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Technical Datasheet

FOP 60 and OPTV

Fibre-Optic Amplifier and Receiver

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Description

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.

Features

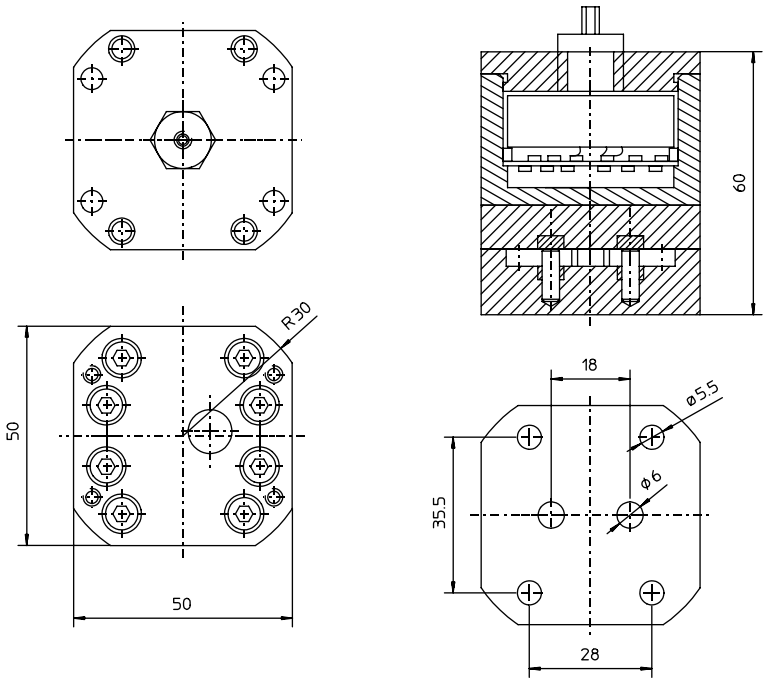
- Interference-free pulse detection
- No electrical connection to OPTV receiver
- Blue-anodised aluminum housing
- Light weight and handy design

Technical Data - FOP

FOP fibre-optic amplifier	
Power supply	lithium battery
Battery lifetime	max. 2 years with 24h-operation
Ambient temperature	-20 up to +50 °C
Frequency range	3 up to 1,000 Hz
Weight	approx. 190 g
Ex-protection, IS	Ⓔx I 2 G EEx ia IIC T4/T5/T6, BVS 03 ATEX E 156
Housing	IP65, anodised aluminium (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 up to +80 °C
Plug type	2 off LWST1000 65
Protection class	IP 65
Cable length	max. 10 m
Wire tip material	nickel-silver (ARCAP)

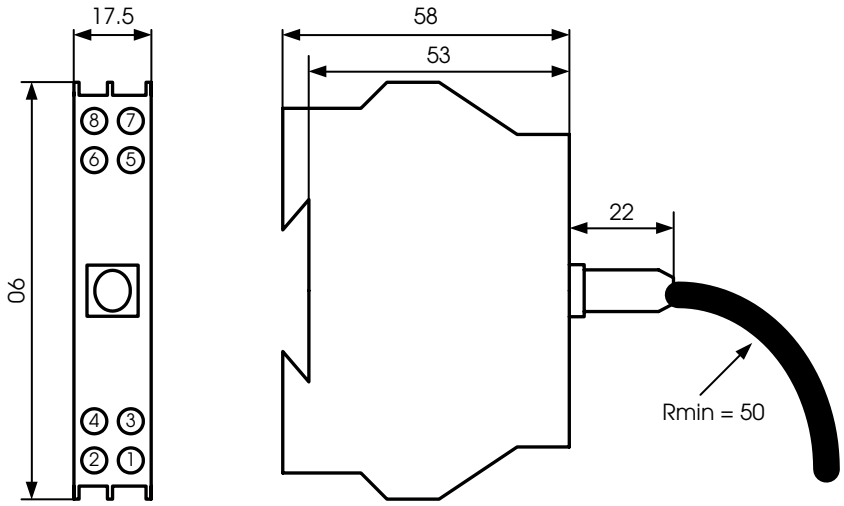
Dimensional drawing (mm) - FOP 60



Technical Data - OPTV

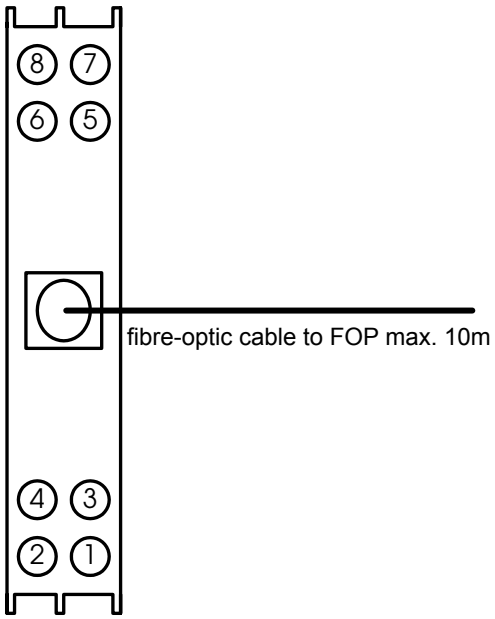
OPTV-02/X light pulse receiver and converter	
Ambient temperature	-20 up to +60 °C
Supply voltage	U_B: 7 up to 30 V
Quiescent current	I_R < 1.1 mA
Output	frequency output, constant pulsetime 500 µsec
Electrical data, alternatively	voltage outputs (3-wire connection) a) active output high level: $U_{high} > U_B$ - 0.6 V - 2.5 kΩ × I_{out} (mA) low level: U_{low} < 0.6 V + 1.3 kΩ × I_{out} (mA) b) passive output high level: $U_{high} > U - I_{out}$ (mA) × 1.3 kΩ low level: U_{low} < 0.6 V + 1.3 kΩ × I_{out} (mA) U is the voltage applied at the output, max. 30 V current output (2-wire connection) a) for U_B < 9 V (NAMUR supply units) high level: I_{high} > 2.2 mA low level: I_{low} < 1.1 mA 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: $I_{low} = (U_B - 4\ V)/7.5\ k\Omega$
Frequency range	3 up to 2,000 Hz according to flow meter
Electrical connection	two off 4-pin screw terminals for supply and output signals (cf. wiring schemes)
Ex protection	Ⓔx II 2 G EEx ia IIC T6, DMT 03 ATEX E 089X
Housing	grey-coloured polycarbonate for DIN hat top rail mounting

Dimensional drawing (mm) - OPTV



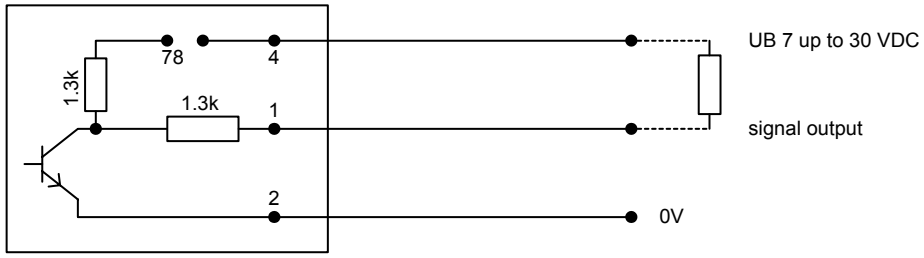
1= signal/out+
2= 0V
3= n.c.
4= UB+
5= detection of line breakage
6= detection of line breakage
7= 2-wire active
8= 2-wire active

connection via
screw terminals

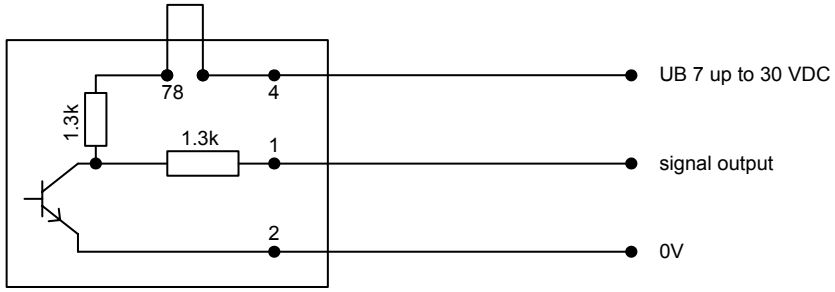


Electrical Connections - OPTV

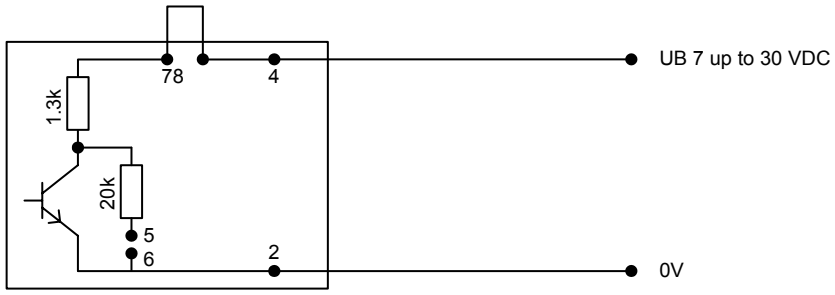
3-wire passive



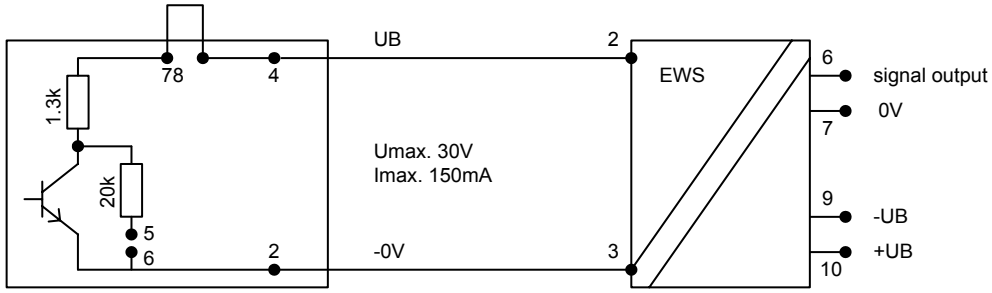
3-wire active



2-wire

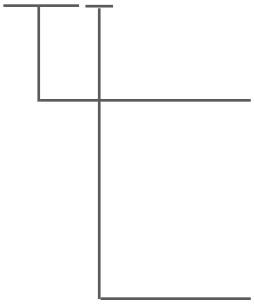


2-wire with KEM separation amplifier type EWS



Ordering Information

FOP **/-**-****



C* = with threadless pickup coil
SK = short pickup coil with thread M14 x 1.5 for ZHM 02 - 04
SR = short pickup coil with thread M14 x 1.5 for ZHM 01/*
SS = long pickup coil with thread M14 x 1.5 for ZHM 02

60/01/1-CT = with threadless pickup coil for ZHM...CT
**-CM = with threadless pickup coil for LFM 10

Marking

FOP 60:

KEM Küppers Elektromechanik GmbH
CE 0123 Ex II 2G Ex ia IIC T4/T5/T6
DMT 03 ATEX E 156

FOP60/**-**_** Ser.Nr. 123456789
-20 °C ≤ Ta ≤ 20 °C T6
≤ 40 °C T5
≤ 70 °C 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.Nr. 123456789
-20 °C ≤ Ta ≤ 60 °C

Ui = 30 V; Ii = 185 mA
Ci =30 nF; Li = 265 µH

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

Notes on Installation

The following has to be adhered to:

a) Installation instructions for electrical devices,
Installation instructions for associated intrinsically-safe devices,
The »Special conditions for safe use« as per EC-Type Examination Certificate

b) The amplifier has to be installed in a way that the max. ambient temperature does under no circumstances exceed +50 °C (consider self heating).

c) With cables care should be taken, that the max inductivity and capacity of the respective voltage or gas group are not exceeded.

d) Exceeding or falling below the regular measuring range will cause invalid frequency output signals.

e) Shielded cables are to be used as connecting lines.

f) Generally, supplied units have to be connected by an expert according to EMC stipulations.

g) The light pulse receiver must always be placed inside a housing with protection class IP20.

h) When the light pulse receiver is installed inside a housing made of plastics or light alloy the material must be in accordance with paragraph 7.3.2 or 8 of EN50014:1997.

i) The internal wiring in this housing must be in accordance with paragraph 6.4.11 and 7.6.e of EN50020:1994.

j) Terminals or plug connections for the intrinsically safe current circuits must be arranged as per paragraph 6.3.1 or 6.3.2 of EN50020:1994.

k) Terminals 5–6 and 7–8 must not be connected with an other device.