

Safety instructions VEGAFLEX 81, 82, 83, 86

Intrinsic safety Two-wire 4 ... 20 mA/HART Two-wire 4 ... 20 mA/HART with SIL qualification Profibus PA Foundation Fieldbus Additional current output 4 ... 20 mA





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Supplementary documentation:

- Operating instructions VEGAFLEX 81, 82, 83, 86
- Quick setup guide VEGAFLEX 81, 82, 83, 86
- Certificate of Compliance CSA2012CA2515397X (Document ID: 49453)

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1 Area of applicability

These safety instructions apply to the VEGAFLEX 81, 82, 83, 86 of type series:

- VEGAFLEX FX8*(*).C/VC****A/H/P/FX****, VEGAFLEX FX8*(*).F/VC****A/HZ****
- VEGAFLEX FX8*(*).C/VO****A/H/P/FX****, VEGAFLEX FX8*(*).F/VO****A/HZ****

With the electronics versions:

- H Two-wire 4 ... 20 mA/HART
- A Two-wire 4 ... 20 mA/HART with SIL qualification
- P Profibus PA
- F Foundation Fieldbus
- Z Additional current output 4 ... 20 mA

According to Certificate of Compliance CSA2012CA2515397X (certificate number on the type label) and for all instruments with safety instruction 47736.

The classification as well as the respective standards are stated in the US Certificate of Conformity.

Type of protection marking:

- CL I, DIV 1, GP ABCD T6 ... T1
- CL I Zone 0 AEx/Ex ia IIC T6 ... T1 Ga
- CL I Zone 0/1 AEx/Ex ia IIC T6 ... T1 Ga/Gb
- CL I Zone 1 AEx/Ex ia IIC T6 ... T1 Gb

2 Important specification in the type code

VEGAFLEX FX81(a).bcdefghijklm

Position Fe		Feature	Description
a			One or two-digit alphanumeric variable, for production control. Op- tional, not safety-relevant.
h.	Coone	С	cCSAus
D	Scope	V	Combination (Europe, world-wide, USA, CSA)
		С	CL I, DIV 1, GP ABCD T6 T1; CL I Zone 0 AEx/Ex ia IIC T6 T1 Ga; CL I Zone 0/1 AEx/Ex ia IIC T6 T1 Ga/Gb; CL I Zone 1 AEx/Ex ia IIC T6 T1 Gb
с	Approval	0	CL I, DIV 1, GP ABCD T6 T1; CL I Zone 0 AEx/Ex ia IIC T6 T1 Ga; CL I Zone 0/1 AEx/Ex ia IIC T6 T1 Ga/Gb; CL I Zone 1 AEx/Ex ia IIC T6 T1 Gb
			+ Ship approval*



Position		Feature	Description
		3	exchangeable coated cable (ø 4 mm) with uncoated centering weight / PFA and 316
		6	exchangeable rod (ø 8 mm) / Duplex (1.4462)
		7	exchangeable cable (ø 2 mm) with gravity weight / Alloy C276 (2.4819)
		А	exchangeable cable (ø 4 mm) with gravity weight / 316
		В	exchangeable cable (ø 2 mm) with gravity weight / 316
		С	exchangeable cable (ø 4 mm) with centering weight / 316
		D	exchangeable cable (ø 2 mm) with centering weight / 316
		E	exchangeable rod (ø 8 mm) / 316L
		F	exchangeable rod (ø 12 mm) / 316L
		G	exchangeable rod (ø 8 mm) / 304L
		н	Coax (ø 21.3 mm) with single hole / 304L
d	Version / Material	I	exchangeable cable (ø 4 mm) with gravity weight / Alloy C22 (2.4602)
-		J	exchangeable cable (ø 4 mm) with centering weight / Alloy C22 (2.4602)
		к	Coax (ø 21.3 mm) with single hole / 316L
		L	Coax (ø 21.3 mm) with multiple hole / 316L
		Ν	Coax (ø 21.3 mm) with multiple hole / 304L
		0	exchangeable rod (ø 12 mm) / Alloy C22 (2.4602)
		Р	Coax (ø 42.2 mm) with multiple hole / 316L
		Q	Coax (ø 21.3 mm) with multiple hole / Alloy C22 (2.4602)
		R	Coax (ø 42.2 mm) with multiple hole / Alloy C22 (2.4602)
		S	exchangeable rod (ø 8 mm) / Alloy C22 (2.4602)
		U	exchangable cable (ø 4 mm) without weight / 316
		V	exchangeable rod (ø 12 mm) / Alloy 400 (2.4360)
		W	exchangeable rod (ø 8 mm) / Alloy C276 (2.4819)
		*	further approved Versions / Materials
ef	Process fitting / Material	**	Two-digit alphanumeric variables for process fittings according to in- dustry standard



Position		Feature	Description
		А	FKM (SHS EPM 70C3 GLT) / without / -40 +80 °C
		В	EPDM (A+P 70.10-02) / without / -40 +80 °C
		D	FFKM (Kalrez 6375) / without / -10 +150 °C
		D	FFKM (Kalrez 6375) / without / -20 +150 °C
		F	FKM (SHS FPM 70C3 GLT) / without / -40 +150 °C
		G	FKM (SHS FPM 70C3 GLT) / with / -40 +150 °C
		н	EPDM (A+P 70.10-02) / without / -40 +150 °C
		1	Silicone FEP coated (A+P FEP-O-SEAL) / without / -40 +150 °C
		J	Borosilicate glass for slightly volatile substances, e.g. ammonia / with / -60 \ldots +150 $^{\circ}\mathrm{C}$
		К	FFKM (Kalrez 6375) / without / -10 +200 °C
	Seal / Second line of	к	FFKM (Kalrez 6375) / without / -20 +200 °C
g	defense / Process tem- perature	L	FFKM (Kalrez 6375) / with / -10 +200 °C
	•	L	FFKM (Kalrez 6375) / with / -20 +200 °C
		М	EPDM (A+P 70.10-02) / with / -40 +150 °C
		N	Silicone FEP coated (A+P FEP-O-SEAL) / with / -40 +150 °C
		0	Silicone FEP coated (A+P FEP-O-SEAL) / without / -40 +80 °C
		Р	FFKM (Kalrez 6375) / with / -10 +150 °C
		Р	FFKM (Kalrez 6375) / with / -20 +150 °C
		Q	FKM (SHS EPM 70C3 GLT) / with / -40 +80 °C
		R	EPDM (A+P 70.10-02) / with / -40 +80 °C
		S	Silicone FEP coated (A+P FEP-O-SEAL) / with / -40 +80 °C
		*	Other seals suitable for process temperature, IP or NEMA protection and environmental conditions, see operating instructions.
h	Electronics	А	Two-wire 4 20 mA/HART with SIL qualification
		F	Two-wire Foundation Fieldbus
		Н	Two-wire 4 20 mA/HART
		Р	Two-wire Profibus PA
i	Supplementary elec-	Х	without
	tronics	Z	Additional current output 4 20 mA



Posi	tion	Feature	Description
j	Housing / Protection	3	Aluminium single chamber / IP66/IP68 (1 bar)
		4	Aluminium double chamber / IP66/IP68 (1 bar)
		5	Stainless steel single chamber (precision casting) / IP66/IP68 (1 bar)
		8	Stainless steel single chamber (electropolished) / IP66/IP68 (0.2 bar)
		А	Aluminium single chamber / IP66/IP68 (0.2 bar)
		С	Cable outlet IP68 with external stainless steel single chamber (elec- tropolished) / IP66/IP67
		D	Aluminium double chamber / IP66/IP68
		D	Aluminium double chamber / IP66/IP68 (0.2 bar)
		F	Cable outlet IP68 with external Aluminium single chamber / IP66/ IP67
		G	Cable outlet IP68 with external stainless steel single chamber (precision casting) / IP66/IP67
		Н	Special colour Aluminium single chamber / IP66/IP68 (0.2 bar)
		J	Cable outlet IP68 with external special colour Aluminium single chamber / IP66/IP67
		L	Cable outlet IP68 with external Aluminium double chamber / IP66/ IP67
		М	Cable outlet IP68 with external stainless steel double chamber / IP66/IP67
		S	Special colour Aluminium double chamber / IP66/IP67
		S	Special colour Aluminium double chamber / IP66/IP68 (0.2 bar)
		т	Cable outlet IP68 with external special colour Aluminium double chamber / IP66/IP67
		V	Stainless steel single chamber (precision casting) / IP66/IP68 (0.2 bar)
		W	Stainless steel double chamber / IP66/IP67
		W	Stainless steel double chamber / IP66/IP68 (0.2 bar)
k	Cable entry / Connection	1	M20 x 1.5 / without
		D	M20 x 1.5 / Blind plug
		N	1/2 NPT / Blind plug
		Q	1/2 NPT / without
		*	Respectively approved cable glands and blind plugs correspond to the ignition protection type
		х	without
		A	mounted
	Display and adjustment	F	without; lid with inspection window
1	module PLICSCOM	В	Laterally mounted
		К	mounted; with Bluetooth, magnetic pen operation
		L	laterally mounted; with Bluetooth, magnetic pen operation



Pos	ition	Feature	Description
	Certificates	М	Yes
		X	No

VEGAFLEX FX82(a).bcdefghijklm

Pos	ition	Feature	Description
a			One or two-digit alphanumeric variable, for production control. Op- tional, not safety-relevant.
h		С	cCSAus
d	Scope	V	Combination (Europe, world-wide, USA, CSA)
		С	CL I, DIV 1, GP ABCD T6 T1; CL I Zone 0 AEx/Ex ia IIC T6 T1 Ga; CL I Zone 0/1 AEx/Ex ia IIC T6 T1 Ga/Gb; CL I Zone 1 AEx/Ex ia IIC T6 T1 Gb
с	Approval	0	CL I, DIV 1, GP ABCD T6 T1; CL I Zone 0 AEx/Ex ia IIC T6 T1 Ga; CL I Zone 0/1 AEx/Ex ia IIC T6 T1 Ga/Gb; CL I Zone 1 AEx/Ex ia IIC T6 T1 Gb
			+ Ship approval*
		А	exchangeable cable (ø 4 mm) / 316
		F	exchangeable rod (ø 6 mm) / 316
		E	exchangeable steel cable (ø 6 mm with gravity weight / PA coated
d	Version / Material	G	exchangeable steel cable (ø 11 mm with gravity weight / PA coated
		н	exchangeable rod (ø 16 mm) / 316L
		Т	exchangeable rod (ø 16 mm) / Alloy C22 (2.4602)
		*	further approved Versions / Materials
ef	Process fitting / Material	**	Two-digit alphanumeric variables for process fittings according to in- dustry standard
		F	FKM (SHS FPM 70C3 GLT) / -40 +150 °C
	Seal / Process temper- ature	Н	EPDM (A+P 70.10-02) / -40 +150 °C
g		К	FFKM (Kalrez 6375) / -20 +200 °C
		*	Other seals suitable for process temperature, IP or NEMA protection and environmental conditions, see operating instructions.
h	Electronics	A	Two-wire 4 20 mA/HART with SIL qualification
		F	Two-wire Foundation Fieldbus
		Н	Two-wire 4 20 mA/HART
		Р	Two-wire Profibus PA
i	Supplementary elec-	Х	without
	tronics	Z	Additional current output 4 20 mA



Posi	ition	Feature	Description
j	Housing / Protection	3	Aluminium single chamber / IP66/IP68 (1 bar)
		4	Aluminium double chamber / IP66/IP68 (1 bar)
		5	Stainless steel single chamber (precision casting) / IP66/IP68 (1 bar)
		8	Stainless steel single chamber (electropolished) / IP66/IP68 (0.2 bar)
		A	Aluminium single chamber / IP66/IP68 (0.2 bar)
		С	Cable outlet IP68 with external stainless steel single chamber (elec- tropolished) / IP66/IP67
		D	Aluminium double chamber / IP66/IP68
		D	Aluminium double chamber / IP66/IP68 (0.2 bar)
		F	Cable outlet IP68 with external Aluminium single chamber / IP66/ IP67
		G	Cable outlet IP68 with external stainless steel single chamber (precision casting) / IP66/IP67
		н	Special colour Aluminium single chamber / IP66/IP68 (0.2 bar)
		J	Cable outlet IP68 with external special colour Aluminium single chamber / IP66/IP67
		L	Cable outlet IP68 with external Aluminium double chamber / IP66/ IP67
		М	Cable outlet IP68 with external stainless steel double chamber / IP66/IP67
		S	Special colour Aluminium double chamber / IP66/IP67
		S	Special colour Aluminium double chamber / IP66/IP68 (0.2 bar)
		т	Cable outlet IP68 with external special colour Aluminium double chamber / IP66/IP67
		V	Stainless steel single chamber (precision casting) / IP66/IP68 (0.2 bar)
		W	Stainless steel double chamber / IP66/IP67
		W	Stainless steel double chamber / IP66/IP68 (0.2 bar)
k	Cable entry / Connection	1	M20 x 1.5 / without
		D	M20 x 1.5 / Blind plug
		N	1/2 NPT / Blind plug
		Q	1/2 NPT / without
		*	Respectively approved cable glands and blind plugs correspond to the ignition protection type
		х	without
		А	mounted
	Display and adjustment	F	without; lid with inspection window
1	module PLICSCOM	В	Laterally mounted
		К	mounted; with Bluetooth, magnetic pen operation
		L	laterally mounted; with Bluetooth, magnetic pen operation



Pos	ition	Feature	Description
	Certificates	М	Yes
m		X	No

VEGAFLEX FX83(a).bcdefghijklm

Position		Feature	Description
a			One or two-digit alphanumeric variable, for production control. Optional, not safety-relevant.
	0	С	cCSAus
D	Scope	V	Combination (Europe, world-wide, USA, CSA)
		С	CL I, DIV 1, GP ABCD T6 T1; CL I Zone 0 AEx/Ex ia IIC T6 T1 Ga; CL I Zone 0/1 AEx/Ex ia IIC T6 T1 Ga/Gb; CL I Zone 1 AEx/Ex ia IIC T6 T1 Gb
с	Approval	0	CL I, DIV 1, GP ABCD T6 T1; CL I Zone 0 AEx/Ex ia IIC T6 T1 Ga; CL I Zone 0/1 AEx/Ex ia IIC T6 T1 Ga/Gb; CL I Zone 1 AEx/Ex ia IIC T6 T1 Gb
			+ Ship approval*
		В	exchangeable cable (ø 4 mm) with gravity weight / PFA
		F	exchangeable rod (ø 8 mm) / 1.4435 (BN2), (Ra<0,76µm)
		G	exchangeable rod (ø 8 mm) / 1.4435 (BN2), can be autoclaved (Ra<0,76 $\mu m)$
d	Version / Material	E	Rod (ø 10 mm) / PFA
		н	exchangeable rod (ø 8 mm) / 1.4435 (BN2), electropolished (Ra<0,38 $\mu m)$
		I	exchangeable rod (ø 8 mm) / 1.4435 (BN2), electropolished, can be autoclaved (Ra<0,38 $\mu m)$
		*	further approved Versions / Materials
ef	Process fitting / Material	**	Two-digit alphanumeric variables for process fittings according to in- dustry standard
		х	without / -40 +150 °C
		E	FFKM (Kalrez 6221) / -20 +150 °C
a	Seal / Process temper-	С	EPDM (Freudenberg 70, EPDM 291) / -20 +130 °C
9	ature	Т	FEPM (Vi 602 Extreme-ETP, COG) / -10 +150 °C
		*	Other seals suitable for process temperature, IP or NEMA protection and environmental conditions, see operating instructions.
h	Electronics	A	Two-wire 4 20 mA/HART with SIL qualification
		F	Two-wire Foundation Fieldbus
		Н	Two-wire 4 20 mA/HART
		Р	Two-wire Profibus PA
i	Supplementary elec-	Х	without
	tronics	z	Additional current output 4 20 mA



Posi	tion	Feature	Description
j	Housing / Protection	3	Aluminium single chamber / IP66/IP68 (1 bar)
		4	Aluminium double chamber / IP66/IP68 (1 bar)
		5	Stainless steel single chamber (precision casting) / IP66/IP68 (1 bar)
		8	Stainless steel single chamber (electropolished) / IP66/IP68 (0.2 bar)
		А	Aluminium single chamber / IP66/IP68 (0.2 bar)
		С	Cable outlet IP68 with external stainless steel single chamber (elec- tropolished) / IP66/IP67
		D	Aluminium double chamber / IP66/IP68
		D	Aluminium double chamber / IP66/IP68 (0.2 bar)
		F	Cable outlet IP68 with external Aluminium single chamber / IP66/ IP67
		G	Cable outlet IP68 with external stainless steel single chamber (precision casting) / IP66/IP67
		Н	Special colour Aluminium single chamber / IP66/IP68 (0.2 bar)
		J	Cable outlet IP68 with external special colour Aluminium single chamber / IP66/IP67
		L	Cable outlet IP68 with external Aluminium double chamber / IP66/ IP67
		М	Cable outlet IP68 with external stainless steel double chamber / IP66/IP67
		S	Special colour Aluminium double chamber / IP66/IP67
		S	Special colour Aluminium double chamber / IP66/IP68 (0.2 bar)
		т	Cable outlet IP68 with external special colour Aluminium double chamber / IP66/IP67
		V	Stainless steel single chamber (precision casting) / IP66/IP68 (0.2 bar)
		W	Stainless steel double chamber / IP66/IP67
		W	Stainless steel double chamber / IP66/IP68 (0.2 bar)
k	Cable entry / Connection	1	M20 x 1.5 / without
		D	M20 x 1.5 / Blind plug
		N	1/2 NPT / Blind plug
		Q	1/2 NPT / without
		*	Respectively approved cable glands and blind plugs correspond to the ignition protection type
		х	without
		A	mounted
	Display and adjustment	F	without; lid with inspection window
1	module PLICSCOM	В	Laterally mounted
		К	mounted; with Bluetooth, magnetic pen operation
		L	laterally mounted; with Bluetooth, magnetic pen operation



Pos	ition	Feature	Description
	Certificates	М	Yes
m		Х	No

VEGAFLEX FX86(a).bcdefghijklm

Position		Feature	Description
a			One or two-digit alphanumeric variable, for production control. Op- tional, not safety-relevant.
	Scope	С	cCSAus
d		V	Combination (Europe, world-wide, USA, CSA)
	Approval	С	CL I, DIV 1, GP ABCD T6 T1; CL I Zone 0 AEx/Ex ia IIC T6 T1 Ga; CL I Zone 0/1 AEx/Ex ia IIC T6 T1 Ga/Gb; CL I Zone 1 AEx/Ex ia IIC T6 T1 Gb
с		0	CL I, DIV 1, GP ABCD T6 T1; CL I Zone 0 AEx/Ex ia IIC T6 T1 Ga; CL I Zone 0/1 AEx/Ex ia IIC T6 T1 Ga/Gb; CL I Zone 1 AEx/Ex ia IIC T6 T1 Gb
			+ Ship approval*
		4	Coax (ø 42.2 mm) with multiple hole and reference distance / 316L
		5	Coax (ø 42.2 mm) with multiple hole and reference distance / Al- loy C22 (2.4602)
		6	exchangeable rod (ø 8 mm) / Duplex (1.4462)
		A	exchangeable cable (ø 4 mm) with gravity weight / 316
		В	exchangeable cable (ø 2 mm) with gravity weight / 316
	Version / Material	С	exchangeable cable (ø 4 mm) with centering weight / 316
		D	exchangeable cable (ø 2 mm) with centering weight / 316
		E	exchangeable rod (ø 8 mm) / 316L
d		Н	exchangeable rod (ø 16 mm) / 316L
		1	exchangeable cable (ø 4 mm) with gravity weight / Alloy C22 (2.4602)
		J	exchangeable cable (ø 4 mm) with centering weight / Alloy C22 (2.4602)
		L	Coax (ø 21.3 mm) with multiple hole / 316L
		Р	Coax (ø 42.2 mm) with multiple hole / 316L
		R	Coax (ø 42.2 mm) with multiple hole / Alloy C22 (2.4602)
		т	exchangeable rod (ø 16 mm) / Alloy C22 (2.4602)
		W	exchangeable rod (ø 8 mm) / Alloy C276 (2.4819)
		*	further approved Versions / Materials
ef	Process fitting / Material	**	Two-digit alphanumeric variables for process fittings according to in- dustry standard



Position		Feature	Description
		1	Ceramic-graphite / with / -196 +280 °C
0	Seal / Second line of defense / Process tem- perature	2	Ceramic-graphite / with / -196 +400 °C
		2	Ceramic-graphite / with / -196 +450 °C
9		3	PEEK-FFKM (Kalrez 6375) / with / -20 +250 °C
		*	Other seals suitable for process temperature, IP or NEMA protection and environmental conditions, see operating instructions.
h	Electronics	A	Two-wire 4 20 mA/HART with SIL qualification
		F	Two-wire Foundation Fieldbus
		н	Two-wire 4 20 mA/HART
		Р	Two-wire Profibus PA
i	Supplementary elec-	х	without
	tronics	Z	Additional current output 4 20 mA
j	Housing / Protection	3	Aluminium single chamber / IP66/IP68 (1 bar)
		4	Aluminium double chamber / IP66/IP68 (1 bar)
		5	Stainless steel single chamber (precision casting) / IP66/IP68 (1 bar)
		8	Stainless steel single chamber (electropolished) / IP66/IP68 (0.2 bar)
		A	Aluminium single chamber / IP66/IP68 (0.2 bar)
		С	Cable outlet IP68 with external stainless steel single chamber (elec- tropolished) / IP66/IP67
		D	Aluminium double chamber / IP66/IP68
		D	Aluminium double chamber / IP66/IP68 (0.2 bar)
		F	Cable outlet IP68 with external Aluminium single chamber / IP66/ IP67
		G	Cable outlet IP68 with external stainless steel single chamber (precision casting) / IP66/IP67
		н	Special colour Aluminium single chamber / IP66/IP68 (0.2 bar)
		J	Cable outlet IP68 with external special colour Aluminium single chamber / IP66/IP67
		L	Cable outlet IP68 with external Aluminium double chamber / IP66/ IP67
		М	Cable outlet IP68 with external stainless steel double chamber / IP66/IP67
		S	Special colour Aluminium double chamber / IP66/IP67
		S	Special colour Aluminium double chamber / IP66/IP68 (0.2 bar)
		Т	Cable outlet IP68 with external special colour Aluminium double chamber / IP66/IP67
		V	Stainless steel single chamber (precision casting) / IP66/IP68 (0.2 bar)
		W	Stainless steel double chamber / IP66/IP67
		W	Stainless steel double chamber / IP66/IP68 (0.2 bar)



Position		Feature	Description
k	Cable entry / Connection	1	M20 x 1.5 / without
		D	M20 x 1.5 / Blind plug
		N	1/2 NPT / Blind plug
		Q	1/2 NPT / without
		*	Respectively approved cable glands and blind plugs correspond to the ignition protection type
I	Display and adjustment module PLICSCOM	х	without
		A	mounted
		F	without; lid with inspection window
		В	Laterally mounted
		к	mounted; with Bluetooth, magnetic pen operation
		L	laterally mounted; with Bluetooth, magnetic pen operation
m	Certificates	М	Yes
		Х	No

* The ship approval is not part of CSA2012CA2515397X.

Multiple listed characteristics according to the dependencies of the device configuration.

In the following, all above mentioned versions are called VEGAFLEX 81, 82, 83, 86. If parts of these safety instructions refer only to certain versions, then these will be mentioned explicitly with their type code.

3 General information

The level measuring instruments VEGAFLEX 81, 82, 83, 86 as guided radar sensors are used to detect the distance between medium surface and sensor by means of high frequency electromagnetic waves in the GHz range. The electronics uses the running time of the signals reflected by the medium surface to calculate the distance to the medium surface.

The VEGAFLEX 81, 82, 83, 86 consist of an electronics housing, a process connection element and a sensor, i.e. a measuring cable or a measuring rod. As an option, the display and adjustment module can also be installed in the instrument.

4 Application area

The VEGAFLEX 81, 82, 83, 86 are suitable for use in explosive atmospheres of all combustible materials of explosion group IIA, IIB, IIC, which require class I, Zone 0, 0/1, 1 Ex ia IIC T6 ... T1, Ga, Ga/Gb, Gb devices

The VEGAFLEX 81, 82, 83, 86 are suitable for use in Class I and Class II in explosive atmospheres of all flammable substances of explosion groups A, B, C, D and dust groups E, F, G, which require Div 1, Div 2 instruments.

The VEGAFLEX 81, 82, 83, 86 are suitable for applications in class III.

The VEGAFLEX 81, 82, 83, 86 with the mechanical fixing element (process fitting) are installed in hazardous areas of zone 0 requiring EPL Ga instruments.

The VEGAFLEX 81, 82, 83, 86 are installed with the mechanical fastening element (process fitting) in the partition wall between zone 1 and zone 0, which separates areas from each other where category EPL Gb or EPL Ga instruments are required.

The VEGAFLEX 81, 82, 83, 86 with the mechanical fixing element (process fitting) are installed in



hazardous areas of zone 1 requiring EPL Gb instruments.

The VEGAFLEX 81, 82, 83, 86 with the mechanical fixing element (process fitting) are installed in hazardous areas requiring Div 1, Div 2.

If the VEGAFLEX 81, 82, 83, 86 are installed and operated in hazardous areas, the general Ex installation regulations, Canadian Electrical Code or National Electrical Code, further national and regional regullations as well as these safety instructions must be observed.

5 Special operating conditions

The following overview is listing all special properties of VEGAFLEX 81, 82, 83, 86, which make a labelling with the symbol "X" behind the certificate number necessary.

Electrostatic charging (ESD)

You can find the details in chapter "Electrostatic charging (ESD)" of these safety instructions.

Ambient temperature

You can find the details in chapter "Thermal data" of these safety instructions.

Impact and friction sparks

The VEGAFLEX 81, 82, 83, 86 in light metal versions (e.g. aluminium, titanium, zircon) must be mounted in such a way that sparks from impact and friction between light metals and steel (except stainless steel, if the presence of rust particles can be excluded) cannot occur.

Non-grounded, metallic parts

The resistance between aluminium housing to metal measuring point identification plate is $> 10^9$ Ohm.

The capacitance of the metal measuring point identification plate was measured as follows:

Measurement loop identification label	Capacitance
45 x 23 mm (standard)	21 pF
100 x 30 mm	52 pF
73 x 47 mm	61 pF

For versions with external housing

For the version with external housing, the potential equalization must be provided in the complete range of the connection cable between electronics housing and transmitter housing.

Make sure that the coaxial connection cable between electronics housing and sensor housing cannot get damaged.

6 Important information for mounting and maintenance

General instructions

The following requirements must be fulfilled for mounting, electrical installation, setup and maintenance of the instrument:

- The staff must be qualified according the respective tasks
- The staff must be trained in explosion protection
- The staff must be familiar with the relevant valid regulations which are necessary for the safe installation and operation of the device.
- Make sure when working on the instrument (mounting, installation, maintenance) that there is no
 explosive atmosphere present, the supply circuits should be voltage-free, if possible
- The instrument has to be mounted according to the manufacturer specifications, the Certificate
 of Conformity, National Electrical Code and the valid regulations and standards



- Modifications on the instrument can influence the explosion protection and hence the safety, therefore repairs are not permitted to be conducted by the end user
- Modifications must only be carried out by employees authorized by VEGA company
- Use only approved spare parts
- Components for installation and connection not included in the approval documents are only
 permitted if these correspond technically to the latest standard mentioned on the cover sheet.
 They must be suitable for the application conditions and have a separate certificate. The special
 conditions of the components must be noted and if necessary, the components must be integrated in the type test. This applies also to the components already mentioned in the technical
 description.
- · Vessel installations and probable flow must be taken into account

Cable and wire entries

- The VEGAFLEX 81, 82, 83, 86 must be connected via suitable cable gland or conduit systems that are in conformity with the requirements of the type of protection and the IP protection or NEMA rating and provided with a separate type approval certificate. When connecting VEGAFLEX 81, 82, 83, 86 to conduit systems, the corresponding sealing facility must be connected directly to the housing.
- The red thread or/dust covers screwed in when the instruments are shipped (depending on the version) must be removed before setup and replaced by approved cable entries or closing screws suitable for the respective ignition protection type and IP protection or NEMA rating.
- Note type and size of the thread: A label with the respective thread name is in the area of the respective thread
- Threads must have no damages
- Cable entries and closing screws should be mounted correctly and according to the safety
 instructions of the manufacturer to ensure the specified ignition protection type and IP protection
 rating or NEMA rating. When using certified or suitable cable glands, closing screws or plug connections, it is absolutely necessary to note the corresponding certificates/documents. Supplied
 cable entries or closing screws meet these requirements.
- Unused openings must be closed with plugs suitable for the ignition protection type and IP
 protection or NEMA rating. Supplied plugs meet these requirements.
- Cable or wire entries resp. the closing screws must be tightly screwed into the housing
- The connection cables resp. pipeline sealing facilities must be suitable for the application conditions (e.g. temperature range) of the application
- With surface temperatures > 70 °C, the cables must be suitable for the higher application conditions
- The connection cable of VEGAFLEX 81, 82, 83, 86 has to be wired fix and in such a way that damages can be excluded.

Mounting

When installing the device, observe the following:

- The instrument must be connected to the grounding system (via the process fitting or an external grounding clamp)
- Mechanical damage on the instrument must be avoided
- Impact and friction sparks are to be avoided
- If the device is used as a partition wall device, the operator must observe the valid applicable installation regulations and ensure a sufficiently tight joint (IP66 or IP67) between the less hazardous area and zone 0 are requiring EPL Ga

Maintenance

To ensure the functionality of the device, periodic visual inspection is recommended for:

Secure mounting



- No mechanical damages or corrosion
- Worn or otherwise damaged cables
- No loose connections of the line connections, equipotential bonding connections
- Correct and clearly marked cable connections

The parts of the VEGAFLEX 81, 82, 83, 86 being in contact with flammable media during operation must be included in the periodic overpressure test of the plant.

Intrinsic safety "i"

- Observe the valid regulations for the interconnection of intrinsically safe circuits.
- The instrument is only suitable for connection to certified, intrinsically safe instruments
- When connecting a circuit with protection level AEx ib, the device, the sensor meas. system of the device must no more be used in hazardous areas of zone 0.
- When connecting an intrinsically safe instruments with classification mark AEx ia to a circuit with
 protection level AEx ib, then the classification mark of the instrument changes to AEx ib. After
 the use as instrument with AEx ib power supply, the instrument must no more be used in circuits
 with protection level AEx ia
- When connecting an intrinsically safe instrument to an non-intrinsically safe circuit, the instrument must be no longer used in intrinsically safe circuits
- With surface temperatures > 70 °C, the cables must be suitable for the higher application conditions

Version with exchangeable cable or rod probe

Only original VEGA cable or rod probes must be mounted to VEGAFLEX 81, 82, 83, 86. When mounting cable or rod probes, the torques specified in the respective operating instruction manuals must be maintained. The mechanical connection must be ensured.

7 Safe operating mode

General operating conditions

- Do not operate the instrument outside the electrical, thermal and mechanical specifications of the manufacturer
- Use the instrument only in media against which the wetted parts are sufficiently resistant
- To assess and reduce the explosion risk, the National Electrical Code applicable regulations, rules and standards must be taken into account
- For process pressures outside the standard atmospheric conditions of 80 kPa (0.8 bar) to 110 kPa (1.1 bar) additional requirements can be valid
- Note the relation between process temperature on the sensor/antenna and the permissible ambient temperature on the electronics housing. For permissible temperatures, see the respective temperature tables. See chapter "*Thermal data*".
- If necessary, a suitable overvoltage arrester can be connected in front of the VEGAFLEX 81, 82, 83, 86

Connection conditions

The connection cable of VEGAFLEX 81, 82, 83, 86 has to be wired fix and in such a way that damages can be excluded

If the temperature at the entry parts exceeds 70 $^\circ\text{C},$ temperature-resistant connection cables must be used

8 Potential equalization/Grounding

 Integrate the instruments into the local potential equalisation, e.g. via the internal or external earth terminal



- The potential equalization terminal must be secured against loosening and twisting
- If grounding of the cable screening is necessary, this must be carried out acc. to the valid standards and regulations
- The intrinsically safe input and the intrinsically safe output circuits are ground-free. The voltage resistance against ground is min. 500 Veff.

9 Electrostatic charging (ESD)

In case of instrument versions with electrostatically chargeable plastic parts, the danger of electrostatic charging and discharging must be taken into account!

The following parts can charge and discharge:

- Lacquered housing version or alternative special lacquering
- Plastic housing, plastic housing parts
- Metal housing with inspection window
- Plastic process fittings
- Plastic-coated process fittings and/or plastic-coated sensors
- Connection cable for separate versions
- Type label
- Isolated metallic labels (measuring point identification plate)

Take note in case of danger of electrostatic charges:

- Avoid friction on the surfaces
- Do not dry clean the surfaces

The instruments must be mounted/installed in such a way that the following can be ruled out:

- electrostatic charges during operation, maintenance and cleaning.
- process-related electrostatic charges, e.g. by measuring media flowing past

The warning label indicates danger:



WARNING -- POTENTIAL ELECTROSTATIC CHARGING HAZARD -- SEE INSTRUCTIONS

AVERTISSEMENT -- DANGER POTENTIEL DE CHARGES ÉLECTROSTATIQUES -- VOIR INSTRUCTIONS

10 Instructions for zone 0, zone 0/1 applications

In hazardous areas, the instrument, sensor measuring system in zone 0 should only be operated under atmospheric conditions:

- Temperature: -20 ... +60 °C.
- Pressure: 80 ... 110 kPa (0.8 ... 1.1 bar)
- Air with normal oxygen content, normally 21 %

The operator must ensure that the medium temperature in zone 0 is not higher than 80 % of the self-ignition temperature of the concerned medium (in °C) and does not exceed the max. permissible flange temperature depending on the temperature class. The parts of the sensor which during operation are in contact with flammable products, must be integrated in the periodic overpressure test of the plant.

If no explosive mixtures or additional application conditions are certified or supplementary measures have been taken, then the instruments can be also operated according to the manufacturer specification outside atmospheric conditions.

If there is a risk of dangerous potential differences inside zone 0, then suitable measures for circuits



in zone 0 must be taken.

Process fittings between two explosion protection areas require category EPL Ga and less endangered areas must show a tightness in accordance with protection rating IP67 acc. to IEC/EN 60529.

11 Electrical data

VEGAFLEX FX8*(*).C/VC/O****A/HX****, single chamber housing, Ex i electronics and connection compartment

Intrinsically safe voltage supply, signal circuit:		
Terminals 1[+], 2[-]	In type of protection Intrinsic safety	
	For connection to a certified, intrinsically safe circuit.	
	U _i = 30 V	
	l _i = 131 mA	
	P _i = 983 mW	
	The effective internal capacitance C _i is negligibly small.	
	The effective internal inductance is $L_1 \le 5 \mu H$.	
	In the version with fix mounted connection cable C _{1,wire/wire} = 58 pF/ m, C _{1,wire/screen} = 270 pF/m and additionally L ₁ = 0.55 μ H/m has to be taken into account.	

$\label{eq:VEGAFLEXFX8} VEGAFLEXFX8*(*).C/VC/O^{****}A/HX^{****}, \ double \ chamber \ housing, \ Ex \ i \ connection \ compartment$

Intrinsically safe voltage supply, signal circuit:		
Terminals 1[+], 2[-]	In type of protection Intrinsic safety	
	For connection to a certified, intrinsically safe circuit.	
	U _i = 30 V	
	l _i = 131 mA	
	P _i = 983 mW	
	The effective internal capacitance C _i is negligibly small.	
	The effective internal inductance is $L_i \le 10 \ \mu H$.	
	In the version with fix mounted connection cable C _{1 wire/wire} = 58 pF/m, C _{1 wire/wire} = 270 pF/m and additionally L ₁ = 0.55 μ H/m has to be taken into account.	



VEGAFLEX FX8*(*).C/VC/O****P/FX****, single chamber housing, Ex i electronics and connection compartment

Intrinsically safe voltage supply, signal circuit:		
Terminals 1[+], 2[-]	In type of protection Intrinsic safety	
	For connection to a certified, intrinsically safe circuit.	
	U _i = 17,5 V	
	l _i = 500 mA	
	P _i = 5,5 W	
	The instrument is suitable for connection to a Fieldbus system ac- cording to the FISCO model (ANSI/ISA 60079-11), e.g. Profibus PA.	
	or	
	U _i = 24 V	
	l _i = 250 mA	
	P _i = 1,2 W	
	The effective inner capacitances C_i , inductances L_i are negligible.	
	In the version with fix mounted connection cable C _{1 wire/wire} = 58 pF/ m, C _{1 wire/wire} = 270 pF/m and additionally L ₁ = 0.55 μ H/m has to be taken into account.	

$\label{eq:VEGAFLEXFX8} VEGAFLEXFX8*(*).C/VC/O^{****}P/FX^{****}, \ double \ chamber \ housing, \ Ex \ i \ connection \ compartment$

Intrinsically safe voltage supply, signal circuit:		
Terminals 1[+], 2[-]	In type of protection Intrinsic safety	
	For connection to a certified, intrinsically safe circuit.	
	U _i = 17,5 V	
	l _i = 500 mA	
	P _i = 5,5 W	
	The instrument is suitable for connection to a Fieldbus system ac- cording to the FISCO model (ANSI/ISA 60079-11), e.g. Profibus PA.	
	or	
	U _i = 24 V	
	l _i = 250 mA	
	P _i = 1,2 W	
	The effective internal capacitance C _i is negligibly small.	
	The effective internal inductance is $L_i \le 5 \mu H$.	
	In the version with fix mounted connection cable $C_{i\text{witer/wite}}$ = 58 pF/m, $C_{i\text{witer/screen}}$ = 270 pF/m and additionally L_i = 0.55 μ H/m has to be taken into account.	



VEGAFLEX FX8*(*).C/VC/O****A/HZ****, double chamber housing, Ex i connection compartment

Intrinsically safe voltage supply, signal circuit I:		
Terminals 1[+], 2[-]	In type of protection Intrinsic safety	
	For connection to a certified, intrinsically safe circuit.	
	U _i = 30 V	
	l= 131 mA	
	P _i = 983 mW	
	The effective internal capacitance C _i is negligibly small.	
	The effective internal inductance is $L_1 \leq 5 \ \mu H$.	

Intrinsically safe voltage supply, signal circuit II:		
Terminals 7[+], 8[-]	In type of protection Intrinsic safety	
	For connection to a certified, intrinsically safe circuit.	
	U _i = 30 V	
	l _i = 131 mA	
	P _i = 983 mW	
	The effective internal capacitance C _i is negligibly small.	
	The effective internal inductance is $L_i \le 5 \mu H$.	

$\label{eq:VEGAFLEXFX} VEGAFLEXFX*(*). C/VC/O^{****}A/H/P/FX^{****}, single chamber housing, Ex \ i \ electronics \ and \ connection \ compartment$

Intrinsically safe circuit for the external display and adjustment unit:		
Terminals 5, 6, 7, 8	In type of protection Intrinsic safety	
	For connection to the intrinsically safe circuit of the corresponding external indicating unit VEGADIS 81 in ignition protection type Intrinsic safety "i".	
	The proof for intrinsic safety of the interconnection rendered if the total inductance and total capacitance of the connection cable L_{cable} = 212 μH and C_{cable} = 1.98 μF is not exceeded	
	When using the supplied VEGA connection cable, then the permissible cable length is $L_{zul} = 341$ m.	



VEGAFLEX FX8*(*).C/VC/O****A/H/P/FX****, double chamber housing, Ex i connection compartment

Intrinsically safe circuit for the external display and adjustment unit:		
Terminals 5, 6, 7, 8	In type of protection Intrinsic safety	
	For connection to the intrinsically safe circuit of the corresponding external indicating unit VEGADIS 81 in ignition protection type In- trinsic safety "i".	
	The proof for intrinsic safety of the interconnection rendered if the total inductance and total capacitance of the connection cable $L_{cable} = 212 \ \mu H$ and $C_{cable} = 1.98 \ \mu F$ is not exceeded	
	When using the supplied VEGA connection cable, then the permissible cable length is ${\rm L}_{\rm zul}$ = 341 m.	

VEGAFLEX FX8*(*).C/VC/O****A/H/P/FX**** and VEGAFLEX FX8*(*).C/VC/O****A/HZ****, double chamber housing, Ex i electronics compartment

Intrinsically safe adapter circuit:						
Internal plug connection	In type of protection Intrinsic safety					
	For connection to the intrinsically safe circuit of the corresponding external indicating unit VEGADIS 81 in ignition protection type Intrinsic safety "i".					
	The proof for intrinsic safety of the interconnection rendered if the total inductance and total capacitance of the connection cable $L_{cable} = 212 \ \mu H$ and $C_{cable} = 1.98 \ \mu F$ is not exceeded					
	When using the supplied VEGA connection cable, then the permissible cable length is $L_{zul} = 341$ m.					

VEGAFLEX FX8*(*).C/VC/O****A/H/P/FX**** and VEGAFLEX FX8*(*).C/VC/O****A/HZ****, single and double chamber housing, Ex i electronics and connection compartment

Intrinsically safe circuit for the display and adjustment module or the interface adapter				
Spring contacts In type of protection Intrinsic safety				
	Only for connection to the display and adjustment module PLICSCOM.			

VEGAFLEX FX8*(*).C/VC/O****A/H/P/FX**** and VEGAFLEX FX8*(*).C/VC/O****A/HZ****

Intrinsically safe HF circuit:	
	In type of protection Intrinsic safety
	The length of the coax connection cable between the electronics housing and the sensor housing may not exceed $L_{cable} = 50$ m for all versions of VEGAFLEX 81, 82, 83, 86 with separate sensor.

12 Mechanical data

The following mechanical data are valid for all housing and electronics versions.

Mechanical data	
Ground terminal (connection cross-section)	≥ 4 mm ²



Mechanical data	
Overvoltage category	See operating instructions VEGAFLEX 81, 82, 83, 86, chapter " <i>Technical data</i> "
Pollution degree	2
 Materials Max. tensile load on the cable or rod probe Potential connections and electrical separating measures in the instrument Electromechanical data Electrical protective measures 	Are described in the operating instructions VEGAFLEX 81, 82, 83, 86 in chapter " <i>Technical data</i> ".

13 Thermal data

The following temperature tables are valid for all housing and electronics versions.

If the VEGAFLEX FX8*(*).C/VC/U/O****A/H/P/FX**** and VEGAFLEX FX8*(*).C/VC/U/O****A/ HZ**** level transmitters are operated in hazardous areas for EPL Ga-, EPL Ga/Gb-, EPL Gb- and Division 1 applications, the permissible temperature range on the electronics/housings as well as on the sensor (measuring cable, rod) depending on the temperature class can be found in the following table:

Temperature class	Ambient temperature range (Electronics/housing)	Product temperature range on the sensor (measuring cable, rod)
Т6	-40 +46 °C	-60 +80 °C
Т5	-40 +60 °C	-60 +95 °C
Τ4	-40 +60 °C	-60 +130 °C
ТЗ	-40 +60 °C	-60 +195 °C
Т2	-40 +60 °C	-60 +290 °C
T1	-40 +60 °C	-60 +440 °C

Low temperature version up to -196 °C

Temperature class	Ambient temperature range (Electronics/housing)	Product temperature range on the sensor (measuring cable, rod)
Т6	-40 +46 °C	-196 +80 °C
Т5	-40 +60 °C	-196 +95 °C
Т4	-40 +60 °C	-196 +130 °C
ТЗ	-40 +60 °C	-196 +195 °C
Т2	-40 +60 °C	-196 +290 °C
T1	-40 +60 °C	-196 +440 °C

The sensors (measuring cable, rod) may only be operated in areas for EPL Ga applications if atmospheric conditions are present (pressure of 0.8 ... 1.1 bar).

If there is no explosive atmosphere, the permissible operating temperatures and pressures must be taken from the manufacturer specifications (operating instructions).

If the sensors (measuring cable, measuring rod) are operated at temperatures higher than those listed in the table above, measures must be taken to prevent the risk of ignition from hot surfaces.



The maximum permissible temperature at the electronics/housing must not exceed the values in the above table.

Temperature derating for process temperatures up to +150 °C, +200 °C, +250 °C, +280 °C and +450 °C



Versions for process temperatures up to +150 °C with metal housing

Versions for process temperatures up to +200 °C with metal housing



Versions for process temperatures up to +250 °C with metal housing





Versions for process temperatures up to +280 °C with metal housing



Versions for process temperatures up to +450 °C with metal housing



14 Tensile force on the measuring cable/ rod

The permissible tensile force is

- VEGAFLEX 81
 - Diameter 4 mm: F = 2.5 kN
 - Diameter 2 mm: F = 1.5 kN
- VEGAFLEX 82
 - Diameter 4 mm: F = 12 kN
 - Diameter 6 mm coated: F = 8 kN
 - Diameter 6 mm: F = 30 kN
 - Diameter 11 mm coated: F = 30 kN
- VEGAFLEX 83
 - Diameter 4 mm: F = 2 kN
 - Exchangeable rod: F = 4.5 kN
- VEGAFLEX 86
 - Diameter 4 mm: F = 2.5 kN
 - Diameter 2 mm: F = 1.5 kN



15 Installation Control Diagram

Installation diagram



b) Associated Apparatus

- c) VEGA DISPLAY e.g. VEGADIS 81
- d) Grounding Connection

NOTES:

1. The Entity Concept allows the interconnection of suitable approved Intrinsically safe devices with entity parameters not specifically examined in combination as a system when:

- $U_o \text{ or } V_{oc} \text{ or } V_t \leq U_i \text{ or } V_{max}$
- I or I or I or I or I or I max
- P₀ ≤ Pⁿ
- C_a° or $C_o^{\circ} \ge C_i + C_{cable}^{\circ}$
- $L_a \text{ or } L_o \ge L_i + L_{cable}$

2. Control equipment connected to the Associated Apparatus shall not use or generate more than 250 $V_{\rm rms}$ or $V_{\rm dc}.$

3. Installation should be in accordance with ANSI/ISA-RP12.06.01 "Intrinsic Safety Wiring Methods for Hazardous (Classified) Locations Instrumentation", the National Canadian Code (C22.1) and the National Electrical Code (NFPA 70 (NEC®).

4. The configuration of associated Apparatus shall be suitable approved under Entity Concept.

5. Associated Apparatus manufacturer's installation control drawing shall be followed when installing this equipment.

6. The VEGAFLEX 80 Series are approved for Class I, Zone 0 and Division 1 applications. If connecting [Ex ia]/[AEx ib] Associated Apparatus to the VEGAFLEX 80 Series, the above system is only suitable for Class 1, Zone 1, or Division 2 hazardous (classified) locations, and is not suitable for Class I. Zone 0, or Division 1 hazardous (classified) locations.

7. When coble parameters ore unknown, the following may be used: Capacitance = 197 pF/m (60 pF/ft); Inductance = 0.66 μ H/m (0.20 μ H/ft)

8. Resistance between intrinsically safe ground and earth ground must be less than one ohm.

9. No revision to drawing without prior Agency Approval.

10. Warning: Substitution of components may impair suitability for intrinsic safely and hazardous locations.



11. Reference Safety Instructions Manual - Two-Wire. VEGAFLEX FX8*(*).C/VC/O***A/H/P/FX**** and VEGAFLEX FX8*(*).C/VC/O****A/HZ**** No. 47736 for additional information necessary for proper installation.

Control Drawing VEGAFLEX FX8*(*).C/VC/O****F/PX3/5/8/A/H/V*** with optional external display and adjustment unit; Single chamber housing version



Intrinsically safe parameter of supply and signal circuit

VEGAFLEX 8* Single chamber housing	U _i (V)	I, (mA)	P <mark>,</mark> (mW)	C _i (µF)	L, (μΗ)
Terminals 1, 2	30	131	983	₹ 0 ³⁾	5 ³⁾

Intrinsically safe parameter of operation and indication circuit

VEGAFLEX 8* Single chamber housing	C_{Cable} (µF)	I _{-Cabie} (µH)	
Terminals 5, 6, 7, 8	≤ 1.98 ⁴⁾	≤ 212 ⁴⁾	

a) Control Room Um ≤ 253 V

b) Associated Apparatus with entity parameters IS Barrier $U_0 \le U_i$, $I_0 \le I_i$, $P_0 \le P_i$, $C_0 \ge C_i + C_{cable}$, $L_0 \ge L_i + L_{cable}$

A) Electronics and terminal compartment

C) Process fitting

D) Rod/cable/ coax probe

1) Optional

²⁾ ASME, DIN, G, LA, NPT or TRI-CLAMP industry type flange, with pressure ratings and any type which comply with an international or national standard

³⁾ Additionally for application with fixed mounted cable: Li² = 0.55 µH/m, Ci² wire/wire = 58 pF/m, Ci² wire/shield = 270 pF/m

4) If the connection cable is supplied by VEGA the maximum cable length is 341m

⁵⁾ Only PLICSCOM or connection to VEGADIS 61,81 possible



Control Drawing VEGAFLEX FX8*(*).C/VC/O****F/PXC/F/G/J*** *** with optional external display and adjustment unit; Single chamber housing; External version



Intrinsically safe parameter of supply and signal circuit

VEGAFLEX 8* Single chamber housing	U _i (V)	l _i (mA)	P _i (mW)	C _i (µF)	ել (µH)
Terminals 1, 2	30	131	983	🕀 0 ³⁾	5 ³⁾

Intrinsically safe parameter of operation and indication circuit

VEGAFLEX 8* Single chamber housing	C _{Cable} (µF)	L_{Cable} (µH)	
Terminals 5, 6, 7, 8	≤ 1.98 ⁴⁾	≤ 212 ⁴⁾	

a) Control Room Um ≤ 253 V

b) Associated Apparatus with entity parameters IS Barrier $U_0 \le U_i$, $I_0 \le I_i$, $P_0 \le P_i$, $C_0 \ge C_i + C_{cable}$, $L_0 \ge L_i + L_{cable}$

A) Electronics and terminal compartment

C) Process fitting

D) Rod/cable/ coax probe

E) Housing base

F) Intrinsically safe HF connection cable

1) Optional

²⁾ ASME, DIN, G, LA, NPT or TRI-CLAMP industry type flange, with pressure ratings and any type which comply with an international or national standard

³⁾ Additionally for application with fixed mounted cable: Li` = 0.55 µH/m, Ci`wirewire = 58 pF/m, Ci`wires/shield = 270 pF/m

⁴⁾ If the connection cable is supplied by VEGA the maximum cable length is 341m

⁵⁾ Only PLICSCOM or connection to VEGADIS 61,81 possible

⁶⁾ HF circuit in type pf protection "Intrinsic Safety". A length of the provided cable of 50 m is permissible.



Control Drawing VEGAFLEX FX8*(*).C/VC/O****A/HX4/D/S/W*** with optional external display and adjustment unit; Double chamber housing

Class I, Division 1, Groups A, B, C, D Unclassified / Ordinary Location Class II, Division 1, Groups E, F and G or Class III, Division 1 Class I, Division 2, Groups A, B, C, D or or Class I, Zone 0, Group IIC Class I, Zone 2, Group IIC Class I, Zone 1, Group IIC PLICSCOM 1) 12C 2-wire HART 4...20mA with SIL (A) 2-wire HART 4...20mA (H) b) a) 1 PLICSCOM VEGAFLEX 2 81, 82, 83, 86 (A/H) 12C 5 5 VEGADIS 6 6 7 7 81 1.5) 1,5) 8 8 A) B) C) 2) D) 1

Intrinsically safe parameter of supply and signal circuit

VEGAFLEX 8* Terminal compartment	Ui (V)	li (mA)	Pi (m W)	Ci (µF)	Li (µH)
Terminals 1, 2	30	131	983		5 ³⁾

Intrinsically safe parameter of operation and indication circuit

VEGAFLEX 8* Terminal compartment	C _{Cable} (µF)	I _{-Cable} (µH)
Terminals 5, 6, 7, 8	≤ 212 ⁴⁾	≤ 1,98 ⁴⁾

a) Control Room Um ≤ 253 V

b) Associated Apparatus with entity parameters IS Barrier $U_o \le U_i$, $Io \le I_i$, $P_o \le P_i$, $C_o \ge C_i + C_{cable}$, $L_o \ge L_i + L_{cable}$

A) Electronics compartment

B) Terminal compartment

C) Process fitting

D) Rod/cable/ coax probe

1) Optional

²⁾ ASME, DIN, G, LA, NPT or TRI-CLAMP industry type flange, with pressure ratings and any type which comply with an international or national standard

3) Additionally for application with fixed mounted cable: Li` = 0.55 µH/m, Ci`wire/wire = 58 pF/m, Ci`wire/shield = 270 pF/m

4) If the connection cable is supplied by VEGA the maximum cable length is 341m

⁵⁾ Only PLICSCOM or connection to VEGADIS 61,81 possible



Control Drawing VEGAFLEX FX8*(*).C/VC/O****A/HXL/M/T*** with optional external display and adjustment unit; Double chamber housing; External version



Intrinsically safe parameter of supply and signal circuit

VEGAFLEX 8* Terminal compartment	Ui (V)	li (mA)	Pi (mW)	Ci (µF)	Li (µH)
Terminals 1, 2	30	131	983		5 ³⁾

Intrinsically safe parameter of operation and indication circuit

VEGAFLEX 8* Terminal compartment	C_{Cable} (µF)	L _{Cable} (µH)
Terminals 5, 6, 7, 8	≤ 212 ⁴⁾	≤ 1,98 ⁴⁾

a) Control Room Um ≤ 253 V

b) Associated Apparatus with entity parameters IS Barrier $U_0 \leq U_i$, $I_0 \leq I_i$, $P_0 \leq P_i$, $C_0 \geq C_i + C_{cable}$, $L_0 \geq L_i + L_{cable}$

A) Electronics compartment

- B) Terminal compartment
- C) Process fitting
- D) Rod/cable/ coax probe
- E) Housing base

F) Intrinsically safe HF connection cable

1) Optional

2) ASME, DIN, G, LA, NPT or TRI-CLAMP industry type flange, with pressure ratings and any type which

- comply with an international or national standard
- ³⁾ Additionally for application with fixed mounted cable: Li^{*} = 0.55 µH/m, Ci^{*}_{wire/wire} = 58 pF/m, Ci^{*}_{wires/shield} = 270 pF/m

4) If the connection cable is supplied by VEGA the maximum cable length is 341m

5) Only PLICSCOM or connection to VEGADIS 61,81

possible

⁶⁾ HF circuit in type pf protection "Intrinsic Safety". A length of the provided cable of 50 m is permissible.



Control Drawing VEGAFLEX FX8*(*).C/VC/O****A/HZ4/D/S/W*** with supplementary electronics second current output; Double chamber housing



Intrinsically safe parameter of supply and signal circuit

VEGAFLEX 8* Terminal compartment	Ui (V)	li (mA)	Pi (mW)	Ci (µF)	Li (µH)
Terminals 1, 2	30	131	983		5 ³⁾
Terminals 7,8	30	131	983	± 0 ³⁾	5 ³⁾

a) Control Room Um ≤ 253 V

b) Associated Apparatus with entity parameters IS Barrier $U_o \le U_i$, $Io \le I_i$, $P_o \le P_i$, $C_o \ge C_i + C_{cable}$, $L_o \ge L_i + L_{cable}$

A) Electronics compartment

B) Terminal compartment with supplementary electronics second current output

C) Process fitting

D) Rod/cable/ coax probe

1) Optional

or

²⁾ ASME, DIN, G, LA, NPT or TRI-CLAMP industry type flange, with pressure ratings and any type which comply with an international or national standard

³⁾ Additionally for application with fixed mounted cable: Li` = 0.55 µH/m, Ci`wwww.e = 58 pF/m, Ci`wrestshield = 270 pF/m

⁴⁾ If the connection cable is supplied by VEGA the maximum cable length is 341m



Control Drawing VEGAFLEX FX8*(*).C/VC/O****A/HZL/M/T*** with optional external display and adjustment unit; Double chamber housing; External version



Intrinsically safe parameter of supply and signal circuit

VEGAFLEX 8* Terminal compartment	Ui (V)	li (mA)	Pi (m W)	Ci (µF)	Li (µH)
Terminals 1, 2	30	131	983	⊕ 0 ³	5 ³⁾
Terminals 7,8	30	131	983		5 ³⁾

a) Control Room Um ≤ 253 V

b) Associated Apparatus with entity parameters IS Barrier $U_o \leq U_i$, $lo \leq I_i$, $P_o \leq P_i$, $C_o \geq C_i + C_{cable}$, $L_o \geq L_i + L_{cable}$

A) Electronics compartment

B) Terminal compartment with supplementary electronics second current output

C) Process fitting

D) Rod/cable/ coax probe

E) Housing base

F) Intrinsically safe HF connection cable

1) Optional

2) ASME, DIN, G, LA, NPT or TRI-CLAMP industry type flange, with pressure ratings and any type which

comply with an international or national standard

³⁾ Additionally for application with fixed mounted cable: Li` = 0.55 µH/m, Ci`_{wires/wires} = 58 pF/m, Ci`_{wires/shield} = 270 pF/m

⁴⁾ If the connection cable is supplied by VEGA the maximum cable length is 341m



Control Drawing VEGAFLEX FX8*(*).C/VC/O****F/PX3/5/8/A/H/V*** with optional external display and adjustment unit; Single chamber housing version

Control Drawing VEGAFLEX FX8*(*).FC/O****F/PX3/5/8/A/H/V*** with optinal external display and adjustment unit; Single chamber housing version



Intrinsically safe parameter of supply and signal circuit

VEGAFLEX 8* connection compartment	Ui (V)	li (mA)	Pi (mW)	Ci (µF)	Li (µH)
Terminals 1, 2	24	250	1,2	🕀 0 ³⁾	5 ³⁾
or					
Terminals 1, 2	17,5	500	5,5	4)	
Intrinsically safe parameter of op	eration and inc	lication circuit			
VEGAFLEX 8*	Costa (UE)	Looke (uH)			

VEGAFLEX 8*			
electronics compartment	C _{able} (µF)	L _{Cable} (µH)	
Terminals 5, 6, 7, 8	≤ 212 ⁵⁾	≤ 1,98 ⁵⁾	

a) Control Room Um ≤ 253 V

b) Associated Apparatus with entity parameters IS Barrier $U_0 \le U_i$, $I_0 \le I_i$, $P_0 \le P_i$, $C_0 \ge C_i + C_{cable}$, $L_0 \ge L_i + L_{cable}$

c) Approved fieldbus device suitable for the location

d) Approved fieldbus termination suitable for the location

A) Electronics and terminal compartment

C) Process fitting

D) Rod/cable/ coax probe

1) Optional

²⁾ ASME, DIN, G, LA, NPT or TRI-CLAMP industry type flange, with pressure ratings and any type which comply with an international or national standard

³⁾ Additionally for application with fixed mounted cable: Li` = 0.55 μH/m, Ci`_{wire/wire} = 58 pF/m, Ci`wires/shield = 270 pF/m

⁴⁾ The apparatus is suitable for connection to a fieldbus system according the FISCO concept (IEC 60079-11), e.g. Profibus PA or Foundation Fieldbus

⁵⁾ If the connection cable is supplied by VEGA the maximum cable length is 341m

6) Only PLICSCOM or connection to VEGADIS 61,81 possible



Control Drawing VEGAFLEX FX8*(*).C/VC/O****F/PXC/F/G/J*** *** with optional external display and adjustment unit; Single chamber housing; External version



Intrinsically safe parameter of supply and signal circuit

VEGAFLEX 8* connection compartment	Ui (V)	li (mA)	Pi (mW)	Ci (µF)	Li (µH)
Terminals 1, 2	24	250	1,2	⊕ 0 ³⁾	5 ³⁾
or					
Terminals 1, 2	17,5	500	5,5	4)	

Intrinsically safe parameter of operation and indication circuit

VEGAFLEX 8* electronics compartment	C _{cable} (µF)	L _{Cable} (µH)
Terminals 5, 6, 7, 8	≤ 212 ⁵⁾	≤ 1,98 ⁵⁾

a) Control Room Um ≤ 253 V

b) Associated Apparatus with entity parameters IS Barrier $U_0 \le U_i$, $I_0 \le I_i$, $P_0 \le P_i$, $C_0 \ge C_i + C_{cable}$, $L_0 \ge L_i + L_{cable}$

c) Approved fieldbus device suitable for the locationd) Approved fieldbus termination suitable for the location

A) Electronics compartment

- C) Process fitting 2)
- D) Rod/cable/ coax probe
- E) Intrinsically safe coaxial connection. Maximum cable lengh ≤ 50m

F) Cable outlet

1) Optional

- ²⁾ ASME, DIN, G, LA, NPT or TRI-CLAMP industry type flange, with pressure ratings and any type which comply with an international or national standard
- ³⁾ Additionally for application with fixed mounted cable: Li^{*} = 0.55 μH/m, Ci^{*}_{wtwwwe} = 58 pF/m, Ci^{*}_{wtwwwe} = 58 pF/m, Ci^{*}_{wtwwwe} = 270 pF/m
 ⁴⁾ The apparatus is suitable for connection to a fieldbus system according the FISCO concept (IEC 60079-11), e.g. Profibus
- ⁴⁾ The apparatus is suitable for connection to a fieldbus system according the FISCO concept (IEC 60079-11), e.g. Profibus PA or Foundation Fieldbus
- ⁵⁾ If the connection cable is supplied by VEGA the maximum cable length is 341m
- 6) Only PLICSCOM or connection to VEGADIS 61,81 possible



Control Drawing VEGAFLEX FX8*(*).C/VC/O****F/PX4/D/S/W*** with optional external display and adjustment unit; Double chamber housing



Intrinsically safe parameter of supply and signal circuit

VEGAFLEX 8* connection compartment	Ui (V)	li (mA)	Pi (mW)	Ci (µF)	Li (µH)
Terminals 1, 2	24	250	1,2	± 0 ³⁾	5 ³⁾
or					
Terminals 1, 2	17,5	500	5,5	4)	

Intrinsically safe parameter of operation and indication circuit

VEGAFLEX 8* electronics compartment	C _{Cable} (µF)	L _{Cable} (µH)
Terminals 5, 6, 7, 8	≤ 212 ⁵⁾	≤ 1,98 ⁵⁾

a) Control Room Um ≤ 253 V

b) Associated Apparatus with entity parameters IS Barrier $U_o \leq U_i$, $lo \leq I_i$, $P_o \leq P_i$, $C_o \geq C_i + C_{cable}$, $L_o \geq L_i + L_{cable}$

c) Approved fieldbus device suitable for the location d) Approved fieldbus termination suitable for the location

A) Electronics compartment B) Connection compartment

C) Process fitting 2)

D) Rod/cable/ coax probe

1) Optional

or

2) ASME, DIN, G, LA, NPT or TRI-CLAMP industry type flange, with pressure ratings and any type which comply with an international or national standard

3) Additionally for application with fixed mounted cable: Li` = 0.55 µH/m, Ci`wirewre = 58 pF/m, Ci`wires/shield = 270 pF/m

⁴⁾ The apparatus is suitable for connection to a fieldbus system according the FISCO concept (IEC 60079-11), e.g. Profibus PA or Foundation Fieldbus

⁵⁾ If the connection cable is supplied by VEGA the maximum cable length is 341m

⁶⁾ Only PLICSCOM or connection to VEGADIS 61,81 possible



Control Drawing VEGAFLEX FX8*(*).C/VC/O****F/PXL/M/T*** with optional external display and adjustment unit; Double chamber housing; External version



Intrinsically safe parameter of supply and signal circuit

VEGAFLEX 8* connection compartment	Ui (V)	li (mA)	Pi (mW)	Ci (µF)	Li (µH)
Terminals 1, 2	24	250	1,2		5 ³⁾
or					32

Terminals 1, 2	17,5	500	5,5	ŀ

Intrinsically safe parameter of operation and indication circuit

VEGAFLEX 8* electronics compartment	C _{Cable} (µF)	L _{Cable} (µH)
Terminals 5, 6, 7, 8	≤212 ⁵⁾	≤ 1,98 ⁵⁾

a) Control Room Um ≤ 253 V

b) Associated Apparatus with entity parameters IS Barrier $U_0 \le U_i$, $I_0 \le I_i$, $P_0 \le P_i$, $C_0 \ge C_i + C_{cable}$, $L_0 \ge L_i + L_{cable}$

c) Approved fieldbus device suitable for the location

d) Approved fieldbus termination suitable for the location

A) Electronics compartment

B) Connection compartment

C) Process fitting 2)

D) Rod/cable/ coax probe

E) Intrinsically safe coaxial connection. Maximum cable lengh ≤ 50m

F) Cable outlet

1) Optional

- ²⁾ ASME, DIN, G, LA, NPT or TRI-CLAMP industry type flange, with pressure ratings and any type which
- comply with an international or national standard
- ³⁾ Additionally for application with fixed mounted cable: Li^{*} = 0.55 µH/m, Ci^{*} wire/wire = 58 pF/m, Ci^{*} wire/shield = 270 pF/m
- ⁴⁾ The apparatus is suitable for connection to a fieldbus system according the FISCO concept (IEC 60079-11), e.g. Profibus PA or Foundation Fieldbus
- ⁵⁾ If the connection cable is supplied by VEGA the maximum cable length is 341m
- ⁶⁾ Only PLICSCOM or connection to VEGADIS 61,81 possible



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