Technical specifications

Measuring principle:	Oscillating quartz measurement
Operating pressure:	max. 15 bar
Humidity:	suitable for outdoor usage: 55°C and max. 98% relative
Protection:	IP65
Vibration:	15 g (max. 6 mm), (5...2000 Hz)
Shock:	100g/ 6 ms
Torque moment pressure connection:	max. 25 Nm
Nominal temperature:	permanent: –40°C ... +70°C
	max. 200h per year: –55°C ... +70°C
Storage temperature:	–40°C ... +85°C
Media temperature:	–40°C ... +70°C

Electrical data

Digital output signal (PWM signal)

Density signal:	current pulses
	pulse frequency 10...292 Hz
Temperature signal:	Pulse width 2188...2565...2975µs
	(=Temp. -40...23...85°C)
Measuring range:	0...60 kg SF6/m³)
Supply voltage:	2-wire, 10...20 VDC
	3-wire, 14...28 VDC
Ground:	via gas connection of sensor
Reaction time:	<10 ms (with density changes)

Analogue output signal

Density signal:	6.5...20 mA current loop
Measuring range:	0...56.1 kg SF6/m³)
Supply voltage:	2-wire, 10...32 VDC
Ground:	via gas connection of sensor
Reaction time:	<10 ms (with density changes)
Dielectrical strength:	250 VAC, 50 Hz
Resistance of insulation:	>10 MΩ, 250 VDC

Mechanical data

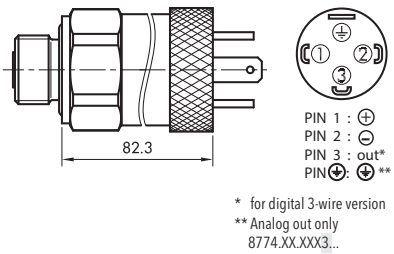
Material:	
Pressure connection:	1.4435 (AISI316L)
Tube	1.4301
O-Ring:	EPDM
Male electrical plug:	see ordering info
Screwed cable gland:	brass nickel plated
Mounting:	any position
Weight:	approx. 200...400 g

Type label (Identification)

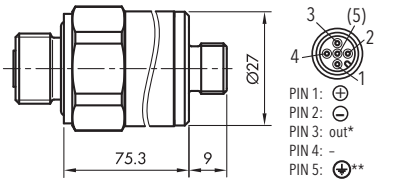
For all inquiries please indicate:

Instrument type:	Type: 8774.XX.XXXX.XX
Instrument serial number:	S/N: XXXXXX.X.XX.XX–XX

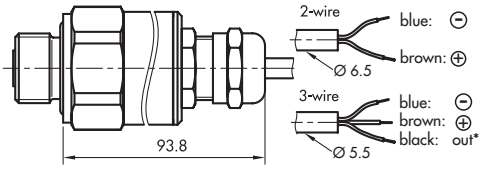
Dimensions / electrical connection



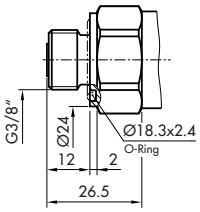
* for digital 3-wire version
** Analog out only
8774.XX.XXX3...

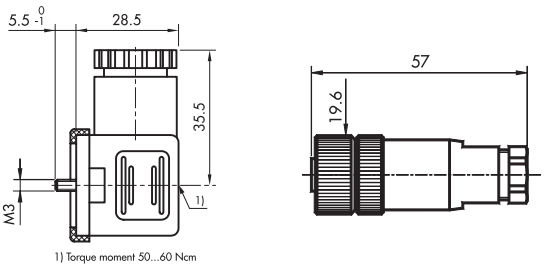


* for digital 3-wire version
** Analog out only
8774.XX.XXX3...



* digital 3-wire version
8774.XX.XXX3....

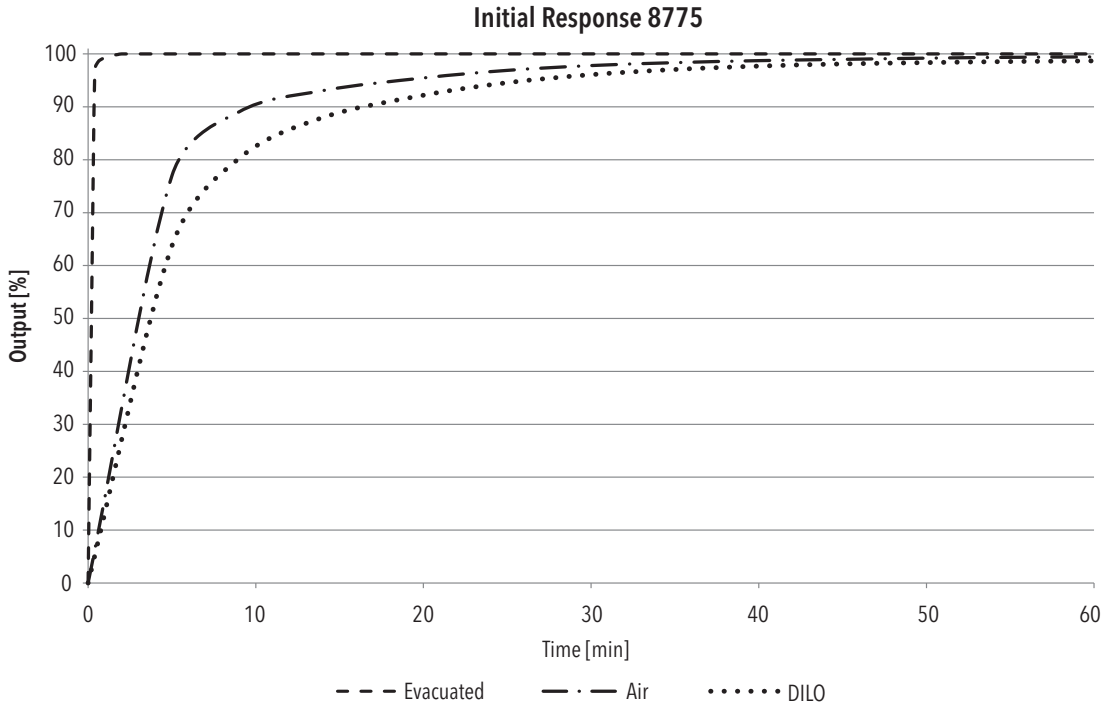




1) Torque moment 50...60 Ncm

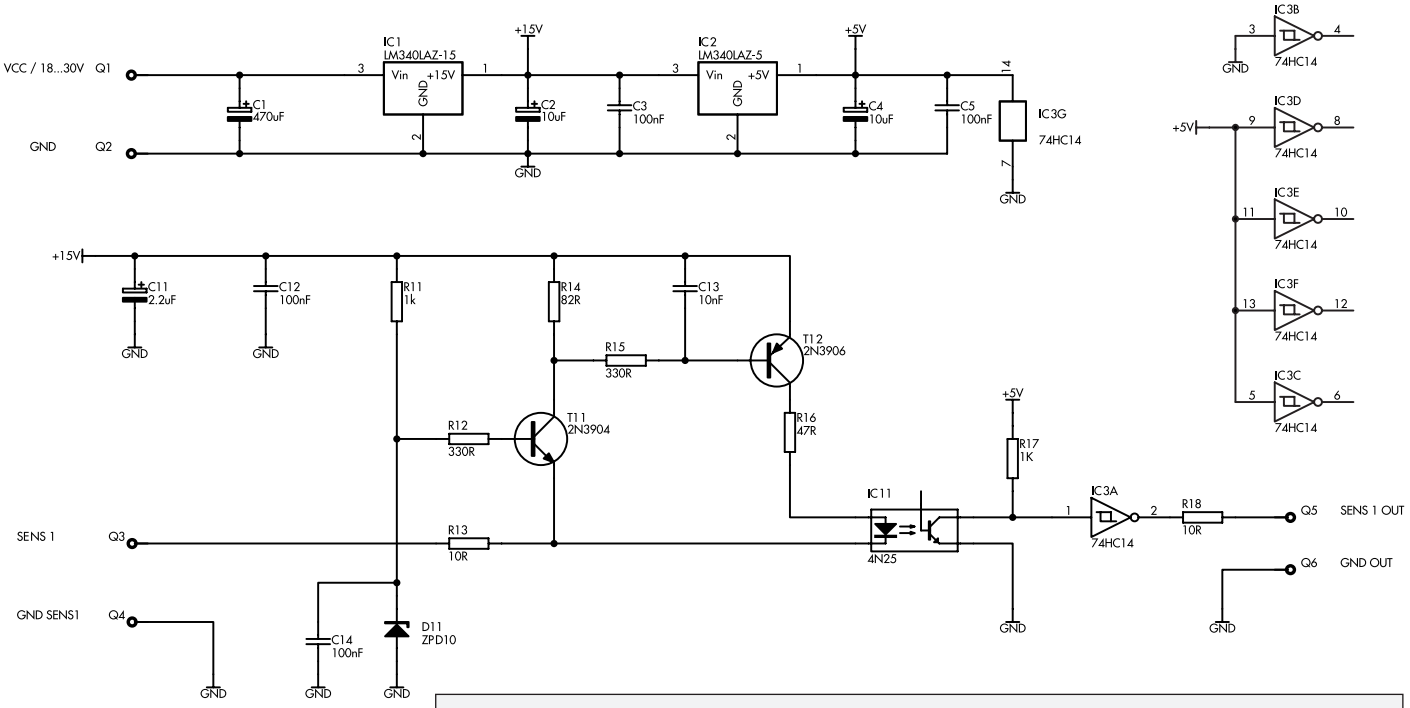
Initial response time after installation

t98 = Time scale for very first installation, measured value within 98% of exact value



Air = device directly plugged under air, t98 = 17 min
Evacuated = device directly plugged under vacuum, t98 = 5 sec
DILO = with DILO DN7 plugged under air, t98 = 40 min

Electric schematic diagram for signal analysis



It is recommended to use a constant voltage source to measure the current consumption of the sensor

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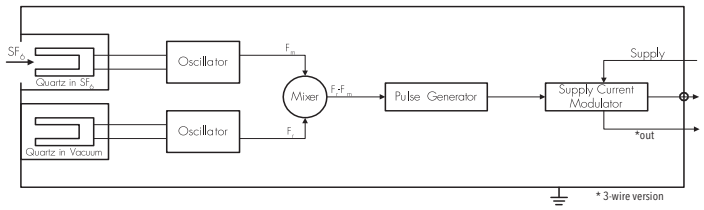
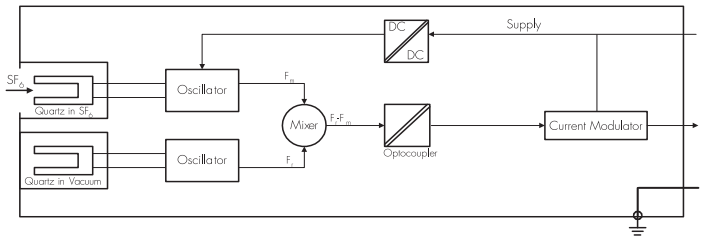
Functional diagram

Digital 2- or 3 wire

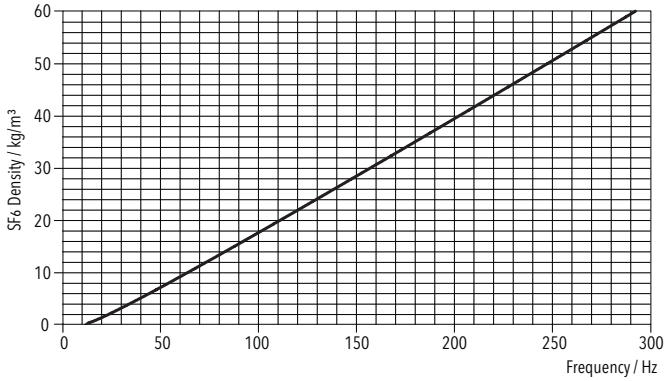


Analogue 2-wire



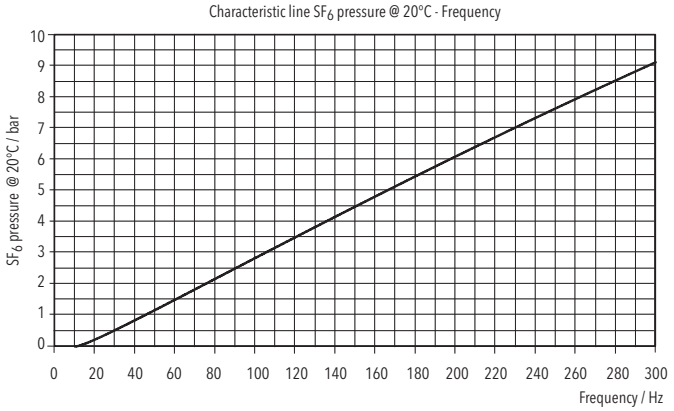
Digital output signal

Conversion frequency to SF_6 gas density



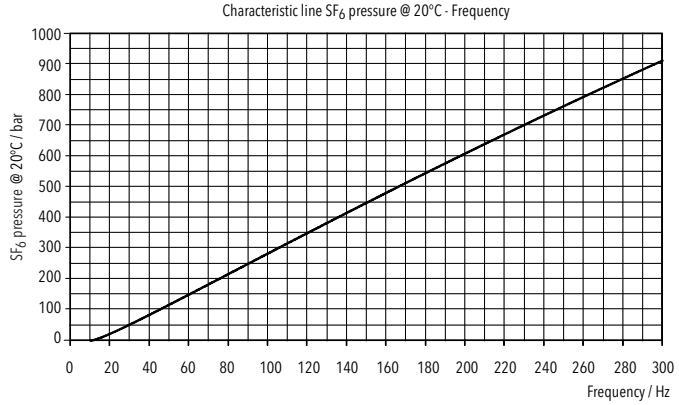
Density $\rho = \{\sqrt{(0{,}237 * F[Hz]) - 2{,}182} - 0{,}44\}^2$

Conversion frequency to SF_6 gas density / pressure @ 20°C



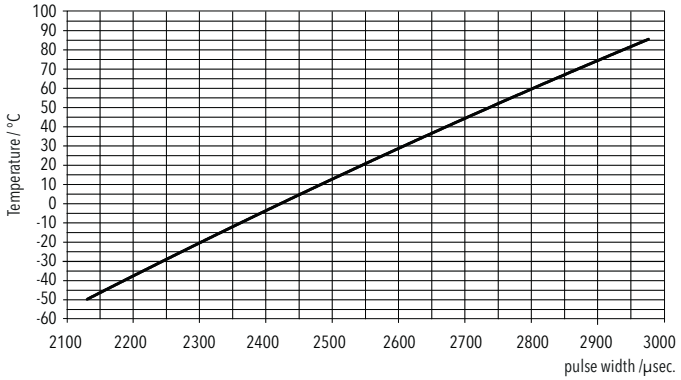
SF_6 Pressure [bar] @ 20°C ≈ 0.032 * F [Hz] – 0.32
(linearized approximation with additional error of ± 0.3 FS within 100...250 Hz)

Conversion frequency to SF_6 gas density / pressure @ 20°C



SF_6 Pressure [kPa] @ 20°C ≈ 3.2 * F [Hz] – 32
(linearized approximation with additional error of ± 0.3 FS within 100...250 Hz)

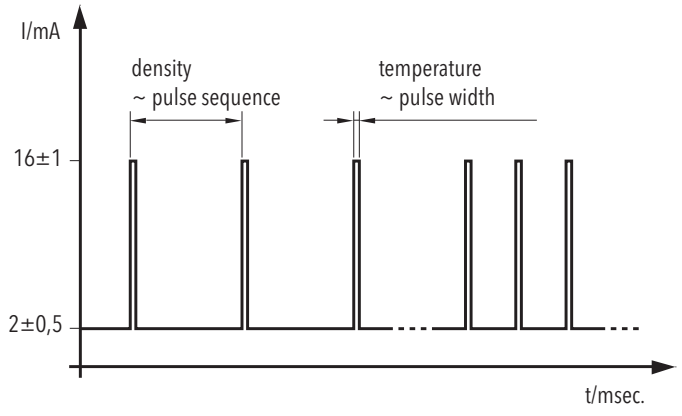
Conversion pulse width to temperature



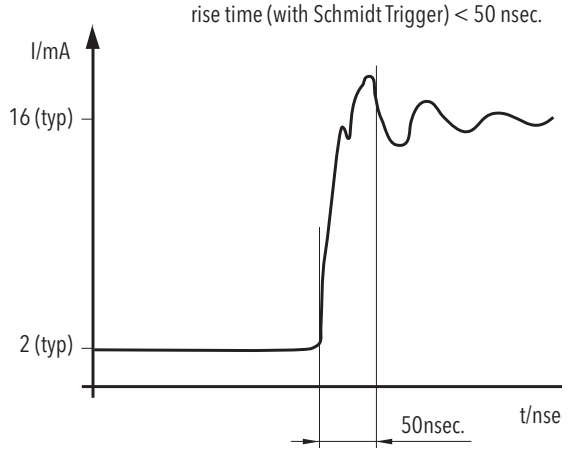
Temp. $T = -1{,}951 * 10^{-5} * I[\mu s]^2 + 0{,}2595 * I[\mu s] - 514{,}3$

PWM signal

current pulses, height typical 12–14 mA; power consumption electronics, without pulses typical 2 mA

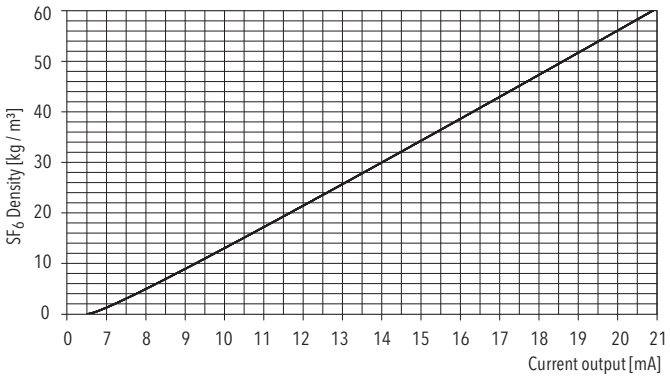


rise time (with Schmidt Trigger) < 50 nsec.



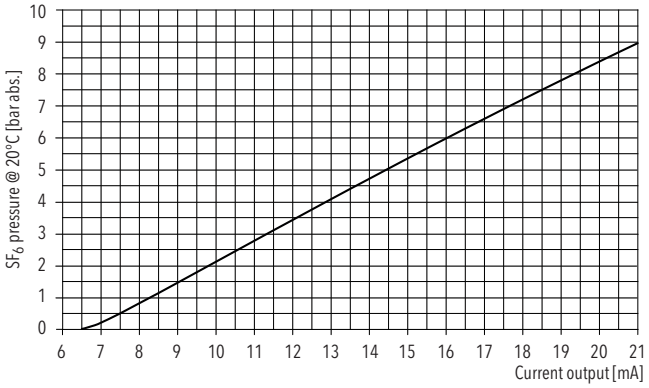
Analogue output signal

SF_6 gas density



Density $\rho = \{ \sqrt{4{,}651 * (I - 6{,}005) - 2{,}185} - 0{,}44 \}^2$

SF_6 gas pressure @ 20°C



Pressure p @ 20°C = {0,000569502 * T[K] * Density [kg/m^3]
+ (0,00250695 * 0,000569502 * T[K] – 0,00073822) * Density [kg/m^3] ^{2}
– (0,00000212238 * 0,000569502 * T[K] – 0,000000513) * Density [kg/m^3] ^{3}}

≈ 0.6303 * current [mA] – 4.1419
(add. non-linearity ±0.3 FS between 9.5 and 19.25 mA)