



ULTRASTAB 867-200IHF Precision Current Transducer

The Ultrastab 867-200IHF Current Transducer is a model in the Ultrastab Current Transducer program.

It is the second generation of current transducers from Danfysik with transducer head and SMD based electronics integrated in one assembly.

The 867-200IHF features a new zero flux detector construction with extreme low noise feed back, compact in size and competitive in price.

It ranges 0-200A from DC to 150kHz with a temperature drift lower than 0.1ppm/K. Powered with $\pm 15V$ it produces an analog output current of 200mA at 200A primary current.

Output noise and noise feed back to the main conductor are both extremely low, and electrostatic shielding ensures maximum immunity against external electrostatic fields.

The 867-200IHF features

- Bandwidth DC to 150kHz
- Linearity better than 3ppm
- Traceable absolute calibration
- Temperature drift less than 0.1ppm/ $^{\circ}C$
- Bipolar - up to 200A primary current with 200mA output current
- Low noise on output signal
- Noise feed-back to main conductor $<5\mu V$
- Resolution better than 0.05ppm

Applications

- Feed back element in high performance gradient amplifiers
- Feed back element in precision current regulated power supplies

North American Distributor: GMW Associates • 955 Industrial Rd • San Carlos, CA 94070 • USA
Tel +1 650 802 8292 • Fax +1 650 802 8298 • sales@gmw.com • www.gmw.com

Working principle

The Ultrastab 867 Current Transducer system is a unique design, based on the zero flux principle for galvanically isolated current measurement.

The Ultrastab 867 has a built-in free-running oscillator, which drives the zero flux detector circuitry.

With the primary current conductor through the transducer head center hole and current flowing, the electronics will generate a current in the built-in compensation winding counterbalancing the primary ampere turns.

A very sensitive and extremely low noise detector circuit will detect when zero flux is obtained, and an analog current signal will be generated at the output terminals in direct proportion to the primary current.

Installation

The Ultrastab 867-200IHF unit is fully self-contained, requiring only $\pm 15V$ voltage supply. All connections via a 9-pole D-sub socket.

It can be installed in any orientation and has a high immunity against external magnetic and electrostatic fields.

With the 867 delivered with the standard transfer ratio of 1000:1, a 200A primary current will generate a 200mA compensation current. Wired up with a 5 Ohm Burden resistor, a 1V analogue output signal will be available.

On the attached installation data sheet it can be seen that the 867-200IHF can operate with higher resistance values of Burden resistors, but in order to get the best performance out of the Burden resistors, we recommend to keep the power loss as low as possible.

Standard features

The Ultrastab 867 is equipped with opto insulator for status interlock reading. A LED on the front shows NORMAL OPERATION i.e. interlock status ok.

The Ultrastab 867 has a built-in scanning/lock in circuit for automatic recovery to normal operation after overload condition.

Accessories

- 9-pole D-sub with 2m shielded cable
- 5 Ohm Burden resistor (2 x 10 Ohm), 0.1%, $T_c < 3\text{ppm}/^\circ\text{C}$
- 10 Ohm Burden resistor (1 x 10 Ohm), 0.1%, $T_c < 3\text{ppm}/^\circ\text{C}$
- $\varnothing 25$ busbar

Ordering information standard

- 867-200IHF current transducer
- 866/867-BR5 Burden resistor
- 866/867-BR10 Burden resistor
- 866/867-SC, 2m shielded cable
- 866/867-BB bus bar

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Last update: 31.10.2007

Current transducer

Parameter	Symbol	Condition	Value	Unit
Primary current	I_p		± 200	A
Nominal primary current Polarity			Bipolar	
Secondary current	I_s		± 200	mA
Nominal secondary current				
External burden resistor	R_b			
Max.		$R_{b, \max}$	30	Ω
Min.		$R_{b, \min}$	0	Ω
Current transfer ratio	N		1000	
Overload capacity				
Max. nondestructive overload	$I_{p, \max}$	@ 0.1s	500	%I _{pN}
Min. overload trip value	$I_{p, \text{trip}}$		110	%I _{pN}
DC accuracy				
Offset				
Initial	I_{s0}		< 60	ppm
Drift vs. Temp.	$I_{s0, \text{temp}}$		< 1	ppm / K
Drift vs. Time	$I_{s0, \text{time}}$		< 1	ppm / month
Drift vs. supply voltage	$I_{s0, \text{supply}}$		< 2	ppm / %
Linearity				
Deviation	X_d		< 3	ppm
Output noise	$I_{s, \text{noise}}$			
		0 - 10Hz	< 0.05	ppm (RMS)
		0 - 100Hz	< 1	ppm (RMS)
		0 - 1kHz	< 2	ppm (RMS)
		0 - 10kHz	< 6	ppm (RMS)
		0 - 50kHz	< 10	ppm (RMS)
	0 - 150kHz	< 20	ppm (RMS)	

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Current transducer

Parameter	Symbol	Condition	Value	Unit
Dynamic response				
Slew rate	dI/dt	10 - 90%	> 100	A / μ S
Delay time	t_d		< 1	μ S
Bandwidth				
± 0.4 dB	f	<0.5%I _{pn}	DC to 150	kHz
Busbar noise				
Measured on primary cable, one turn	U_b	DC - 50kHz	< 5	μ V RMS
Busbar free zone				
Length	l		140	mm
Radius	r		70	mm
Test voltages				
Busbar to GND	V _{t, b}		5000	VAC RMS
Power supply				
Supply voltage	V _s	$\pm 5\%$	± 15	V
Maximum quiescent current	I _q		± 70	mA
Maximum current consumption	I _{max}		± 270	mA
Operating environment				
Temperature	T _a		10 - 50	$^{\circ}$ C
Humidity	RH _a	Noncondensing	20 - 80	%RH
Storage environment				
Temperature	T _s		-20 - 85	$^{\circ}$ C
Humidity	RH _s	Noncondensing	20 - 80	%RH

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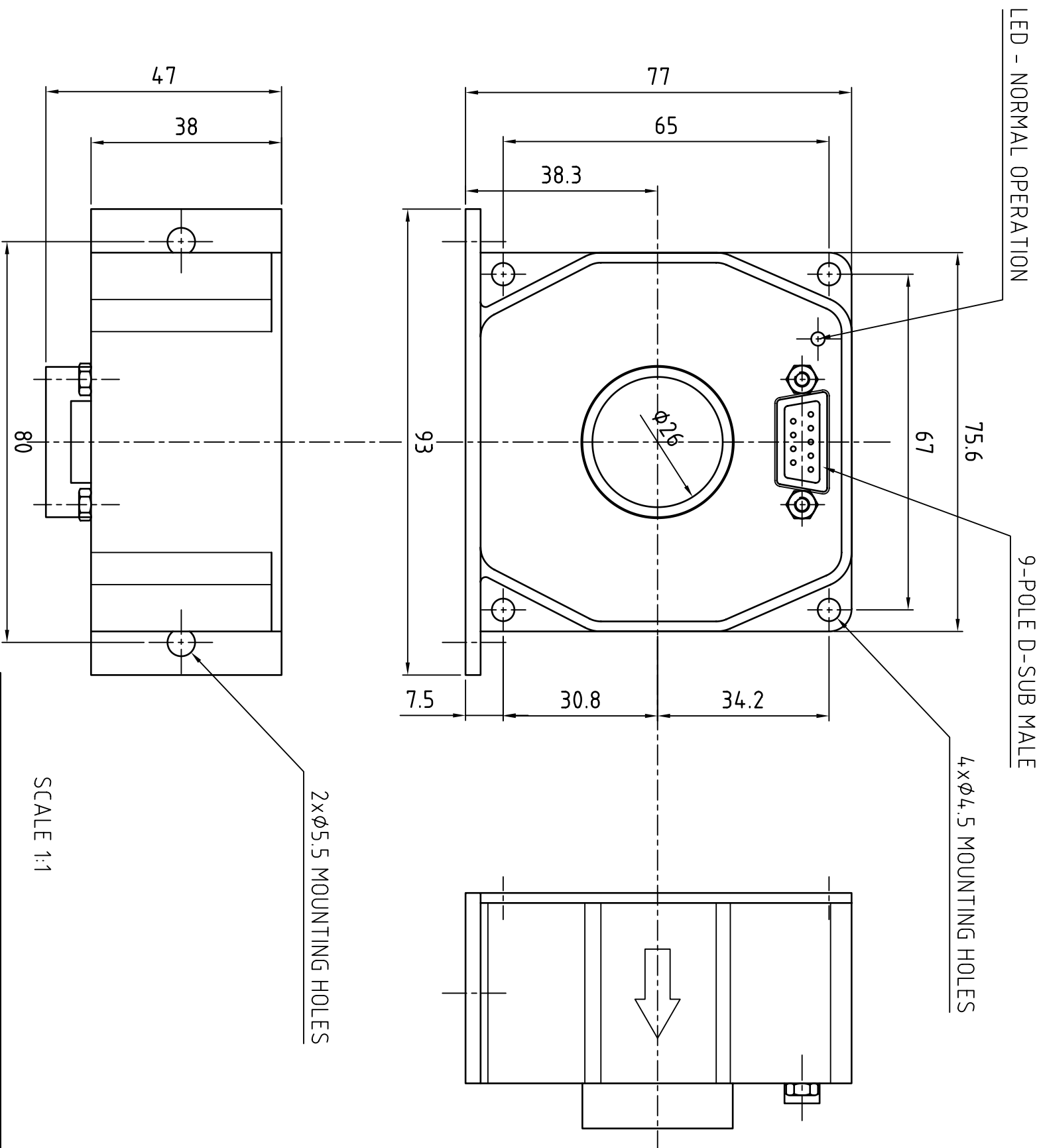
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Current transducer

Parameter	Symbol	Condition	Value	Unit
Mechanical dimension				
Width	W		93	mm
Height	H		78	mm
Depth	D		47	mm
Weight (approx.)	m		0.3	kg
Inner hole diameter	O		26	mm

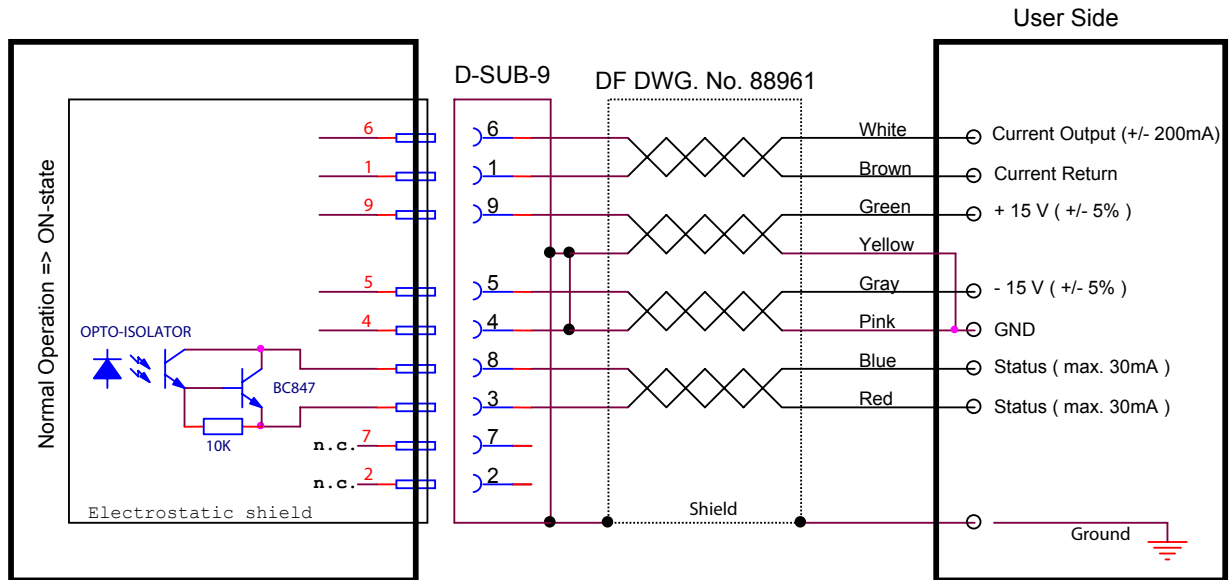
Notes:

- 1: All ppm figures refer to nominal current
- 2: Specifications are subject to change without notice



<p>DANFYSIK DK-4040 Jyllinge, Denmark Homepage: www.danfysik.dk e-mail: danfysik@danfysik.dk Phone: +45 4679 0000 Fax: +45 4679 0001</p>		Projection: Dimensions without tolerance indication: EN 22768-mk Scale: 1:1 Customer: CURRENT TRANSDUCER Description: Assembly Ultrafab 200/4001 Size: A3	
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Proj. Eng. Des. App. Drawn by	Date: Name: TS	CAD File Type: AutoCAD Mechanical 2002 Plot Date: 24-06-2004	Sheet 1 of 1

ULTRASTAB 867-200IHF INSTALLATION



Pin configuration for 9 pole D_SUB :

Pin 1	Current return	Pin 6	Current output
Pin 2	N.C.	Pin 7	N.C.
Pin 3	Normal operation status	Pin 8	Normal operation status
Pin 4	GND	Pin 9	+15V supply voltage
Pin 5	-15V supply voltage	House	Electrostatic shield

Electrical specification - power :

Supply voltage pin 9 to pin 4	:	+ 15 V +/- 5 %
Supply voltage pin 5 to pin 4	:	- 15 V +/- 5 %
Supply current pin 9 to pin 4	:	+ 70 mA + output current (200 mA nom.)
Supply current pin 5 to pin 4	:	- 70 mA - output current (200 mA nom.)
Test voltage secondary (pin 4) to shield	:	200 VDC

Electrical specification – status signal :

Fault level (off-state)	:	$I_p > 110 \%$
Max. voltage pin 8 to pin 3 , off-state	:	45 V
Max. current pin 8 to pin 3 , on-state	:	30 mA
Reverse voltage pin 8 to pin 3 , off-state	:	5 V
On-voltage pin 8 to pin 3 , $I = 5 \text{ mA}$:	1 V max.
Test voltage secondary (pin 4) to pin 8	:	300 VDC

Accessories :

- 9 pole D-sub plug with 2m shielded cable (Part No. 65889610)
- 5 Ω Burden Resistor (2 x 10 Ω) , 0.05% , $T_c < 3 \text{ ppm}/^\circ\text{C}$
- \varnothing 25mm busbar

Manufacturer: Danfysik A/S • Møllehaven 31 • DK-4040 Jyllinge • Denmark
 Tel. +45 4679 0000 • Fax +45 4679 0001 • danfysik@danfysik.dk • www.danfysik.com

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