

Thickness Measurement Devices DEVICE FOR THE CONTROL OF THE THICKNESS OF COATINGS

C1FPX-XXXLV1M04LN0 - 1T03XL



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
- Ability to measure several points
simultaneously using several measuring heads
(up to Y=100 measuring heads)

Applications

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

Key values¹

Parameter	Symbol	Value	Unit
Measurable thickness range	E_p	0.1 - 1000	μm
Accuracy	σ_{E_p}	< 3% of measured thickness	μm
Measurement duration	t_m	< 1s	s
Measurement distance range	d_m	15 – 150	mm

References

Maximum power (W)	Wavelength (nm)	Reference
1	455	C1FP1-455LV1M04LN0 - 1T03L
1	1470	C1FP1-1470LV1M04LN0 - 1T03L
3	1550	C1FP3-15500LV1M04LN0 - 1T03L
1	980	C1FP1-980LV1M04LN0 - 1T03L
4	980	C1FP4-980LV1M04LN0 - 1T03L
10	980	C1FP10-980LV1M04LN0 - 1T03L
20	980	C1FP20-980LV1M04LN0 - 1T03L

Repeatability by thickness range¹

Thickness range (μm)	Typical RMS repeatability in 1 point (μm)		Application process
	Paint, Adhesives, polymer coatings...	Metallic, ceramic...	
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 ($T_a = 23^\circ\text{C}$)

Parameter	Symbol	Value	Unit
Supply voltage	V_p	100 - 240	V
Supply voltage frequency	f_p	50 - 60	Hz
Operating temperature	T_n	-5 to +50	$^\circ\text{C}$

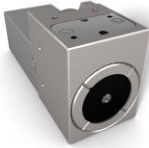








Mechanical and optical characteristics ($T_a = 23^\circ\text{C}$)

Parameter	Symbol	Value	Unit
Optical power	P	0.01 - 150	W
Wavelength	λ	455 - 1550	nm
Dimensions of computing unit	$L_c \times W_c \times H_c$	373 x 247 x 88	mm
Weight of computing unit	m_c	3	Kg
Dimensions of standard head of measurement	$L_h \times W_h \times H_h$	86 x 41 x 32	mm
Weight of standard head of measurement	m_h	180	g


Available spot sizes and measurement distances

Spot diameter (mm)	Measurement distance (mm)	Reference of the front lens	Typical tolerances on distance (mm) ¹	
			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

 Available measuring head references

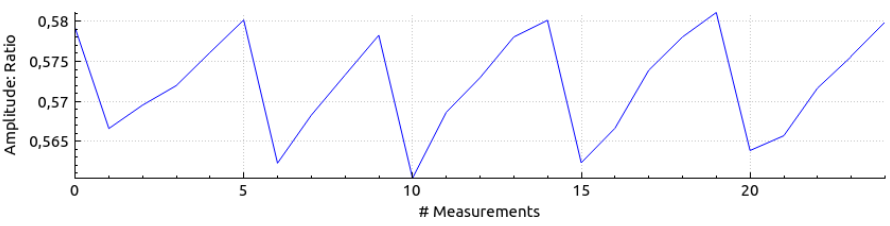
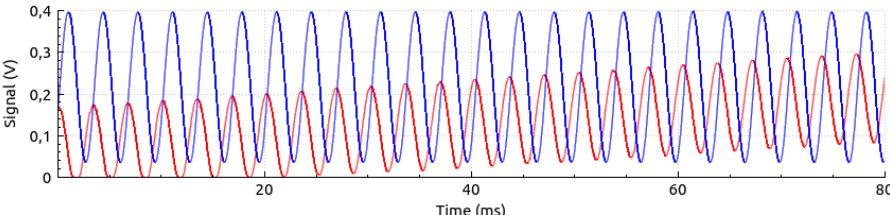
Reference	T030	T031	T032
			
			
			
Size (mm) $L_c \times W_c \times H_c$	86 x 41 x 32	120 x 66 x 66	111.5 x 61 x 61
Weight (g)	180	500	500
AS06-OM-TS-MN – Orthogonal module static available	Yes	Yes	Yes
AS06-OM-TD-MW – Orthogonal module dynamic available	No	Yes	No
Average increase in repeatability compared to T030 reference	X1.0	X2.5	X2.5
Effective measurement distance shift compared to front lens indication	-1.0	-6.5	-5.5

Signal testing software view



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BEHIND THE INVISIBLE

BACK



TEN100 (10.42.0.100) Add modules

Frequency: 300 Hz

Voltage: 0.35 V watts?

Heating time: 60 ms

Measuring time: 80 ms

Pause time: 10000 ms

Phaseshift: -71.31

Phaseshift stability: 0.071868

START


STOP

RESET

LOAD...


EXPORT...

Fast calibration software view



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BACK



Selected Module: 1

LOAD CONFIG...

Current config: LIBRATION/TOY-980-SS-A-N

FAST_CALIBRATIONTOY-980-SS-A-N

LOAD DATA

ADD...96.5

TRAIN

25DELETE DELETE ALL

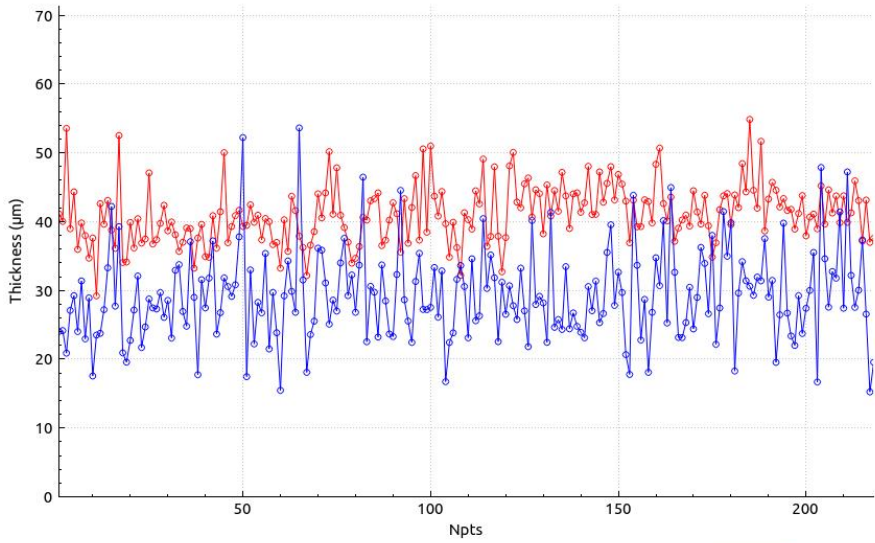
SAVE AND EXPORT

Input number: 1

 Measure software view (2 heads example)



BACK



Thicknesses:
37.6 µm 19.6 µm

Averages:
41.1 µm 29.2 µm

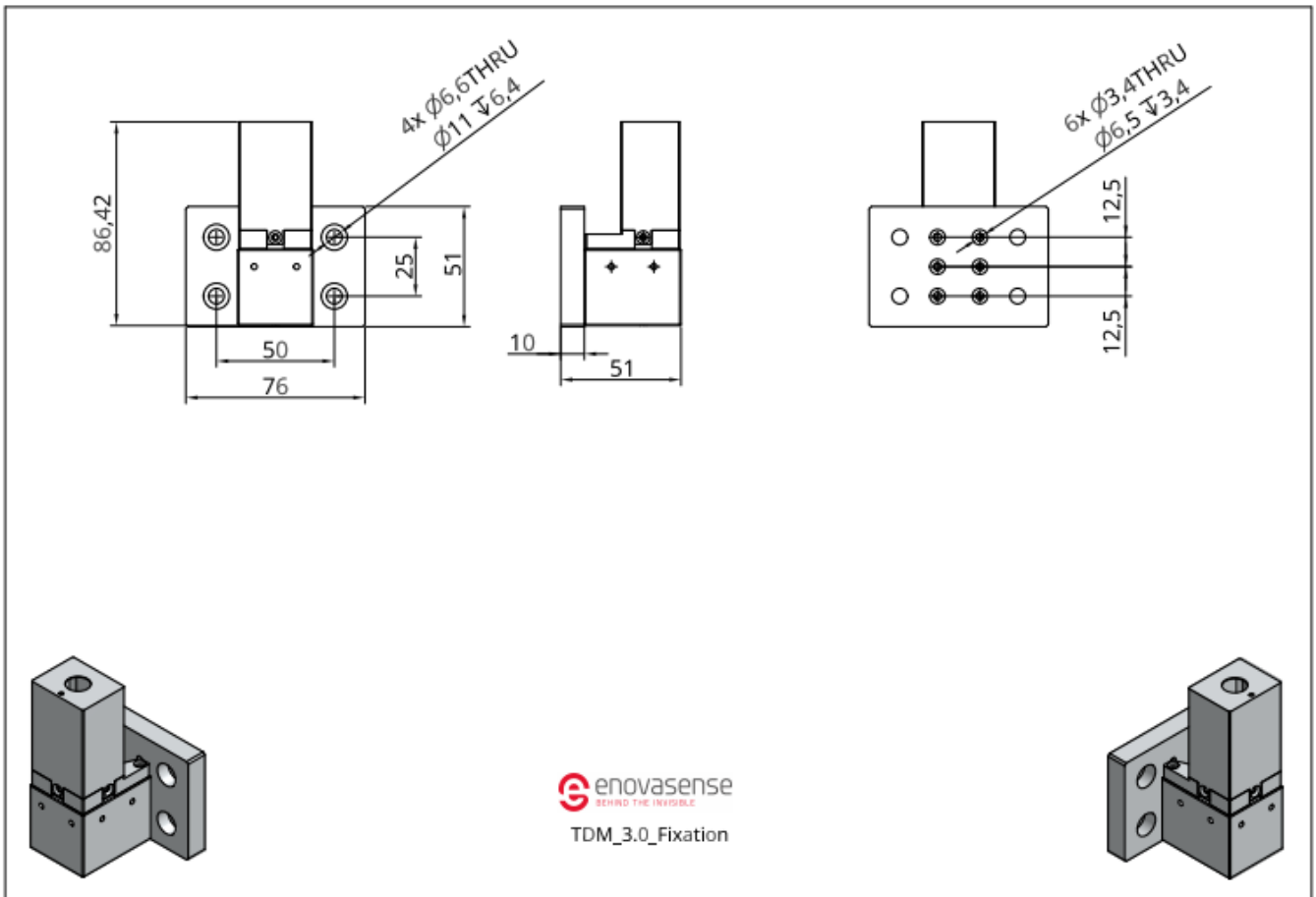
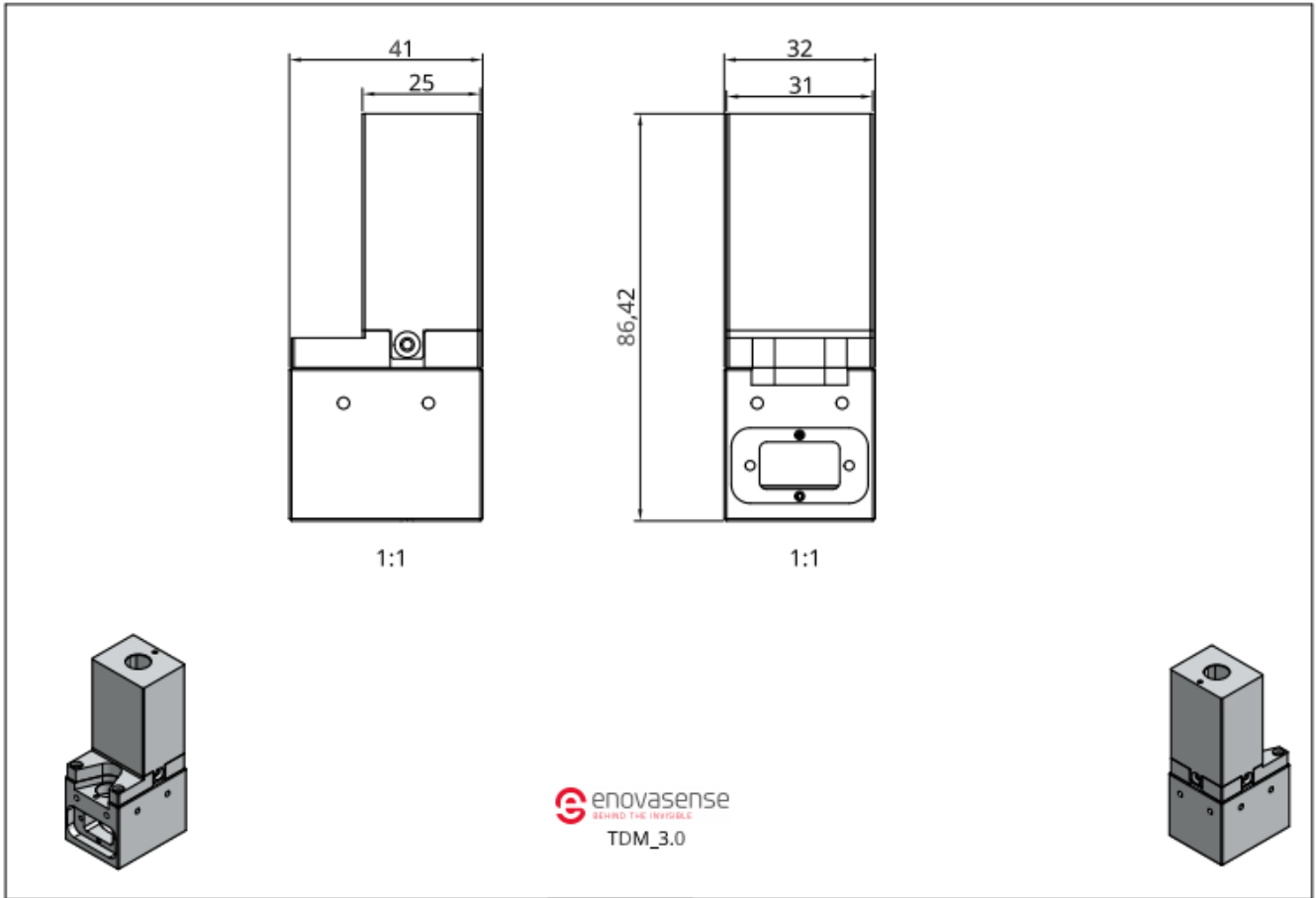
Standard deviations:
4.247 µm 6.598 µm

Name:

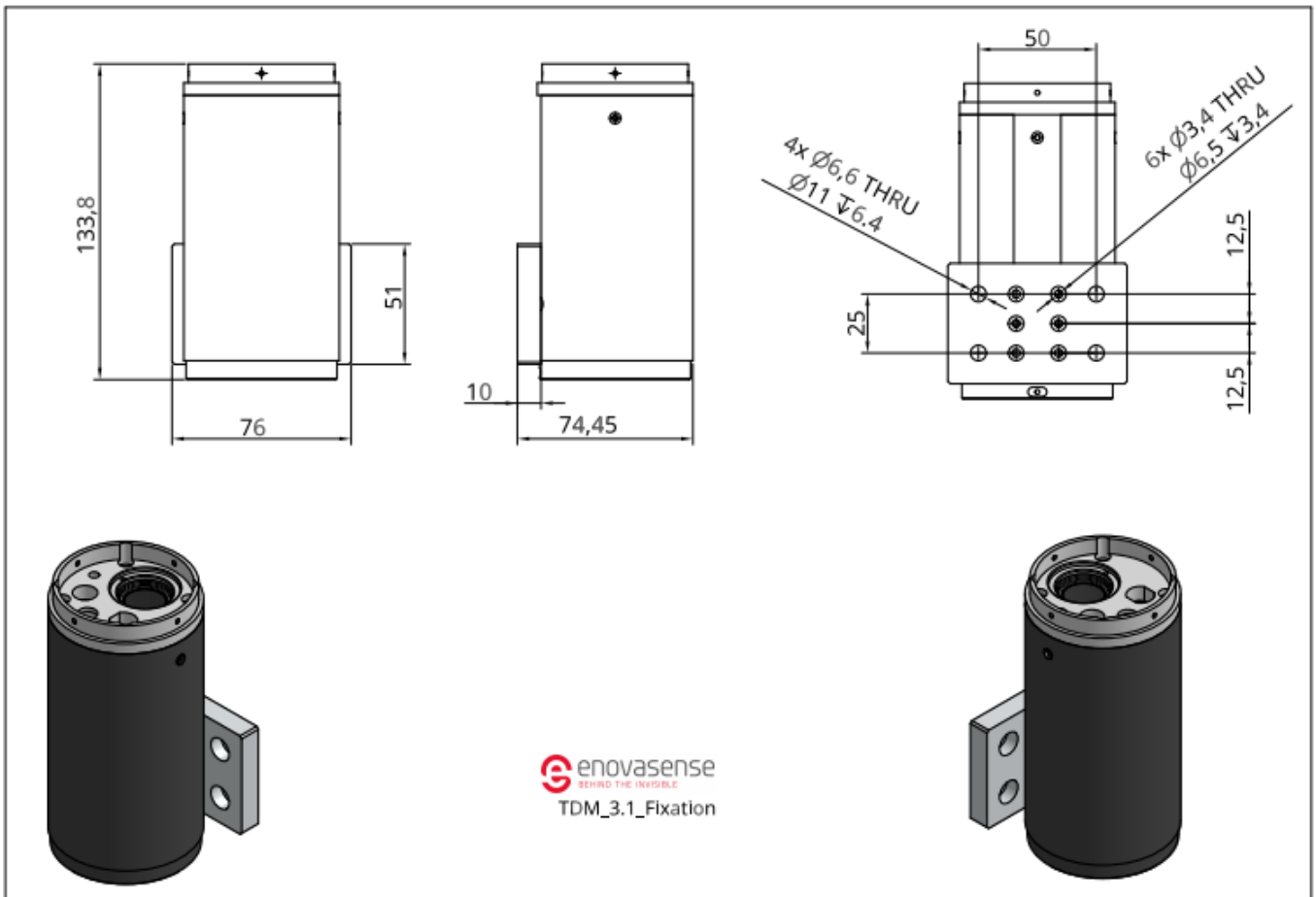
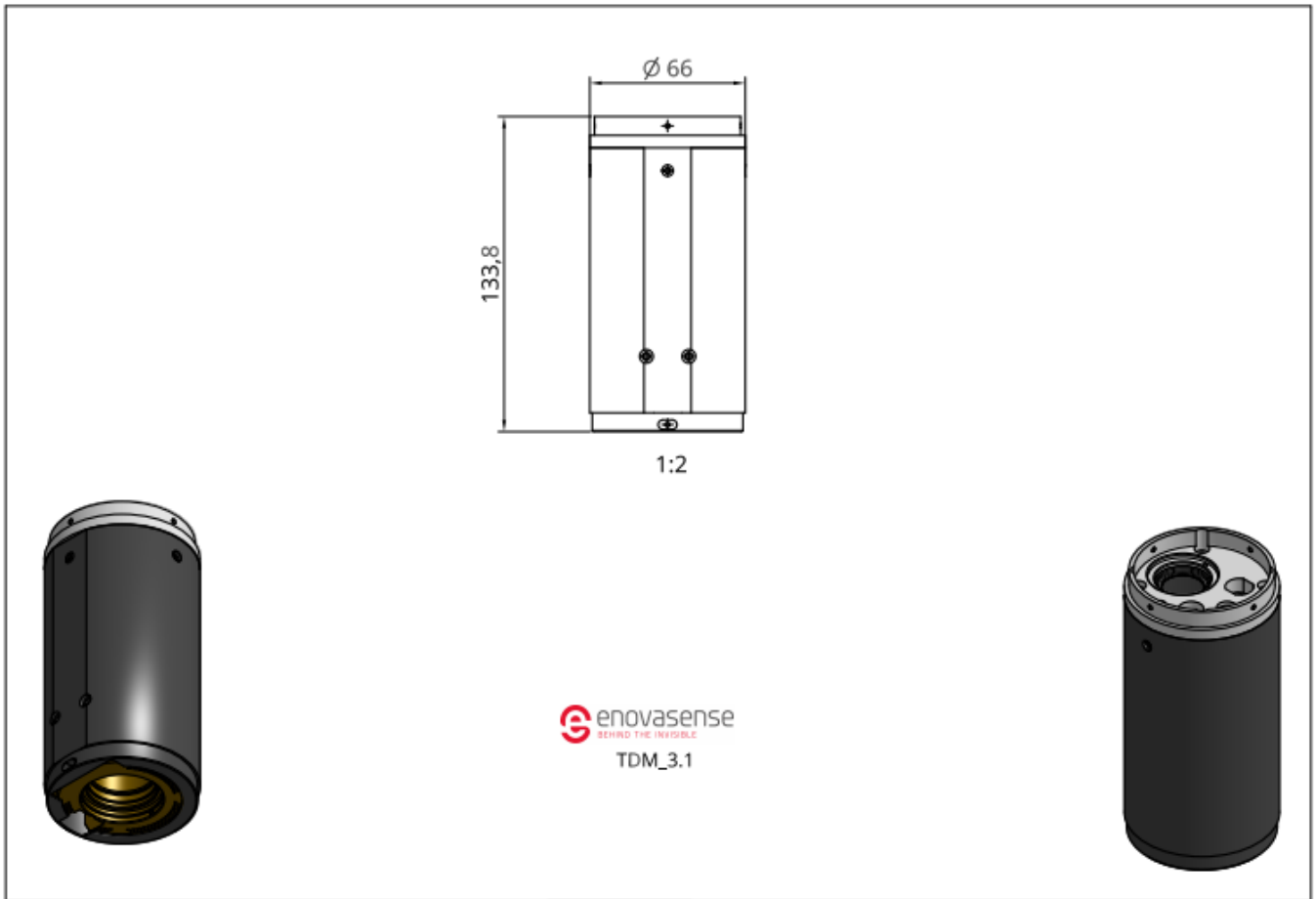
Current calibrations:
SKF-GB SKF-GB

Pause before measure (ms): 1500 Mode

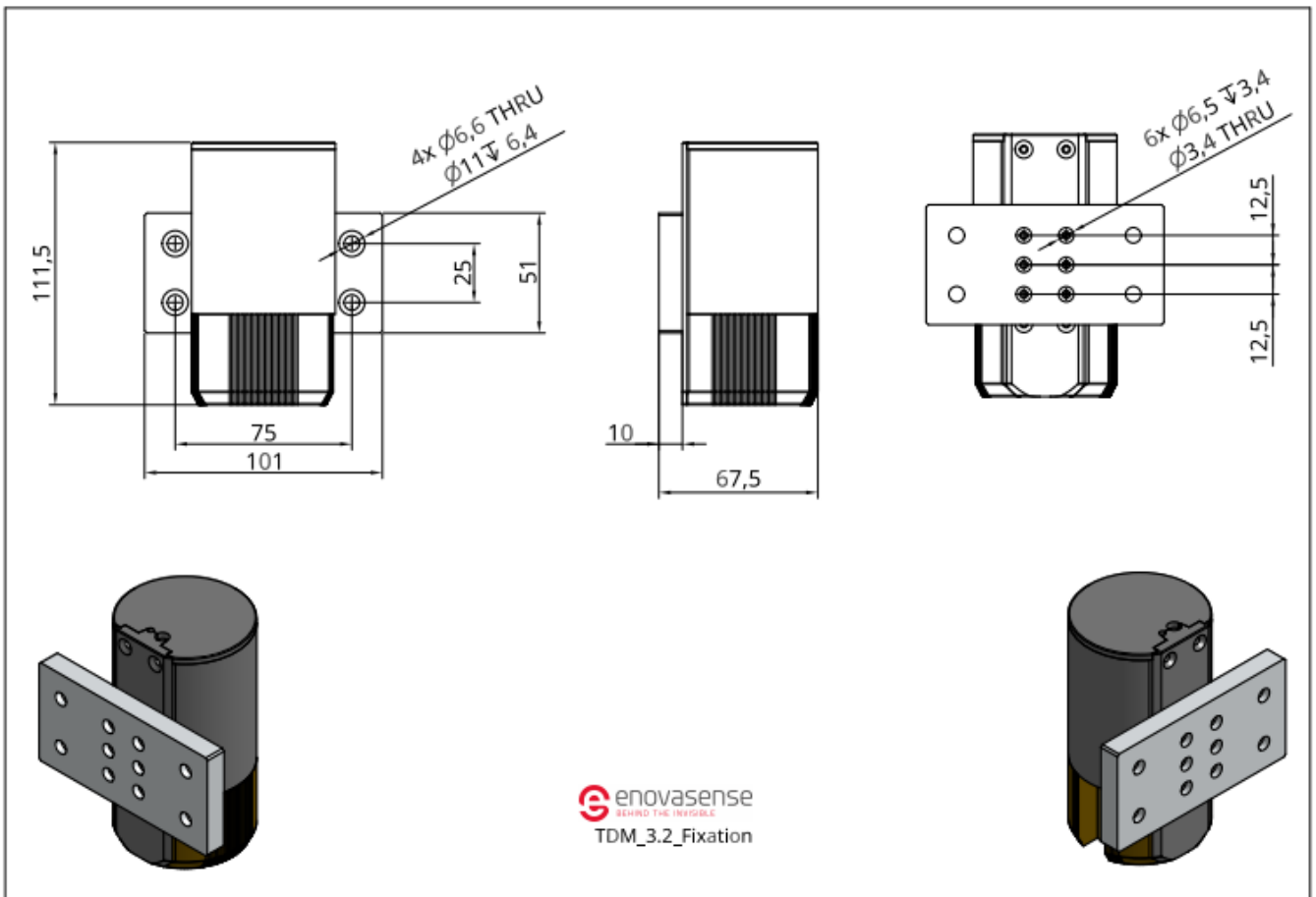
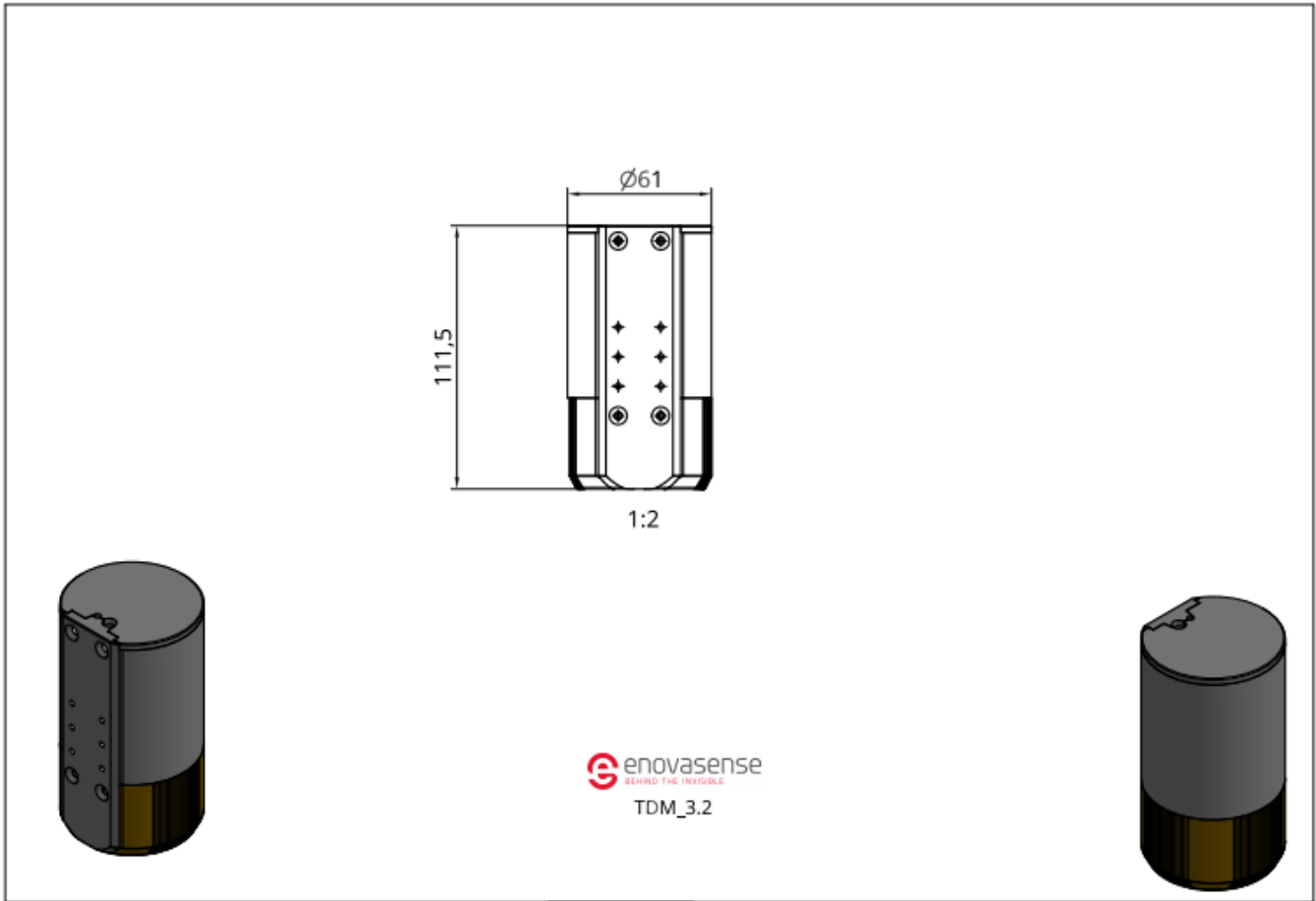
 Measuring head T030




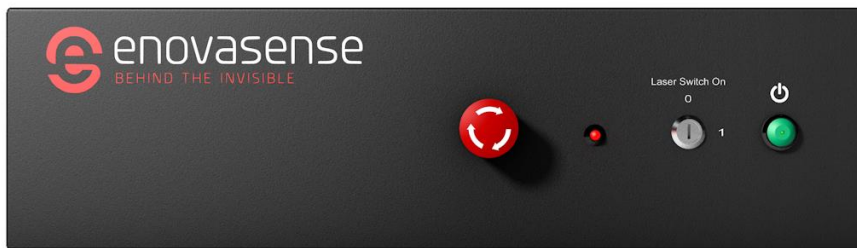
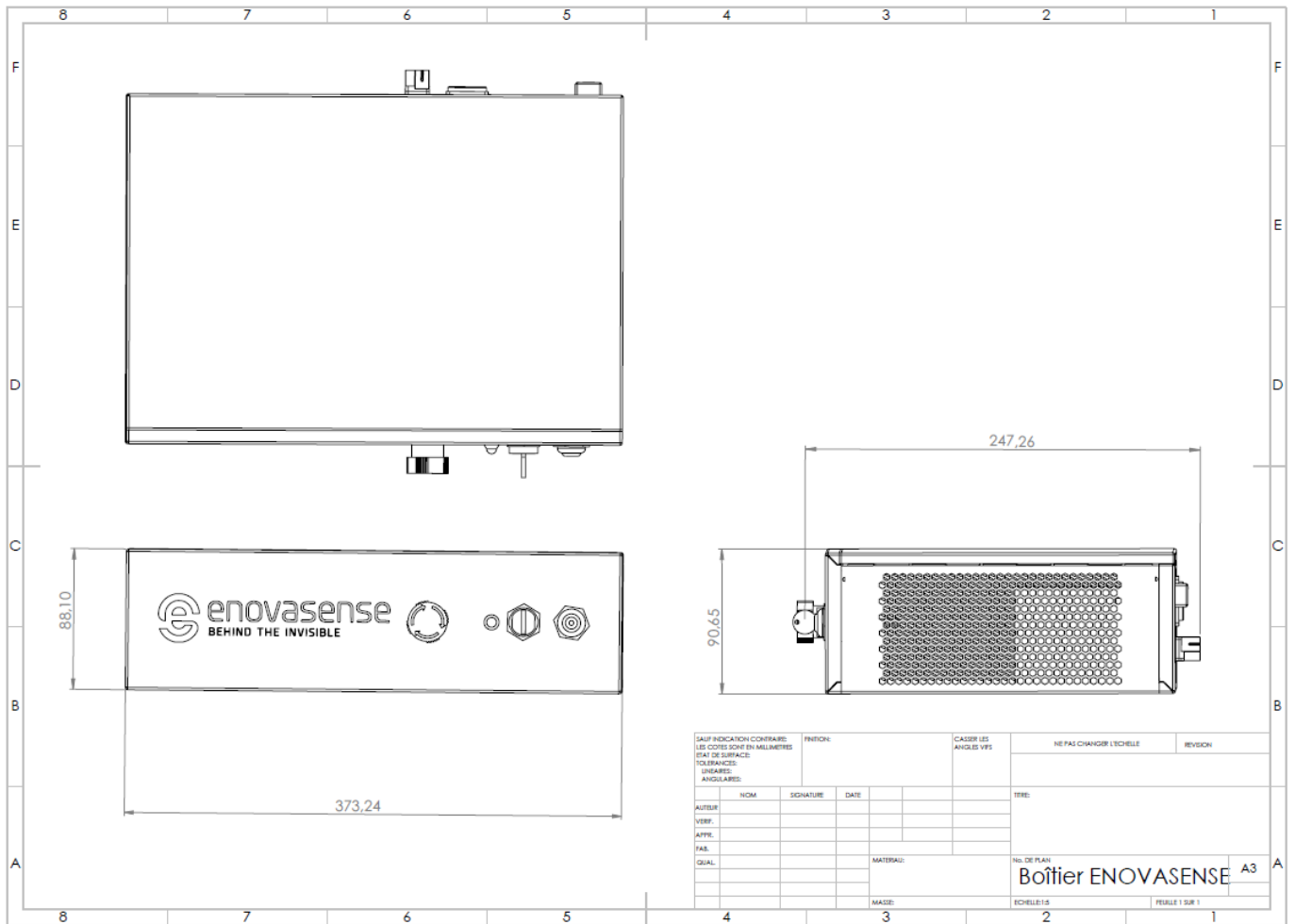
 Measuring head T031



 Measuring head T032



 Command box



 Package content

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

¹Performances 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.

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