






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 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	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 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 head of measurement	$L_h \times W_h \times H_h$	86 x 41 x 32	mm
Weight of head of measurement	m_h	180	g

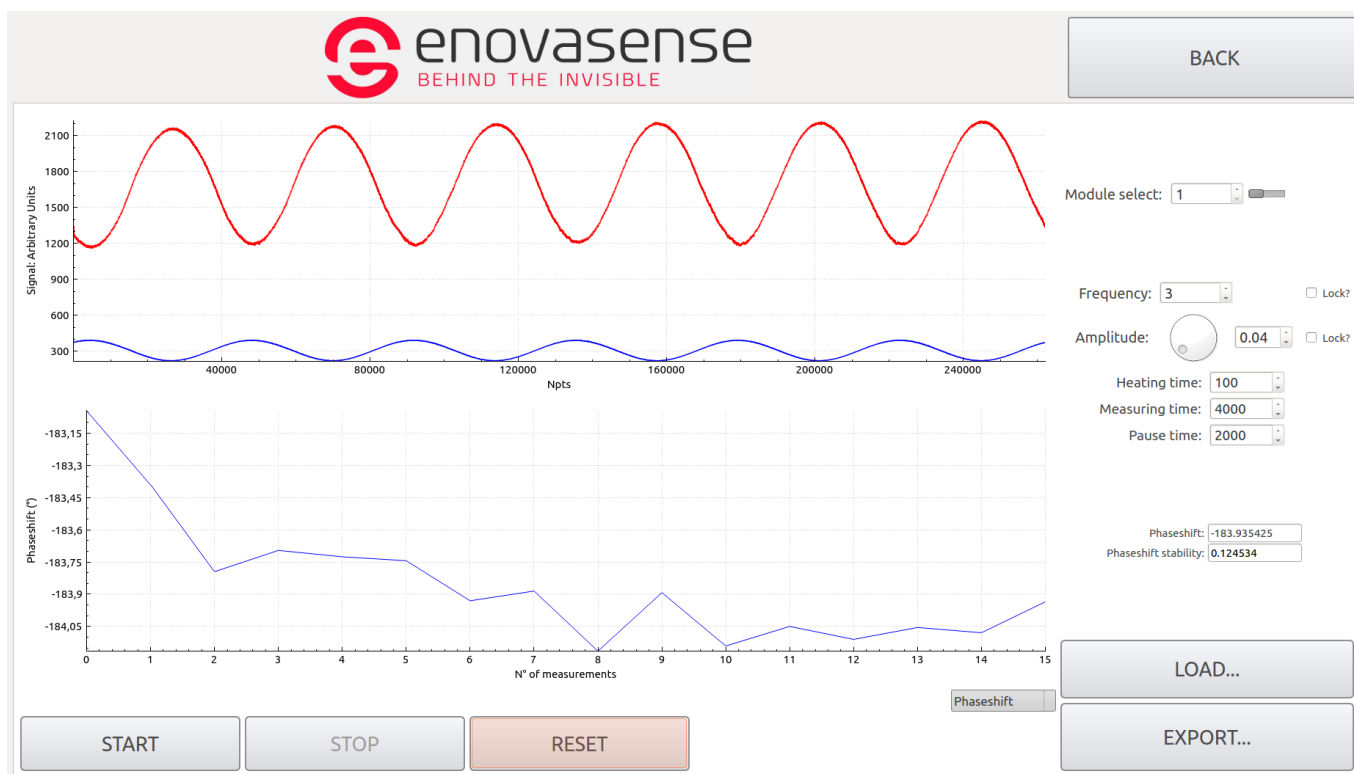
Available spot sizes and measurement distances

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
6	450 ²	SP03-FL-WD450-SD6.0	± 100	± 20

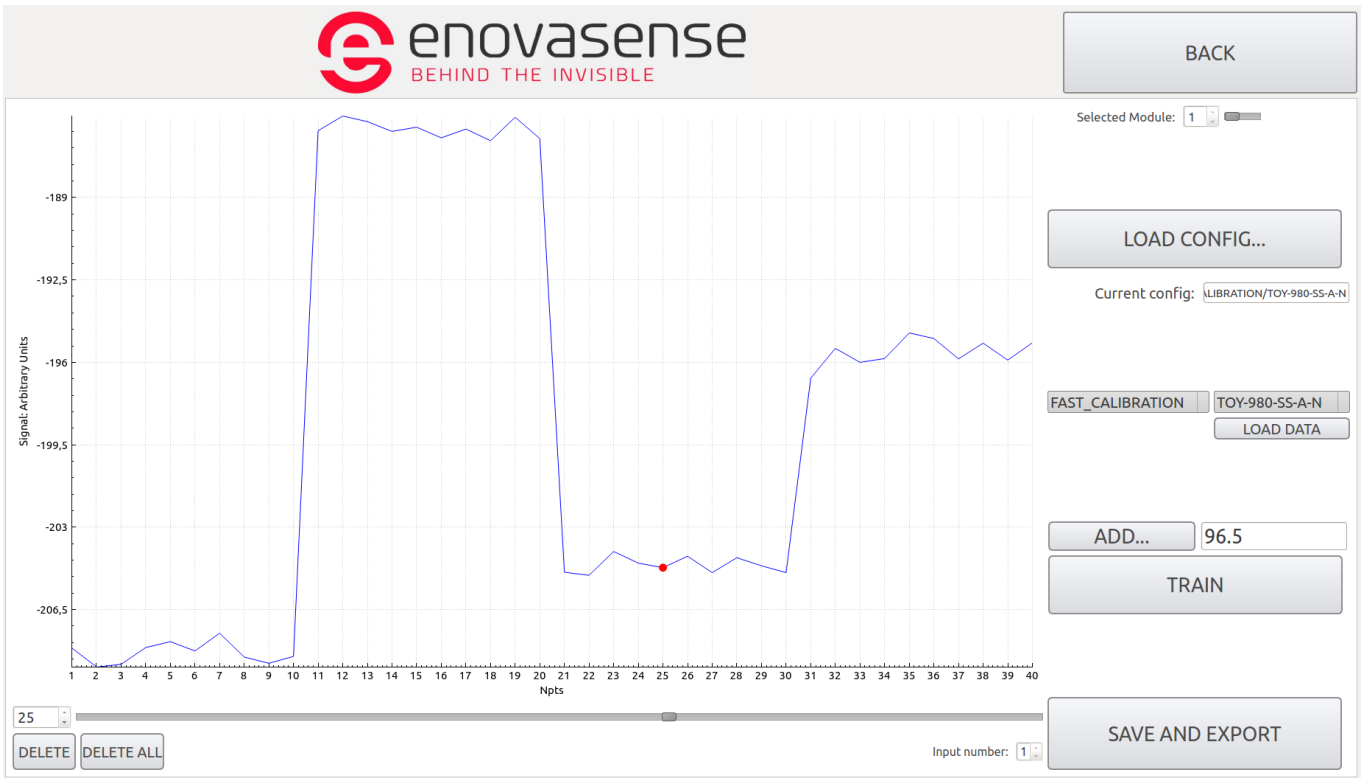
Package content

Designation	Quantity
Computer with EU power adaptor	1
Enovasense TPS computing unit	1
EU Power cable	1
Ethernet 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

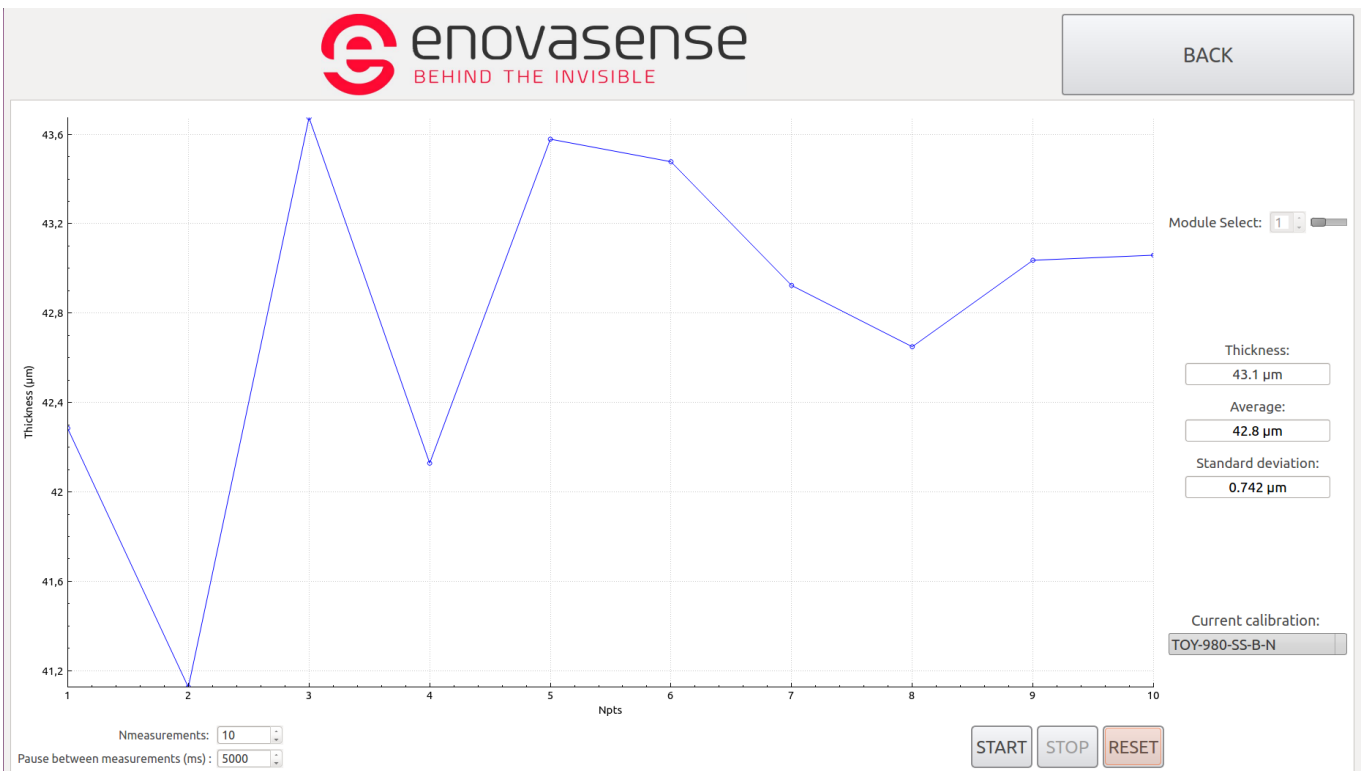
Signal testing software view



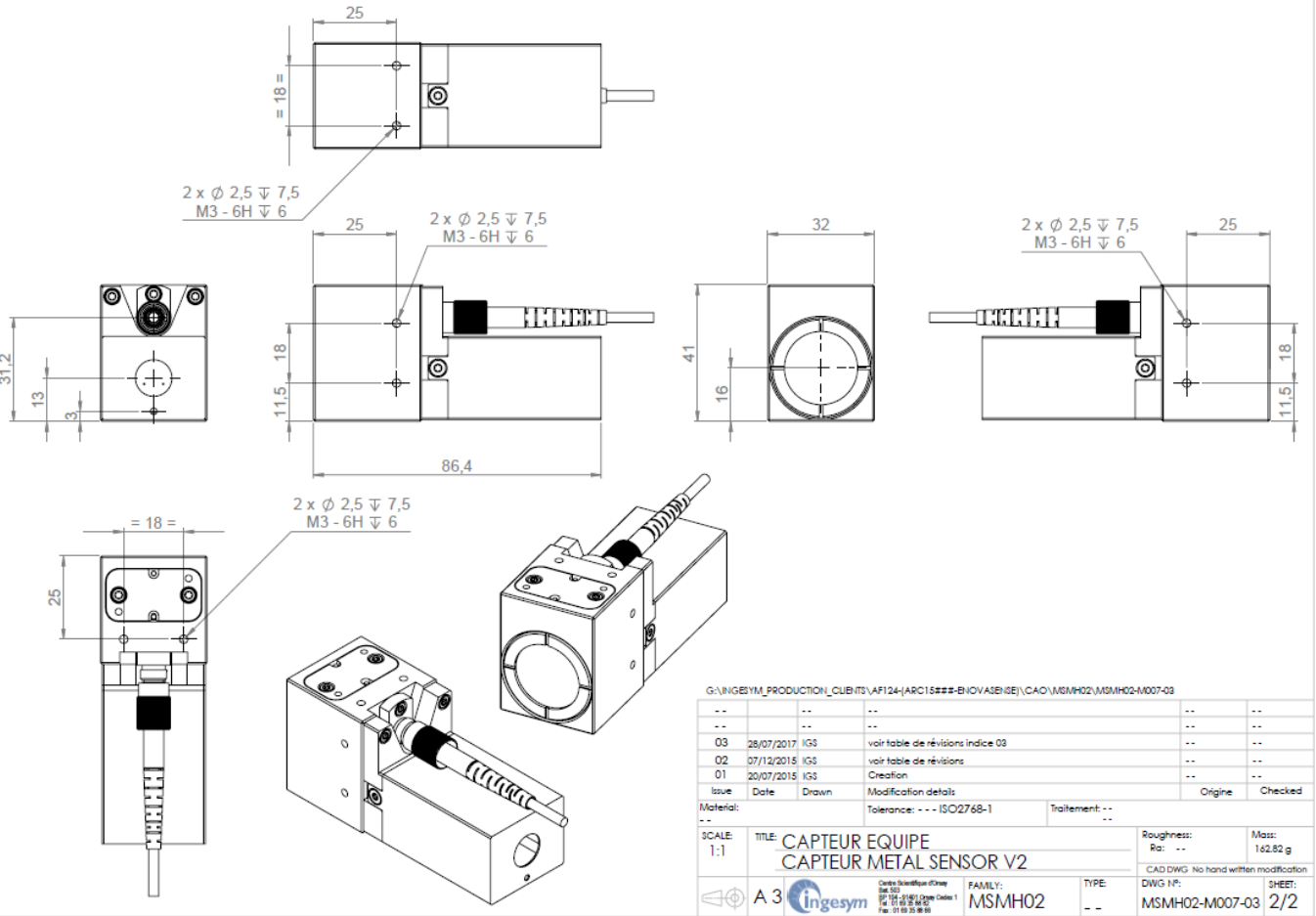
Fast calibration software view



Measure software view



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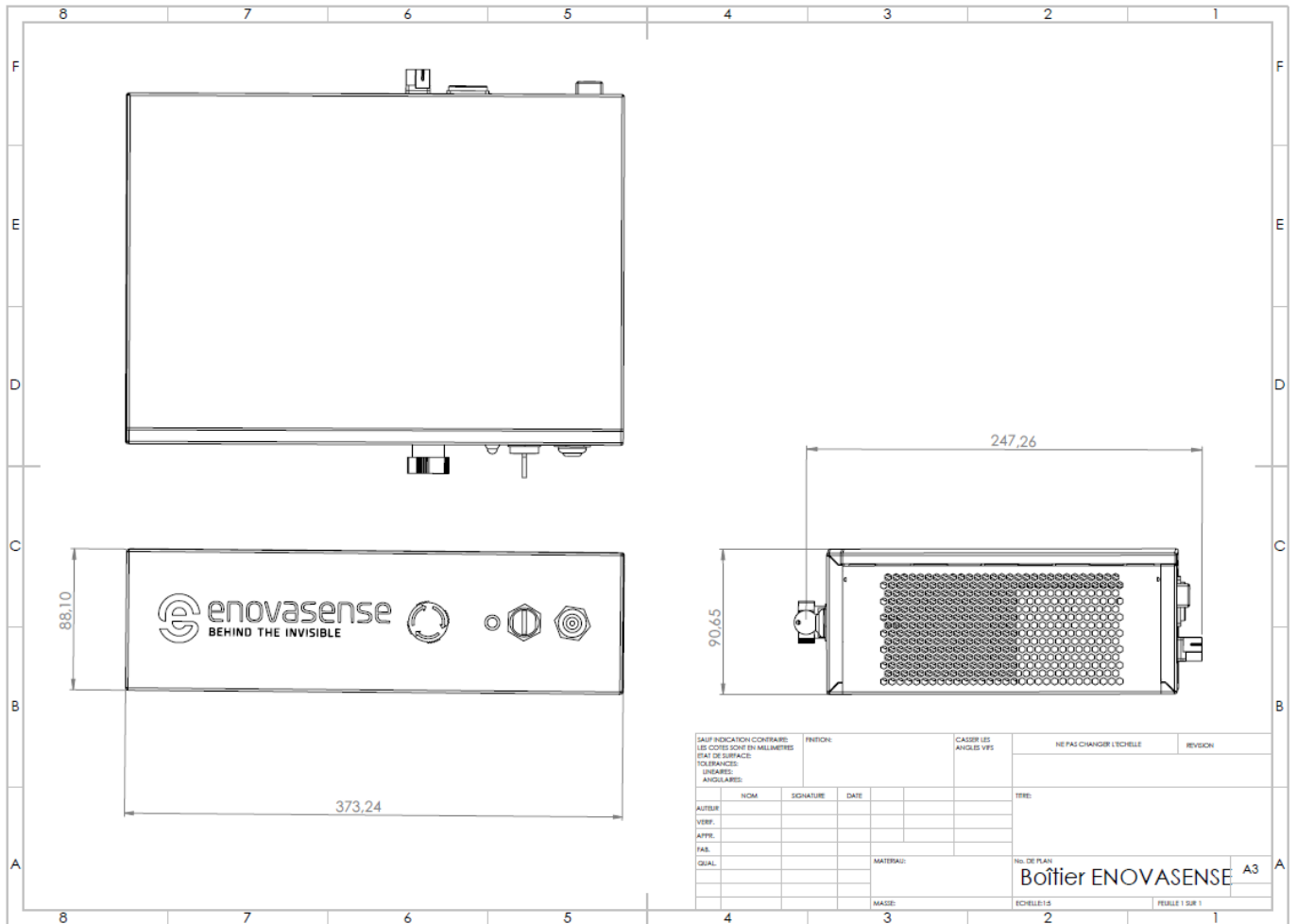
Issue	Date	Drawn	Modification details	Origine	Checked
03	28/07/2017	IGS	voir table de révisions indice 03	--	--
02	07/12/2015	IGS	voir table de révisions	--	--
01	20/07/2015	IGS	Creation	--	--

Material: -- Tolerance: --- ISO2768-1 Traitement: --

SCALE: 1:1 TITLE: CAPTEUR EQUIPE
CAPTEUR METAL SENSOR V2

Roughness: Ra: -- Mass: 162.82 g
CAD DWG No hand written modification

A3	ingesyms	Centre Scientific d'Essai Site 507 Rte. de l'Industrie - Case 1 Ft. de la Chapelle Ft. de la Chapelle	FAMILY: MSMH02	TYPE: --	DWG N°: MSMH02-M007-03	SHEET: 2/2
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SAUF INDICATION CONTRAIRE: LES COSES 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	
				MARQUE:		Boîtier ENOVASENSE A3	
						ECHELLE: 1:5	
						FEUILLE 1 SUR 1	

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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.

²450mm 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.

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