

HLSR / HO Series Current Transducers

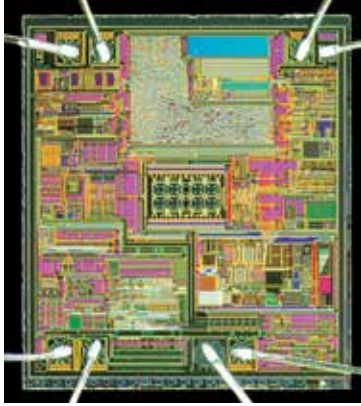
A new standard of performance
with Advanced ASIC Technology



HLSR / HO Series

Current Transducers with Advanced ASIC technology

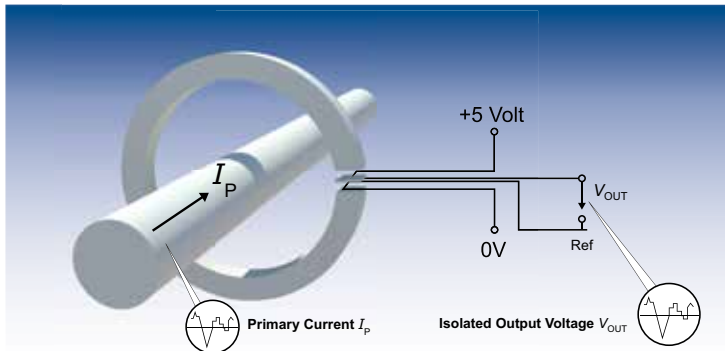
Special effort has been focused on a new Application Specific Integrated Circuit (ASIC) to meet industry trends in power electronics for optimisation of costs & reduction of size, together with performance improvement, resulting in a new generation of ASIC specific current transducers based on the Open Loop Hall effect technology leading to the development of the HLSR & HO series.



New ASIC die, a complete Open Loop Hall effect current transducer on a single chip.

With various versions of this ASIC at its heart:

- the HO models have been designed for current measurements from 2.67 A to 25 A nominal, with nine possible current ranges selectable either by digital programmability or by multi-range PCB configuration.
- the HLSR models have been designed for current measurements from 10 A to 50 A nominal, with five possible current ranges.



Open-Loop, Hall-Effect current transducers using an ASIC in the gap of the core.

HLSR Series

The perfect fit for your control system



HLSR - A cost-effective current transducer that out-performs shunts in every way.

The compact package of the **HLSR** requires only 387 mm²; less board area than many shunt solutions. Large clearance/creepage distances ensure safety, and its high performance supports accurate measurements across a wide temperature range of -40°C to +105°C.

The LEM **HLSR** is a single compact device that eliminates complexity in your design.

The LEM **HLSR** series:

- High performance open-loop ASIC based current transducer
- 10 A, 20 A, 32 A, 40 A and 50 A nominal current versions
- Single +5 V or +3.3 V power supply
- Fast response time: 2.5 μ s
- Full galvanic isolation
- 8 mm clearance/creepage distances + CTI 600
- Low offset and gain drifts:
Improved accuracy @ +105°C: ± 3.4 % of I_{PN}
- Over-drivable reference voltage @ 0.5 to 2.65 V or 0.5 to 1.7 V (respec. +5 or +3.3 V)
- Through-hole and SMT packages



HLSR Series

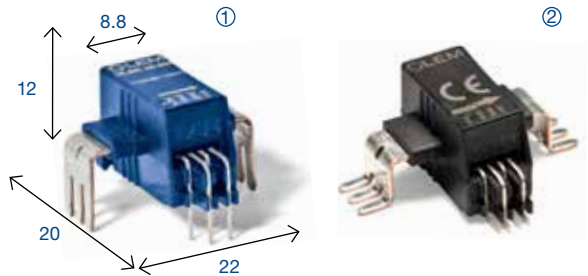
$I_{PN} = 10\text{ A} \dots 50\text{ A}$

I_{PN} A	I_P A	Technology	U_C V	V_{out} @ I_{PN}	BW kHz	$X @ I_{PN}$ $T_A = 25^\circ\text{C}$ %	T_A $^\circ\text{C}$	Connection				UR or UL	Packaging No	Type	Features
								Primary		Secondary					
						Aperture, busbar, other	PCB	Other	PCB	Other					
10	±25	O/L	+5/0	2.5V or $V_{ref} \pm 0.8V$	DC-400 (-3dB)	1	-40...+105	●		●	●	1	HLSR 10-P ¹⁾		
10	±25	O/L	+5/0	2.5V or $V_{ref} \pm 0.8V$	DC-400 (-3dB)	1	-40...+105	SMD		SMD	●	2	HLSR 10-SM ¹⁾		
10	±25	O/L	+3.3/0	1.65V or $V_{ref} \pm 0.460V$	DC-400 (-3dB)	1	-40...+105	●		●	●	1	HLSR 10-P/SP33 ¹⁾		
10	±25	O/L	+3.3/0	1.65V or $V_{ref} \pm 0.460V$	DC-400 (-3dB)	1	-40...+105	SMD		SMD	●	2	HLSR 10-SM/SP33 ¹⁾		
20	±50	O/L	+5/0	2.5V or $V_{ref} \pm 0.8V$	DC-400 (-3dB)	1	-40...+105	●		●	●	1	HLSR 20-P ¹⁾		
20	±50	O/L	+5/0	2.5V or $V_{ref} \pm 0.8V$	DC-400 (-3dB)	1	-40...+105	SMD		SMD	●	2	HLSR 20-SM ¹⁾		
20	±50	O/L	+3.3/0	1.65V or $V_{ref} \pm 0.460V$	DC-400 (-3dB)	1	-40...+105	●		●	●	1	HLSR 20-P/SP33 ¹⁾		
20	±50	O/L	+3.3/0	1.65V or $V_{ref} \pm 0.460V$	DC-400 (-3dB)	1	-40...+105	SMD		SMD	●	2	HLSR 20-SM/SP33 ¹⁾		
32	±80	O/L	+5/0	2.5V or $V_{ref} \pm 0.8V$	DC-400 (-3dB)	1	-40...+105	●		●	●	1	HLSR 32-P ¹⁾		
32	±80	O/L	+5/0	2.5V or $V_{ref} \pm 0.8V$	DC-400 (-3dB)	1	-40...+105	SMD		SMD	●	2	HLSR 32-SM ¹⁾		
32	±80	O/L	+3.3/0	1.65V or $V_{ref} \pm 0.460V$	DC-400 (-3dB)	1	-40...+105	●		●	●	1	HLSR 32-P/SP33 ¹⁾		
32	±80	O/L	+3.3/0	1.65V or $V_{ref} \pm 0.460V$	DC-400 (-3dB)	1	-40...+105	SMD		SMD	●	2	HLSR 32-SM/SP33 ¹⁾		
40	±100	O/L	+5/0	2.5V or $V_{ref} \pm 0.8V$	DC-400 (-3dB)	1	-40...+105	●		●	●	1	HLSR 40-P ¹⁾		
40	±100	O/L	+5/0	2.5V or $V_{ref} \pm 0.8V$	DC-400 (-3dB)	1	-40...+105	SMD		SMD	●	2	HLSR 40-SM ¹⁾		
40	±100	O/L	+3.3/0	1.65V or $V_{ref} \pm 0.460V$	DC-400 (-3dB)	1	-40...+105	●		●	●	1	HLSR 40-P/SP33 ¹⁾		
40	±100	O/L	+3.3/0	1.65V or $V_{ref} \pm 0.460V$	DC-400 (-3dB)	1	-40...+105	SMD		SMD	●	2	HLSR 40-SM/SP33 ¹⁾		
50	±125	O/L	+5/0	2.5V or $V_{ref} \pm 0.8V$	DC-400 (-3dB)	1	-40...+105	●		●	●	1	HLSR 50-P ¹⁾		
50	±125	O/L	+5/0	2.5V or $V_{ref} \pm 0.8V$	DC-400 (-3dB)	1	-40...+105	SMD		SMD	●	2	HLSR 50-SM ¹⁾		
50	±125	O/L	+3.3/0	1.65V or $V_{ref} \pm 0.460V$	DC-400 (-3dB)	1	-40...+105	●		●	●	1	HLSR 50-P/SP33 ¹⁾		
50	±125	O/L	+3.3/0	1.65V or $V_{ref} \pm 0.460V$	DC-400 (-3dB)	1	-40...+105	SMD		SMD	●	2	HLSR 50-SM/SP33 ¹⁾		

1) Ref_{IN} & Ref_{OUT} modes



Ask your sales person about kits (5 pieces) for tests purpose at special price.



** Dedicated data sheets are the only recognized reference documents for the given performances and data – Data sheets: www.lem.com



HO - Interactive, user-programmable current transducer.

Configure the appropriate HO by setting its operational characteristics using a simple microcontroller interface. Its outstanding performance gives better control, flexibility and improves systems efficiency while minimizing inventory with a unique configurable device.

The LEM HO Series:

Programmable Functions		
Nominal current ranges	3 possibilities: 8 / 15 / 25	A
Overcurrent detection	16 possibilities of thresholds	A
Response time	3 possibilities: 6 / 3.5 / 2	μs
Internal reference voltage	4 possibilities: 0.5 / 1.5 / 1.65 / 2.5	V
Low power mode	2 possibilities: Active or Inactive	
Standby mode	2 possibilities: Active or Inactive	
Fault reporting mode	2 possibilities: Active or Inactive	



- Single +5 V or +3.3 V power supply
- 8 mm clearance/creepage distances + CTI 600
- Low offset and gain drifts: Improved accuracy @ +105°C : $\pm 3.8\%$ of I_{PN}
- Over-drivable reference voltage @ 0.5 to 2.65 V or 0.5 to 1.7 V (respec. +5 or +3.3 V)
- Through-hole and SMT packages
- Overcurrent detection on a dedicated pin

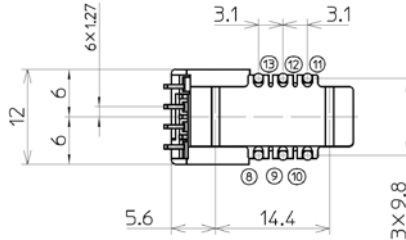
HO Series

Various current ranges

With LEM's latest ASIC generation at its heart, the HO models are designed for current measurements from 2.67 A to 25 A nominal, with nine possible current ranges selectable either by digital programmability (on the programmable versions) or by multi-range PCB configuration.

The HO construction uses three U-shaped primary terminals integrated into the housing, providing the designer with a greater flexibility to perfectly adapt the measuring range of the current transducer to the application. The primary resistance is 0.36 mΩ per conductor @ +25°C.

Possible nominal ranges of HO 25-NPPR/-NSMPR with the various primary bus bar configurations:



Number of primary turns	Primary resistance current rms R_p (typ.)(mΩ) @ +25°C	Recommended PCB connections	Primary nominal current rms, I_{PN} [A]		
			1	2	3
1	0.12		8	15	25
2	0.54		4	7.5	12.5
3	1.18		2.67	5	8.33

Overcurrent detection (OCD function)

The programmable overcurrent detection (OCD) function is provided on a dedicated pin, to be set by the user over 16 programmable levels up to $5.8 \times I_{PN}$ (the nominal primary current). The OCD output turns on within 2 μs when the corresponding overcurrent occurs, switching from a high (5 V) to a low level (0 V). The overcurrent threshold is detected with 10 % accuracy; the user can set a minimum duration of the OCD output pulse of 1 ms if required, to ensure that a short overload can still be detected by an external micro-controller.

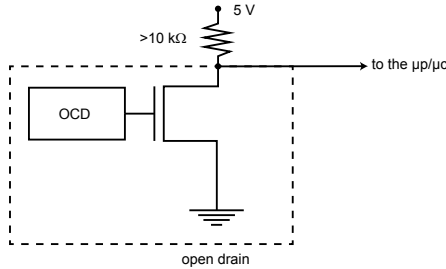
On the models programmed in factory, the overcurrent function is still provided on a dedicated pin at a pre-set value.

By externalising the OCD, the transducer is freed from measuring the peaks which are required for protection and enables its full measuring range to be used to measure the application's dynamic operating range.

Overcurrent detection (OCD function)

LEM's HO series allows a trip threshold of 580 % of the nominal rating of the transducer. This means that the externalised OCD can detect currents which are higher than the transducer's rated measurement range, enabling a transducer rated at 8 A to be programmed for an OCD threshold of 45.6 A.

A further benefit of the OCD pin is that it can be used to replace a dedicated overcurrent detection crowbar circuit which usually consists of a comparator and a number of resistors. By eliminating these discrete components, the OCD pin offers the additional benefit of reducing component count and board space.



LEM offers the HO models in 2 main versions:

- Models programmable by the user: HO 25-NPPR & HO 25-NSMPR are pre-programmed in the factory but have the possibility to change parameters afterwards via programming by the user.

Users program the HO transducer through a connection to a host microcontroller: when the V_{Ref} pin is forced to the supply voltage, the output pin becomes the I/O port of a single wire bus interface. Over this interface, serial data comprising a 12-bit word conveys the user's configuration choices, such as, among others: range selection, the internal reference voltage, and the overcurrent detection threshold. Data is sent over this interface to the transducer at 10 kbits/s and programming takes only a few hundred milliseconds. This programming procedure may be carried out at any time, so the operating parameters of the HO transducer may be re-assigned, even during operation of the device in its application (information on setting per default page 8).

- Models programmed at the factory as per page 9. These models can not be re-programmed by the user afterwards.

Parameters are fixed for the HO 8-NP, HO 15-NP, HO 25-NP, HO 8-NSM, HO 15-NSM, HO 25-NSM.

However, if nothing matches with your needs, do not hesitate to contact LEM. The shown models are just a small amount of the huge possible solutions of the HO.

HO Series

 $I_{PN} = 2.67 \text{ A} \dots 25 \text{ A}$ Programmable / User
HO 25-NPPR / HO 25-NSMPR

I_{PN} A	I_P A	Technology	U_C V	V_{out} @ I_{PN}	BW kHz	$X @ I_{PN}$ $T_A = 25^\circ\text{C}$ %	T_A $^\circ\text{C}$	Connection				Packaging No	Type	Features	
								Primary		Secondary					
								PCB Aperture, via/air other	PCB	Other	UR or UL				
2.67 ; 5 ; 8.33	$\pm 6.67 ; \pm 12.5 ; \pm 20.83$	O/L	+ 5/0	2.5 ; 1.65 ; 1.5 ; 0.5 V or $V_{ref} \pm 0.8\text{V}$	DC-100 ; 250 ; 600 (-3dB)	1	-40...+105	●		●	●	4	HO 25-NPPR ¹⁾ Orange for default setting	P	
4 ; 7.5 ; 12.5	$\pm 10 ; \pm 18.75 ; \pm 31.25$	O/L	+ 5/0	2.5 ; 1.65 ; 1.5 ; 0.5 V or $V_{ref} \pm 0.8\text{V}$	DC-100 ; 250 ; 600 (-3dB)	1	-40...+105	●		●		4	HO 25-NPPR ¹⁾ Orange for default setting	P	
8 ; 15 ; 25	$\pm 20 ; \pm 37.5 ; \pm 62.5$	O/L	+ 5/0	2.5 ; 1.65 ; 1.5 ; 0.5 V or $V_{ref} \pm 0.8\text{V}$	DC-100 ; 250 ; 600 (-3dB)	1	-40...+105	●		●		4	HO 25-NPPR ¹⁾ Orange for default setting	P	
2.67 ; 5 ; 8.33	$\pm 6.67 ; \pm 12.5 ; \pm 20.83$	O/L	+ 5/0	2.5 ; 1.65 ; 1.5 ; 0.5 V or $V_{ref} \pm 0.8\text{V}$	DC-100 ; 250 ; 600 (-3dB)	1	-40...+105	SMD		SMD		●	3	HO 25-NSMPR ¹⁾ Orange for default setting	P
4 ; 7.5 ; 12.5	$\pm 10 ; \pm 18.75 ; \pm 31.25$	O/L	+ 5/0	2.5 ; 1.65 ; 1.5 ; 0.5 V or $V_{ref} \pm 0.8\text{V}$	DC-100 ; 250 ; 600 (-3dB)	1	-40...+105	SMD		SMD		●	3	HO 25-NSMPR ¹⁾ Orange for default setting	P
8 ; 15 ; 25	$\pm 20 ; \pm 37.5 ; \pm 62.5$	O/L	+ 5/0	2.5 ; 1.65 ; 1.5 ; 0.5 V or $V_{ref} \pm 0.8\text{V}$	DC-100 ; 250 ; 600 (-3dB)	1	-40...+105	SMD		SMD		●	3	HO 25-NSMPR ¹⁾ Orange for default setting	P
2.67 ; 5 ; 8.33	$\pm 6.67 ; \pm 12.5 ; \pm 20.83$	O/L	+ 3.3/0	1.65 ; 1.5 ; 0.5 V or $V_{ref} \pm 0.460\text{V}$	DC-100 ; 250 ; 600 (-3dB)	1	-40...+105	●		●		●	4	HO 25-NPPR/SP33 ¹⁾ Orange for default setting	P
4 ; 7.5 ; 12.5	$\pm 10 ; \pm 18.75 ; \pm 31.25$	O/L	+ 3.3/0	1.65 ; 1.5 ; 0.5 V or $V_{ref} \pm 0.460\text{V}$	DC-100 ; 250 ; 600 (-3dB)	1	-40...+105	●		●		●	4	HO 25-NPPR/SP33 ¹⁾ Orange for default setting	P
8 ; 15 ; 25	$\pm 20 ; \pm 37.5 ; \pm 62.5$	O/L	+ 3.3/0	1.65 ; 1.5 ; 0.5 V or $V_{ref} \pm 0.460\text{V}$	DC-100 ; 250 ; 600 (-3dB)	1	-40...+105	●		●		●	4	HO 25-NPPR/SP33 ¹⁾ Orange for default setting	P
2.67 ; 5 ; 8.33	$\pm 6.67 ; \pm 12.5 ; \pm 20.83$	O/L	+ 3.3/0	1.65 ; 1.5 ; 0.5 V or $V_{ref} \pm 0.460\text{V}$	DC-100 ; 250 ; 600 (-3dB)	1	-40...+105	SMD		SMD		●	3	HO 25-NSMPR/SP33 ¹⁾ Orange for default setting	P
4 ; 7.5 ; 12.5	$\pm 10 ; \pm 18.75 ; \pm 31.25$	O/L	+ 3.3/0	1.65 ; 1.5 ; 0.5 V or $V_{ref} \pm 0.460\text{V}$	DC-100 ; 250 ; 600 (-3dB)	1	-40...+105	SMD		SMD		●	3	HO 25-NSMPR/SP33 ¹⁾ Orange for default setting	P
8 ; 15 ; 25	$\pm 20 ; \pm 37.5 ; \pm 62.5$	O/L	+ 3.3/0	1.65 ; 1.5 ; 0.5 V or $V_{ref} \pm 0.460\text{V}$	DC-100 ; 250 ; 600 (-3dB)	1	-40...+105	SMD		SMD		●	3	HO 25-NSMPR/SP33 ¹⁾ Orange for default setting	P

Pre-set parameters in factory which are able to be re-programmed by user.

- $I_{PN} = 25\text{A}$
- Response time = 2 μs
- Low power mode non active
- Fault reporting mode active
- OCD set @ $2.5 \times I_{PN}$ (peak value)

1) Ref_{IN} & Ref_{out} modes

SMT Version ③

Through-hole Version ④

P = Programmable by the user at any time for the current range (between 3 ranges) ; The internal reference (between 3 or 4 references) ; The response time (between 3 response times) ; Lower consumption mode ; Overcurrent detection level ; Device faulty indication mode ; Standby mode.

** Dedicated data sheets are the only recognized reference documents for the given performances and data – Data sheets: www.lem.com

I_{PN} A	I_p A	Technology	U_c V	V_{out} @ I_{PN}	BW kHz	$X @ I_{PN}$ $T_A = 25^\circ\text{C}$		T_A °C	Connection				Packaging No	Type	Features	
						%	°C		Primary		Secondary					UR or UL
									PCB	Aperture, other	PCB	Other				
2.67	± 6.67	O/L	+ 5/0	2.5V or $V_{ref} \pm 0.8V$	DC-250 (-3dB)	1	-40...+105	●		●	●	4	HO 8-NP-0000 ¹⁾			
2.67	± 6.67	O/L	+ 5/0	2.5V or $V_{ref} \pm 0.8V$	DC-250 (-3dB)	1	-40...+105	SMD		SMD	●	3	HO 8-NSM-0000 ¹⁾			
2.67	± 6.67	O/L	+ 3.3/0	1.65V or $V_{ref} \pm 0.460V$	DC-250 (-3dB)	1	-40...+105	●		●	●	4	HO 8-NP/ SP33-1000 ¹⁾			
2.67	± 6.67	O/L	+ 3.3/0	1.65V or $V_{ref} \pm 0.460V$	DC-250 (-3dB)	1	-40...+105	SMD		SMD	●	3	HO 8-NSM/ SP33-1000 ¹⁾			
4	± 10	O/L	+ 5/0	2.5V or $V_{ref} \pm 0.8V$	DC-250 (-3dB)	1	-40...+105	●		●	●	4	HO 8-NP-0000 ¹⁾			
4	± 10	O/L	+ 5/0	2.5V or $V_{ref} \pm 0.8V$	DC-250 (-3dB)	1	-40...+105	SMD		SMD	●	3	HO 8-NSM-0000 ¹⁾			
4	± 10	O/L	+ 3.3/0	1.65V or $V_{ref} \pm 0.460V$	DC-250 (-3dB)	1	-40...+105	●		●	●	4	HO 8-NP/ SP33-1000 ¹⁾			
4	± 10	O/L	+ 3.3/0	1.65V or $V_{ref} \pm 0.460V$	DC-250 (-3dB)	1	-40...+105	SMD		SMD	●	3	HO 8-NSM/ SP33-1000 ¹⁾			
5	± 12.5	O/L	+ 5/0	2.5V or $V_{ref} \pm 0.8V$	DC-250 (-3dB)	1	-40...+105	●		●	●	4	HO 15-NP-0000 ¹⁾			
5	± 12.5	O/L	+ 5/0	2.5V or $V_{ref} \pm 0.8V$	DC-250 (-3dB)	1	-40...+105	SMD		SMD	●	3	HO 15-NSM-0000 ¹⁾			
5	± 12.5	O/L	+ 3.3/0	1.65V or $V_{ref} \pm 0.460V$	DC-250 (-3dB)	1	-40...+105	●		●	●	4	HO 15-NP/ SP33-1000 ¹⁾			
5	± 12.5	O/L	+ 3.3/0	1.65V or $V_{ref} \pm 0.460V$	DC-250 (-3dB)	1	-40...+105	SMD		SMD	●	3	HO 15-NSM/ SP33-1000 ¹⁾			
7.5	± 18.75	O/L	+ 5/0	2.5V or $V_{ref} \pm 0.8V$	DC-250 (-3dB)	1	-40...+105	●		●	●	4	HO 15-NP-0000 ¹⁾			
7.5	± 18.75	O/L	+ 5/0	2.5V or $V_{ref} \pm 0.8V$	DC-250 (-3dB)	1	-40...+105	SMD		SMD	●	3	HO 15-NSM-0000 ¹⁾			
7.5	± 18.75	O/L	+ 3.3/0	1.65V or $V_{ref} \pm 0.460V$	DC-250 (-3dB)	1	-40...+105	●		●	●	4	HO 15-NP/ SP33-1000 ¹⁾			
7.5	± 18.75	O/L	+ 3.3/0	1.65V or $V_{ref} \pm 0.460V$	DC-250 (-3dB)	1	-40...+105	SMD		SMD	●	3	HO 15-NSM/ SP33-1000 ¹⁾			
8	± 20	O/L	+ 5/0	2.5V or $V_{ref} \pm 0.8V$	DC-250 (-3dB)	1	-40...+105	●		●	●	4	HO 8-NP-0000 ¹⁾			
8	± 20	O/L	+ 5/0	2.5V or $V_{ref} \pm 0.8V$	DC-250 (-3dB)	1	-40...+105	SMD		SMD	●	3	HO 8-NSM-0000 ¹⁾			
8	± 20	O/L	+ 3.3/0	1.65V or $V_{ref} \pm 0.460V$	DC-250 (-3dB)	1	-40...+105	●		●	●	4	HO 8-NP/ SP33-1000 ¹⁾			
8	± 20	O/L	+ 3.3/0	1.65V or $V_{ref} \pm 0.460V$	DC-250 (-3dB)	1	-40...+105	SMD		SMD	●	3	HO 8-NSM/ SP33-1000 ¹⁾			
8.33	± 20.83	O/L	+ 5/0	2.5V or $V_{ref} \pm 0.8V$	DC-250 (-3dB)	1	-40...+105	●		●	●	4	HO 25-NP-0000 ¹⁾			
8.33	± 20.83	O/L	+ 5/0	2.5V or $V_{ref} \pm 0.8V$	DC-250 (-3dB)	1	-40...+105	SMD		SMD	●	3	HO 25-NSM-0000 ¹⁾			
8.33	± 20.83	O/L	+ 3.3/0	1.65V or $V_{ref} \pm 0.460V$	DC-250 (-3dB)	1	-40...+105	●		●	●	4	HO 25-NP/ SP33-1000 ¹⁾			
8.33	± 20.83	O/L	+ 3.3/0	1.65V or $V_{ref} \pm 0.460V$	DC-250 (-3dB)	1	-40...+105	SMD		SMD	●	3	HO 25-NSM/ SP33-1000 ¹⁾			
12.5	± 31.25	O/L	+ 5/0	2.5V or $V_{ref} \pm 0.8V$	DC-250 (-3dB)	1	-40...+105	●		●	●	4	HO 25-NP-0000 ¹⁾			
12.5	± 31.25	O/L	+ 5/0	2.5V or $V_{ref} \pm 0.8V$	DC-250 (-3dB)	1	-40...+105	SMD		SMD	●	3	HO 25-NSM-0000 ¹⁾			
12.5	± 31.25	O/L	+ 3.3/0	1.65V or $V_{ref} \pm 0.460V$	DC-250 (-3dB)	1	-40...+105	●		●	●	4	HO 25-NP/ SP33-1000 ¹⁾			
12.5	± 31.25	O/L	+ 3.3/0	1.65V or $V_{ref} \pm 0.460V$	DC-250 (-3dB)	1	-40...+105	SMD		SMD	●	3	HO 25-NSM/ SP33-1000 ¹⁾			

Fixed setting:

- Current range
- Internal reference
- Response time = 3.5 μs
- Low power mode non active
- Fault reporting mode active
- OCD set @ 3 x I_{PN} (peak value)

1) Ref_{IN} & Ref_{out} modes

I_{PN} A	I_P A	Technology	U_C V	V_{out} @ I_{PN}	BW kHz	$X @ I_{PN}$ $T_A = 25^\circ\text{C}$ %	T_A $^\circ\text{C}$	Connection				UR or UL	Packaging No	Type	Features
								Primary		Secondary					
								PCB	Aperture, Pad, or Solder	PCB	Other				
15	± 37.5	O/L	+ 5/0	2.5V or $V_{ref} \pm 0.8\text{V}$	DC-250 (-3dB)	1	-40...+105	●		●	●	4	HO 15-NP-0000 ¹⁾		
15	± 37.5	O/L	+ 5/0	2.5V or $V_{ref} \pm 0.8\text{V}$	DC-250 (-3dB)	1	-40...+105	SMD		SMD	●	3	HO 15-NSM-0000 ¹⁾		
15	± 37.5	O/L	+ 3.3/0	1.65V or $V_{ref} \pm 0.460\text{V}$	DC-250 (-3dB)	1	-40...+105	●		●	●	4	HO 15-NP/ SP33-1000 ¹⁾		
15	± 37.5	O/L	+ 3.3/0	1.65V or $V_{ref} \pm 0.460\text{V}$	DC-250 (-3dB)	1	-40...+105	SMD		SMD	●	3	HO 15-NSM/ SP33-1000 ¹⁾		
25	± 62.5	O/L	+ 5/0	2.5V or $V_{ref} \pm 0.8\text{V}$	DC-250 (-3dB)	1	-40...+105	●		●	●	4	HO 25-NP-0000 ¹⁾		
25	± 62.5	O/L	+ 5/0	2.5V or $V_{ref} \pm 0.8\text{V}$	DC-250 (-3dB)	1	-40...+105	SMD		SMD	●	3	HO 25-NSM-0000 ¹⁾		
25	± 62.5	O/L	+ 3.3/0	1.65V or $V_{ref} \pm 0.460\text{V}$	DC-250 (-3dB)	1	-40...+105	●		●	●	4	HO 25-NP/ SP33-1000 ¹⁾		
25	± 62.5	O/L	+ 3.3/0	1.65V or $V_{ref} \pm 0.460\text{V}$	DC-250 (-3dB)	1	-40...+105	SMD		SMD	●	3	HO 25-NSM/ SP33-1000 ¹⁾		

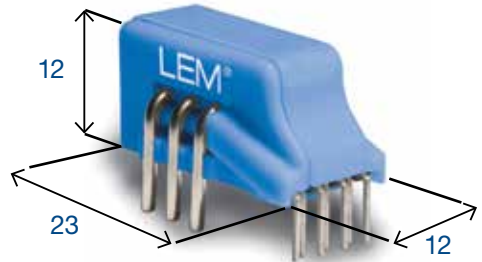
Fixed setting:

- Current range
- Internal reference
- Response time = 3.5 μs
- Low power mode non active
- Fault reporting mode active
- OCD set @ $3 \times I_{PN}$ (peak value)

**



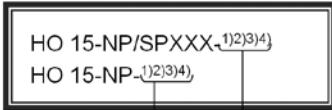
Ask your sales person about kits (5 pieces) for tests purpose at special price.

1) Ref_{IN} & Ref_{out} modes

** Dedicated data sheets are the only recognized reference documents for the given performances and data – Data sheets: www.lem.com

HO Series

HO name and codification



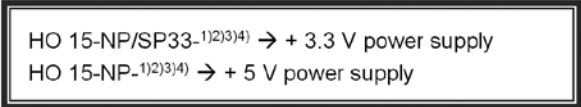
as example

The 1)2)3)4) digits indicate the individual transducer programming options.

- 1) Reference out:
 - 2.5 V → Code: 0
 - 1.65 V → Code: 1
 - 1.5 V → Code: 2
 - 0.5 V → Code: 3
 - Only $V_{ref IN}$ → Code: 4
(Low power mode engaged)
- 2) Response time:
 - 3.5 μ s → Code: 0
 - 2 μ s → Code: 1
 - 6 μ s → Code: 2
- 3) Control EEPROM:
 - YES → Code: 0
 - NO → Code: 1
- 4) Over-current detection (value x I_{FN}):
 - 2.9 → Code: 0
 - 3.6 → Code: 1
 - 4.0 → Code: 2
 - 4.8 → Code: 3
 - 5.2 → Code: 4
 - 5.8 → Code: 5
 - 1.7 → Code: 6
 - 2.3 → Code: 7
 - 0.67 → Code: A
 - 0.94 → Code: B
 - 1.17 → Code: C
 - 1.4 → Code: D
 - 1.6 → Code: E
 - 1.9 → Code: F
 - 2.1 → Code: G
 - 2.3 → Code: H

SET_THRESH = 0

SET_THRESH = 1



As an example:

HO 25-NP-0000: performances and functions are set as follows:

- First digit = 0 → Reference out = 2.5 V
- Second digit = 0 → Response time = 3.5 μ s
- Third digit = 0 → Control EEPROM = YES
- Fourth digit = 0 → Overcurrent detection = 2.9 x I_{FN}

Europe • Middle East

Austria and CEE
 Etlotex Handesgebmh
 Grundauweg 7
 A-25 Baden
 Tel. +43-2252-47040-0
 Fax +43-2252-47047-0
 e-mail: office@etlotex.at

LEM Austria GmbH,
 Office Austria
 Concorde Business Park 2/P/6
 A-2320 Schwechat
 Tel. +43 1 706 56 14-10
 Fax +43 1 706 56 14-30
 e-mail: lba@lem.com

Belarus and Baltic Republics
 DACPOL Sp. z o.o.
 ul. Pulawska 34
 PL-05-500 Piaseczno
 Tel. +48 22 7035110
 Fax +48 22 7035110
 e-mail: dacpol@dacpol.com.pl

BeNeLux
 LEM Belgium sprl-bvba
 Egelentierlaan, 2
 B-1851 Humbeek
 Tel. +32 22 70 30 84
 Fax +32 22 70 30 85
 e-mail: lbe@lem.com

Bosnia, Croatia, Serbia and Slovenia
 Proteus Electric S.r.l.
 Via di Noghera 94/1
 I-34147 Muggia-Aquilia
 Tel. +39 040 23 21 88
 Fax +39 040 23 24 40
 e-mail: dno.fabiani@proteuselectric.it

Bulgaria, Hungary
 Ineltron GmbH
 Hugenotterstr. 30
 D-1581 Friesdorf
 Tel.: +36 70 3666055
 Tel.: +49 (0)6172 598809
 Fax: +49 (0)6172 59333
 email: l.szaszlo@ineltron.hu

Czech Republic, Slovakia
 PE & ED, spol. s r.o.
 Koblovska 101/23
 CZ-71100 Ostrava
 Tel. +420 596 239 256
 Fax +420 596 239 531
 e-mail: peedova@peed.cz

Denmark
 Motron A/S
 Kongens Lyngbyvej 3
 DK-8240 Risskov
 Tel. +47 6212 1050
 Fax +47 6212 1051
 e-mail: motron@motron.dk

Finland
 ETRA Electronics Oy
 Lampputie 2
 FI-00740 Helsinki
 Tel. +358 207 65 160
 Fax +358 207 65 23 11
 e-mail: markku.sottila@etra.fi
 Field Applications Engineer
 Mr. Pasi Leveälähti
 Kausante 668, 17150 Uurajärvi
 Tel. +358 50 5754435
 Fax +358 387 167 141
 e-mail: pli@lem.com

France
 LEM France Sarl
 15, avenue Galois
 F. 92340 Bourg-La-Reine
 Tel. +33 1 45 36 46 20
 Fax +33 1 45 36 06 16
 e-mail: lfr@lem.com

Germany
 LEM Deutschland GmbH
 Frankfurter Strasse 74
 D-64521 Gross-Gerau
 Tel. +49 6152 9301 0
 Fax +49 6152 8 46 61
 e-mail: info-ld@lem.com

Hauber & Graf electronics GmbH
 Bavaria / Baden Württemberg
 Höpfigheimer Str. 8
 D-71711 Steinhelm
 Tel. +49 7144 33905-0
 Fax +49 7144 33905-55
 e-mail: info@hg-electronics.de

Israel
 Ofer Levin Technological
 Application
 PO Box 18247
 IL - Tel Aviv 611 81
 Tel. +972 3 5566279
 Fax +972 3 5566282
 e-mail: o.levin@netvision.net.il
 ofer.levin@tec-apps.co.il

Italy
 LEM Regional Office Italy
 via V. Bellini, 1
 I-35030 SelvaZZano Central, PD
 Tel. +39 049 805 60 60
 Fax +39 049 805 60 59
 e-mail: lit@lem.com

Norway
 Motron A/S
 Torsoevej 3
 DK-8240 Risskov
 Tel. +47 6212 1050
 Fax +47 6212 1051
 e-mail: motron@motron.dk

Poland
 DACPOL Sp. z o.o.
 ul. Pulawska 34
 PL-05-500 Piaseczno
 Tel. +48 22 7035110
 Fax +48 22 7035110
 e-mail: dacpol@dacpol.com.pl

Portugal
 OGenéria, Lda
 Centro Empresarial S. Sebastião
 Rua S. Sebastião Lt 11 n.º 10,
 Albarraque
 2635-448 Rio de Mouro
 Portugal
 Tel. +351 214 309 320
 Fax +351 214 309 299
 e-mail: genéria@genéria.pt

Romania
 SYSCOM -18 Srl.
 Calea Plevnei 139B Sector 6
 Bucharest
 Tel. +40 21 310 26 78
 Fax +40 21 316 91 76
 e-mail: generie.barbalata@syscom18.com

Russia
 LEM Russia LLC, Central Office
 Staritskoye shosse,15
 170040 Tver / Russia
 Tel./fax: +7 4822 655672, 73
 e-mail: tvlem@lem.com

Scandinavia
 LEM Deutschland GmbH,
 Filial Denmark
 Christian X's Alle 18
 2800 Lyngby, Denmark
 Tel. +45 60 43 1953
 e-mail: kck@lem.com

Spain
 LEM France Sarl
 15, avenue Galois
 F-92340 Bourg-la-Reine
 Tel. +34 93 886 02 28
 Fax +34 93 886 60 87
 e-mail: slu@lem.com

Sweden
 ADIATOR AB
 Hålsingsgatan 40
 SE-11343 Stockholm
 Tel. +46 8 729 1700
 Fax +46 8 729 1717
 e-mail: info@adiator.se

Switzerland
 SIMPEX Electronic AG
 Binzackerstrasse 3
 CH-8622 Wetzikon
 Tel. +41 44 931 10 30
 Fax +41 44 931 10 31
 e-mail: contact@simpech.ch
 LEM International SA
 8, Chemin des Aulx, P.O. Box 35,
 CH-1228 Plan-les-Quates
 Tel. +41 22 706 11 11
 Fax +41 22 794 94 73
 e-mail: lsa@lem.com

Turkey
 Özdisan Elektronik Pazarlama
 DES Sanayi Sitesi,
 104.Sok.A07 Blok N°02
 TB-34176 Yilduzlu
 Umraniy / Istanbul
 Tel. +90 216 420 1882
 Fax +90 216 466 3686
 e-mail: Ozdisan@ozdisan.com

Ukraine
 "SP DACPOL" Co Ltd.
 Srovska str., 20
 UA-02090, KIEV, UKRAINE
 Tel. +380 44 501 93 44
 Fax +380 44 501 93 47
 e-mail: kiev@dacpol.com

United Kingdom and Ireland
 LEM Regional Office UK
 A Branch of LEM Deutschland GmbH
 West Lanes Investment Centre
 Suite 10, Maple view
 Whittemoss Business Park
 Skelmersdale, Lancs WN8 9TG
 Tel. +44 (0)1942 388 440
 Fax +44 (0)1942 388 441
 e-mail: luk@lem.com

Africa • America

Argentina
 Semak S.A.
 Av. Belgrano 1580, 5.º Piso
 AR-1030 BUENOS AIRES
 Tel. +54 11 4381 2109
 Fax +54 11 4383 7400
 e-mail: comex@semak.com.ar

Brazil
 AMDS4 Imp. Exp. e Com. de
 Equip. Eletrônicos Ltda.
 Rua Dr. Ulisses Castro, 489,
 Piso Superior, Centro,
 13800-061-Mojo Mirim-São Paulo
 Brazil
 Tel. +55 19 3806-1950/8509
 Fax +55 19 3806-8422
 e-mail: jeduardo@amds4.com.br

Australia and New Zealand
 Fasttron Technologies Pty Ltd.
 25 Kingsley Close
 Rowville - Melbourne -
 Victoria 3178
 Tel. +61 3 9763 5155
 Fax +61 3 9763 5166
 e-mail: sales@fasttron.com.au

China
 LEM Electronics (China) Co., Ltd.
 No. 28, Linhe Str. Linhe
 Industrial Development Zone
 Shunyi District, Beijing, China
 Post code : 101300
 Tel. +86 10 80 48 43 88
 Fax +86 10 80 48 43 03
 +86 10 80 48 31 20
 e-mail: bj@lem.com

LEM Electronics (China) Co., Ltd.
 Hefei Office, R204,
 Qirong Building, No. 502 Wangjiang
 West Road, High-tech Zone
 Hefei, Anhui, 230022 P.R. China
 Tel. +86 551 530 9772
 Fax +86 551 530 9773
 e-mail: bj@lem.com

Canada Ontario East
 Optimum Components Inc.
 7750 Birchmount Road Unit 5
 CAN-Markham ON L3R 0B4
 Tel. +1 905 477 9393
 Fax +1 905 477 6197
 e-mail: mikep@optimumcomponents.com

Canada Manitoba West
 William P. Hall Contract Services
 7345 NE 137th st.
 CAN-Kirkland,
 Washington 98034
 Tel. +1 425 820 9216
 Fax +1 206 390 2411

South Africa
 Denver Technical Products Ltd.
 P.O. Box 75810
 SA-2047 Garden View
 Tel. +27 11 626 20 23
 Fax +27 11 626 20 09
 e-mail: denvertech@pixie.co.za

USA, Canada, Mexico
 LEM USA, Inc., Central Office
 11665 West Bradley Road
 Milwaukee, WI 53244, USA
 Toll free: 800 236 5366
 Tel. +1 414 353 0711
 Fax +1 414 353 0733
 e-mail: lus@lem.com

LEM USA East, Greg Parker
 Toll free: 800 236 5366 ext. 202
 Tel. +1 414 577 4132
 e-mail: gap@lem.com

LEM USA Central, Alan Garcia
 Toll free: 800 236 5366 ext. 200
 Tel. +1 414 577 4130
 e-mail: atg@lem.com

LEM USA Midwest, John Marino
 Toll free: 800 236 5366 ext. 138
 Tel. +1 414 577 4137
 e-mail: jam@lem.com

LEM USA West, Don Blankenburg
 Toll free: 800 236 5366 ext. 206
 Tel. +1 414 577 4122
 e-mail: db@lem.com

Asia • Pacific

LEM Electronics (China) Co., Ltd.
 Shanghai Office, R510,
 Huailian Development Mansion,
 No. 728 Xinhua Road
 Changning District
 Shanghai, 200052, P.R. China
 Tel. +86 21 3228 0881
 Fax +86 21 5258 2262
 e-mail: bj@lem.com

LEM Electronics (China) Co., Ltd.
 Shenzhen Office
 R1205, Liantai Mansion, Zhuzhili,
 Shennan Avenue, Futian District,
 7345 NE 137th st. China
 Tel. +86 755 3334 0779
 Fax +86 755 3336 9609
 +86 755 3334 0780
 e-mail: bj@lem.com

LEM Electronics (China) Co., Ltd.
 Xi'an Office
 R703, Tower B
 Jinjiao International Plaza
 No. 50, Technology Road
 High-Tech District, Xi'an,
 Shanxi, 710076 P.R., China
 Tel. +86 29 8833 7168
 Fax +86 29 8833 7158
 e-mail: bj@lem.com

India
 LEM Management Services Sarl-
 India Branch Office
 Mr. Sudhir Khandekar
 Level 2, Connaught Place,
 Bund Garden Road, Pune-411001
 Tel. +91 20 4014 7575
 Mobile +91 98 3313 5223
 e-mail: skh@lem.com

GLOBETEK
 No.739, 13th Cross,
 7th Block, Jayanagar,
 Bengaluru-560070
 Karnataka, INDIA
 Tel. +91 80 2677 1770
 Fax: +91 80 2677 1777
 e-mail: sales@globetek.in

Japan
 LEM Japan K.K.
 2-1-2 Nakamachi
 J-194-0021Machida-Tokyo
 Tel. +81 4 2725 8151
 Fax +81 4 2728 8119
 e-mail: lj@lem.com
 LEM Japan K.K.
 Nagoya Sales Office
 1-14-24-701 Marunouchi,
 Naka-ku, Nagoya

460-0002 Japan
 Tel. +81 52 203 8065
 Fax +81 52 203 8091
 e-mail: lj@lem.com

Korea
 LEM Korea Branch
 D-Cube City, Office Tower 15F,
 #662 Gyeongin-Ro, Guro-Gu,
 Seoul, 152-706 Korea
 Tel. +82 10 7150 2450
 Fax: +82 2 2211 6698
 e-mail: sbe@lem.com

S&H Trading
 Rm.302 Eopmu A-dong,
 Chungang Yulung, 125B,
 Gurobon-dong, Guro-gu,
 Seoul, 152-721, Korea
 Tel. +82 2 2686 83 46
 Fax +82 2 2613 83 45
 Fax +82 2 2686 83 47
 e-mail: snh@hinoedkorea.co.kr
 Young Wo Ind. Co.
 #608 Pententium IT Tower,
 261 Haeveo-ro, Dongan-gu,
 Anyang-si, Gyeonggi-do
 South Korea, 431-810
 Tel. +82 31 266 88 56
 Fax +82 31 266 88 57
 e-mail: info@ywooc.co.kr

Malaysia
 ACEI Systems Sdn. Bhd.

1A & 1A-1, Lintas
 Peraruri 6,
 Taman Perak
 31400 Ipoh
 Perak Darul Ridzuan, Malaysia
 Tel. +65 5 47 0761/0771
 Fax +65 5 47 1518
 e-mail: enquiry@aceisys.com.my

Singapore
 Overseas Technology Centre Pte Ltd
 05 Tagore Lane - Unit# 05-06
 Entrepreneur Business Centre (EBC)
 Singapore 878494
 Tel. +65 6272 6077
 Fax. +65 6276 2134
 e-mail: info@overseas technology.com.sg

Taiwan
 POWERTRONICS CO. LTD
 The Taipei SUN-TECH Technology Park
 10th Floor, No. 205-2, Section 3, Beitou
 Road, Xindian City, Taipei County
 23143, Taiwan, R. O. C.
 Tel. +886 2 7741 7000
 Fax +886 2 7741 7001
 e-mail: sales@powertronics.com.tw
 Tope Co., Ltd.
 3F-4, 716 Chung Cheng Road
 Chung Ho City, Taipei Hsien,
 Taiwan 235, R.O.C.
 Tel. +886 2 8228 0658
 Fax +886 2 8228 0659
 e-mail: tope@ms1.ninet.net



Keep in touch
www.lem.com

LEM International SA
 8, Chemin des Aulx, P.O. Box 35
 CH-1228 Plan-les-Quates
 Tel. +41 22 706 11 11, Fax +41 22 794 94 78
 e-mail: lsa@lem.com; www.lem.com

Distributor