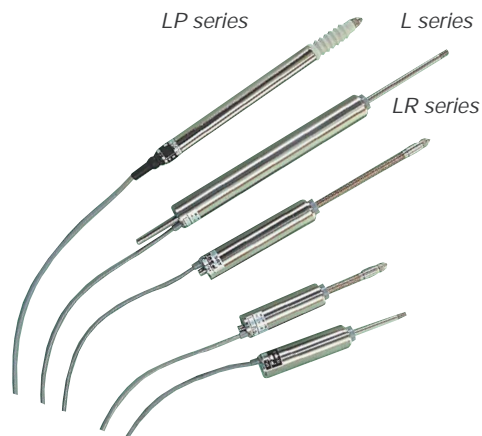


LP, L, LR and LG series

Linear variable displacement transformers (LVDT's) measure rectilinear displacements with excellent linearity.

- They constitute a varied family, covering a wide measurement range : from ± 0.25 mm to ± 500 mm, at standard values (special ranges on demand).
- These high-tech products have excellent resistance to shocks and vibrations, are not sensitive to external magnetic fields and can be used in damp or oil-laden atmospheres.



Selection table

Serie	Body Ø	Rod	Guides	Return spring	End of axis	Bellows
L	12	removable	2 bearings	no	M3 x 5 thread	no
LR	12	attached	2 bearings	yes	sensor tip*	no
LP	8	attached	2 bearings	yes	sensor tip*	yes
LG	21.3	attached	2 bearings	no	M5 x 10 thread	no

* Ø 2 tungsten carbide ball



How to order
See next page

Technical specifications

Linearity	$\pm 0.2\%$ of measuring range ($\pm 0.1\%$ on demand)
Hysteresis	nil
Resolution	infinite
Screening	integral
Output cable	length 1 m, Ø 2.5 mm (4 screened conductors)
Primary supply	10 mA rms. - 2000 Hz (provided by the GDL or IF11 card)
Insulation primary/secondary and windings/body	≥ 100 MΩ at 500 Vdc
Tolerance on external diameter	f9 for Ø 8 and h11 for Ø 12
Environmental conditions	-20...+80°C
Temperature coefficient	250 ppm/K
Protection	IP 55 (except for LG series)

See details on next page.

Special sensors

"Made to measure" sensors for all your applications.

- From our customers specifications, we manufacture :
- metrology sensors guided by ball bearings (repeatability $0.1 \mu\text{m}$)
 - reduced size sensors
 - sensors for hostile environments (immersion, high temperature) up to IP 68
 - sensors with specific measurement ranges (maxi 1 m)
 - sensors with all types of mechanical adapters (lateral cable outlet, knee joints on the ends)

This list only presents examples, and is of course not exhaustive.

LRC special serie





How to order
Ask for details

Example of special series

Rectilinear displacement sensor series LRC.

- Body Ø 12 mm
- Attached guided axis
- Sensor tip
- Return spring
- LEMO-type connector

The sensors in the LRC series are LR series sensors which have a body length that has been deliberately increased so as to be able to fit a connector on the end. These products have the electrical specifications and the general specifications of the displacement sensor of the LR series. Only the mechanical specifications are different.

LP, L, LR and LG series

Specifications	L serie - sensor Ø 12							LP serie - sensor Ø 8			
	L 0.5	L 2	L 5	L 10	L 20	L 50	L 100	L 0.5P	L 2P	L 5P	L 10P
Measuring range EM (mm)	0.5 (±0.25)	2 (±1)	5 (±2.5)	10 (±5)	20 (±10)	50 (±25)	100 (±50)	0.5 (±0.25)	2 (±1)	5 (±2.5)	10 (±5)
Overall displacement CT (mm)	unlimited							5.5	5	8.5	13.5
Spring pressure at full range (rod in)	no return spring							60 g	90 g	100 g	120 g
Length A	35	35	40	45	57	100	172	61	61	71	83
Max length B	59	56	65	75	96	170	292	81.5	81.5	94	111
B for mechanical zero								80	79	90	105.5
Range at mechanical zero C	16	14.5	16	19.5	23.5	39	65				
Weight	27 g	27 g	28 g	32 g	40 g	64 g	110 g	27 g	25 g	32 g	32 g
Sensor reference	01.NC.8051	P07.8051.02	P07.8051.03	P07.8051.04	P07.8051.05	P07.8051.06	P07.8051.07	01.NC.8054	P07.8054.02	P07.8054.03	P07.8054.04
Ref. of associated GDL (see page 17)	P07.8070.01	P07.8070.01	P07.8070.02	P07.8070.03	P07.8070.05	P07.8070.06	P07.8070.07	P07.8070.01	P07.8070.01	P07.8070.02	P07.8070.04
Dimensions (mm)											
Specific models on request											

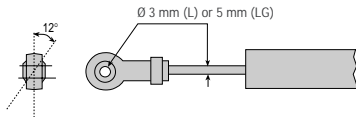
Specifications	LR serie - Ø 12						LG serie - Ø 21.3						
	L 0.5R	L 2R	L 5R	L 10R	L 20R	L 50R	L200G	L300G	L400G	L500G	L600G	L800G	L1000G
Measuring range EM (mm)	0.5 (±0.25)	2 (±1)	5 (±2.5)	10 (±5)	20 (±10)	50 (±25)	200 (±100)	300 (±150)	400 (±200)	500 (±250)	600 (±300)	800 (±400)	1000 (±500)
Overall displacement CT (mm)	5.5	6.5	9	12	26	56	225	332	440	550	650	872	1092
Spring pressure at full range (rod in)	100 g	110 g	120 g	150 g	150 g	290 g	no return spring						
C for mechanical zero	29.5	30	31.5	34.5	55	70	120	170	220	270	315	1668	520
Length A	35	35	40	45	57	100	362	509	672	803	957	1249	1544
Max length B	54	55	63	73	111	184	597	851	1123	1363	1619	2131	2646
Weight	27 g	28 g	29 g	34 g	43 g	68 g	ask for details						
Sensor reference	01.NC.8052	P07.8052.02	P07.8052.03	P07.8052.04	P07.8052.05	P07.8052.06	ask for details						
Ref. of associated GDL (see page 17)	P07.8070.01	P07.8070.01	P07.8070.02	P07.8070.03	P07.8070.05	P07.8070.06	ask for details						
Dimensions (mm)													
Specific models on request													

Mechanical zero : middle position of measurement range.

Accessories

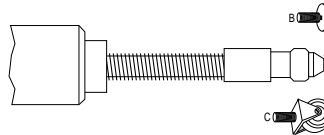
L and LG mounting

These L and LG displacement sensors have an axis which is threaded at the end. This feature allows each of the sensors to be fitted with a ball joint. With this fitted, transmission of movement is ensured almost without any restriction on the bearings.

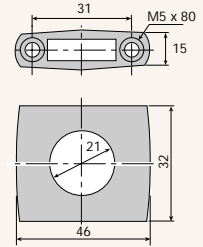


LR and LP mounting

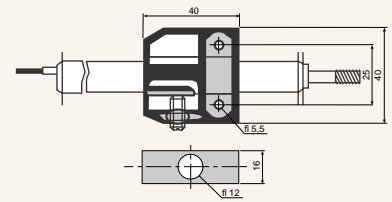
A removable prod made of tungsten carbide (A) ensures excellent contact with the part to be tested. It can, on request, be replaced by : a flat tip, Ø 5 (B) or a wheel (C), Ø 8 x 3, for the LP sensor.



Two-piece mounting (PVC)



Single-piece mounting (PVC) for sensor Ø 12 mm



GDL generator demodulator

The GDL contains all the features necessary for the optimum use of LVDT differential transformer displacement sensors.

- Power supply to the primary winding of the sensor.
- Processing of the signal output from sensors.
- Simultaneous output of two signals, voltage and current, to process the measurement with numerous instruments (panel meters, threshold detectors...).
- Special output ranges on request.

Designation of LVDT sensors	Reference of associated GDL
L0.5 - L2 - L0.5 R - L2 R - L0.5 P - L2 P	P07.8070.01
L5 - L5 R - L5 P	P07.8070.02
L10 - L10 R	P07.8070.03
L10 P	P07.8070.04
L20 - L20 R	P07.8070.05
L50 - L50 R	P07.8070.06
L100	P07.8070.07



Technical specifications

Power supply	115 / 230 Vdc $\pm 10\%$ - 50 / 60 Hz - 2.5 VA option : ± 15 Vdc ; 0...12 Vdc ; 0...24 Vdc ; 10...70 V ; 127 V
Measurement outputs	voltage : -1...+1 V or 0...+2 V* / 1 mA max option : 0...+10 V current : 0...20 mA / 500 Ω max option : 4...20 mA
Electrical zero	adjustment to $\pm 100\%$
Electrical gain	$\pm 20\%$ of nominal V or I
Linearity	$\pm 3.10^{-4}$
Bandwidth	1.5 Hz at -3 dB - factory set up to 30 Hz at -3 dB
Environmental conditions	0...+50°C
Temperature coefficient	≤ 200 ppm/°C
Dimensions / weight	96 x 48 x 122 mm / 450 g
Connection	by Faston lug (supplied)

* ± 0.5 V or 0...+1 V with sensor L0.5

SL threshold unit

The SL detection unit has two thresholds and offers two configurations.

- The detection unit receives the signal from a single sensor. The signal can be processed by two levels of threshold detection (high level, low level).
- The detection unit receives signals from two distinct sensors.

Designation	Reference
SL threshold unit	P07.8075.01

Technical specifications

Power supply	115 / 230 Vac $\pm 10\%$ - 50 / 60 Hz - 5 VA max
Range of adjustment	-1...+2 V
Accuracy of threshold	$\pm 0.2\%$ of measuring range
Input impedance	10 M Ω for each channel
Hysteresis	adjustable from 0.5 % to 10 % of measuring range
Output by relay	1 insulated inverter contact per channel work position on overload cut-out power 40 W or 100 VA (2 A or 220 V max) maximum frequency 25 Hz mechanical life : $2 \cdot 10^7$ operations at 10 Hz
Output by NPN transistor (PNP optional)	collector open, 40 Vdc 100 mA max rise time : 0.2 ms load 150 Ω at 150 Vdc maximum frequency : 1000 Hz
Dimensions / weight	96 x 48 x 122 mm / 450 g
Connection	by Faston lugs (supplied)

Filter 200 P

6th order filter for displacement measurement at high frequency (220 Hz).

- Connection with GDL (requires slight adaptation) and LVDT sensors
- Negligible residual ripple

- Power supply 115 x 230 V 50/60 Hz
- Dimensions 96 x 48 x 122 mm



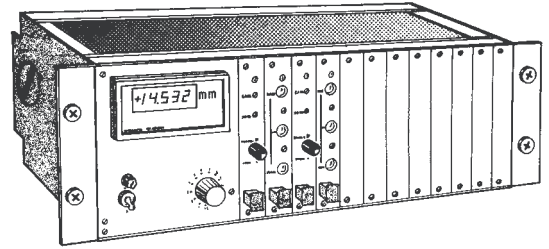
How to order
Ask for details

IF 10 rack

Production of multi-sensor chains with different extents. Immediate reading of measurements by selection of the channel.

Of modular construction in anodised aluminium, accepting from 1 to 12 measurement channels, the IF 10 Rack provides :

- Electrical power supply to these 1 to 12 channels.
- Direct display of the measurement on 2000 or 20000 counts panel meter (format 48 x 96), by 12 position switch accessible on the front panel.
- Output of each module of the measurement signal at the back (± 1 V). Special output on request.
- Housing of electronics cards, in both of the following basic versions (non-exchangeable) :
 - from 1 to 12 IF 11 generator-demodulator cards,
 - from 1 to 6 pairs of cards, each pair comprising an IF 11 generator-demodulator card associated with an IF 12 threshold detection card.



Power supply	115 / 230 V 50 Hz (60 Hz option)
Consumption	with display and 12 modules : 130 mA
Dimensions / weight	488 x 132 x 210 mm / 4 kg

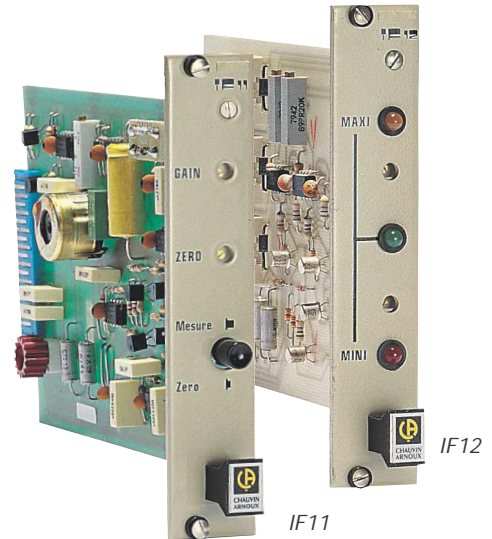
IF 11 / 12 cards

IF 11 : multi-function generator-demodulator card.

- Power supply of the primary winding of the sensor.
- Processing of the signal emitted by the secondary winding of the sensor.
- Output of the signal in volts allowing exploitation of the measurement by numerous instruments (threshold indicator and detector themselves housed in the IF 10 bay).

IF 12 : threshold detection card.

- The IF 12 card has two threshold levels and determines three ranges displayed by LED's.



Technical specifications

IF11 card	
Power supply	± 22 Vdc
Power supply of primary winding sensor	10 mA RMS at 2000 Hz
Measurement output	-1...+1 V / 1 mA / 1000 Ω min residual voltage : 2 mV peak (0.1 % f.s.)
Electrical zero	adjustment to ± 100 %
Electrical gain	adjustment to ± 20 %
Linearity	$\pm 3 \cdot 10^{-4}$ of the measuring range
Bandwidth	30 Hz at -3 dB - Extension of the bandwidth by serial connection of FL 200 P filter up to 220 Hz
Environmental conditions	0... +50°C
Temperature coefficient	≤ 200 ppm/°C
Dimensions / weight	25 x 128.4 x 157 mm / 150 g

IF12 card	
Power supply	± 22 Vdc
Adjustment range	-1...+2 Vdc
Input impedance	10 M Ω
Accuracy of threshold adjustment	± 0.2 % of the measuring range
Fidelity	$5 \cdot 10^{-5}$ of the measuring range
Hysteresis	adjustable from 0.5 % to 10 % of the measuring range
Output	3 independent relays trip capacity : 40 W or 100 VA (2 A or 220 V maxi)
Mechanical life	$2 \cdot 10^7$ operations at 10 Hz
Max operating frequency	25 Hz
Dimensions / weight	25 x 128.5 x 157 mm / 150 g

Designation	Reference
Rack IF 10 (without display)	01.NC 8080
Card IF 11	01.NC 8081
Card IF 12	01.NC 8082
2,000 or 20,000 count digital panel meter	See page 49

This dimensional measurement line is used for measuring rectilinear displacements and analyzing the information on a computer using ModBus protocol and half-bridge LVDT sensors specially designed for the task. At the heart of the system, the converter ensures sensor position acquisition, then converts this analog data into a digital value included between 0 and $\pm 50\%$ of the total travel of the sensor (bi-directional operation). Typical accuracy offered by this chain is 0.1% of the sensor measurement range with drifting of less than 10 ppm/K.

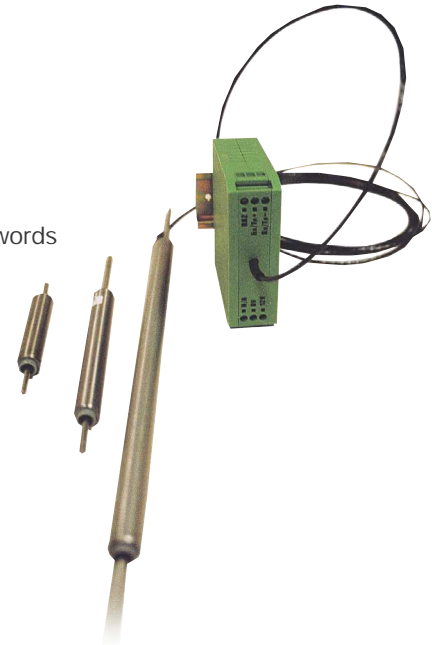
CNL01 Converter

The converter offers the following functionalities:

- Measurement origin initialization control RTZ
- Correction of linearity errors
- Output type specification: digital or pulse width modulation (PWM)
- Definition of subscriber number, word number using ModBus and number of words
- Specialization and testing by Logmod-c dedicated software
- Transmission by RS485 ModBus protocol link.

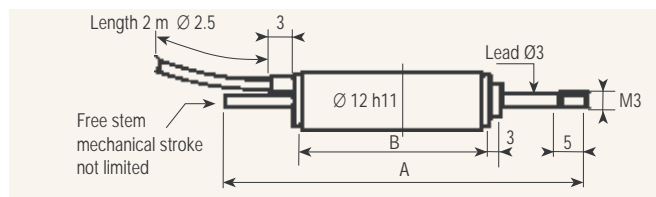
Technical characteristics

Number of calibration points	101
Acquisition time	26 ms
Transmission	RS485 ModBus RTU
Transmission rate	from 1200 to 9600 bd
Adjustment mode	automatic, by manufacturer
Power supply	12 Vdc / 10 mA
Size (h x w x d)	79 x 85,5 x 25 mm
Mounting	on balanced DIN rail
Link to sensor(s)	by shielded cable $\varnothing 2,5$ mm length 2 m, with or without connector

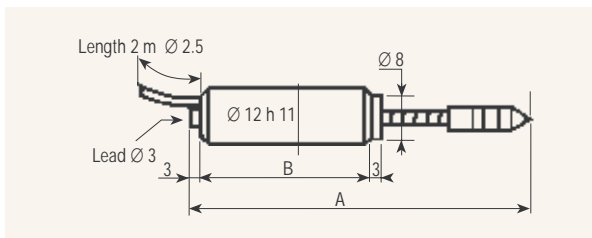


CNL digitized displacement sensors

- Free rod, guided by bronze bearing with M3 threaded end over 5 mm
- Housing $\varnothing 12$ mm
- Power supply 12 V by CNL01 converter



CNLR digitized displacement sensors



- Captive stem with return spring guided by 2 bronze bearings equipped with tungsten ball sensor
- Housing $\varnothing 12$ mm
- Power supply 12 V by CNL01 converter

Description	Reference	Measurement range	Size A / B (mm)
CNL01 converter	811 752 93	—	—
LOGMOD/PC software	811 672C 79	—	—
CNL100 sensor	818 375 93	± 50 mm	351 / 232
CNL80 sensor	818 376 93	± 40 mm	270,5 / 172
CNL50 sensor	818 377 93	± 25 mm	240,5 / 172
CNL10 sensor	818 374A 93	± 5 mm	57,4 / 35
CNL5 sensor	818 374B 93	$\pm 2,5$ mm	58,5 / 35
CNL2 sensor	818 374C 93	± 1 mm	64 / 35
CNL1 sensor	818 374D 93	$\pm 0,50$ mm	64 / 35
CNLR50 sensor	818 379 93	± 25 mm	276,3 / 172
CNLR10 sensor	818 378A 93	± 5 mm	81,3 / 35
CNLR5 sensor	818 378B 93	$\pm 2,5$ mm	74,6 / 35
CNLR2 sensor	818 378C 93	± 1 mm	69,3 / 35
CNLR1 sensor	818 378D 93	$\pm 0,50$ mm	69,3 / 35