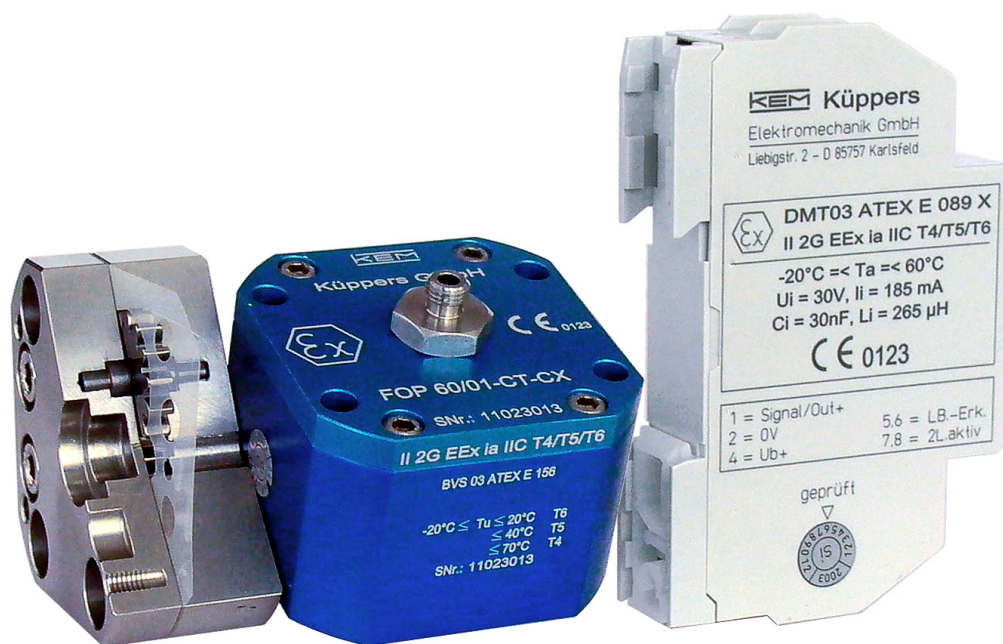


Technical Datasheet



FOP 60 and OPTV

Fibreoptical Amplifier and Lightpulse Receiver

Application

The FOP is a fibre-optic amplifier for KEM gear flow meters used in high-voltage applications. Its integral pickup detects the r.p.m. of the gears and the FOP provides a flow-proportional light pulse signal. The OPTV receiver will convert the light pulses into a current or voltage squarewave signal which may be used for evaluation.

Applications

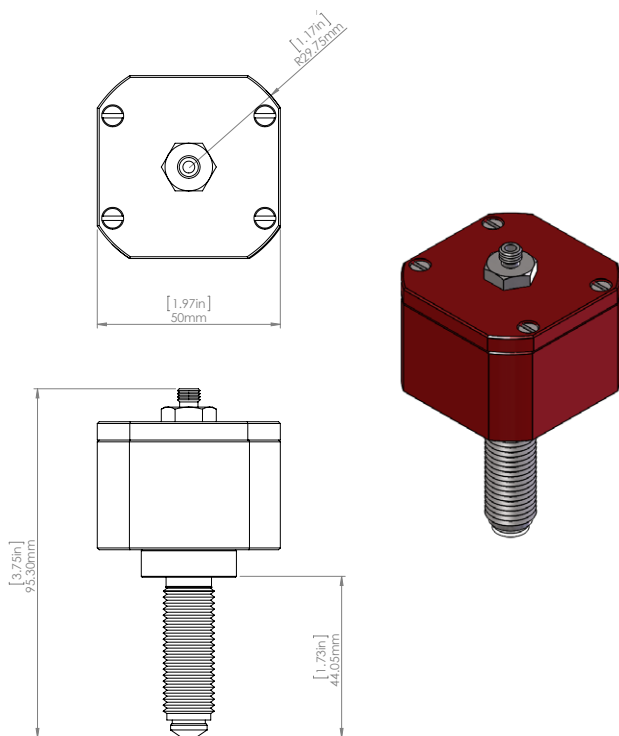
- Interference-free Pulse Detection
- No Electrical Connection to OPTV Receiver
- Anodised Aluminum Housing
- Light Weight and Handy Design

Technical Data FOP 60

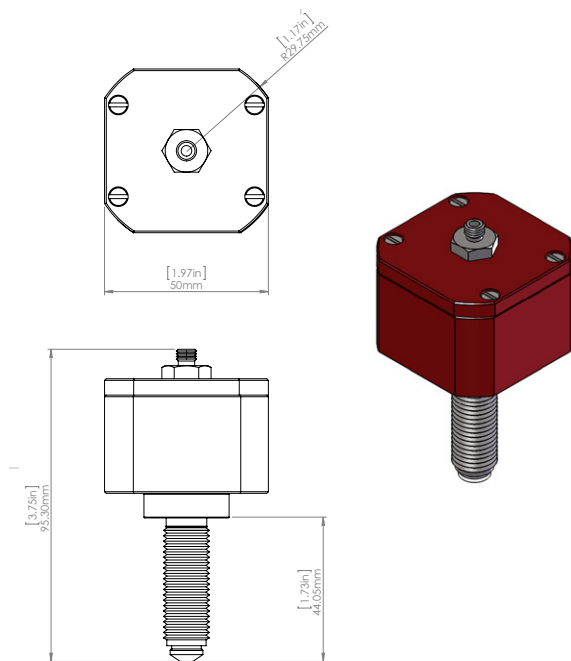
FOP Fibre-Optic Amplifier	
Power Supply	Lithium battery (exclusively use original batteries)
Battery Lifetime	Max. 2 years with 24h-operation
Ambient Temperature	-20 °C up to +50 °C [-4 °F up to +122 °F]
Frequency Range	7 up to 1,000 Hz
Weight	Approx. 190 g
Ingress Protection	IP65
Ex-protection, IS ATEX	II 2 G EEx ia IIC T4/T5/T6, BVS 03 ATEX E 156 CSA Ex ia IIC Class 1, Zone 0, AEx ia IIC
Housing	Anodised aluminum (for dimensions please see drawings)

Fibre-Optic Cable, Silicone-Free, Ready-to-Wire	
Type	OKE1000-C, orange-coloured
Cable Ø	5.5 mm
Plug Ø	< 8.5 mm
Bending Radius	> 10/50 mm
Tensile Strength	250/100 N
Bending Strength in Alternate Directions	> 10,000
Ambient Temperature	-30 °C up to +80 °C [-22 °F up to +176 °F]
Plug Type	2x LWST1000 65
Protection Class	IP65
Cable Length	Max. 10 m
Wire Tip Material	Nickel-silver (ARCAP)

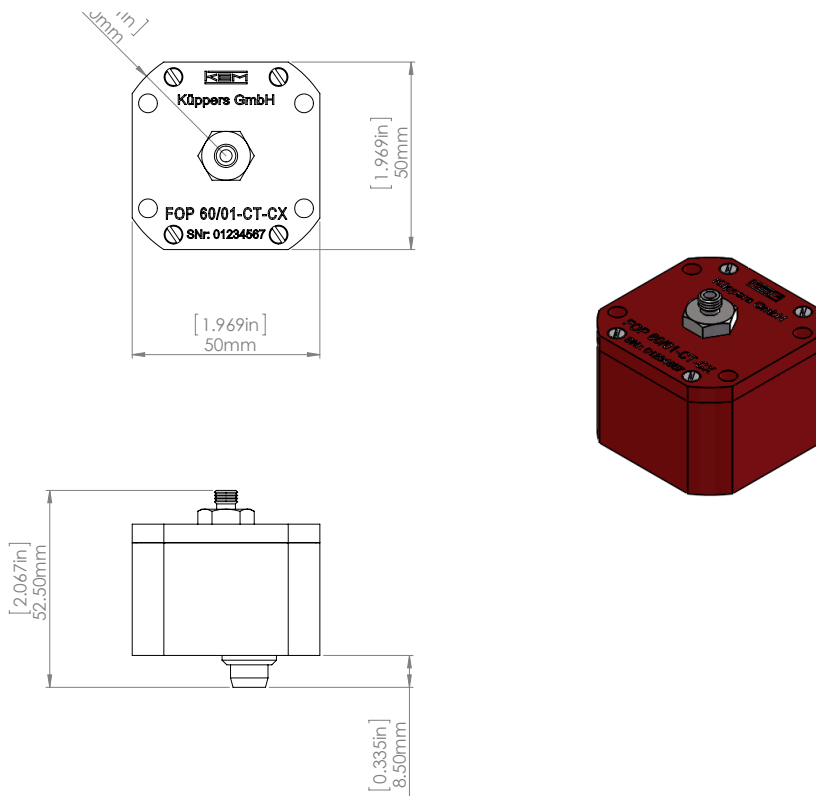
Dimensional Drawing – FOP 60-XX-XX-SR



Dimensional Drawing – FOP 60-XX-XX-SK



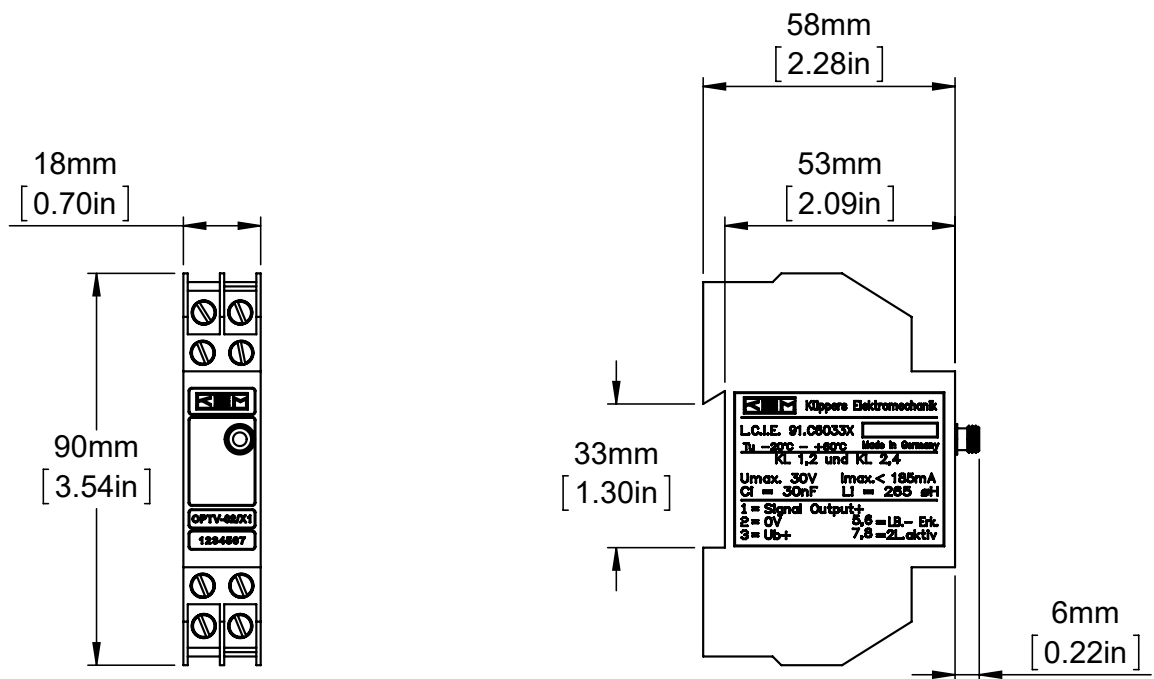
Dimensional Drawing – FOP 60-01-CT-CX



Technical Data – OPTV

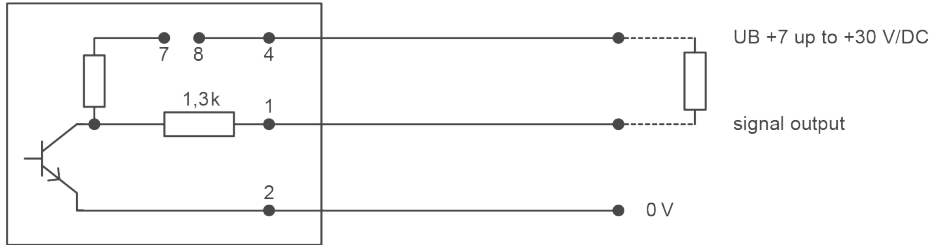
OPTV-02/X Light Pulse Receiver and Converter	
Ambient Temperature	-20 °C up to +60 °C [-4 °F up to +140 °F]
Supply Voltage	U_B : 7 up to 30 V
Quiescent Current	$I_R < 1,1$ mA
Output	Frequency output, constant pulsetime 500 µsec
Electrical Data, Alternatively	<p>Voltage outputs (3-wire connection)</p> <p>a. Active output High level: $U_{high} > U_B - 0.6 V - [2.5 k\Omega \times I_{out} (mA)]$ Low level: $U_{low} < 0.6 V + [1.3 k\Omega \times I_{out} (mA)]$</p> <p>b. Passive output High level: $U_{high} > U - [I_{out} (mA) \times 1.3 k\Omega]$ Low level: $U_{low} < 0.6 V + [1.3 k\Omega \times I_{out} (mA)]$ U is the voltage applied at the output, max. 30 V</p> <p>Current output (2-wire connection)</p> <p>a. For $U_B < 9$ V (NAMUR supply units) High level: $I_{high} > 2.2$ mA Low level: $I_{low} < 1.1$ mA</p> <p>b. For U_B 7 up to 30 V High level: $I_{high} = [(U_B - 0.6 V)/1.3 k\Omega] + I_{low}$ Low level: $I_{low} = (U_B - 4 V)/7.5 k\Omega$</p>
Frequency Range	3 up to 1,500 Hz according to flow meter
Electrical Connection	Two off 4-pin screw terminals for supply and output signals (see wiring schemes)
Ex Protection ATEX	II2 G EEx ia IIC T6, DMT 03 ATEX E 089X
Housing	Grey-coloured polycarbonate for DIN hat top rail mounting

Dimensional Drawing – OPTV

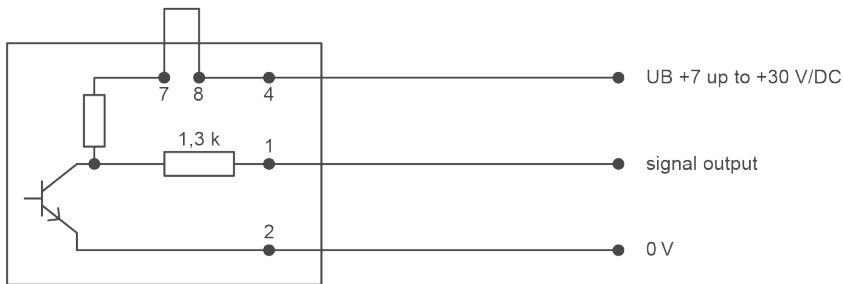


Electrical Connection OPTV

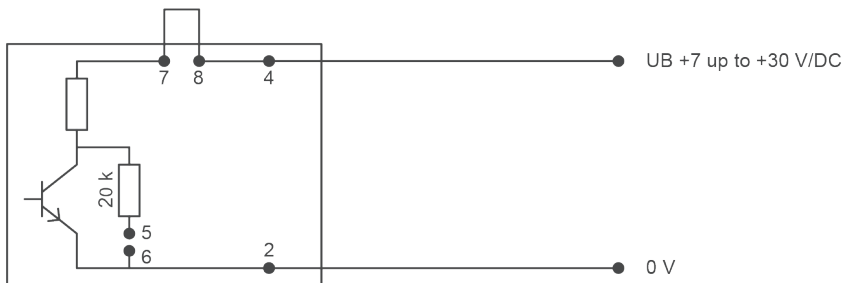
3-wire passive



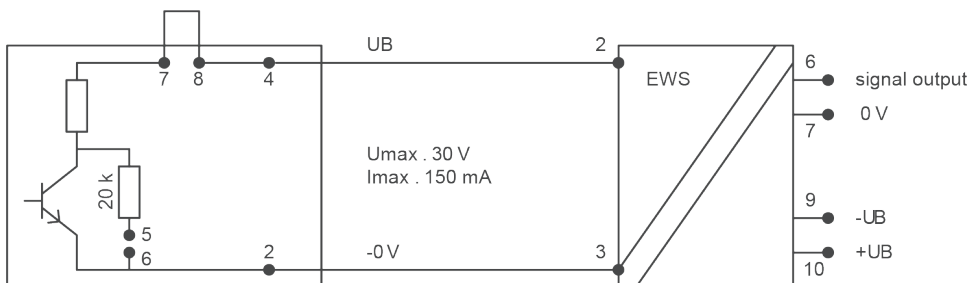
3-wire active



2-wire



2-wire with KEM separation amplifier type EWS



Ordering Code

	FOP60	-	X	X	-	X	X	-	X	X
Meter size										
ZHM 01 with pickup to plug			0	1						
Optional			X	X						
Meter design										
Cartridge design						C	T			
Optional M14x1.5						X	X			
Pickup nose										
With threadless transducer in Cartridge design									C	X
Short pickup with thread M14 x 1.5 for ZHM 02-04									S	K
Short pickup with thread M14 x 1.5 for ZHM 01/*									S	R

Marking

FOP 60:

KEM Küppers Elektromechanik GmbH

CE 0123 Ex II 2G Ex ia IIC T4/T5/T6

DMT 03 ATEX E 156

FOP 60/**-**-** Ser.Nr. 123456789

-20 °C [-4 °F] ≤ Ta ≤ +20 °C [+68 °F] T6
 ≤ +40 °C [+104 °F] T5
 ≤ +70 °C [+158 °F] T4

OPTV:

KEM Küppers Elektromechanik GmbH

CE 0123 Ex II 2G Ex ia IIC T4/T5/T6

DMT 03 ATEX E 089X

OPTV-02 Ser.No. 123456789

-20 °C [-4 °F] ≤ Ta ≤ +60 °C [+140 °F]

U_i = 30 V; I_i = 185 mA

C_i = 30 nF; L_i = 265 μH

The test sticker indicates year of building and person in charge of test.

Safety Instructions

The following has to be adhered to:

- a. Installation instructions for electrical devices,
- b. Installation instructions for associated intrinsically-safe devices,
- c. The »Special conditions for safe use« as per EC-Type Examination Certificate
- d. The devices have to be installed in a way that the max. ambient temperature does under no circumstances exceed the mentioned maxima (consider self heating).
- e. With cables care should be taken, that the max. inductivity and capacity of the respective voltage or gas group are not exceeded.
- f. Exceeding or falling below the regular measuring range will cause invalid frequency output signals.
- g. Shielded cables are to be used as connecting lines.
- h. Generally, supplied units have to be connected by an expert according to EMC stipulations.
- i. Terminals 5 - 6 and 7 - 8 must not be connected with an other device.



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