571	front side (completely equipped): IP 40 upper and lower side: IP 20 wiring side: IP 00
- mounted in housing type 506	front side (completely equipped): IP 40 housing general: IP 30 terminal side: IP 20
Protection class (in housing type 506)	II
Overvoltage category	II

Electrical separating measures

Galvanic separation	between intrinsically safe circuits, against not intrinsically safe circuits as well as against the power supply
- reference voltage	250 V
- isolation resistance	1,5 kV

CE-conformity

The ex-separator VEGATRENN 547 V Ex meets the protective regulations of EMVG (89/336/ EWG) and NSR (73/23/EWG). The conformity has been judged acc. to the following standards:		
EMVG	Emission	EN 50 081-2: 1993
	Susceptibility	EN 50 082-2: 1995
NSR		EN 61 010

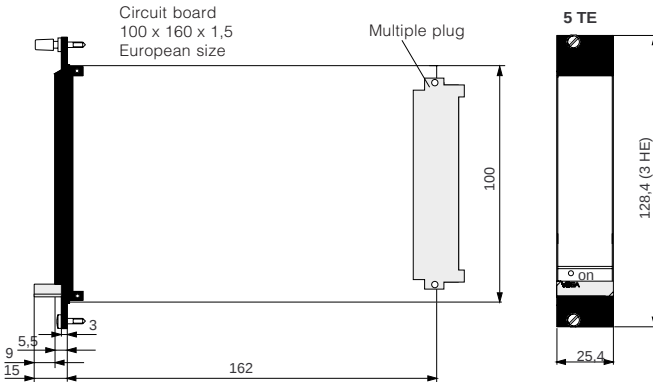
Mechanical data

Series	module unit for 19"-carrier or housing type 506
Dimensions	W = 25,4 mm (5 TE), H = 128,4 mm, D = 162 mm
Weight	approx. 350 g

Ambient conditions

Permissible ambient temperature	-20°C ... +60°C
Storage and transport temperature	-40°C ... +80°C

1.3 Dimensions

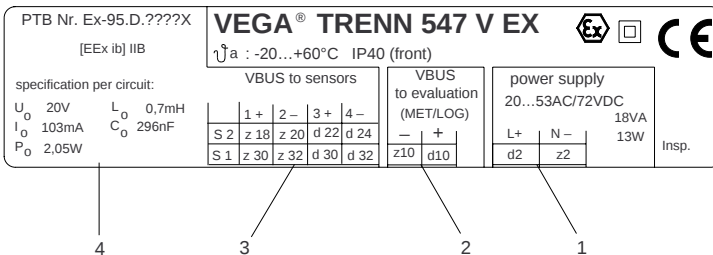


1.4 Approvals

The Ex-separator VEGTRENN 547 V Ex is approved for connection of sensors in hazardous areas. The conformity certificate to CENELEC has PTB-no. Ex-97.D.2098 X.

1.5 Type plate

The type plate contains important data required for connection. The type plate is located laterally on the multiple plug. The configuration and parts of the type plate are described in the following:



2 Mounting

The Ex-separator VEGATRENN 547 V Ex can be mounted as follows:

- in carrier BGT 596 Ex or BGT LOG 571
- in housing type 506

Mounting in carrier

First of all mount the Ex-module into your carrier. The Ex-module consists of a multipoint connector acc. to DIN 41 612, individual coded pins (see coding), a separating chamber as well as guide rails and mounting material.

Wire the connections of the multipoint connector acc. to the wiring plan on the following pages.

The multipoint connector is available as follows:

- Wire-Wrap standard connection 1,0 x 1,0 mm
- Plug connection 2,8 x 0,8 mm
- Termi-Point standard connection 1,6 x 0,8 mm
- Soldering connection
- Screw terminal 2 x 0,5 mm²

Further information concerning mounting is stated in the operating instructions of the carrier.

Mounting in single housing

The housing socket can be either screwed directly to a mounting plate or plugged on a carrier rail (TS 35 x 7,5 acc. to EN 50 022 or TS 32 acc. to EN 50 035). Further information concerning mounting are stated in the operating instructions of the housing. Connect the wires acc. to the wiring plan.

Coding

The multipoint connector of the carrier or the housing must be provided with coded keys to avoid interchanging of the various signal conditioning instruments. The multiple plug of VEGATRENN is provided with the appropriate holes (mechanical coding).

The instrument coding ensures that the various signal conditioning instruments are not interchanged. The appropriate coded pins are attached to each module or housing. Provide the multipoint connector with these coded pins acc. to the following table and figure.

The Ex-coding with fixed coded pins ensures that not-Ex and Ex-instruments are not interchanged.

	Instrument-coding	Ex-coding
VEGATRENN 547 V Ex	a23 / c11	c23

Fig. 2.1 Coding table

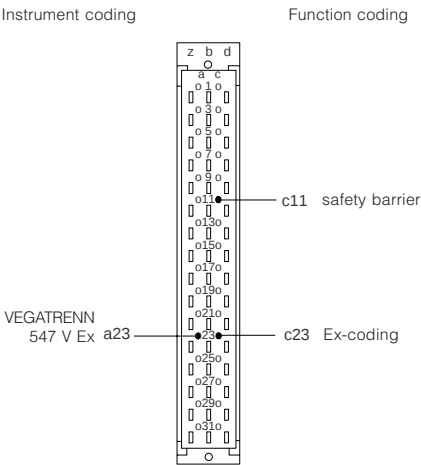


Fig. 2.2 Module coding VEGATRENN

3 Electrical connection

3.1 Installation information

Generally the following instructions must be noted for installation:

Installation place

VEGATRENN 547 V Ex as well as the appropriate signal conditioning instrument must be generally installed outside the hazardous area.

Protection

In Ex-applications protection IP 20 must be maintained. Cover the gaps or free modules from the front with appropriate blind covers.

Ex-separating chamber

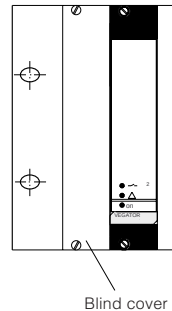
An Ex-separating chamber must be mounted to the connections of VEGATRENN to ensure sufficient "air and creep distances". Loop the cable through the Ex-separating chamber and connect the cables. Fasten the Ex-separating chamber with the lower screw. Note the operating instructions of the carrier BGT 596 Ex.M.

Mounting in carrier

When you mount VEGATRENN in a carrier, you have to use a VEGA-Ex-module. Keep a distance of at least 10 mm (2TE) to module cards of other manufacturers. If you want to mount VEGATRENN in the complete left position in the carrier, a blind cover of at least 20 mm (4 TE) must be mounted in front of the module of the instrument.

Separation from not intrinsically safe circuits

A separating wall must be provided between the connection parts of intrinsically safe and



not intrinsically safe circuits so that the min. distance of 50 mm must be kept. When using a separating chamber (supplied with the module) this condition is met.

General conditions

In addition the valid "installation and operating instructions" as well as the special conditions and instructions in the conformity certificates must be noted.

3.2 Connection instructions

Not intrinsically safe input

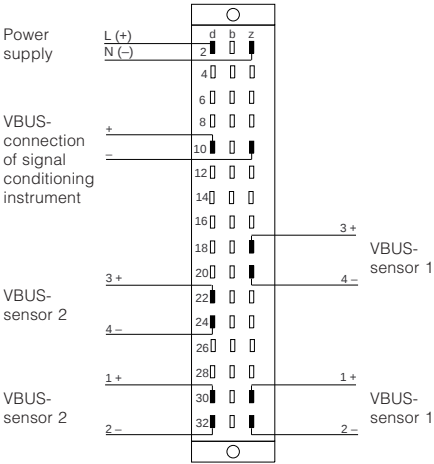
The not intrinsically safe input of the Ex-separator is connected via a standard two-wire line with a signal conditioning instrument. If electromagnetic interferences have to be expected, screened cable should be used. The screen must only be earthed at one end of the signal conditioning instrument.

Intrinsically safe output

The wiring of the intrinsically safe outputs of the Ex-separator with the sensors must meet with the valid installation regulations. E.g. the DIN-regulations prescribe that the connection lines between Ex-separator and sensors must be marked on the entire length. For coverings light blue must be used as colour.

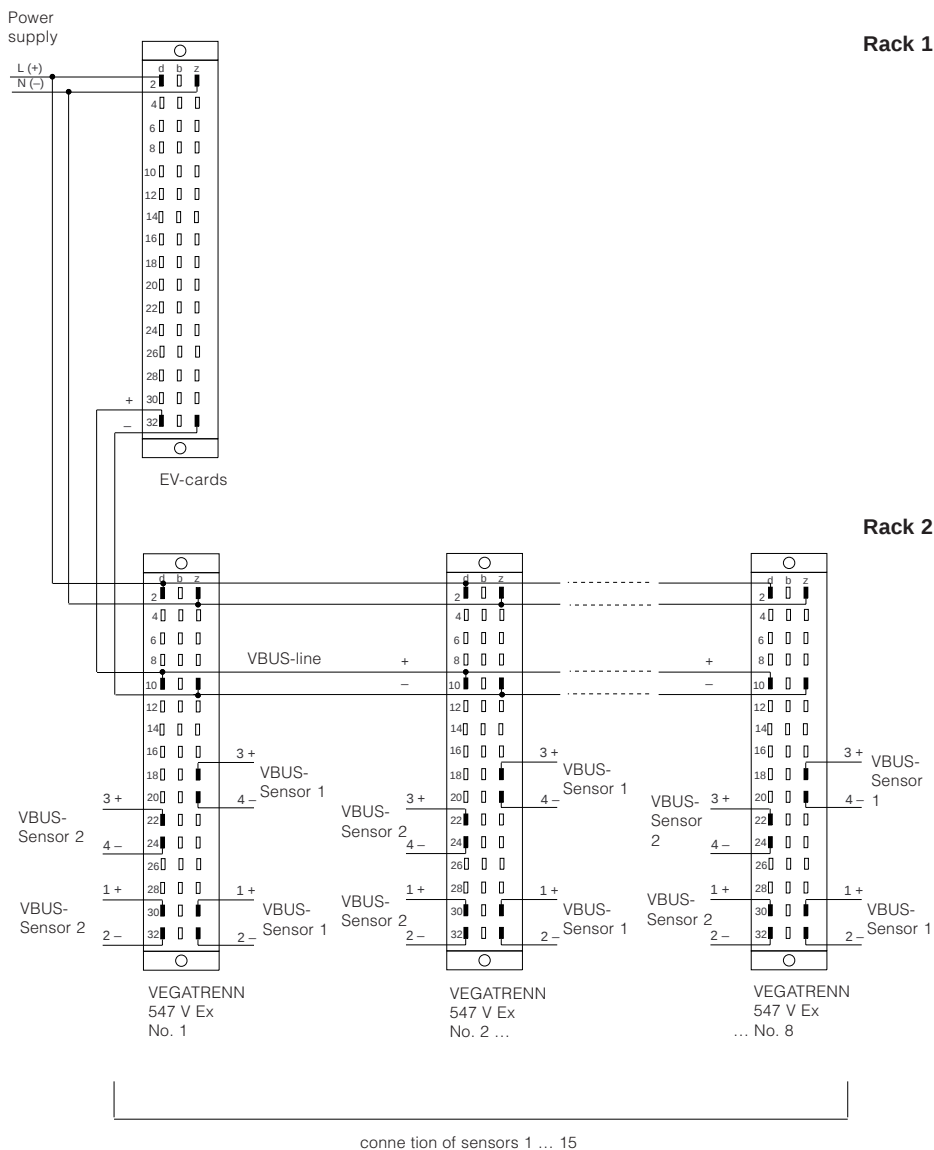
If electromagnetic interferences must be expected, screened cable must be used. The screen must only be earthed at one sensor.

3.3 Wiring plan

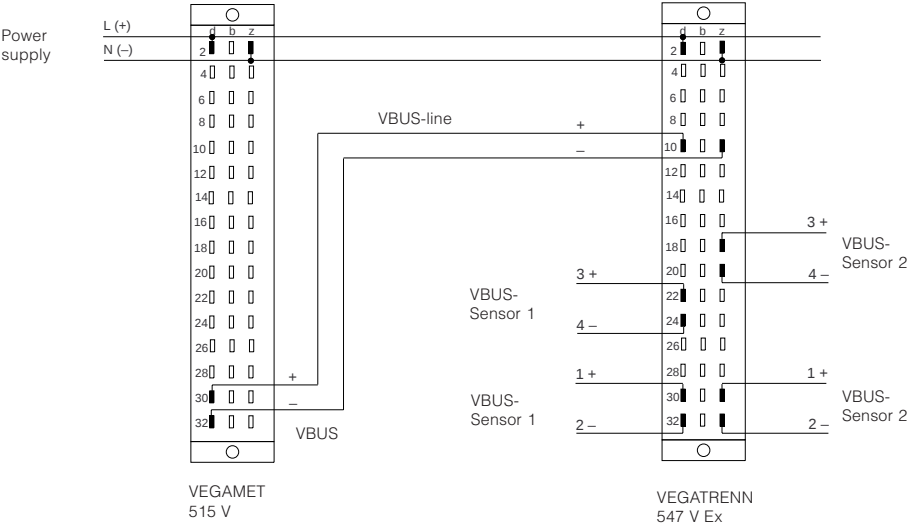


3.4 Connection examples

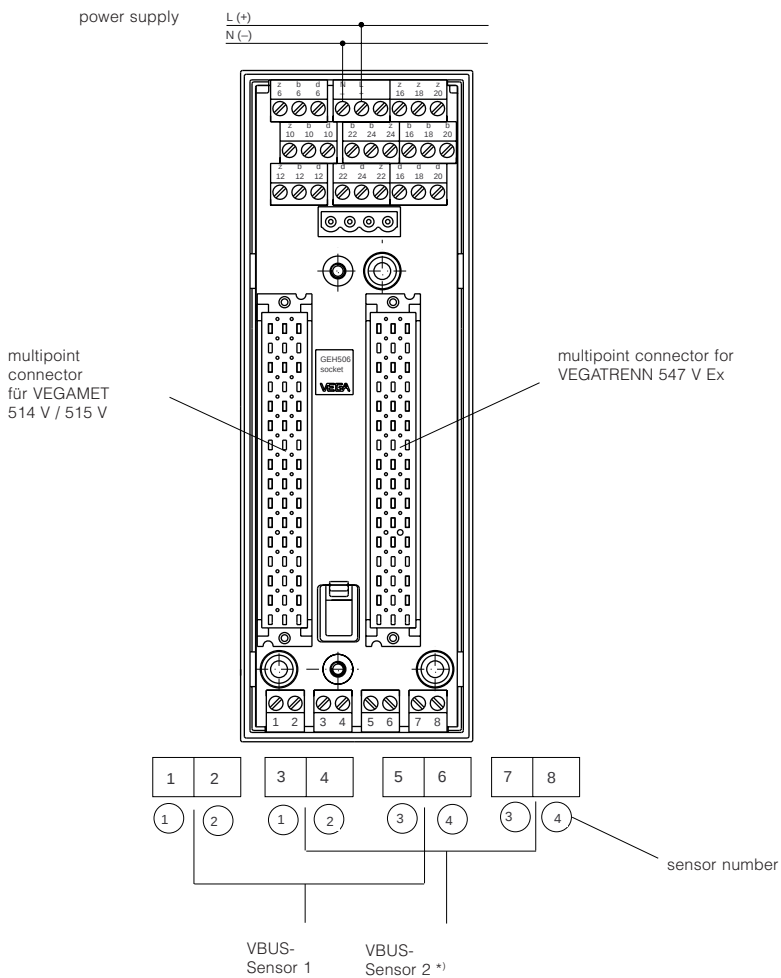
In conjunction with VEGALOG 571



In conjunction with VEGAMET 515 V (carrier)



In conjunction with housing type 506



*) only with VEGAMET 515 V

4 Set-up

For set-up note additionally the operating instructions and the legal documents of the sensors and signal conditioning instruments used.

5 Diagnosis

5.1 Maintenance

The instrument is maintenance free.

5.2 Repair

Due to safety and guarantee reasons repair work must only be done by VEGA-staff.

In case of defect please return the respective instrument with a short description of the error to our repair department.

5.3 Fault signal

VEGATRENN 547 V Ex has no own monitoring. The sensor lines are monitored by the signal conditioning instrument on shortcircuit and line break.



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