

IUF - Current to Frequency / Current to Voltage Converter



Features:

- Converts very low currents to frequency or to voltage with a linearity better than 0.3% for the frequency output, better than 0.1% for the voltage output
- High sensitivity - up to 5 pA/mV voltage output or 25 pA/kHz frequency output
- Three models ACUF4-1, ACUF4-2 and ACUF4-3 offer different input sensitivity
- Low noise design with very low leakage current and wide dynamic range
- 50 nA to 1000 nA full scale current range
- Pulse frequency (TTL) and voltage output, optical pulse output



The optical output enables the user to bridge large differences of voltage levels. A fiber optical cable and receiver is included with every IUF module.

Either positive or negative inputs are accepted (bipolar inputs only for voltage output). The output voltage or frequency is directly proportional to the input signal.

By counting the output pulses per unit time, one gets the high resolution current information. Integration of the input signal may be obtained over the counting duration by counting the output pulses in a scaler which is indicative of the total accumulated charge.

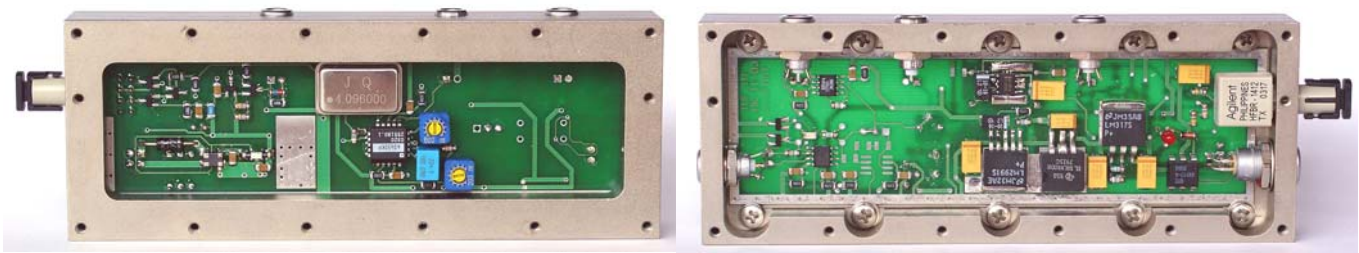
A very high (2 MHz full scale) output frequency provides exceptional resolution at short counting periods. The IUF models can be used as a digital current integrator. A typical application is a beam current digitizer.

Description:

The IUF-Series Current-to-Frequency and Current-to-Voltage converters is a compact device that can be mounted close to the signal source such as a Faraday Cup, Ion-Chambers, etc. and can transmit the voltage or frequency output to such devices as transient recorders, ADC's, digital volt meters (DVM) or multiscalers.

Model	ACUF4-1		ACUF4-2		ACUF4-3	
Jumper Position	1 (neg)	2 (pos)	1 (neg)	2 (pos)	1 (neg)	2 (pos)
R feedback	10 MOhm		50 MOhm		100 MOhm	
C fb	2.7 pF		2.7 pF		2.7 pF	
Timeconstant	37 μ s		185 μ s		370 μ s	
Input leakage current (typ)	1 pA					
Frequency output:						
Current range: 0 nA to	-1000 nA	+500 nA	-200 nA	+100 nA	-100 nA	+50 nA
Frequency sensitivity	-500 pA/kHz	+250 pA/kHz	-100 pA/kHz	+50 pA/kHz	-50 pA/kHz	+25 pA/kHz
Output frequency range	0 to 2 MHz					
Linearity error	0,3% max					
FS Current accuracy	+ -1%					
Test input Freq. converter	0...10 V					
Offset Freq. Adj. Range	0...30 kHz					
FS Freq. Adj. Range	1,95...2,048 MHz					
Voltage output						
-5 to +10 V						
Current range: from	+500 nA	-250 nA	+100 nA	-50 nA	+50 nA	-25 nA
to	-1000 nA	+500 nA	-200 nA	+100 nA	-100 nA	+50 nA
Sensitivity Volt	-100 nA/V	+50 nA/V	-20 nA/V	+10 nA/V	-10 nA/V	+5 nA/V
Noise Voltage (output, typ)	0.2 mV rms	0.4 mV rms	0.3 mV rms	0.6 mV rms	0.5 mV rms	1.0 mV rms
Noise Voltage (Ci=450 pF)	0.4 mV rms	0.8 mV rms	0.6 mV rms	1.2 mV rms	0.9 mV rms	1.8 mV rms
(bandwidth 0,1..10000Hz)						
Offset Voltage (max)	0.8 mV	1.6 mV	0.8 mV	1.6 mV	0.8 mV	1.6 mV
Linearity error	0,1% max					
Power supply						
+22 to +26 V @ 100 mA						

IUF 20032007 Rev. 5



For high resolution signal recording or signal-averaging the IUF models can be used as a front end of a FAST ComTec multichannel scaler such as the Model P7882 or the Model MS-12 Multi-Input Scaler board.

Dimensions, Cables & Connectors:

DIMENSIONS and WEIGHT

DIMENSIONS: 160 x 54 x 28 mm

WEIGHT: 280 g

INPUT/OUTPUT CONNECTORS

SIGNAL Lemo 00

VOLTAGE-out Lemo 00

TEST-in: Lemo 00

Frequency-out: Lemo 00 (signal, 50 Ohm)

Frequency-out: ST-connector (optical)

Fibre optic cable: 62.5/125 μ m

POWER-in Lemo 0 (304)

FIBRE OPTIC CABLE CONVERTER

DIMENSIONS and WEIGHT

DIMENSIONS: 60 x 35 x 20 mm

WEIGHT: 50 g

INPUT/OUTPUT CONNECTORS:

Input FOC: ST connector

Output-TTL (50 Ohm): BNC

POWER SUPPLY

for IUF

Input: 90 ... 230V AC

Output: 24V / 0.4A

Connector: Lemo 0 (304)

Weight: 120 g

for Fibre Optic Cable Converter

Input: 90 ... 230V AC

Output: 7.5V / 0.8A

Connector: 2.1 x 5 mm

FIBRE OPTIC CABLE

Fibre optic cable: 62.5/125 μ m

Outer diameter: 2.8 mm FRNC

Connectors: ST

Length: 10 m

ORDERING INFORMATION

Model	Order No.
ACUF4-1	ACUF41
ACUF4-2	ACUF42
ACUF4-3	ACUF43

Each model is shipped including: two Power Supplies, Fibre Optic Cable Receiver and 10 m Fibre Optic Cable

