






Thickness Measurement Devices

# DEVICE FOR THE CONTROL OF THE THICKNESS OF COATINGS






C1FPX-XXXLV1M04LN0 - 1T03L



## Features

-  Contactless device
-  Non-Destructive measurement
-  Real-time thickness control
-  Compact measuring head  
Less than 10 cm and 180g
-  Measurable thickness from 100 nm up to 1 mm

## Applications

-  Industrial coating
-  Automotive industry
-  Aeronautics
-  Medical coatings
-  Housing and consumer goods

## Key values<sup>1</sup>

Parameter	Symbol	Value	Unit
Measurable thickness range	$E_p$	0.1 - 1000	$\mu\text{m}$
Accuracy	$\sigma_{E_p}$	< 3% of measured thickness	$\mu\text{m}$
Measurement duration	$t_m$	< 1s	s
Measurement distance range	$d_m$	20 - 150	mm

## References

Maximum power (W)	Wavelength (nm)	Reference
1	455	C1FP1-455LV1M04LN0 - 1T03L
1	1470	C1FP1-1470LV1M04LN0 - 1T03L
3	1550	C1FP3-1550LV1M04LN0 - 1T03L
1	980	C1FP1-980LV1M04LN0 - 1T03L
4	980	C1FP4-980LV1M04LN0 - 1T03L
10	980	C1FP10-980LV1M04LN0 - 1T03L
20	980	C1FP20-980LV1M04LN0 - 1T03L
150	980	C1FP150-980LV1M04LN0 - 1T03L

## Repeatability by thickness range<sup>1</sup>

Thickness range (μm)	Typical RMS repeatability in 1 point (μm)		Application process
	Paint, Adhesives, polymer coatings...	Metallic, ceramic... coatings	
0.01-0.1	±0.01	±0.01	PVD, CVD, PACVD, Electroplating
0.1-1	±0.05	±0.05	PVD, CVD, PACVD, Electroplating, Screen printing
1-5	±0.1	±0.3	PVD, CVD, PACVD, Electroplating, Anodizing, Spray, Screen printing
5-50	±0.3	±1	Anodizing, Electroplating, Galvanizing, Spray, Screen printing
50-300	±1	±2	Thermal spray, Cold spray, Galvanizing, Spray
300-1000	±3	±5	Thermal spray, Cold spray

## Absolute maximum rating (Ta = 23°C)

Parameter	Symbol	Value	Unit
Supply voltage	V <sub>p</sub>	100 - 240	V
Supply voltage frequency	f <sub>p</sub>	50 - 60	Hz
Operating temperature	T <sub>n</sub>	-5 to +50	°C


## Mechanical and optical characteristics (Ta = 23°C)

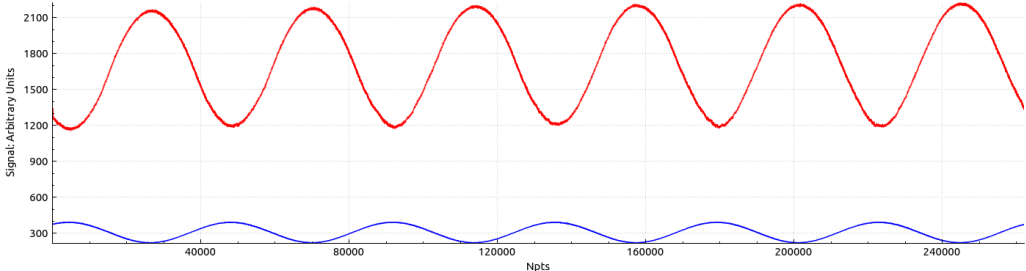
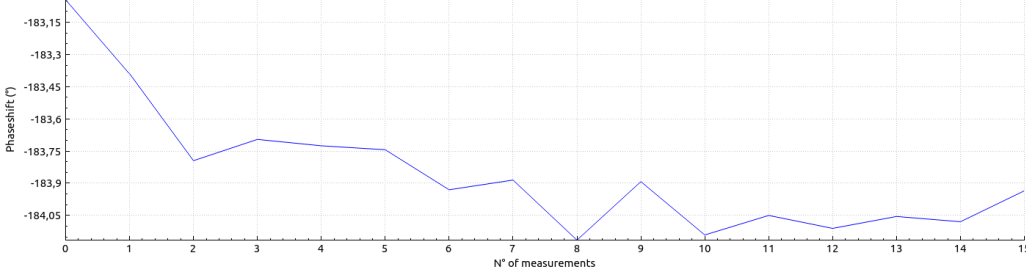
Parameter	Symbol	Value	Unit
Optical power	P	0.01 - 150	W
Wavelength	λ	455 - 1550	nm
Dimensions of computing unit	L <sub>c</sub> x W <sub>c</sub> x H <sub>c</sub>	373 x 247 x 88	mm
Weight of computing unit	m <sub>c</sub>	3	Kg
Dimensions of head of measurement	L <sub>h</sub> x W <sub>h</sub> x H <sub>h</sub>	86 x 41 x 32	mm
Weight of head of measurement	m <sub>h</sub>	180	g

## Available spot sizes and measurement distances

Spot diameter (mm)	Measurement distance (mm)	Reference of the front lens	Typical tolerances on distance (mm) <sup>1</sup>	
			Paint, adhesives, polymer coatings...	Metallic, ceramic... coatings
0.3	20	SP03-FL-WD20-SD0.3	±2	±0.5
0.7	20	SP03-FL-WD20-SD0.7	±2	±0.5
2.5	20	SP03-FL-WD20-SD2.5	±2	±0.5
4.9	20	SP03-FL-WD20-SD4.9	±2	±0.5
6.5	20	SP03-FL-WD20-SD6.5	±2	±0.5
0.8	40	SP03-FL-WD40-SD0.8	±4	±1
2.3	40	SP03-FL-WD40-SD2.3	±4	±1
3.3	40	SP03-FL-WD40-SD3.3	±4	±1
10	40	SP03-FL-WD40-SD10.0	±4	±1
12	40	SP03-FL-WD40-SD12.0	±4	±1
8.8	100	SP03-FL-WD100-SD8.3	±10	±4
11.8	150	SP03-FL-WD150-SD11.8	±20	±10
6	450 <sup>2</sup>	SP03-FL-WD450-SD6.0	±100	±20

 **Signal testing software view**



Module select:

Frequency:   Lock?

Amplitude:   Lock?

Heating time:


Measuring time:

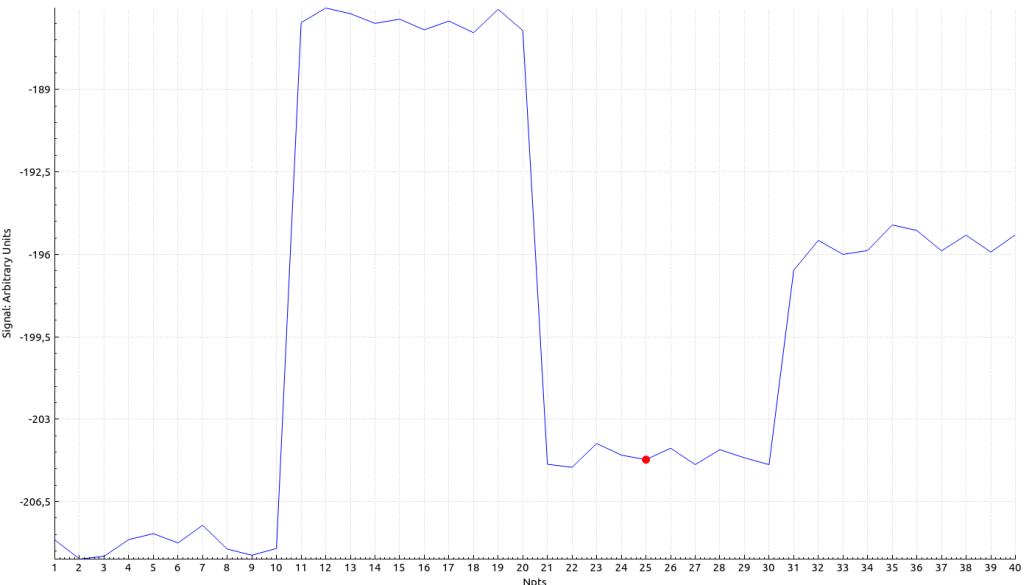
Pause time:

Phase shift:

Phase shift stability:

 **Fast calibration software view**



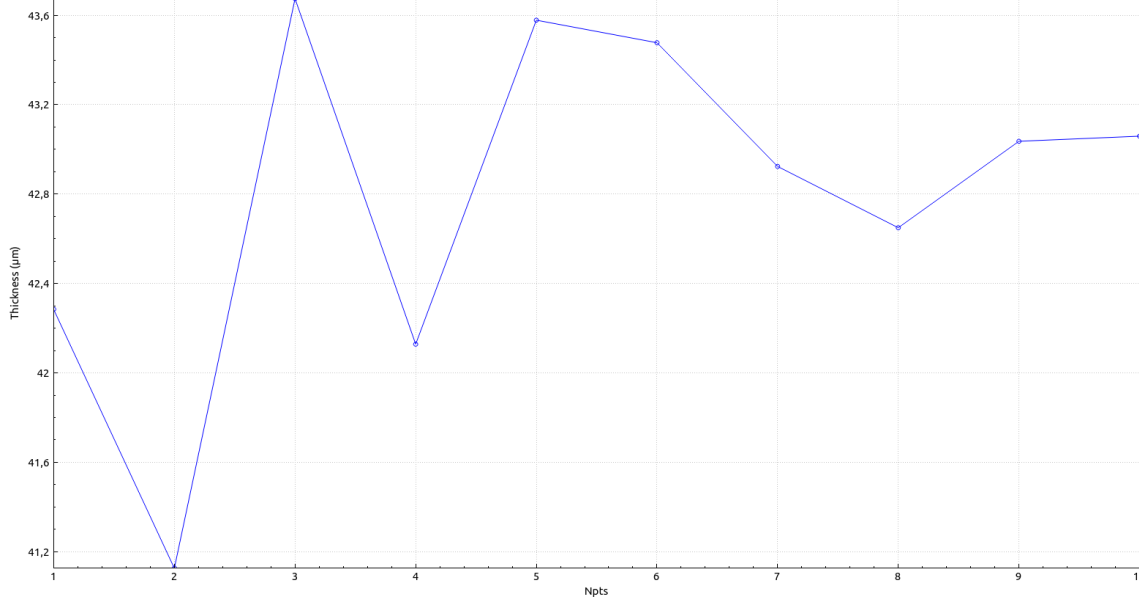


Selected Module:

Current config:

Input number:

BACK



Module Select: 1

Thickness:

43.1 µm

Average:

42.8 µm

Standard deviation:

0.742 µm

Current calibration:

TOY-980-SS-B-N

Nmeasurements: 10

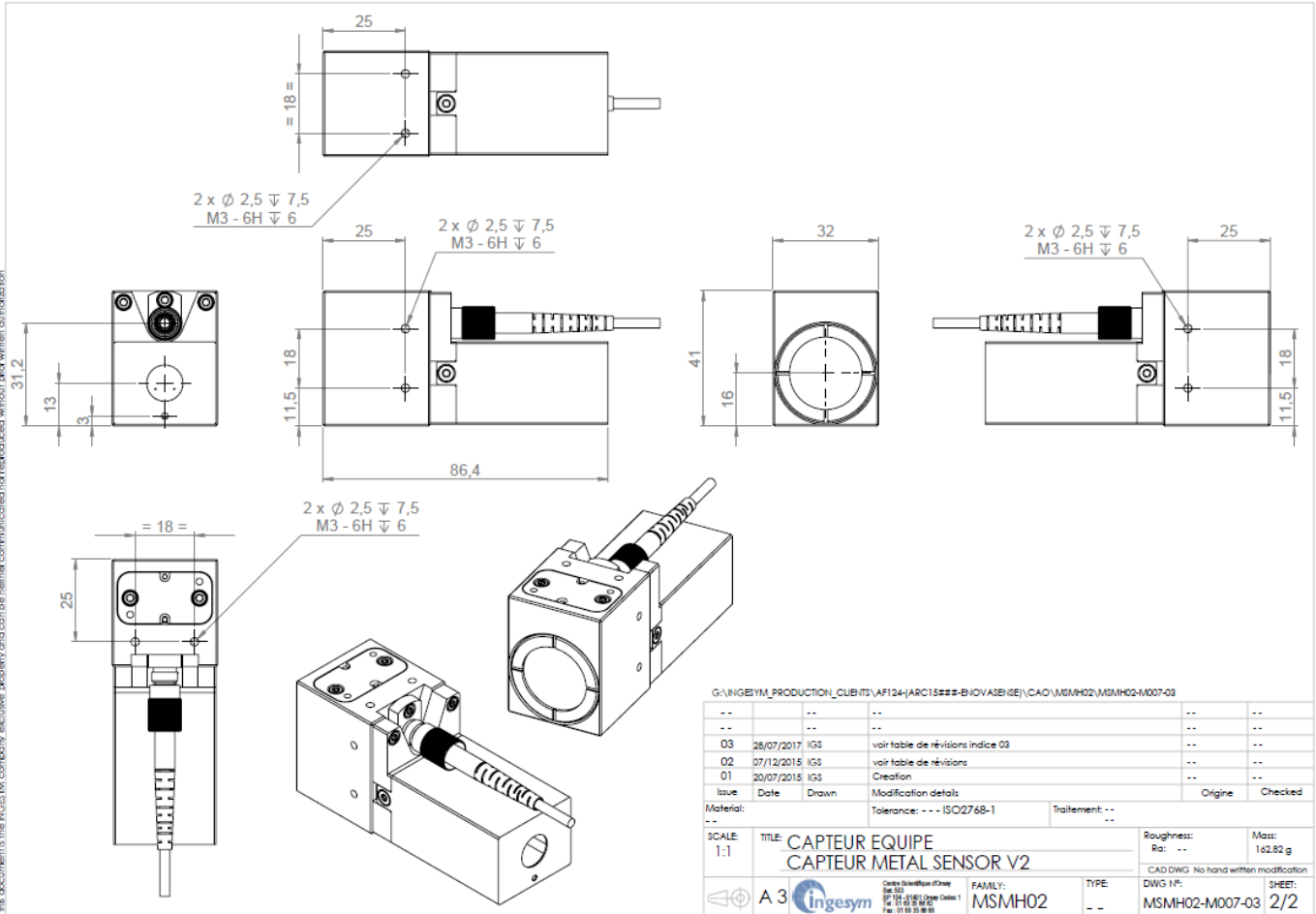
Pause between measurements (ms): 5000

START

STOP

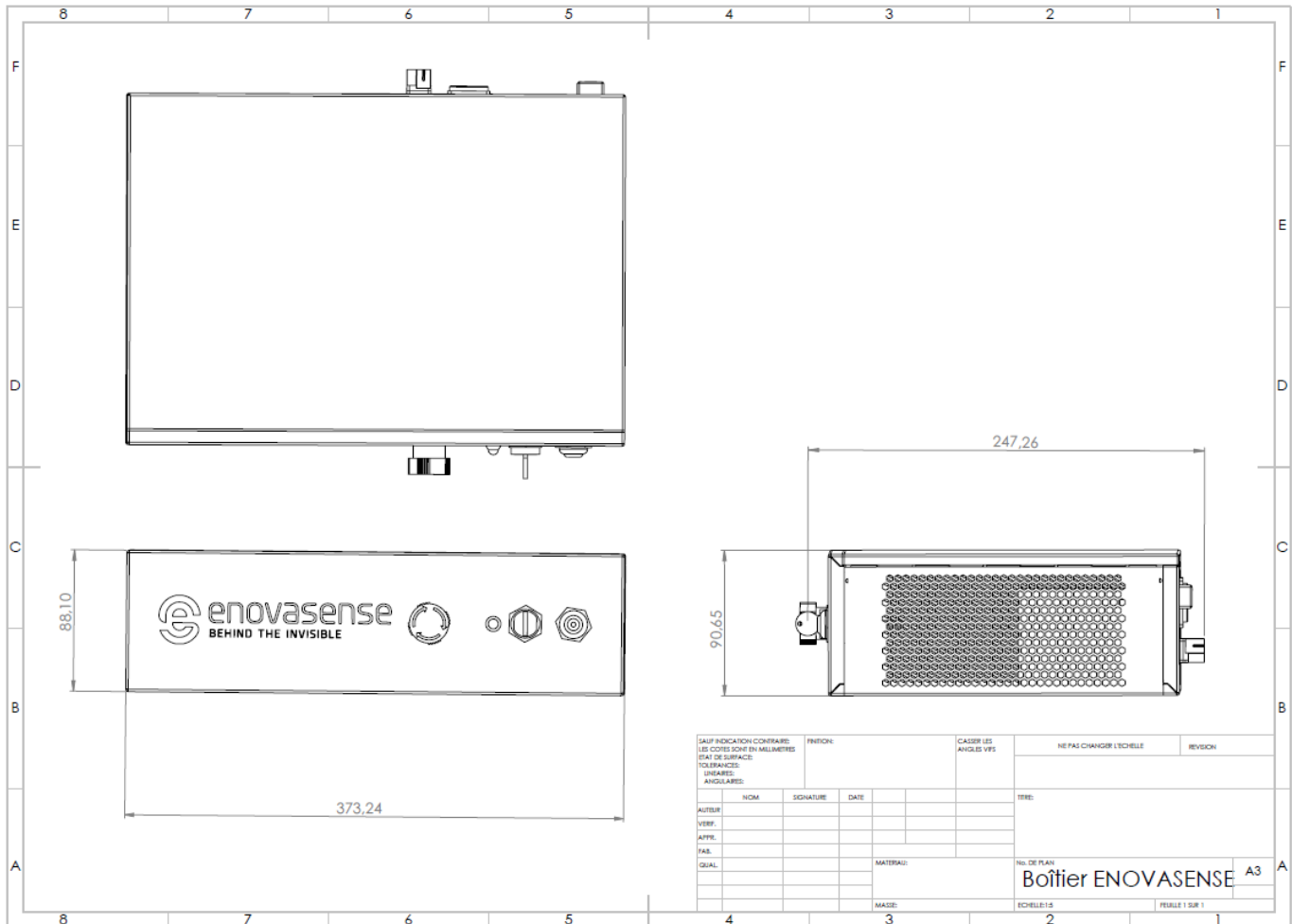
RESET

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G:\INGESYM\_PRODUCTION\_CUBITS\AF124-ARC15###-ENOVASENSE\CAO\MSMH02\MSMH02-M007-03

03	28/07/2017	IGS	voir table de révisions indice 03	--	--
02	07/12/2015	IGS	voir table de révisions	--	--
01	20/07/2015	IGS	Creation	--	--
Issue	Date	Drawn	Modification details	Origine	Checked
Material: --			Tolerance: --- ISO2768-1	Traitement: --	
SCALE: 1:1		TITLE: CAPTEUR EQUIPE CAPTEUR METAL SENSOR V2		Roughness: Ra: --	Mass: 162.82 g
A 3 Ingesym				CAD DWG No hand written modification	
FAMILY: MSMH02			TYPE: --	DWG N°: MSMH02-M007-03	SHEET: 2/2



SAUF INDICATION CONTRAIRE: LES COTES SONT EN MILLIMETRES ETAT DE SURFACE: TOLERANCES: LINEAIRES: ANGULAIRES:			FINITION:	CAUSER LES ANGLES VES:	NE PAS CHANGER L'ECHELLE	REVISION
AUTR:	NOM	SIGNATURE	DATE	TITRE:		
VER:						
APP:						
FAB:						
QUAL:				MATERIAU:	No. DE PLAN Boîtier ENOVASENSE A3	
				MARQUE:	ECHELLE: 1:5	FEUILLE 1 SUR 1

## Package content

Designation	Quantity
Computer with EU power adaptor	1
Enovasense TPS computing unit	1
EU Power cable	1
HDMI cable	1
Optical fiber	1
LEMO cable	1
Enovasense Measuring head T03	1
Front lens SP03-FL	1
Enovasense standard software	1
1-year warranty	1
CE certificate	1
Quality control certificate	1

<sup>1</sup>Performances values given in this document are typical values obtained with this device but can vary from one application to another. For a diagnosis of those performances on specific samples, please contact Enovasense.

<sup>2</sup>450mm distance measurement can be obtained with a specific distance objective AS01DO that is not included in this standard package and has to be purchased as an add-on accessory. See AS01DO datasheet.

## **Contacts**

### **Germany**

#### **POLYTEC GMBH**

Peter Schullerer  
p.schullerer@polytec.de  
+49 7243 604-3700  
Polytec-Platz 1-7  
76337 Waldbronn  
Germany

### **Japan**

#### **OPTOSCIENCE**

Michihiro Morita  
morita@optoscience.com  
+81 3-3356-1064  
Naitocho Bldg.. 1. Naitocho.  
Shinjuku-ku. Tokyo 160-0014  
Japan

### **United States**

#### **TED**

Jeremy Capling  
jeremyc@tedndt.com  
+1 313-686-7875  
1370 Piedmont  
Troy, Michigan 48083-1917  
United States

### **ENOVASENSE**

Geoffrey Bruno  
geoffrey.bruno@enovasense.com  
+33 1 46 70 93 96  
Villejuif Biopark  
1. mail du Professeur Georges Mathé  
94800 Villejuif  
France



[www.enovasense.com](http://www.enovasense.com)

ENOVASENSE SAS  
1 Mail du Professeur Georges Mathé. Villejuif BioPark. 94800 Villejuif. FRANCE  
Phone : (+33) 1 46 70 93 96. Mail : [contact@enovasense.com](mailto:contact@enovasense.com)  
VAT N° FR 28 791516578. SIRET N° 791 516 578 00022 CRETEIL